

Laboratory Supplies Catalogue
9th Edition

# M.R.S. Scientific Limited

Welcome to the 9th edition of the MRS Scientific catalogue. It's packed with many new products from familiar brands. Encompassing well over 8000 products, we focus on quality UK and world class manufacturers for todays' 21st century laboratory. Our sales office staff are highly adept at processing your orders or enquiries for any of our apparatus or chemicals.

The catalogue covers only a fraction of the products we can supply. If you cannot find an item you need please ask, as we have a vast knowledge base at our disposal and can source many items that are not listed.

We export to many countries around the world. Goods are packed with care by our own experts for despatch either by air, sea or courier to ensure maximum prevention against damage in transit. All export documentation and shipping are taken care of by our very experienced staff.

The office is organised into dedicated teams of staff specifically trained to handle customer requests efficiently with knowledge about the products. This approach ensures that you have the benefit of speaking or corresponding with someone who can identify your needs quickly.

We look forward to working with you.



- All quotations by and contract with The Company shall be valid and binding only if made in writing and shall be subject to these conditions and no other. No variations of either quotation or contract shall be valid or binding unless made and accepted In writing, as a separate issue, by both The Company and the customer. A contract shall exist only when The Company transmits Its written acceptance of a customer order. **PRICES** 
  - (a) Goods will be invoiced at prices ruling at date of despatch unless otherwise agreed In writing.
  - (b) All prices are nett and no cash discount is allowed unless otherwise agreed in writina.
- DELIVERY
  - (a) The time period shown on quotations and order acknowledgments Indicates when it is estimated goods will be available for despatch. Although The Company will endeavour to work as near as they can to this, such estimates are to be treated as estimates only and do not involve contractual obligation.

  - (b) (1) Force Majeure

    If The Company Is unable to commence, continue or completely perform its obligations under this contract by reason of force majeure then The Company shall not be held responsible to the customer for expenses or financial losses
    - incurred or sustained by the customer In consequence of such Inability.

      (2) For the purpose of this clause the tenn force majeure shall include any factors affecting the performance of this contract attributable to acts, events, nonhappenings, omissions or accidents beyond the reasonable control of The Company to perform and in particular (but without limiting the generality thereof the following, namely, strikes, lock-outs, riots, civil commotion, war, state of national emergency and governmental action, fire, explosion, storm, flood, earthquake, epidemic or other natural physical disaster and the
  - Impossibility of use of normal means of public or private transport. Where as a result of any happening the subject of sub-clause (b) of this clause the availability of goods to the customer is delayed he shall take delivery of or collect the goods sold within seven days of being requested to do so by The Company
  - The Company Is permitted to make partial deliveries and Is allowed to deliver a quantity different from that ordered by not more than 10% either way and the customer shall pay for the actual quantity delivered at the contract price.
- PAYMENT
  - (a) Unless otherwise agreed in writing, payment shall be made 30 days from the date of invoice. Without prejudice to The Company's rights such payment is a condition precedent to the fulfillment of further obligations of The Company under the contract in respect of which default in payment Is made.

    The Company shall have the right to withhold deliveries of goods sold under this
  - contract and any other contract made between The Company and the customer until all sums of money due by the customer to The Company under this or any other contract have been discharged in full and The Company shall be entitled to a lien upon (and the right to sell or otherwise dispose of all goods which are the subject matter of this and/or any other such contract in respect of such indebtedness
  - Where a contract requires a customer to make payment by means of a letter of credit the contract is not included until a copy of the letter of credit has been received by them through the Bank. Letters of credit should be raised In the following manner:-
    - (i) Goods to be described as laboratory products, instruments and equipment, and medical paper.
    - (ii) Validity to extend to a period of twenty-eight days after the date of shipment (iii) Be Irrevocable and confirmed by a United Kingdom Bank reasonably approved by The Company.
  - (d) Monies due to The Company under contract shall be paid to The Company In the currency in which the goods are Invoiced to the customer.
  - The Company may levy an Interest charge of 2% per month (or such other higher rate of interest as The Company shall consider fair and reasonable in all the circumstances) on all overdue amounts.
  - Should a well founded doubt arise about the customer's ability or willingness to pay on the due date, The Company shall be at liberty to cancel the contract or to postpone delivery until payment has been received.
  - Where payment Is by 'Bill of Exchange' the customer must accept and return the Bill within seven days from receipt of the goods. Where payment Is by documentary collection, the customer must accept the
  - Documents within three days of arrival at the customer's Bank.
- PASSING OF RISK AND TITLE
  - The absolute legal and beneficial ownership In all goods sold shall remain invested in The Company and shall not pass to the customer until the purchase price of the order of which they form part (each order being considered as a whole) and all other monies owing by the customer to The Company on any account shall have been paid by the customer to The Company.
    Until such payment In full has been made the customer shall hold the goods sold
  - as Bailee of The Company and shall not sell, dispose of, process or use the goods sold except with the express written permission and as agent of The Company and on the condition that if authorised to re-sell the goods to a third party he shall forthwith account to The Company for the proceeds of sale to the extent of the customer's Indebtedness to The Company.
  - The goods sold shall be set aside and stored separately from other goods in the possession of the customer so as to be clearly and separately identifiable and !he customer shall deliver them up to The Company at any time on demand.
  - The risk in the goods sold shall pass on to the customer upon delivery. The customer will insure the goods with reputable company and If the same are damaged or destroyed then such insurance monies as are payable shall be immediately paid by the customer to The Company to the extent of the Indebtedness of the customer to The Company and without prejudice to any right of The Company to recover from the customer any balance of the purchase price remaining due under the contract.
- BANK CHARGES, FEES, DUTIES

All consular and bank charges and import and customs duties and taxes arising from or by virtue of the contract must be made by the customer.

SPECIFICATIONS

Every effort has been made to ensure that the descriptions and technical specifications given in this catalogue were correct at time of going to press however The Company accepts no liability for any error and reserves the right to change specifications without prior notice.

### CONSIGNED GOODS

Unless specifically provided or otherwise agreed In writing, goods shall be sol.d ex works or store from such of The Company's premises In the United Kingdom as shall be notified to the customer. Where goods are agreed to be consigned to the customer they shall be consigned at the customer's own risk and delivery shall take place when the goods are handed over to the customer or the carrier.

### COMPLAINTS PROCEDURE

Any claim in respect of difference In weight or numbers defect or defective quality or damage to goods shall be notified by the customer to The Company In writing within three days of delivery. Any claim for the nondelivery of the whole or any part of a consignment of goods ordered by the customer from The Company shall be submitted by the customer to The Company in writing within 10 days of the receipt by the customer of The Company's Invoice or advice note. In the absence of notification of claims within the times mentioned above the goods ordered by the customer shall be deemed to have been delivered In accordance with the contract and The Company will accept no liability for any claim made outside of the relevant period. GOODS STORED FOR THE CUSTOMER

If the customer falls to take or accept delivery of goods at the time specified, the contract price shall nevertheless be paid as if delivery has taken place. The Company shall be entitled to charge the customer for storage, insurance and other loss or expenses reasonably incurred or suffered by The Company as a result of such failure but The Company shall not be bound to take any steps for the custody and care of such goods or shall not be liable for any loss or damage suffered by the customer

### arising therefrom. DEFECTIVE GOODS

- (a) Any goods (other than goods not made by The Company and goods which have been repaired or Interfered with by someone other than by The Company) supplied by The Company which the customer shall prove to The Company's satisfaction to have been defective through faulty material or workmanship will be replaced exworks value refunded provided The Company Is notified In writing of any defect within twenty-eight days from receipt of the goods alleged to be defective are returned to The Company carriage paid.

  (b) Subject to the obligation contained In sub-clause (a) hereof to credit the ex-works
- price or replace ex-works defective goods all express or implied statements conditions or warranties statutory or otherwise are excluded and The Company will not be responsible for any loss or damage consequential or otherwise. however caused. This sub-clause shall apply to all goods whether or not made by The Company and to goods which have been repaired or interfered with other than by The Company as well as to goods supplied by The Company.

### 12. USE OF GOODS

It is the customer's responsibility to determine whether the goods are suitable for contemplated use whether or not such use is known to The Company. Any technical advice furnished by The Company or its representatives or agent Is given without charge and only on the basis that it Is followed at the customer's own risk.

### IMPORT LICENCES

The customer's order must specify the number, date of expiry and value of any necessary Import Licence.

The Company will quote C. & F. and C. I. F. prices on request and these will be based on the current rates of freight and Insurance. Should any fluctuation in freight and insurance rates occur before completion of a contract The Company reserves the right to amend the prices effective from the date of such changes In rates. C. & F. prices will include the cost and freight by direct routes. to principal ports, airports and railheads in a customer's territory relevant to the means of transport, which shall be decided at The Company's discretion. C. I. F. prices will, in addition to C. & F. terms, Include Insurance breakage on the basis C. I. F. value + 10%. Any additional insurance will be for the customer's account. Cover notes will be issued for claims payable at destination and carrying an excess clause. It will be the customer's responsibility to present the claim. 15. PACKAGING

Prices shown in quotation or contracts will include the cost of The Company's normal packaging for destinations In the U.K. or for export unless stated otherwise. Any other forms of packaging supplied at customer's request will be charged extra and will be non-returnable

### BANKRUPTCY

If the customer has a Receiver appointed In respect of any of his property or business undertaking or announces that he Is ceasing to trade or suspends payment of his debts and/or notifies any of his creditors that he is unable to meet his debts or that he is about to suspend payment of his debts or convenes, calls or holds a meeting of his creditors or being an individual trader commits an act of bankruptcy, Is adjudicated bankrupt or makes any composition or scheme of arrangement with his creditors or being a body corporate convenes, calls or holds a meeting for the purpose of going Into liquidation (other than for the purpose of reconstruction or amalgamation), by the making of an order or the passing of a resolution for winding-up then the full price of any goods delivered shall be Immediately payable notwithstanding any previous arrangement to the contrary and The Company shall have the right (without prejudice to any other rights and remedies available to them) to cancel and/or suspend deliveries to the customer. If the customer fails to make any payment as due or dies the rights conferred on The Company by this condition shall apply provided that within twentyeight days after the relevant occurrence The Company shall give to the customer or his representative written notification of The Company's Intention to exercise all or any part of such rights.

### 17. CONTRACT RIGHTS

- (a) The customer shall not assign his rights or liabilities under a contract made subject to these conditions.
- (b) Save as herein provided The Company shall not be liable for any loss or damage directly or indirectly arising out of any contract made subject hereto or any advice or expression of opinion whether or not due to the negligence of The Company its servants or contractors and express or implied conditions, statements, guarantees or warranties statutory or otherwise are hereby excluded.
- Contracts made with The Company shall be governed by and construed according to the laws of England. The customer hereby submits to the jurisdiction of the English Courts.

### 18. ARBITRATION

ANY dispute which may arise in connection with this Agreement shall be referred for the decision of a single Arbitrator to be agreed by the parties or falling agreement to be appointed by the President for the time being of the London Chamber of Commerce in accordance with the provisions of the Arbitration Act 1950 or any statutory modification or re-enactment thereof for the time being in force.

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AN/95010

# Kestrel 1000

AN/95006

### **Anemometers**

### Velocity Volume Thermo-Anemometer

This remote vane thermo-anemometer measures air velocity, airflow volume and temperature. The detachable 75mm vane has a 1.5m coiled connection cable and plug. An Ideal Instrument for ventilation surveys, air conditioning, heating and environmental monitoring.

- 0.3 to 45m/sec x 0.01
- Measures air velocity in m/sec, ft/min, km/sec, knots or mph
- Measures volume in m³/min (CMM) or ft³/min (CFM)
- Measures temperature °C or °F
- 55mm Hi-Contrast LCD display with backlight and function indicators
- Dual Display for Velocity and Temperature
- 12 Segment Bargraph for Velocity
- Average multiple readings for velocity or flow volume for the last 30 readings
- Auto Power Off after 15 minutes of no activity
- Low Battery indicator
- Standard 1/4" camera bush for tripod mounting of instrument
- Supplied with hard carry case and battery

Technical Sp	ecifications						
Range	m/sec	ft/min	mph	km/hr	knots	m³/min	
Maximum	45	8550	100	162	85	999900	
Minimum	0.3	60	0.6	1	0.5	0	
Resolution	0.01	1	0.1	0.1	0.1		
Accuracy				$\pm 3\% \pm 0.1$			
Temp range			30  to  +	60°C/ -22 to	+140°F		
Accuracy			±	$1.5^{\circ}C/\pm.2.$	7°F		
Power		1 x 9V PP3 Alkaline battery (LR-61)					
Dimensions		185 x 66 x 33mm					
Weight				311g			

Cat. No.	Code	Description
AN/95010	ET-955	Velocity/ Volume Thermo-Anemometer
AN/95012	CAL-AN	Traceable Calibration Certificate (Airflow)
AN/95014	CAL-ANT	Traceable Calibration Certificate (Temperature)
AN/95016	TP-1220R	Instrument Tripod
BA/93010	PP3	Alkaline Manganese battery 9V (LR-61)

### Anemometer, waterproof

These pocket sized anemometers have a replaceable impeller. Designed with a robust water-proof case to IP-67 classification (IEC standard 60529) with a large easy to read display and carrying lanyard makes them ideal for practically all conditions and uses.

- Selectable measurement units: m/sec, ft/min, mph, km/hr, knots or Beaufort force
- Shock-resistant precision jewelled vane bearings
- Replaceable 25mm impeller vane
- IP-67 dust-tight and water-proof to 1m
- 14mm LCD display with function indicators
- Display Backlight (AVM-20 & AVM-30)
- Easy to use three button operation
- Data Hold freezes displayed readings
- · Auto Power Off after 45 minutes of no activity
- · Supplied with lanyard and battery

AVM-10 Measures current, average & maximum wind speed

AVM-20 Measures wind speed, temperature & wind chill

AVM-30 Measures wind speed & temperature with heat index, dew point & RH

Technical Specifications	3				
Range	m/sec	ft/min	km/hr	mph	knots
Maximum	40	7,877	144	89	78
Minimum	0.4	60	1	0.8	0.6
Resolution	0.1	10	0.1	0.1	0.1
Operating temperature	-	15°C to +50°C	C,±1° (AVM-20	and AVM-3	30)
Humidity		5 to 95%, $\pm 3$	% Dew Point (A	AVM-30 only	·)
Accuracy	$\pm 3\%$ of reading or $\pm$ least significant digit				
Power		3V Lithio	um battery (CR	-2032)	
Dimensions		12	22 x 46 x 26mr	m	

Cat. No.	Code	Description
AN/95006	AVM-10	Water-Proof Pocket anemometer
AN/95020	AVM-20	Water-Proof Thermo-anemometer
AN/95022	AVM-30	Water-Proof RH, Thermo-anemometer
AN/95030	AV-ACC	Replacement impeller
AN/95032	CR-2032	Lithium Battery, 3V
AN/95012	CAL-AN	Standard Traceable Calibration Certificate (Airflow) *

<sup>\*</sup>Standard Calibration certificates are issued at 3 points, 7.5, 15 and 22.5m/sec, additional points can be added from 1 to 30m/sec at an additional cost. Please contact our sales office for pricing, stating points required.

## **Aspirators**

### Aspirators, borosilicate glass

**PYREX**®

With ground side socket (size 29/32) for stopcock assembly and unground neck to accept rubber stopper.

Cat. No.	Code	Capacity, litres	Height x dia., mm	Inlet neck dia, mm
AS/12002	1541/12D	2	248 x 138	28
AS/12004	1541/16D	5	318 x 181	44
AS/12006	1541/18D	10	298 x 227	59
AS/12008	1541/22D	20	492 x 288	59
Stopcocks				
AS/12012	1571/02M	Traditional gla	ss key Pyrex, 29/32 4mi	m bore
AS/12010	1568/04M	Rotaflo, 29/32	2 3mm bore	



AS/12008

### Aspirators, borosilicate glass

With ground inlet and glass stopper at top and ground outlet with stopcock near base.

Cat. No.	Capacity litres	Outlet size.	Inlet neck size
AS/62002	2	19/26	24/29
AS/62005	5	19/26	29/32
AS/62010	10	24/29	45/40
AS/62020	20	29/32	50/42



AS/62005

### Aspirators with stopcock, HDPE narrow mouth

Round with heavy duty carrying handles

Cat. No.	Capacity, litres	
AS/56102 AS/56105 AS/56110 AS/56120 AS/56125 Spare stopcock AS/56101 AS/56103	2.5 5 10 20 25 Stopcock for 2.5, 5 and 10 litres Stopcock for 20 and 25 litres	



AS/561

### Aspirator bottles, carboy with stopcock, LDPE

NALGENE

With polypropylene stopcock and screw closure, size 83B.

Cat. No.	Code	Capacity, litres
AS/36304	2318-0010	4
AS/36310	2318-0020	10
AS/36320	2318-0050	20
AS/36325	2318-0065	25
AS/36350	2318-0130	50

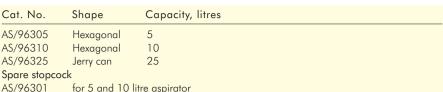


AS/363



### Aspirators with stopcock, PE

Economical range





AS/96305



AS/16205

### Aspirator bottles, polypropylene



- Squat form for easy location on shelves or bench top or in transit
- Moulded in handle for safe and secure carrying
- Clear moulded graduations allowing quick and easy volume assessment
- Leakproof heavy duty stopcock opens and closes with a quarter turn
- Autoclavable polypropylene for easy cleaning and sterilisation
- Caps have moulded drill guides for easy location of probes and feed-lines.
- Complimentary set of large bottles available (see BO/169 Series)

Cat.No.	Ref. with stopcock	Capacity litres	Cap size mm	Height with cap & max width mm
AS/16205 AS/16210	BNP05A BNP10A	5 10	45 90	270X220 360X280
Spare stopco	ck			
AS/16201	SCBNP01	for BNP Aspirators		
Spare cap				
AS/16204	For AS/162	210 and AS/16220		

Notes	

### **Autoclaves**

### Portaclave range

Rodwell

A range of compact and fully portable autoclaves with electronic temperature control. Simple and safe to use, no plumbing needed and minimal maintenance required.

Compact and fully portable autoclave heated by a single internal element. The temperature is controlled by an electronic temperature controller and a PT100 probe and fitted with an automatic cut-out to prevent it boiling dry. Every autoclave is electrically tested in compliance with BS3456 Part 101 1987. Stainless steel construction with a polished exterior, with removable lid allowing full access. Items to be sterilised can be placed in the inner liner provided with the machine. Alternately, Dressing Drums and Wire Mesh Baskets are available separately. The lid locking device is comprised of six wing nuts and six lid locking lugs. This ensures that the lid cannot be opened while the vessel is under pressure. After the sterilising period, a condensing vacuum is drawn to aid drying. This is particularly useful for dressings and drapes. The operator is not restricted to a set sterilising period, this can be adjusted to suit the application.

### Model Portaclave 15E

- Minimal Maintenance Required
- Lid Locking Safety to H&SE PM73
- Produced under ISO 9001
- Suitable for Culture Media

### Model Portaclave 30E

The stainless steel 30E comes complete with:

- Inner Liner with Handles
- Easy to follow Users Manual
- Manufacturers Safety Test Certificate



### Vario automatic cycle control

Both the 30E and 15E autoclaves are available fitted with the VARIO time and temperature controller which features four pre-sets and one variable cycle. Countdown of sterilisation time and current temperature are shown at all times. The variable cycle is stored in the permanent memory, when selected, the unit runs through the sterilisation programme unattended. On completion, an audible alarm is sounded.

If the drying vacuum cycle is required, the unit cools to a safe temperature at which point, another alarm is sounded for safe removal of contents

The model Vario 30E is particularly suitable for destructive sterilization.

This is a factory fitted; it cannot be purchased separately of fitted to an existing autoclave.

 Four pre-set cycles: 30 minutes at 121°C 60 minutes at 115°C 15 minutes at 121°C 30 minutes at 115°C

- Variable cycle temperature and time
- Soft touch control pad
- Variable cycle stored in memory
- LED System status indicators

Technical specifications	15E		30E
Capacity (Litres)	15		30
Internal dimensions (dia x height)	280 x 280mm		280 x 490mm
External dimensions (dia x height)	370 x 485mm		370 x 700mm
Material		Stainless steel	
Design pressure		1.3 bar (18psi)	
H T Pressure		2.0 bar (30 psi)	
S W Pressure		1.3 bar (18psi)	
Maximum working temperature		121°C	
Power	2	30v AC 50Hz - 2.0kW	
Net weight	19.0Kg		23.0Kg

Cat. No.	Description
AC/35010	Autoclave model 15E, stainless steel, 15 Litre capacity
AC/35004	Autoclave model 30E, stainless steel, 30 Litre capacity
AC/35008	Autoclave 30E fitted with Vario automatic cycle control
AC/35012	Autoclave 15E fitted with Vario automatic cycle control

### Autoclave accessories

Cat. No.	Description
AC/35024	Bottle Rack to take 4 x 1 Litre Bottles
AC/35026	Wire Mesh Basket, S/S, c/w Lifting Handle, 240mm dia x 220mm deep
AC/35028	Wire Mesh Basket, S/S, c/w Lifting Handle, 240mm dia x 440mm deep



AC/35010



AC/35004



Vario controller



AC/350



AC/25800



Cycle display



AC/25906

### Autoclave, Astell Compact units 33, 43 and 63 Litres.



### STANDARD FEATURES:

- No mains water supply or drain necessary Eco-Friendly low water & power consumption
- Media hold-warm facility to maintain pouring temperature
- Delayed start feature to maximise the number of cycles per day
- Base tray/ shelf
- Thermocouple validation gland with easy access panel
- USB port backup and restore configuration data, customer cycles, cycle logs fault diagnosis and
- Over temperature and over pressure cut-out
- Optional 21 CFR Part II compliant

The Astell colour touch screen control system, is one of the largest easy to use icon driven colour touchscreens on any benchtop/ compact sterilizer. It also allows users the flexibility to create and modify their own cycle parameters, ensuring adaptability and longevity whatever the sterilization requirements.

### Features:

- Continuous displays of temperature, pressure, stage time, cycle time and cycle status
   Data archiving for over 5,000 cycles batch logging
- Over 50 programmable cycles
- Multi-level password protection
- Multi-language

Classic Version - Ideal for Liquid Loads, Media etc. This is the ideal model for all standard traditional laboratory sterilization procedures. Water fill is manual; during the cycle condensate leaves the vessel via a silicone tube that can be connected to a heat resistant bottle. Ideal for use with media or liquid loads.

AutoFill Version - Ideal for all Laboratory Applications AutoFill is fitted as standard. A pulsed-heat drying system, which is adjustable in 5 minute steps, is available when running a non-fluid cycle. The integral reservoir, once filled, provides sufficient water for 15 to 20 cycles

Factory fitted options, please note these must be specified at time of order.

Cat No	Model	Fill Method	Loading	Volume (litres)	Chamber dia x useable depth, mm	Overall dimensions, wxhxd, mm
AC/25800	AMB420	Classic	Front	33	346 x 294	520 x 600 x 805
AC/25802	AMB430	Classic	Front	43	346 x 403	520 x 600 x 805
AC/25804	AMB440	Classic	Front	63	346 x 600	520 x 600 x 1005
AC/25906	AMA440*	Classic	Тор	63	346 x 576	530 x 1070 x 705
AC/25808	AMB220	Autofill	Front	33	346 x 294	520 x 600 x 805
AC/25810	AMB230	Autofill	Front	43	346 x 403	520 x 600 x 805
AC/25812	AMB240	Autofill	Front	63	346 x 600	520 x 600 x 1005
AC/25914	AMA240*	Autofill	Тор	63	346 x 576	530 x 1070 x 705

\*NB: AC/25906 and AC/25914 are mounted on castors as standard

Cat No.	Code	Description
AC/26040	AAR130	Integral Data Printer
AC/26042	AAR014	Load Sensed Process Timing
AC/26044	AAP007	Assisted Air Cooling

### Autoclave accessories

Cat No.	Code	Description
AC/26046	AAN025	Five Position Shelf Rack (plus 2 shelves) AMB220/AMB420
AC/26048	AAN022	Spare Shelf for AAN020 AMB220/AMB420
AC/26050	AAN530	Five Position Shelf Rack (plus 3 shelves) AMB230/AMB430
AC/26052	AAN532	Spare Shelf for AAN530 AMB230/AMB430
AC/26054	AAN040	Five Position Shelf Rack (plus 3 shelves) AMB240/AMB440
AC/26060	AAN346	Discard Container AMB220 (accepts 1) AMB230/AMB430
		(accepts 2) AMB240/AMB440(accepts 3)
AC/26062	AAN340	Half Depth S/Steel Basket AMA240/AMA440
AC/26064	AAN342	Half Depth Morrison Container AMA240/AMA440
AC/26066	AAN074	Load Support Plate AMA240/AMA440
AC/26070	AAN043	Spare Shelf for AAN040 AMB240/AMB440
AC/26072	AAN308	Spare Condensate Bottle for Classic Range AMB420/30/40 + AMA440

### Autoclaves Swiftlock Front & Top Loading 95 to 344 Litres Astell®

### STANDARD FEATURES

- 95, 120 & 135 Litres Top Loading 120, 153, 240, 290 & 344 Litres Front Loading
- Touch Screen Controller with USB port
- Fully Programmable
- PIN Restricted User Programming
- Timed Free Steaming
- Holdwarm / Delayed Start
- Full Range of Options & Accessories
- Suitable for a wide range of Laboratory applications
- Guaranteed precision and versatility in sterilization
- Ultra Quick Swiftlock Door Mechanism
- Service Independent Gasket
- Data Archiving for up to 5000 cycles

Heaters are mounted in the chamber for non-vacuum models; vacuum models have an integral steam generator. Direct steam models are available, please ask for details.

The Astell colour touch screen control system offers important benefits to safety and efficiency by allowing a cycle operation to be monitored in greater detail, providing status updates, clear warning messages when required, and allowing storage of data for up to 5000 cycles. It also allows users the flexibility to create and modify their own cycle parameters, ensuring adaptability and longevity whatever the sterilization requirements.

Ideal for Liquids & most laboratory applications, including Discard, Glassware, Laboratory Instruments etc. Available with various options and accessories, including Assisted Air Cooling, Load Sensed Process Timing, Advanced Water Cooling, Pulsar Free Steaming, Data Recording devices.

VACUUM VERSIONS The addition of a vacuum system enhances pre-sterilization air removal and greatly reduces cycle times. Post vacuum drying (in conjunction with the optional heated jacket or external vessel warming) greatly improves drying performance.

Ideal for Many Laboratory Applications, Porous Materials, Media, Discard, Waste, CAT III Applications etc (NB - Certain applications may require additional options).

Available with various options and accessories, including Air Ballast, CAT III Compliance, Full Heated/Cooling Jackets, Load Sensed Process Timing, Data Recording devices etc. Factory Fitted Options. Please note these must be specified at time of order.



AC/25410



Cooling Cycle

Cat No	Model	Power supply	Vol Lit	Chamber dia x useable depth	Loading height mm	Overall dimensions, wxhxd mm
Top loading n	nodels, single and 3 pho	ase				
AC/25410	AMA250	30/15A, 7/10kW	95	456 x 449	775	660 x 940 x 840
AC/25412	AMA260	30/15A, 7/10kW	120	456 x 601	912	660 x 1070 x 840
AC/25414	AMA270	30/15A, 7/10kW	135	456 x 682	992	660 x 1150 x 840
Front loading	models (non-vacuum),	single and 3 phase				
AC/25620	ASB260	30/15A, 7/10kW	120	454 x 633	750/850	685 x 1320 x 1100
AC/25622	ASB270	30/15A, 7/10kW	153	454 x 863	750/850	685 x 1320 x 1320
3 Phase only						
AC/25624	ASB280	20A/ 12kW	247	600 x 734	800/900	900 x 1405 x 1370
AC/25626	ASB290	20A/ 16kW	290	600 x 886	800/900	900 x 1405 x 1370
AC/25628	ASB300	20A/ 16kW	344	600 x 1217	800/900	900 x 1405 x 1570
Front loading	models with vacuum					
AC/25730	ASB260 + AVC001	25A, 18kW	120	454 x 638	750/850	685 x 1320 x 1500*
AC/25732	ASB270 + AVC001	25A, 18kW	153	456 x 862	750/850	685 x 1320 x 1500*
AC/25734	ASB280 + AVC001	38A, 28kW	247	600 x 734	800/900	900 x 1405 x 1750
AC/25736	ASB290 + AVC001	38A, 28kW	290	600 x 886	800/900	900 x 1405 x 1750
AC/25738	ASB300 + AVC001	38A, 28kW	344	600 x 1217	800/900	900 x 1405 x 1750

The above models have heaters in the chamber (non-vacuum models) or have an internal steam generator, (vacuum models). Direct steam versions are available - Please ask for details \*Steam generator is mounted on top of the unit as standard. Rear mounted versions are available - Please ask for details

### Accessories

Cat No.	Code	Description
AC/25040	AAR130	Integral data printer
AC/26042	AARO14	Load sensed process timing
AC/25104	AAP006	Assisted Air Cooling
AC/25112	AAP019	Automatic waterfill (mains supply)
AC/25114	AVC004	Air ballast
AC/25116	AAN036	S/Steel Wire Basket for Top Loading Models (400 dia x 400h)
AC/25118	AAN042	S/Steel Wire Basket Top Loading Models (400 dia x 220h)
AC/25120	AAN056	Morrison Container Top Loading Models (390 dia x 500h)
AC/25122	AAN058	Morrison Container Top Loading Models (390 dia x 355h)
AC/25126	AAN300	Rectangular Morrison Front Loading Models (290 x 330 x 280)



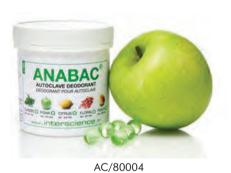
AC/25620



AC/161



AC/1630





### **Autoclave Accessories**

### Autoclave bags and stands



Strong disposable bags with blue biohazard labelling designed for contaminated waste disposal in autoclaves or incinerators. Convenient 'tissue box' cartons dispense bags individually and wire and cardboard stands are designed to hold bags open while in use.

### Bags

Cat. No	Sterilin Code	Max Temp (°C)	Material	Length x Width (mm)	Pk Qty
AC/16102	509	121 (low)	HDPE	305 x 660	200
AC/16104	510	121 (low)	HDPE	305 x 660	500
AC/16106	509L	121 (low)	HDPE	406 x 610	200
AC/16108	510L	121 (low)	HDPE	406 x 610	500
AC/16110	511	121 (low)	HDPE	610 x 810	200
AC/16202	509HT	134 (high)	PP	307 x 660	200
AC/16204	510HT	134 (high)	PP	307 x 660	500
AC/16206	509LHT	134 (high)	PP	406 x 610	200
AC/16208	510LHT	134 (high)	PP	406 x 610	500
AC/16210	511HT	134 (high)	PP	610 x 810	200

### Stands

Cat. No	Sterilin Code	Material	Description	Pk Qty
AC/17002	S23B	Cardboard	Holder for 511	10
AC/14002	S23C	Coated Wire	Holder for 509, 510	1
AC/14004	S23E	Coated Wire	Holder for 511	1

### Bags

Biohazard autoclave bags with warning instruction and sterilization indicator field, strong 50 m Polypropylene film with broad seam at bottom. Autoclavable at  $134^{\circ}$ C (When autoclaving, the bag must not be completely sealed)

Cat No.	Dimensions, wxl (mm)	Volume (approx) Litres	Pk qty
AC/16300	300 x 500	8	500
AC/16302	400 x 780	38	500
AC/16304	600 x 800	60	500
AC/16306	700 x 1100	110	350

### Autoclave Deodoriser Capsules

Anabac® fragrant capsules that release a discreet and pleasant perfumed odour, placed directly in the autoclave, they melt without residue and have no effect on the disinfection process. A variety of fragrances are available, the capsules are 100% biodegradable and are suitable for use with any autoclave, supplied in packs of 100 capsules.

Cat. No.	Description
AC/80002	Autoclave deodorant based on Eucalyptus extract
AC/80004	Autoclave deodorant based on Apple extract
AC/80006	Autoclave deodorant based on Lemon extract
AC/80008	Autoclave deodorant based on Flower extract
AC/80010	Autoclave deodorant based on Peach extract

### Autoclave tape

Indicator tape for steam sterilisation.

Cat. No.	Description	Size
AC/97002	Autoclave tape	19mm x 50m

Autoclave adhesive tape (Class 4) Can be written on, for use in standard autoclaves. Irreversible colour transition from Green to Orange after 15 minutes at 121°C. Provides clean removal from autoclaved object (leaves no residue). Pack of 12 rolls.

Cat. No.	Code	Description	Size
AC/96102	TAP-SCS-E	Autoclave tape	18mm x 55m

### Autoclave Chemical Process Indicator Dots

Autoclave chemical process indicator self-adhesive labels. Indicates at a glance whether the product has gone through the autoclaving process. Labels turn from blue to pink after exposure to  $121\,^{\circ}\text{C}$  for 3 to 10 minutes or  $134\,^{\circ}\text{C}$  for  $\frac{1}{2}$  to 2 minutes.

Cat. No.	Code	Description
AC/96110	CPI-S01E	Process indicator dots, roll of 5000 dots.

### Autoclave TST Strips

Autoclave TST strips show a pass when exposed to steam after a set period of time by means of a colour change.

Cat. No.	Code	Description	Pack qty
AC/96140	TST-4SE	Autoclave TST test strips, Class 4, Shows a "Pass" when exposed to steam for 3½ minutes at 134°C or 15 minutes at 121°C, turns from yellow to black	250
AC/96142	TST-5SE	Autoclave TST test strips, Class 5, Shows a "Pass" when exposed to steam for 3½ minutes at 134°C or 16½ minutes at 121°C, turns from yellow to tan	250
AC/96144	TST-6SE	Autoclave TST test strips, Class 6, Shows a "Pass" when exposed to steam for 3½ minutes at 134°C, turns from blue to pink	250



AC/96110



AC/96140

### Bowie & Dick Vacuum Penetration Tests

Bowie & Dick test pack, single use (without heavy metals) Conforms to EN 867-4. For use with steam 134°C for 3 to  $3\frac{1}{2}$  minutes.

Cat. No.	Code	Description	Pack qty
AC/96116	BD-1EXCS	Bowie & Dick test pack	20 single tests



AC/96116



### **LEADERS IN STERILIZATION SINCE 1884**

## Manufacturers of Autoclaves and Effluent Decontamination Systems



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Quality maintenance and rapid after-sales support



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Contact us TODAY to discuss your requirements and request a quotation!

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AC/96118

### Autoclave Spore Ampoule SCBIs

Spore ampoule Self-contained Biological Indicator (SCBI) for autoclave liquid loads. Contains Geobacillus stearothermophilus with a 10 population.

This item needs to be kept refrigerated prior to use and has a limited shelf life (2 years)

Cat. No.	Code	Description	Pack qty
AC/96118	SA1-50-06E	Autoclave ampoule (SCBI)	50



AC/96120

### Autoclave Self Contained Biological Indicators

Autoclave SCBI, Contains Geobacillus stearothermophilus with a 10 population. Crush cap to activate after autoclaving, Incubate for 24 hours.

This item needs to be kept refrigerated prior to use and has a limited shelf life (2 years)

Cat. No.	Code	Description	Pack qty
AC/96120	SCS-06E	Autoclave indicator (SCBI)	50



AC/96122

### Mini Autoclave Self Contained Biological Indicators

Mini Autoclave SCBI, Contains Geobacillus stearothermophilus with a 10 population. Crush cap to activate after autoclaving, Incubate for 24 hours.

This item needs to be kept refrigerated prior to use and has a limited shelf life

Cat. No.	Code	Description	Pack qty
AC/96122	MSCS-06E	Mini Autoclave indicator (SCBI)	100



BH/70010

### Self-Contained Biological Indicator Incubator

Self-contained, 10 well aluminium dry block incubator for use in conjunction with SCBI's and Mini SCBI's. Offers a temperature range of ambient to  $70^{\circ}\text{C}$  with a tolerance of  $\pm 0.5^{\circ}\text{C}$ 

Cat. No.	Code	Description
BH/70010	INC-13UE	Self-contained Biological indicator incubator

### Bags

### Bags, polythene, resealable

Polythene bags, selfseal, with write on panels (Sold in packs of 100)

Cat. No.	Approx. size (w x d), mm
BA/96430	76 x 83
BA/96432	89 x 114
BA/96433	114 x 114
BA/96434	102 x 141
BA/96436	127 x 191
BA/96437	140 x 140
BA/96438	152 x 229
BA/96439	191 x 191
BA/96440	203 x 280
BA/96442	229 x 324
BA/96444	254 x 356
BA/96446	279 x 406
BA/96448	330 x 457
BA/96449	381 x 508



BA/96430



# BA/96470

BA/96454



BA/96480

### Bags, polythene, resealable

Polythene bags, plain (Sold in packs of 1000)

BA/96470 76 x 83mm
BA/96472 89 x 114mm
BA/96474 102 x 141mm
BA/96476 127 x 191mm
BA/96478 1 152 x 227mm

Other sizes available on request

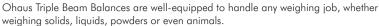
### Bags, sample, Whirl-Pak®, sterile, write on panel

Made from polythene with tab and wire frame at the aperture allowing the bag to be opened wide. Sealing is achieved by pulling the tabs and spinning the bag around the wire. The bags can be opened and closed as required. Suitable for solids and liquids, with write on panel. Other sizes available on request.

Cat. No.	Description	Capacity ml	Pk Qty
BA/96450	Whirl pack bag, 185 x 75mm panel	118	500
BA/96454	Whirl pack bag, 230 x 115mm panel	532	500
BA/96456	Whirl pack bag, 230 x 120mm panel	710	500
BA/96458	Whirl pack bag, 380 x 190mm panel	2041	500
BA/96480	Whirl pack bag, 380 x 254mm panel	2721	250
BA/96482	Whirl pack bag, 254 x 508mm panel	3637	250
BA/96484	Whirl pack bag, 508 x 380mm panel	5441	100
BA/96486	Whirl pack bag, 230 x 115mm self-standing	532	500
BA/96488	Whirl pack bag, 380 x 125mm self-standing	1065	250
BA/96490	Whirl pack bag, 380 x 190mm self-standing	2041	250

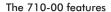
### **Balances**

### Triple beam



The top loading Triple Beam Balance Series is known world wide for its durability and versatility to accommodate a range of laboratory applications.

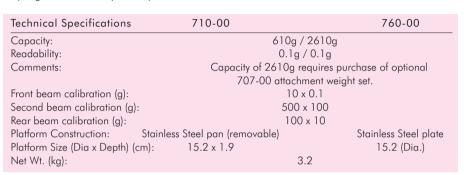




- Removable Stainless Steel pan
- Three notched and tiered beams with centre reading
- Spring loaded zero adjust compensator

### The 760-00 features

- Tare beam to offset the weight of containers up to 225 g to be balanced out
- Durable Stainless Steel platform
- Three notched and tiered beams with centre reading
- Spring loaded zero adjust compensator



Cat. No.	Code	Description
BA/40172	710-00	Balance, Triple beam
BA/40174	760-00	Balance, Triple beam, with tare
BA/40176	707-00	Weight set
BA/40178	703-S0	(30.5 cm x 15.2 cm x 7 cm) Stainless steel scoop and counterweight
BA/40180	704-00	(25.4 cm dia. x 6.4 cm deep) Polypropylene Maxi-Scoop™ (with pouring spout) and counterweight
BA/40184	183-00	Rod & Clamp Assembly



BA/40174



# Pioneer® Balances

## Do More With OHAUS

### Combining Economy and High Performance for Essential Weighing





### Work It

Perfect for essential weighing applications in laboratory, industrial and education settings, OHAUS Pioneer Lab Balances are the ultimate "workhorse" to Work It in the workplace.



### Connect It

Featuring RS232 connectivity for easy communication in essential weighing applications in laboratory, industrial and education settings, OHAUS Pioneer Lab Balances are perfectly designed to Connect It in the workplace.



### Worth it

Offering high accuracy and repeatability for essential weighing applications in laboratory, industrial and education settings, OHAUS Pioneer Balances are designed to add value and be Worth It in the workplace.

### Entry level balances

- Ready for use, 9V batteries included, operating time approximately 12 hours
- AUTO-OFF function to preserve the battery
- Tare function facilitates formulation work
- Flat design
- Non-slip rubber feet
- Large LCD display, 15mm digit
- Overall dimensions 170x240x39mm (WxDxH)

Cat. No.	Model	Weighing range (max) g	Readout g	Reproducibility g	Linearity g	Plate dia. (mm)
BA/21002	EMB 200-3	200	0.001	0.001	±0.003	82
BA/21006	EMB 600-2	600	0.01	0.01	$\pm 0.03$	105
BA/21010	EMB 2000-2	2000	0.01	0.01	$\pm 0.03$	150
BA/21016	EMB 3000-1	3000	0.1	0.1	±0.3	150
BA/21018	EMB 6000-1	6000	0.1	0.1	±0.3	150
BA/21022	EMB 5.2K1	5200	1	1	±3	150
Accessory Cat. No. BA/21050	Descri Externo	iption al mains adap	oter			



BA/21002

### Balances, portable, CS series

The CS series of compact portable scales provide reliability and durability at an economical price. They are battery operated with an auto shut off function and use 3 AA batteries. Mains adapter and SS pan cover (included).



Cat. No.	Model	Capacity	Readabili	ty Platform (mm)
BA/40302	CS200	200g	0.1g	146 x 133 oval
BA/40304	CS2000	2000g	1.0g	146 x 133 oval
BA/40306	CS5000	5000g	1.0g	146 x 133 oval
Accessory Cat. No.	Code	Description		
BA/40308	80850075	1050ml cont	ainer	



BA/40302



# - 0000 ·

BA/40600



BA/40602



BA/40610



The Ohaus range of Scout SKX balances is built to endure the demanding workload of a busy laboratory environment. Combined with a simplified 4 button operation, the large backlit display increases readability in dim lighting conditions, and makes it easier to view results from across a desk or laboratory bench. Manufactured with ABS housing, stainless steel pan, ABS draft shield (1 mg model only), weigh below hook, transportation lock, manual calibration lock switch and a security slot.

Connectivity options include RS232, USB Host, USB Device, Ethernet and Bluetooth®, (available as an extra), the Scout provides added versatility to your data collection and transfer needs.

- Stackable with storage cover (excluding 1mg model)
- Stability indicator
- Mechanical and software overload/underload protection
- Low battery indicator
- Auto shut-off
- Auto tare
- Span calibration mass included on models up to 620g capacity
- AC adapter included (will run on 4 x AA batteries, not supplied)
- Expanded connectivity options including RS232, USB Host, USB Device, Ethernet and Bluetooth®
- Suitable for Density Determination and Mole Weighing

Cat. No.	Code	Description	Pan size	
BA/40600	30253070	Balance, Ohaus Scout SKX123, 120g x 0.001g	93mm Dia.	
BA/40602	30253071	Balance, Ohaus Scout SKX222, 220g x 0.01g	120mm Dia.	
BA/40604	30253072	Balance, Ohaus Scout SKX422, 420 x 0.01g	120mm Dia.	
BA/40606	30253073	Balance, Ohaus Scout SKX622, 620 x 0.01g	120mm Dia.	
BA/40608	30253076	Balance, Ohaus Scout SKX421, 420 x 0.1g	120mm Dia.	
BA/40610	30253077	Balance, Ohaus Scout SKX621, 620 x 0.1g	140 x 170mm	
BA/40612	30253078	Balance, Ohaus Scout SKX2201, 2200 x .0.1g	140 x 170mm	
BA/40614	30253079	Balance, Ohaus Scout SKX6201, 6200 x 0.1g	140 x 170mm	
BA/40616	30253080	Balance, Ohaus Scout SKX8200, 8200 x 1g	140 x 170mm	
Accessories				
BA/40630	30268982	RS232 Interface Kit		
BA/40632	30268983	USB Host Interface Kit		
BA/40634	30268984	USB Device Interface Kit		
BA/40636	30268985	Bluetooth Interface Kit		
BA/40638	30268986	Ethernet Interface Kit		
BA/40640	30268987	Stacking & Storage Cover (6 pcs)		
BA/40642	30268988	Stacking & Storage Cover (1 pc)		
BA/40646	30333960	Auxiliary display		
BA/40650	30269020	Top Loading Kit for Density Determination		
BA/40652	30269021	Carrying Case		
BA/40654	30269022	In-use Cover		
BA/40560	30064202	Impact printer SF40A		
BA/40116	80850043	Security Device		



BA/5042

### Balances, portable, HCB Highland range



Adam Equipment's Highland balances have what it takes for lab work, field use and various education and industrial applications.

- HandiCal<sup>™</sup> internal calibration for fast and accurate readings
- Internal rechargeable battery with auto power off and low-battery indicator
- ShockProtect<sup>™</sup> overload protection
- RS-232 and USB interfaces
- $\bullet$  Lock down mounting slot for Kensington  $^{\scriptscriptstyle\mathsf{TM}}$  type lock and cable
- Stackable for storage and transportation
- Removable draft shield 132mm diameter 100mm high
- Capacity tracker
- Audible overload indicator
- Pan diameter 120mm
- Dual tare keys, colour coded for easy recognition

Cat. No.	Model	Capacity	Readability
Cui. No.	Model	Сараспу	Redddbilliy
BA/50418	HCB 153	150g	0.005g
BA/50420	HCB 302	300g	0.01g
BA/50422	HCB 602H	600g	0.01g
BA/50424	HCB 602	600g	0.02g
BA/50426	HCB 1002	1000g	0.01g
BA/50428	HCB 1502	1500g	0.05g
BA/50430	HCB 3001	3000g	0.1g

### Balances, portable CQT Core series

**BE**ADAM

The Core series from Adam Equipment is designed to withstand field and laboratory environments. Complete with an AC adapter, and removable draught shield on 120mm pan models.

- Three-point ShockProtect<sup>™</sup> overload protection
- $\bullet$  Built in security slot for Kensington  $^{\scriptscriptstyle\mathsf{TM}}$  type lock
- Large backlit display is clear and quick to read
- Stacking storage (CQT202, 251, 601 and 1501 models)
- Stainless steel pan
- Battery powered with 6 x AA batteries or AC adapter
- Removable draft shield on 120mm ø pans
- Auto power off to save battery life
- Low-battery indicator
- Dual tare keys, colour-coded for easy recognition

Cat. No.	Model	Capacity	Readability	Pan size
BA/50114	CQT202	200g	0.01g	120mm
BA/50116	CQT251	250g	0.1g	120mm
BA/50118	CQT601	600g	0.1g	120mm
BA/50120	CQT1501	1500g	0.1g	145mm
BA/50122	CQT2601	2600g	0.1g	145mm
BA/50124	CQT2000	2000g	lg	145mm
BA/50126	CQT5000	5000g	1g	145mm



BA/5011

### Balances, Nimbus Precision Range

the additional density kit.



Designed for scientists, the Nimbus range of balances has a small footprint for economical use of laboratory bench space. The single piece construction offers greater stability producing highly repeatable results. The weighing sensor is crafted from a single block and contains fewer parts than a traditional force motor balance. This optimised internal mechanism is fabricated using hardened material, helping the Nimbus to tolerate rigorous laboratory use. Efficiency in the mechanics, plus improved processing power of the electronics, leads to excellent performance.

Suitable for weighing, parts counting, percentage weighing and density determination when used with

Cot. No.	Code	Capacity	Readability	Pon diameter mm
BA/50854	NBL423e	420g	0.001g	120mm
BA/50856	NBL2602e	2600g	0.01g	160mm
BA/50858	NBL3602e	3600g	0.01g	160mm
BA/50860	NBL4602e	4600g	0.01g	160mm
BA/50862	NBL6201e	6200g	0.1g	160mm
Accessories	C 1	Б . т.		
Cat. No.	Code	Description		
BA/50866	1060012714	Density kit for 120	mm and 160mm p	oan diameters for models
		up to 6Kg capacity	,	
BA/50868	3012313008	Dust cover		
BA/50872	3012313010	In use cover for 12	:0mm pan	
BA/50874	3012313011	In use cover for 16	0mm pan	
BA/50876	1120011156	ATP Adam thermal	printer	
BA/50878	3126011263	Thermal printer rol	I	
BA/50880	3014011014	RS-232 Cable		
BA/50882	600002028	Adam DU data co	lection program	
BA/50884	3074010267	USB Cable		
BA/50886	3011413013	Weigh below hook	for models up to	6Kg capacity



BA/50854



BA/50862



BA/40380



BA/40394



BA/4048

### Balances, Precision, Ohaus Pioneer

Application Basic weighing, parts counting, percent weighing, animal weighing,

density determination.

Power AC adapter (included)

Construction Metal base, plastic top housing, removeable stainless steel pan, glass draft-

shield, integral weigh below hook, calibration lock and in-use cover

Communication RS232 and USB device (included)

Design features Selectable environmental filters, auto-tare, software lockout and reset menu, user

selectable communication and data print option settings. LCD backlit display.

- User selectable brightness setting and span calibration points
- Second line dot matrix display for additional information.

Cat. No.	Model	Internal calibration	Capacity/ readability	Calibration weight	Platform dia.
BA/40380	PX323/E	No*	320g/1mg	200/100g	120mm
BA/40382	PX323	Yes	320g/1mg	-	120mm
BA/40384	PX523/E	No*	520g/1mg	500g	120mm
BA/40386	PX523	Yes	520g/1mg	-	120mm
BA/40388	PX3202/E	No*	3200g/0.01g	2/1kg	180mm
BA/40390	PX3202	Yes	3200g/0.01g	-	180mm
BA/40392	PX4201/E	No*	4200g/0.1g	2x2kg	180mm
BA/40394	PX4201	Yes	4200g/0.1g	-	180mm
BA/40396	PX5202/E	No*	5200g/0.01g	5kg	180mm
BA/40398	PX5202	Yes	5200g/0.01g	-	180mm

Accessories Cat. No.	Description			
BA/40360	lonizer lon-100A			
BA/40560	SF40A Impact printer			
BA/40362	Paper roll, 57.5mm for SF40A printer			
BA/40364	Ink ribbon cartridge for SF40A printer			
BA/40818	Cable, RS232 PC 9 Pin			
BA/40366	Cable-USB-RS232 converter			
BA/40368	Auxiliary display kit			
BA/40444	Anti-theft device			
BA/40558	Density determination kit			
BA/40370	Sinker, glass for density kit			
BA/40372	In-use cover			

### Precision Balances, Ohaus Explorer® Series

Application Weighing (17 units + custom units), Parts Counting, % weighing, Animal/Dynamic Weighing, Checkweighing, Filling, Totalization,

Formulation, Differential weighing, Density determination, Peak hold, Ingredient

costing, Pipette adjustment, Gross/Net/Tare Weighing

Display High resolution 14.5cm (diagonal) full colour VGA touch display including

QWERTY and numeric key pads plus weighing capacity indication

Communication Ports (USB, RS232) option (Ethernet or 2nd RS232).

Construction Metal base, ABS top housing, stainless steel pan, glass draftshield with flip-top,

replaceable in-use cover

Design features 3-door draftshield with removable panels on 0.1 mg and 1 mg models with

draftshield light. Modular display design with adjustable angle (attach to base, wall or optional tower). AutoCal automatic internal calibration. Level assist feature with illuminated level indicator, Selectable environmental and auto-print settings. Integral weigh below hook, Protective in-use cover. Software lock switch. GLP.

• High resolution multi-lingual colour VGA touch display with icons for simple operation. Programmable

Multiple application modes plus library for storage of personal application settings.

Internall cal Cot. No.	ibration Code	Capacity	Readability	Platform
BA/40480	EX223	220g	lmg	Ø130mm
BA/40482	EX423	420g	lmg	Ø130mm
BA/40484	EX623	620g	1 mg	Ø130mm
BA/40486	EX1103	1100g	1 mg	Ø130mm
BA/40488	EX2202	2200g	0.01g	190 x 200mm
BA/40490	EX4202	4200g	0.01g	190 x 200mm
BA/40492	EX6202	6200g	0.01g	190 x 200mm
BA/40494	EX10202	10200g	0.01g	190 x 200mm
BA/40496	EX6201	6200g	0.1g	190 x 200mm
BA/40498	EX10201	10200g	0.1g	190 x 200mm
External calibration Cot. No. Code Capacity Readability Platform				
BA/40570	EX423/E	420g	lmg	Ø130mm
BA/40572	EX6202/E	6200g	0.01g	190 x 200mm
BA/40574	EX6201/E	6200g	0.1g	190 x 200mm

### Precision top pan balances

Includes as standard, protective working cover over keyboard and housing, hook to weigh hanging loads. A ring-shaped draft shield is also provided with model PCB 250-3.

- PRE-TARE function for manual subtraction of a known container weight, useful for checking fill-levels
- ullet Freely programmable weighing unit, e.g. display directly in special units such as length of thread g/m, paper weight g/m², or similar
- Backlit LCD display, 15mm digit
- Optional battery operation, 9V (not included)
- AUTO-OFF function to preserve the battery
- Overall dimensions 163 x 245 x 79mm (W x D x H)

Cat. No.	Model	Weighing range (max) g	Readout g	Reproducibility g	Linearity g	Plate dia. (mm)
BA/21102	PCB 250-3	250	0.001	0.001	$\pm 0.003$	ø 81
BA/21108	PCB 1000-2	1000	0.01	0.01	$\pm 0.03$	130x130
BA/21110	PCB 2500-2	2500	0.01	0.01	$\pm 0.03$	130x130
BA/21116	PCB 2000-1	2000	0.1	0.1	$\pm 0.2$	130x130
BA/21120	PCB 10000-1	10000	0.1	0.1	$\pm 0.3$	150x170
BA/21122	PCB 6000-0	6000	1	1	$\pm 2$	150x170
Accessories Cat. No. Description						
BA/21140		Rechargeable battery pack, internal				
BA/21142		Thermal printer				



KERN

BA/21102

# High-quality precision balance with automatic internal adjustment.

- Individual keys for primary functions
- Automatic internal adjustment
- Verification available on larger capacity models
- Draft shield
- RS-232 and USB interfaces
- Large 16.5mm backlit LCD display
- Parts counting
- Percentage determination

Cat. No.	Model	Weighing range (max) g	Readout g	Reproducibility g	Linearity g	Plate dia. (mm)
BA/21130	EWJ 300-3	300	0.001	-	-	80Ø
BA/21132	EWJ 600-2M	600	0.01	0.1*	1	135Ø
BA/21134	EWJ 6000-1M	6000	0.1	1*	5	156 x 145





BA/21130

Notes		



BA/40350



BA/40464



BA/50830

### Balances, Analytical, Ohaus Pioneer

Application: Basic weighing, parts counting, percent weighing, animal weighing,

density determination.

Power: AC adapter (included)

Construction: Metal base, plastic top housing, removeable stainless steel pan, glass draft-

shield, integral weigh below hook, security bracket, calibration lock and in-use

cover

Display: Backlit LCD

Communication: RS232 and USB device (included)

Design features: Selectable environmental filters, auto-tare, software lockout and reset menu, user

selectable communication and data print option settings

- User selectable brightness setting and span calibration points
- Second line dot matrix display for additional information.
- Stability indicator.

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<sup>\*</sup>Requires 100g calibration weight

<sup>\*\*</sup>Requires 200g calibration weight

Accessories	
Cat. No.	Description
BA/40360	lonizer lon-100A
BA/40560	SF40A Impact printer
BA/40362	Paper roll, 57.5mm for SF40A printer
BA/40364	Ink ribbon cartridge for SF40A printer
BA/40818	Cable, RS232 PC 9 Pin
BA/40366	Interface cable, USB (A-B)
BA/40368	Auxiliary display kit
BA/40116	Anti-theft device
BA/40558	Density determination kit
BA/40370	Sinker, glass for density kit
BA/40374	In-use cover
BA/40378	Dust cover to suit PX124 and PX224 models

### Balances, Semi-Micro Analytical, Ohaus Explorer Series



- Display: 5.7" (145 mm) Full-colour VGA graphic touchscreen display with user-controlled brightness.
- Application: Weighing, Parts Counting, Percent Weighing, Checkweighing, Animal/Dynamic Weighing, Filling, Totalization/Statistics, Formulation, Differential Weighing, Density Determination, Peak Hold, Ingredient Costing, Pipette Adjustment, SQC
- Features: Selectable environmental filters, auto tare, user selectable span calibration points, software lockout and reset menu, user selectable communication settings and data print options, user definable project and user IDs, auto standby, up to 14 operating languages
- Measuring units: Baht; Carat; Custom; Grain; Gram; Hong Kong Tael; Kilogram; Mesghal; Milligram; Momme; Newton; Ounce; Ounce Troy; Pennyweight; Pound; Singapore Tael; Taiwan Tael: Tical: Tola

Cat No.	Model	Capacity	Readability	Platform
BA/40464	EX125D	52g/ 120g	0.01mg/ 0.1mg	Ø80mm
BA/40466	EX125	120g	0.01mg	Ø80mm
BA/40468	EX225D	120g/220g	0.01mg/ 0.1mg	Ø80mm

### Balances, Adam Solis Series



Providing an outstanding solution for a variety of laboratory applications, such as research and quality assurance, education, accurate counting and manufacturing application where precision results are needed. The Solis range of analytical and semi-microbalances feature a high resolution graphic display, check weighing with audible alarm and parts counting with pre-set sample sizes.

The external calibration allows for verification and adjustments with reference weights.

- Easy to read keypad with navigation arrows for uncomplicated navigation
- RS-232 interface for connection to computer or printer
- Large stainless steel pan for easy cleaning
- AC Adapter supplied as standard
- $\bullet\,$  Printouts include date and time for data tracking within GLP\* guidelines

\*Good Laboratory Practices

Cat No.	Model	Capacity	Readability	Pan size
BA/50830	SAB125i	62g / 120g	0.01mg / 0.1mg	Ø80mm
BA/50832	SAB225i	80g / 220g	0.01mg / 0.1mg	Ø80mm
BA/50834	SAB224i	220g	0.0001g	Ø80mm
BA/50836	SAB414i	410g	0.0001g	Ø80mm

### Analytical

- High quality single cell weighing system
- External calibration (weight required)
- Dosage aid
- Simple recipe weighing and documenting
  Data output via RS232 interface available separately
- Large 14mm LCD Display
- Weighing plate 91mmØ
- Overall dimensions 210 x 340 x 325mm
- Weighing space 174 x 162 x 227mm
- Net weight 6kg

3	- 3				
Cat. No.	Model	Weighing range (max) g	Readout mg	Reproducibility mg	Linearity g
BA/21212	ABS 120-4N	120	0.1	0.2	±0.3
BA/21214	ABS 220-4N	220	0.1	0.2	±0.3
Accessorie Cat. No.	S	Description			
BA/21220 BA/21142 BA/21260		Thermal printer			
	Cat. No.  BA/21212 BA/21214  Accessorie Cat. No.  BA/21220 BA/21142	Cat. No. Model  BA/21212 ABS 120-4N BA/21214 ABS 220-4N  Accessories Cat. No.  BA/21220 BA/21142	Cat. No. Model Weighing range (max) g  BA/21212 ABS 120-4N 120 BA/21214 ABS 220-4N 220  Accessories Cat. No. Description  BA/21220 Calibration certification of the product	Cat. No.         Model         Weighing range (max) g         Readout mg           BA/21212         ABS 120-4N         120         0.1           BA/21214         ABS 220-4N         220         0.1           Accessories Cat. No.         Description           BA/21220         Calibration certificate Thermal printer	range (max) g mg mg  BA/21212 ABS 120-4N 120 0.1 0.2  BA/21214 ABS 220-4N 220 0.1 0.2  Accessories Cat. No. Description  BA/21220 Calibration certificate BA/21142 Thermal printer



BA/21212

### Moisture Balances, Halogen

### Moisture analyser, Halogen

- Halogen quartz glass heater 400W
- Backlit LCD display, digit height 14mm
- Observation window over the sample, useful during initial adjustment
- Internal memory for automatic sequence of 10 drying programs and 100 drying processes carried

WARDEN OF WICHTE - BALANCES - WESTERT

- The last value measured remains on the display until it is replaced by a new measurement
- Sample description for up to 99 samples, 2 digits, freely programmable, and is printed in the measuring protocol
- Date and time display
- 10 sample plates included

Technical Specifications					
Readout	0.001g / 0.01%				
Weighing range (Max)	60 g				
Reproducibility, weight of sample 2g	0.15%				
Reproducibility, weight of sample 10g	0.02%				
Display after drying (Display can be s	witched over at any time)				
Moisture (%) = Weight loss					
(Weight Loss) from SW (startweight)	0 - 100%				
Dry mass (%) = Residual					
Weight (RW) from SW	100 - 0%				
Weight loss (WL)	Absolute value in (g)				
Temperature range	50°C - 200°C in steps up to 1°C				
Overall dimensions WxDxH	202x336x157mm				
Net weight	Approx. 4.2Kg				
Cat. No. Model	Description				

Cat. No.	Model	Description
BA/21270	DBS 60-3	Moisture analyser
Accessories		
BA/21142 BA/21274		Thermal printer USB interface cable



BA/21270



BA/40932

# MARS THE STATE OF THE STATE OF

BA/40934



Ohaus MB moisture analysers feature a precisely controlled heating system; heat is distributed uniformly over the sample which helps to produce fast and repeatable results with readability up to 0.01%. The operating temperature range covered is 40 to 230°C in 1°C increments on model MB 120, and 40 to 200°C in 1°C increments on model MB90. All of the features and parameters of both the MB120 and the MB90 can be accessed via the easy-to-read colour touchscreen display. The intuitive icon-based navigation guides users through every step of the operation process in a choice of 13 languages (display only, no key in).

Both models are supplied with ABS top housing, stainless steel pan support, stainless steel pan handler and in-use cover, all of which are also available as accessories, plus a user guide.

### Additional features for model MB90:

3 shut-off criteria (manual, timed or auto), 2 heating profiles (standard and fast), storage up to 2 methods and 100 test results for each method.

### Additional features for model MB120:

7 shut-off criteria (manual, timed, auto free %/s, auto free mg/s, A30, A60 and A90), 4 heating profiles (standard, fast, ramp and step), storage up to 100 methods and 1000 test results for each method.

Technical Specifications Model	MB120	MB90	
Capacity	120g	90g	
Repeatability	0.01	%/ 0.001g	
Repeatability (Std Dev) (g)	0.05% (3g sample)	0.18% (3g sample)	
	0.015% (10g sample)	0.02% (10g ample)	
Output	RS232, USE	B host, USB device	
Heating element	F	łalogen	
Temperature range	40 to 230°C	40 to 200°C	
Power	120 or 24	0 VAC 50/60Hz	
Operating temperature range	10	to 40°C	
Display Type	109mm, QVG	GA, TFT touch screen	
Display results	% moisture, % solids,	, % regain, time, temperature,	
	weight, method nam	ne, drying curve and statistics	
Pan size	90mm		
Dimensions (W x H x D)	210 x 1	80 x 350mm	
Weight	Į.	5.23Kg	

Cat. No.	Model	Description	
BA/40932	MB120	Moisture balance MB120, capacity 120g	
BA/40934	MB90	Moisture balance MB90, capacity 90g	
Accessories Cat. No.	es Description		
BA/40912	Sample pan, Alumin pack of 80	nium, disposable, for use with MB series moisture analysers,	
BA/40590	Pan holder for moisture balance models MB90 and MB120		
BA/40592	Pan, re-useable, 7mm, set of 3		
BA/40594	Pan, re-useable, 14mm, set of 3		
BA/40920	Temperature calibration kit for MB series balances		
BA/40916	Filter, glass fibre, pack of 200		
BA/40596	Sample cage		
BA/40598	In-use cover		
BA/40116	Anti-theft device		
BA/40544	Thermal printer mo	del STP103 for series MB analysers	
BA/40552	Thermal paper roll	for STP103 printer	
BA/40560	SF40A Impact print	er	



BA/40930

### Balances, moisture, MB series



• Ideal for fast routine tasks with readability up to 5mg/0.05%

Compact and simple to operate

Application Moisture determination from 50°C to 160°C, 5°C increments
Repeatability 0.05% (10g sample)
Display Custom backlit LCD
Operation Mains operation
Communication RS232 Interface
Construction Durable ABS

Design features Compact design, in-use cover, sample pan holder, halogen heating, manual, automatic or timed duration drying time

Cat. No.	Model	Capacity	Readability	Platform (mm)
BA/40930	MB25	110g	5mg	Ø90

### **Balance Accessories**

### Anti-vibration table

Providing a solid, stable surface developed specifically to help decrease vibration and provide a marked precision despite air currents or movements during weighing processes. Supplied for easy self-assembly, with all necessary tools provided, the unit comes in 2 parts, the table style base, and a scratch-resistant dark granite slab with a working surface measuring 400 x 450mm. The work surface sits on shock absorbing rubber mounts fitted to the base which also has levelling feet to correct uneven surfaces.

Cat. No.	Description
BA/55002	Anti-vibration table with granite work surface



BA/55002

### Calibration Weights

Calibration weights, available individually or in sets to either Class M1 or F1 tolerance in a plastic case. Individual weights are supplied with COPRAC (Comite Français d'Accreditation) certification. Sets are available with or without certification. Weights from 1 mg to 500mg are manufactured from aluminium with weights from 1g to 500g being manufactured from polished stainless steel.

Please note, prices for E1, E2 and F2 tolerances are available on request

### Individual weights:

Individual weights: Mass	M1 Cat. No.	F1 Cat. No.
lmg	BW/84100	BW/84200
2mg	BW/84102	BW/84202
5mg	BW/84104	BW/84204
10mg	BW/84106	BW/84206
20mg	BW/84108	BW/84208
50mg	BW/84110	BW/84210
100mg	BW/84112	BW/84212
200mg	BW/84114	BW/84214
500mg	BW/84116	BW/84216
1g	BW/84118	BW/84218
2g	BW/84120	BW/84220
5g	BW/84122	BW/84222
10g	BW/84124	BW/84224
20g	BW/84126	BW/84226
50g	BW/84128	BW/84228
100g	BW/84130	BW/84230
200g	BW/84132	BW/84222
500g	BW/84134	BW/84234
Uncertified weight Cat. No.	sets: Description	
BW/84300	Calibration weight set, I	V1 set of 12 range 1mg to 500mg
BW/84302		V11 set of 23 range 1 mg to 200g
BW/84304	Calibration weight set, I	V11 set of 11 range 1g to 200g
BW/84306	Calibration weight set, I	V11 set of 13 range 1g to 1Kg
BW/84308	Calibration weight set, f	1 set of 12 range 1mg to 500mg
BW/84310	Calibration weight set, f	-1 set of 23 range 1 mg to 200g
BW/84312	Calibration weight set, f	-1 set of 11 range 1g to 200g
BW/84314	Calibration weight set, f	-1 set of 13 range 1g to 1Kg
COFRAC Certified Cat. No.	weight sets: Description	
BW/84320	·	M1 certified, set of 12 range 1mg to 500mg
BW/84322		V1 certified set of 23 range 1 mg to 200g
BW/84324		M1 certified set of 11 range 1g to 200g
BW/84326		V1 certified set of 11 range 1g to 1Kg
BW/84328		-1 certified set of 12 range 1mg to 500mg
BW/84330		-1 certified set of 23 range 1mg to 200g
BW/84332		certified set of 11 range 1g to 200g
BW/84334		-1 certified set of 13 range 1g to 1Kg
211/01004	Canbranon weigin ser, i	. coou sor or to range 19 to 11kg



BW/84100



BW/84300



BW/84320



BB/166

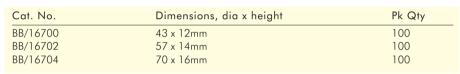
### Weighing boats, disposable

Manufactured from high impact ant-static polystyrene to prevent powder adhesion.

Anti Static Diamo		D: / )	6 : ( 1)	DI O
Cat. No.	Colour	Dim (mm)	Capacity (ml)	Pk Qty
BB/16642	Black	55 x 30	5	1000
BB/16644	Black	80 x 60	30	500
BB/16646	Black	120 x 100	100	250
BB/16648	White	55 x 30	5	1000
BB/16650	White	80 x 60	30	500
BB/16652	White	120 x 100	100	250
Anti Static Square				
Anti Static Square Cat. No.	Colour	Dim (mm)	Capacity (ml)	Pk Qty
		Dim (mm) 44 x44	Capacity (ml)	Pk Qty
Cat. No.	Colour		. , , ,	
Cat. No. BB/16662	Colour Black	44 x44	7	1000
Cat. No. BB/16662 BB/16664	Colour Black Black	44 x44 80 x 80	7 100	1000
Cat. No.  BB/16662 BB/16664 BB/16666	Colour Black Black Black	44 x44 80 x 80 140 x 140	7 100 250	1000 1000 1000

### Weighing Boats, Aluminium

Lightweight aluminium weighing boats, flat bottom, crimped wall for rigidity with finger tab to assist handling, FDA food-grade compliant.





BB/1670

### Weighing paper and Kjeldahl Weighing Boats

### Kjeldahl Weighing Boats

- The fastest, safest, and most reliable way to transfer Kjeldahl samples.
- Dissolves residue-free in the digestion solution without influencing the analytical results in any way
- Made from very low nitrogen parchment paper without any glue or additives
- Transfer your samples without loss by simply dropping the entire weighing boat containing the sample into the acid solution in the Kjeldahl flask/digestion tube.

### Parchment Paper

- Transparent and smooth
- Simplifies sample transfer
- Quantitative transfer from paper

Product	Grade	Thickness mm	Weight g/m <sup>2</sup>
Weighing Boats, 0.07%	N 609	0.07	80
Parchment Paper, 0.05%	N B-2	0.04	43

Cat. No.	Code	Description	Pk Qty
BP/13032	10313032	609 Kjeldahl Weighing Boat	100
BP/17671	10347671	B-2 Sheets, 3 x 3 inch	500
BP/17672	10347672	B-2 Sheets, 4 x 4 inch	500
BP/17673	10347673	B-2 Sheets, 6 x 6 inch	500
BP/17670	10347670	B-2 Sheets, 12 x 12 inch	500



BP/13032

### Weighing bottles

Glass, tall form with hollow blown stopper. Pack of 4.

Cat. No.	Code	Capacity, ml	HT x Dia. mm
BB/32202	L180/B/4	15	50 x 25
BB/32204	L180/C/4	28	60 x 30
BB/32206	L180/D/4	60	80 x 40
BB/32208	L180/E/4	135	100 x 50



BB/3220

### Weighing scoops, borosilicate glass

- Flat base for stability on the balance panHollow stem for pouring powders into flasks etc
- Ideal for weighing small quantities of powder

Cat. No.	Code	Capacity, ml	Pk Qty.
BS/12202	2115/02M	3	10
BS/12204	2115/04M	6	10
BS/12206	2115/06M	10	10
-, -	-, -	10	10



BS/1220

### **Basins**

### Basins, borosilicate glass, crystallising, flat bottom, without spout

<b>PYREX</b> ®
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(volac)

**PYREX®** 

Cat. No.	Code	Capacity, ml	Dia x H., mm	Pk Qty.
BC/12002	1470/02D	100	70x40	10
BC/12004	1470/04D	150	80x45	10
BC/12006	1470/08D	300	95x55	10
BC/12008	1470/10D	500	115x65	10
BC/12010	1470/12D	900	140x75	10
BC/12012	1470/16D	2000	190x90	10



BC/120

### Basins, borosilicate glass, crystallising, flat bottom, without spout

Cat. No.	Capacity, ml	Dia, mm	Pk Qty.	
BC/62102	40	50	10	
BC/62104	60	60	10	
BC/62106	100	70	10	
BC/62108	150	80	10	
BC/62110	300	95	10	
BC/62112	500	115	10	
BC/62114	900	140	10	
BC/62116	2000	190	4	



BC/62110

### Basins, borosilicate glass, crystallising, flat bottom, with spout

Cat. No.	Capacity, ml	Dia, mm	Pk Qty.	
BC/62002	40	50	10	
BC/62004	60	60	10	
BC/62006	100	70	10	
BC/62008	150	80	10	
BC/62010	300	95	10	
BC/62012	500	115	10	
BC/62014	900	140	10	
BC/62016	2000	190	4	



BC/62012



BE/120

# Basins, borosilicate glass, evaporating, flat bottom, with spout

Cat. No.	Code	Capacity, ml	Dia x H, mm	Pk Qty
BE/12002	1450/01D	15	50x25	10
BE/12004	1450/03D	45	60x30	10
BE/12006	1450/04D	90	80x45	10
BE/12008	1450/06D	170	95x55	10
BE/12010	1450/10D	320	115x65	10
RE/12012	1450/14D	600	1.40~80	10

Basins, borosilicate glass, evaporating, flat bottom with spout

Cat. No.	Capacity, ml	Dia, mm	Pk Qty	
BE/62202	45	60	10	
BE/62204	90	80	10	
BE/62206	170	95	10	
BE/62208	320	115	10	



Cat. No.	Capacity, ml	Dia, mm	Height, mm	Pk Qty
BE/93202	41	72	26	5
BE/93204	62	83	27	5
BE/93206	110	96	30	5
BE/93210	215	117	41	1
BE/93212	240	127	42	1
BE/93214	325	142	46	1
BE/93216	420	154	50	1
BE/93218	558	170	55	1

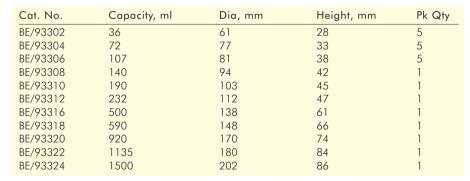


BE/622



BE/932

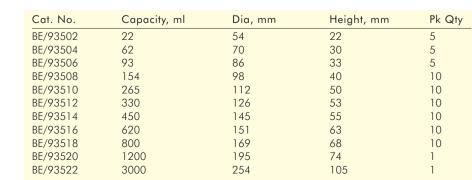
# Basin, glazed porcelain, evaporating, round bottom, deep, with spout





BE/933

Basin, glazed porcelain, evaporating, flat bottom, with spout





BE/935

### **Baskets**

### Baskets, test tube, nylon coated and stainless steel

Can be autoclaved to 130°C

Nylon coated wire Cat. No.	Stainless Steel Cat. No.	Size, mm
BA/99102	BA/99122	100 x 100
BA/99104	BA/99124	125 x 125
BA/99106	BA/99126	150 x 150
BA/99108	BA/99128	200 x 200
BA/99110		160 x 180 diam., with handle



BA/991

### Baths, Water, Boiling

All heated circular and rectangular baths have an integral constant level device and are supplied with a set of rings to vary the diameter of each place. The steam produced provides an effective source of heat for samples that may be otherwise thermally damaged by a naked flame. A one shot thermal cut out is fitted for safety. These baths are suitable for 220-240V, 50-60Hz operation. An energy regulator, available as an accessory, may be used to control between simmering and vigorous boiling.



BW/84002

### Bath, circular, aluminium

An unheated bath suitable for use with a gas burner or hotplate.

Cat. No.	Code	Dia x Depth, (mm)
BW/84002	1021G	160 x 102

BW/85057

### Baths, circular, aluminium, electrically heated

Boiling bath

Cat. No.	Code	Dia x Depth, (mm)
BW/85050	1026E	200 x 130

### Baths, rectangular, stainless steel, electrically heated

Cat. No.	Code	LxWxH, mm	Hole sizes, Dia
BW/85054	1101E	321 x 219 x 90	6 x 80mm
BW/85056	1102E	425 x 321 x 90	6 x 101mm
BW/85058	1104E	425 x 321 x 90	12 x 80mm

As above but with simmer to boiling control.

Cat. No.	Code	Dia x Depth, (mm)
BW/85055	1101ER	321 x 219 x 90 6 x 80mm dia
BW/85057	1104ER	425 x 321 x 90 12 x 80mm dia

### Energy regulator

A compact energy regulator designed to be used with round and rectangular boiling baths (BW/8505 series). Supplied with mains inlet and outlet leads and suitable for 220 - 240V operation up to 10 amps.

Cat. No.	Code	Description
BR/85002	ER1	Energy regulator



BW/85055



BR/85002 with bath

### Baths, water

All Clifton brand baths now feature a powder painted body providing a durable finish and protection against corrosion, with "active anti-bacterial technology". This paint finish actively inhibits bacterial growth improving hygiene requirements as demanded by many clinical and laboratory environments. This new paint finish is effective against major strains of bacterium including E-coli and Staphylococcus aureus resistant strain. Within its formulation is a proven anti-bacterial agent, bound into the coating during application and curing to the product. The efficacy of the paint finish applied

to the Cliffon range is maintained over time, as the anti-bacterial agent is integral within the paint finish.

The larger models in the NE1 and NE2D series water baths, with a capacity of 22 litres and above, have been enhanced with the fitting of 'big bore' fast draining outlets. Baths now empty in less than half the time previously taken.

Every bath undergoes a factory calibration check at a reference temperature.



BW/8506

### Baths, unstirred, thermostatic, NE1 series

Clifton Range

These Clifton analogue baths are designed for general use and are economically priced without compromising on quality. Comprising of a stainless steel tank, housed in a durable paint finished outer case; they include a low height stainless steel perforated false base – increasing working volume. Thermostat Control, heater with safety cut-out.

Sensitivity  $\pm 0.2^{\circ}$ C Uniformity  $\pm 0.1^{\circ}$ C

Ambient  $+5^{\circ}\text{C}$  -  $99^{\circ}\text{C}$ . A lid is recommended for use above  $60^{\circ}\text{C}$ .

This range of baths will operate at 100°C but are not designed for continuous boiling.

Cat. No.	Model	Capacity (Litres)	Internal dims (lxwxh), mm	Heater, (Watts)
BW/85059	NE1-2.5	2.5	230 x 130 x 100	250
BW/85060	NE1-4	4	300 x 150 x 150	400
BW/85062	NE1-8	8	300 x 240 x 150	800
BW/85064	NE1-14	14	325 x 300 x 150	1000
BW/85066	NE1-22	22	500 x 300 x 150	1500
BW/85068	NE1-28	28	500 x 300 x 200	1500
BW/85069	NE1-56	56	620 x 500 x 200	2500
56L bath include	s 2 flat lids BW/8	5162 (LD-56)		
22L, 28L and 56				



BW/856

### Baths, unstirred, digital

Clifton Range

These water baths provide a stable temperature environment ideal for meeting quality control requirements. Featuring a digital PID temperature control with smart technology for adaptive temperature control maintaining accurate working temperatures. Also featuring auto alarm settings, illuminated on/off switch, heater, set temperature and over and under temperature indications.

°C

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Technical	Spe	CITIC	ations

Sensitivity	±0.2°C
Uniformity	±0.1°C
Temperature range	ambient +5°C to 99°

For temperatures above 60°C, the use of a lid is recommended

Cat. No.	Model	Capacity (Litres)	Internal dims (lxwxh), mm	Heater, (Watts)
Standard depth				
BW/85620	NE2-4D	4	300 x 150 x 150	400
BW/85622	NE2-8D	8	300 x 240 x 150	800
BW/85629	NE2-10D	10	300 x 240 x 200	800
BW/85624	NE2-14D	14	325 x 300 x 150	1000
BW/85626	NE2-22D	22	500 x 300 x 150	1500
BW/85628	NE2-28D	28	500 x 300 x 200	1500
BW/85656	NE2-56D	56	620 x 500 x 200	2500
Shallow form				
BW/85623	NE2-2D	2	300 x 100 x 65	200
BW/85625	NE2-5D	5	300 x 325 x 65	800
22L, 28L and 56L	baths have a drain	tap.		

For accessories see pages 37-39

### Baths, stirred, digital and analogue, NE4 series

These stirred water baths are designed for immersion of flasks/bottles/racks in a highly stable temperature environment throughout the water bath. Available in a wide range of sizes suiting a variety of applications. They feature totally unobstructed, crevice free, stainless steel tank – corrosion resistant and easy to clean, powerful stirring within tank for stable water control, sturdy construction – powder coated for a chemical resistant exterior, safety cut-out switch, and removable perforated stainless steel false base. Lids are an optional extra – recommended above 60°C or below ambient. Every bath undergoes a factory calibration check at a reference temperature.

### Bath, stirred analogue, NE4-T series

### Clifton Range

Technical Specifications	
Sensitivity	±0.2°C
Uniformity	±0.05°C
Temperature Range	ambient $+5^{\circ}\text{C} - 99^{\circ}\text{C}$
Temperature Settings	dial with scale 5°C temperature increments
Thermostatic Control Heater	1250W, 230V

Cat. No.	Model	Capacity Litres	Working dims (wxdxh),mm	Overall dims (wxdxh),mm
BW/85602	NE4-8T	8	129 x 300 x 150	271 x 332 x 170
BW/85604	NE4-14T	14	219 x 298 x 150	361 x 332 x 170
BW/85606	NE4-22T	22	395 x 298 x 150	537 x 332 x 170
BW/85608	NE4-28T	28	395 x 298 x 200	537 x 332 x 240

For accessories see pages 37-39



BW/85604

### Bath, stirred, digital PID control, NE4-D series Clifton Range

In addition to the standard features of the NE4T series this range has a digital PID control, low liquid level warning, over and under temperature audible alarm and timer function. Clifton Optimization Control automatically operates for unstable conditions, clear 4 digit display with a resolution of 0.1°C and precision control.

- Variable timer, 00:01 to 99:59 (hh:mm) Activates at set temperature, end of timed period with audible buzzer and "end" message.
- Under/over temperature alarm is automatically set at 4°C above and 4°C below set point.
- When a low liquid level is detected, a "FILL" message automatically appears and heating is suspended. Once filled, heating is restored and temperature control resumes automatically.

Technical Specifications	
Sensitivity	±0.05°C
Uniformity	±0.01°C
Temperature Range	ambient+5°C – 99°C (Optional Accessory cooling:
	ambient to -20°C (see page ??)
Digital PID Control Heater 1250W, 230V	

Cat. No.	Model	Capacity Litres	Working dims (wxdxh),mm	Overall dims (wxdxh),mm
BW/85630	NE4-8D	8	129 x 300 x 150	271 x 332 x 170
BW/85632	NE4-14D	14	219 x 298 x 150	361 x 332 x 170
BW/85634	NE4-22D	22	395 x 298 x 150	537 x 332 x 170
BW/85636	NE4-28D	28	395 x 298 x 200	537 x 332 x 240

For accessories see pages 37-39



BW/85634



BW/85664

# Bath, stirred, digital PID control, polycarbonate tank NE4-D/CT series

Clifton Range

Stirred Clifton water baths are designed for immersion of flasks/bottles/racks in a highly stable temperature environment throughout the water bath. Available in 2 different sizes suiting a variety of applications. The sturdy clear polycarbonate tank allows observation of samples. Complete with stainless steel shelf all designed for good water circulation and water temperature stability. Supplied with a stainless steel bridge to mount the thermostirrer to the tank. Features include, timer facility, powerful stirring motor – excellent temperature stability, low liquid level warning, safety cut-out float switch for low liquid level protection, over temperature – audible and visual alarm preset, clear 3 digit display with 0.1°C resolution.

When used above 60°C or below ambient, the use of polypropylene spheres BW/85268 is recommended. Every bath undergoes a factory calibration check at a reference temperature.

- Variable timer, 00:01 to 99:59 (hh:mm) Activates at set temperature, end of timed period with audible buzzer and "end" message.
- Under/over temperature alarm is automatically set at 4°C above and 4°C below set point.
- When a low liquid level is detected, a "FILL" message automatically appears and heating is suspended. Once filled, heating is restored and temperature control resumes automatically.

Technical Specifications	
Sensitivity	±0.05°C
Uniformity	±0.01°C
Temperature range	ambient +5°C - 90°C (Using optional accessory
	BW/85262 or BW85272, cooling from ambient
	down to 0°C is possible)
Heater	1250W, 230V.

Cat. No.	Model	Capacity Litres	Working dims (wxdxh),mm	Overall dims (wxdxh),mm
BW/85664	NE4-14D/CT	14	385x290x150	530x325x295
BW/85666	NE4-22D/CT	22	385x290x200	530x325x345

For accessories see pages 37-39



BW/8568

### Circulators

### Water NE4-P series

### Clifton Range®

A range of closed circuit circulator baths for water, supplied complete with a stainless steel tank and mounting bridge both of which are corrosion resistant and easy to clean. This range circulates water at a rate of 10 litres per minute. It features a low liquid level float - safety cut out, low liquid level warning, digital PID control, timer and an audible and visual over temperature alarm. Available in four sizes to suit a wide range of applications. Bath cover recommended above 60°C.

- Variable timer, 00:01 to 99:59 (hh:mm) Activates at set temperature, end of timed period with audible buzzer and "end" message.
- Under/over temperature alarm is automatically set at 4°C above and 4°C below set point.
- When a low liquid level is detected, a "FILL" message automatically appears and heating is suspended. Once filled, heating is restored and temperature control resumes automatically.

Technical Specifications	
Sensitivity	±0.05°C
Uniformity	±0.01°C
Temperature range	ambient +5°C - 99°C (Using optional accessory
	BW/85262 or BW85272, cooling from ambient
	down to -20°C is possible)
Heater	1250W, 230V.

Cat. No.	Model	Capacity Litres	Working dims (wxdxh),mm	Overall dims (wxdxh),mm
BW/85682	NE4-8P	8	129x332x150	271x332x170
BW/85684	NE4-14P	14	219x298x150	361x332x170
BW/85686	NE4-22P	22	395x298x150	537x332x170
BW/85688	NE4-28P	28	395x298x200	537x332x240

#### Water and heat transfer fluid, NE4-HT series

#### Clifton Range

A range of closed circuit circulator baths for water and heat transfer fluid supplied complete with a stainless steel tank and mounting bridge, both corrosion resistant and easy to clean. This range circulates water and heat transfer fluid at a rate of 10 litres per minute. It features a low liquid level float - safety cut out, low liquid level warning, digital PID control, clear 4 digit display, timer and an audible and visual over temperature alarm. Available in three sizes to suit a wide range of applications. Bath cover recommended above 60°C.

- Variable timer, 00:01 to 99:59 (hh:mm) Activates at set temperature, end of timed period with audible buzzer and "end" message.
- Under/over temperature alarm is automatically set at 4°C above and 4°C below set point.
- When a low liquid level is detected, a "FILL" message automatically appears and heating is suspended. Once filled, heating is restored and temperature control resumes automatically.

Technical Specifications	
Sensitivity	±0.05°C
Uniformity	±0.01°C
Temperature range	ambient +5°C - 130°C (Using optional accessory BW/85262 or BW85272, cooling from ambient down to -20°C is possible)
Heater	1250W, 230V.

Cat. No.	Model	Capacity Litres	Working dims (wxdxh),mm	Overall dims (wxdxh),mm
BW/85692	NE4-8HT	8	129x298x150	271x332x170
BW/85694	NE4-14HT	14	219x298x150	361x332x170
BW/85696	NE4-22HT	22	395x298x150	537x332x170



BW/85694

#### Baths, shaking analogue, reciprocating action Clifton Range

A solid state controlled bath consisting of a 304 (18/8) stainless steel tank housed in a durable paint finished outer case. The reciprocating stainless trolley accepts perforated clip trays for holding flasks, micro-titre plates or test tube racks. The trolley is easily removed for cleaning purposes. The heater is concealed beneath the tank and both shaker speed and temperature are solid state controlled. Stroke length (amplitude) is easily adjusted. The speed is continuously adjustable up to 380 stroke/min (medium load). A manually adjustable hydraulic over temperature device is also included. The bath features illuminated on/off power and shaker switches, heater, over temperature and access door indication lamps. Features an anti-bacterial paint finish that inhibits the growth of bacteria.

Fitted with large 12mm bore outlet for fast emptying

Technical Specifications	
Model	NE5-28
Capacity, litres	28
Internal dimensions, mm (I x w x h)	500 x 300 x 200
Overall dimensions, mm (l x w x h)	715 x 322 x 240
Stroke length, mm	variable 0 – 40
Heater, Watts	1000
Temp range	ambient +5°C - 99°C
Sensitivity	±0.2°C
Uniformity	±0.1°C
Maximum flask immersion	120mm
Voltage	230V.a.c. 50-60Hz

Cat. No.	Code	Description
BW/85800	NE5-28	28 litre bath
BW/85824	SBF01804	Perforated tray for 28 litre bath



BW/85800



BW/8580

#### Baths, shaking digital, reciprocating action

Clifton Range

Shaking water bath, featuring precision PID control, allows observation of set and actual temperature simultaneously. Featuring a broad range of accessory trays, flask clips and racks ensures flexibility for routine and specialised work.

Precision temperature control with menu driven data entry, with touch pad buttons. For temperature values, retained in memory for repeatability. Protecting your work at set temperature an auto setting alarm. Every bath undergoes a factory calibration check at a reference temperature. Water bath construction, stainless steel 304 spec tank, crevice free. Body constructed from durable steel chassis, zinc coated, with an antibacterial paint protection, hygienic coating which actively inhibits bacterial growth. Control panel also features antibacterial properties, good chemical and detergent resistance. The 28 litre version is fitted with a large 12 mm bore outlet for fast emptying.

Technical Specifications		
Model	NE5-10D	NE5-28D
Capacity, litres	10	28
Internal dimensions, mm (I x w x h)	242 x 300 x 200	500 x 300 x 200
Overall dimensions, mm ( $l x w x h$ )	449 x 332 x 240	715 x 322 x 240
Stroke length, mm	Fixed 20	Variable 0 – 40
Heater, Watts	800	1000
Temp range	ambient +5°C - 99°C	
Sensitivity	±0.1°C	
Uniformity	±0.1°C	
Alarm	+4°C	
Linear shaking control	0 - 400 rpm	
Maximum flask immersion	120mm	
Voltage	230V.a.c. 50-60Hz	

Cat. No.	Code	Description
BW/85802	NE5-10D	10 litre bath
BW/85804	NE5-28D	28 litre bath
BW/85878	SA01773	Perforated tray for 10 litre bath
BW/85824	SBF01804	Perforated tray for 28 litre bath

For accessories clips, see pages 37-39

Notes			
Notes			

#### **Accessories for Clifton Baths**

#### Flask trays for NE5-28 and NE5-28D Shaking water baths

A perforated tray, complete with flask clips to suit common sizes of glass/polypropylene Erlenmeyer flasks. The tray simply drops onto the reciprocating trolley and locates snugly.

Cat. No.	Code	Description
BW/85806	SFT0025	39 x 25ml clip tray
BW/85808	SFT0050	32 x 50ml clip tray
BW/85810	SFT0100	18 x 100ml clip tray
BW/85812	SFT0250	12 x 250ml clip tray
BW/85814	SFT0500	8 x 500ml clip tray
BW/85816	SFT1000	5 x 1000ml clip tray
BW/85818	SFT2000	2 x 2000ml clip tray
BW/85820	SFT9000	Universal spring tray
BW/85822	STT004	T/T rack tray (holds 4) see BW/85250 to BW/85258
BW/85824	SBF01804	Perforated tray only (for clips see below)



BW/85820

#### Flask tray for NE5-10D shaking water bath.

Cat. No.	Description	
BW/85878	Perforated tray only (for clips see below)	

#### Separate clips

For personalised clip arrangement, clips are supplied with all necessary fixings to enable them to be attached to the perforated trays BW/85824 and BW/85878. It is possible to mix and match a variety of clips sizes to suit different applications.

The clips are easy to assemble and remove from the perforated tray, their highly flexible and elastic design allows glassware to be easily slid into the clip, and yet remain secure during mixing or shaking. There are no sharp edges to cut or score glassware and the clips can be autoclaved. Maximum quantity of any one size of clip:

Clip size	10 Litre tray	28 Litre tray
25ml	12	39
50ml	12	32
100ml	6	18
250ml	4	12
500ml	2	8
1000ml	1	5
2000ml	1	2
Microplate	2	4

Clip size	10 Litre tray	28 Litre tray
25ml	12	39
50ml	12	32
100ml	6	18
250ml	4	12
500ml	2	8
1000ml	1	5
2000ml	1	2
Microplate	2	4

Cat. No.	Code	Capacity of flask, ml
BW/85826	FC0025	25
BW/85828	FC0050	50
BW/85830	FC0100	100
BW/85832	FC0250	250
BW/85834	FC0500	500
BW/85836	FC1000	1000
BW/85838	FC2000	2000
BW/85842	M11	Microplate Clip

# 

BW/85828

BW/85262

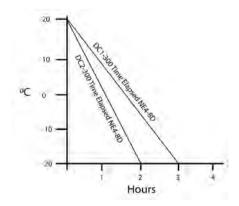
#### Immersion cooler (ambient to -20°C), for NE4 Series

This refrigeration cooler has no temperature controls as it is designed to be used in conjunction with a stirred or circulated water bath where the coil is specially designed to fit into rear access hole behind the stirrer into the bath without sacrificing the working area.

The cooler runs continuously with the bath providing temperature control.

Technical Specifications			
Model	DC1-300		DC2-300
Length of hose		900mm	
Diameter cooling coil		65mm	
Overall dims, mm	345w		345w
	445d		465d
	265h		315h
Cooling capacity W			
+10°C	800W		1400W
0°C	580W		1000W
- 10°C	400W		700W
- 20°C	250W		450W
Refrigerant		R134a	
Voltage		230V	

Cat. No.	Code	Description
BW/85262	DC1-300	Immersion Dip Cooler
BW/85272	DC2-300	Immersion Dip Cooler





BW/85081







BW/85154



BW/85156



BW/85166 with bath

#### Lids

For temperatures above 60°C a lid is recommended in order to reduce evaporation and achieve optimum performance. Using a lid also helps reduce the risk of contamination and saves energy, reducing energy consumption and running costs for your water bath.

Available in both hinged clear plastic and lift off stainless steel. These lids have a high profile which allows extended use of the bath area, right into edges of the tank. They feature insulated handles and the design ensures that all condensate goes back into the bath. The design also ensures there are no drip points to contaminate samples.

#### Flat lids

Flat lids feature an insulated handle.

#### Gable lids for NE1, NE2-D and NE5 series water baths

Cat. No.	Code	Description
BW/85080	GL1-4	Hinged Gable Lid to suit 2 and 4 Litre Unstirred Baths
BW/85081	GL1-8	Hinged Gable Lid to suit 8 and 10 Litre Unstirred and Shaking Water Baths
BW/85082	GL1-14	Hinged Gable Lid to suit 14 Litre Unstirred Baths
BW/85084	GL1-22	Hinged Gable Lid to suit 22 and 28 Litre Unstirred and Shaking Water Baths
BW/85090	SL1-4	Stainless Steel Gable Lid to fit 2 and 4 Litre Unstirred Baths
BW/85092	SL1-8	Stainless Steel Gable Lid to fit 8 and 10 Litre Unstirred and Shaking Water Baths
BW/85094	SL1-14	Stainless Steel Gable Lid to fit 5 and 14 Litre Unstirred Baths
BW/85096	SL1-22	Stainless Steel Gable Lid to fit 22 and 28 Litre Unstirred and Shaking Water Baths

#### Gable lids for NE4 series water baths

Cat. No. Code Desc	ription
BW/85152 SL4-14 Stainl	ess Steel Gable Lid to fit 8 Litre Stirred Baths ess Steel Gable Lid to fit 14 Litre Stirred Baths ess Steel Gable Lid to fit 22 and 28 Litre Stirred Baths

#### Flat lids for NE4-P, NE4-HT series water baths

Cat. No.	Code	Description
BW/85156	LD4-8	Flat Lid, Stainless steel, 8 litre baths
BW/85158	LD4-14	Flat Lid, Stainless steel, 14 litre baths
BW/85160	LD4-22	Flat Lid, Stainless steel, 22/28 litre baths

#### Flat lids with insulated handle for NE1 and NE2D series water baths

Cat. No.	Code	Description
BW/85162	LD-56	56 Litre Stainless Steel Flat Two Piece Lid with Insulated Handles
BW/85172	LD-8	Flat One Piece Stainless Steel Lid for 8 Litre Baths
BW/85174	LD-14	Flat One Piece Stainless Steel Lid for 14 Litre Baths
BW/85176	LD-22	Flat One Piece Stainless Steel Lid for 22 Litre Baths
BW/85178	LD-2.5	Flat One Piece Stainless Steel Lid with Insulated Handle to suit 2.5 Litre
		Capacity Baths
UB/85118	LD-4	Flat One Piece Stainless Steel Lid for 2 and 4 Litre Baths
BW/85176 BW/85178	LD-22 LD-2.5	Flat One Piece Stainless Steel Lid for 22 Litre Baths Flat One Piece Stainless Steel Lid with Insulated Handle to suit 2.5 Litre Capacity Baths

#### Lids, concentric ring set for unstirred baths

Cat. No.	Code	Description
BW/85166	SLR1-14	Lid, ring set, stainless steel, 4 x 105mm to fit 14 litre bath
BW/85168	SLR2-14	Lid, ring set, stainless steel, 6 x 81mm to fit 14 litre bath
BW/85170	SLR1-22	Lid, ring set, stainless steel, 6 x 105mm to fit 9, 22 and 28 litre baths

#### Spheres, polypropylene

Provide a floating lid on water baths to minimize evaporation and allows easy immersion of flasks etc.

Technical Specifications	
For the NE1, NE1B and NE2D range	of Unstirred water baths:
Bath size	Number of packs required to provide a single layer.
2, 2.5 + 4 litre	1
5, 8, 10, 14 + 18 litre	2
9, 22 + 28 litre	4
56 litre	8
For the NE4 range of Stirred and Circ	culating water baths:
Bath size	Number of packs required to provide a single layer.
8 litre	1
14 litre	2
22/28 litre	3
38 litre	5
56 litre	8
NE4-D/CT range of Stirred Clear wat	er baths:
Bath size	Number of packs required to provide a single layer.
14+22 Litre	3

Cat. No.	Description	Pk qty
BW/85268	Spheres PP 20mm dia.	200



BW/85268

#### Raised shelves

Allows immersion depth of samples to be varied.

Cat. No.	Code	Description
BW/85264	RS4-14	Raised shelf, stainless steel, for 14 litre baths
BW/85266	RS4-22 R	Raised shelf, stainless steel, for 22 litre baths



BW/8526

#### Test tube racks

Test tube racks suitable for use with Clifton baths. Made of high grade stainless steel. Overall dimensions of rack: 270mm long x 70mm wide, height to top of lifting handle: 138mm.

Maximum number of racks per bath

NE1, NE1B and NE2D range of a	unstirred water baths: Number of racks
2/4 Litre	1
8 Litre	2
14 Litre	4
9, 22 + 28 Litre	6
56 Litre	12
NE4 range of water baths: Capacity	Number of racks
8 Litre	1
14 Litre	3
22 + 28 Litre	5
38 Litre	7
56 Litre	10

Cat. No.	Code	Description
BW/85250	6872	Test tube rack, stainless steel, 36 holes x 13mm dia
BW/85252	6870	Test tube rack, stainless steel, 26 holes x 17mm dia
BW/85254	6873	Test tube rack, stainless steel, 18 holes x 19mm dia
BW/85256	6871	Test tube rack, stainless steel, 16 holes x 26mm dia
BW/85258	6900	Test tube rack, stainless steel, 12 holes x 32mm dia



BW/8525



BW/85850

#### Bath Armor<sup>TM</sup> replacement for water in water baths

- No more filling.
- No more routine cleaning.
- No water borne contamination.
- No longer incubating microbes.
- Washes and sterilizes easily.
- Good thermal heat distribution.
- Smooth, rounded & fluid-like

Replace water in your water bath with these thermally efficient pellets that are easy to keep clean. It enables you to eliminate nearly all water bath cleaning and protects your water bath from drying out. Saving need for racks, floaties and bottle weights. More free time, one less lab duty, never have to wash or refill a water bath again.

Cat. No.	Description
BW/85850	Bath Armor replacement for water in water baths, 5 Litre

<sup>\*</sup>Larger 12 Litre pack size available

#### Calibration Record

The completed calibration record will be enclosed at the rear of the instruction book accompanying the Clifton unit carrying the following information:

- Unique record number for traceability.
- Serial number of the unit.
- Instrument it was checked against.
- Calibration temperature and actual sensitivity results.

The calibration record provides a measurement of precision about set point with maximum and minimum sensitivity readings obtained. Precision is defined as "(1) The ability of a measurement to be consistently reproduced" and "(2) The number of significant digits to which a value has been reliably measured".

The calibration record does not provide or assure any form of accuracy.

Cat. No.	Description
BW/85862	Calibration Record
Applicable for all	Clifton models

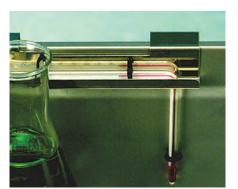


BW/85874

#### Drain Tap

Providing a gated on/off valve to empty fluids conveniently from the bath. With the new 'big bore' fast draining outlets it only takes 13 minutes to empty a 28 litre bath, 50% quicker than before.

Cat. No.	Description	
BW/85874	Drain Tap Assembly to suit baths with serial number 7510	
For 22, 28 and 56 litre baths – not suitable for use with NE4 series baths		



BW/85260

#### Reference thermometer

Thermometer clip with bent stem red spirit filled thermometer, lies flush with top edge of the bath to prevent accidental damage.

- 100°C in 2°C gr	1 0
- 100 C III Z C git	aduations
de	Description
-1	Reference thermometer
c	de

#### Baths, advanced, SUB Aqua Pro series

Gran

The SUB Aqua Pro range is built to the highest standards and specifications and incorporates the latest technology to provide accurate temperature control in even the most demanding applications in research, pharma and biotech. Choose from eight models, including shallow and dual baths with stainless steel tanks and digital controls.

- Ambient +5 to 99°C
- Stability  $\pm~0.2^{\circ}C$
- Set and Forget™ technology for fast heat up and accurate temperature control
- Advanced dry start and run dry protection
- Comprehensive safety features to protect your samples and your workspace
- 3-year warranty as standard
- 2-point user calibration
- 3 programmable temperature pre-sets
- Countdown timer (1-999 minutes)
- Polycarbonate lid and base tray included



BW/65646 with lid

Model	SAP2	SAP2S	SAP5	SAP12
Tank capacity	2L	2L shallow	5L	12L
Temperature range		ambient	+5 to 99°C	
Temperature setting resolution		(	0.1°C	
Stability @ 70°C	±0.2°C			
Temperature setting/energy regulation	digital			
Temperature display		3 digit	bright LED	
Working area (lxwxd mm)	131 x 117 x 132	289 x 139 x 47	281 x 131 x 132	306 x 281 x 132
Drain tap included	No	No	No	Yes
Power consumption 230V/120V/kW	0.25/0.25	0.35/0.35	0.35/0.35	0.8/0.8
Supply voltage	120V or 230V			
Sample protection	Adjustable over temperature cut-off and alarm			

Model	SAP18	SAP26	SAP34	SAPD
Tank capacity	18L	26L	34L	5L and 12L
Temperature range		ambient	+5 to 99°C	
Temperature setting resolution		C	).1°C	
Stability @ 70°C		±	0.2°C	
Temperature setting/energy regulation	digital			
Temperature display	3 digit bright LED			
Working area (lxwxd mm)	281 x 485 x 132	278 x 481 x 182	281 x 635 x 180	281 x 131 x 132 and 306 x 281 x 132
Drain tap included	Yes	Yes	Yes	Yes
Power consumption 230V/120V/kW	1.4/1.05	1.4/1.05	1.8/1.3	1.15/1.15
Supply voltage	120V or 230V			
Sample protection	Adjustable over temperature cut-off and alarm			

Cat. No.	Code	Description
BW/65640	SAP2	Water bath, SUB Aqua Pro 2L
BW/65642	SAP2S	Water bath, SUB Aqua Pro 2L shallow
BW/65644	SAP5	Water bath, SUB Aqua Pro 5L
BW/65646	SAP12	Water bath, SUB Aqua Pro 12L
BW/65648	SAP18	Water bath, SUB Aqua Pro 18L
BW/65650	SAP26	Water bath, SUB Aqua Pro 26L
BW/65652	SAP34*	Water bath, SUB Aqua Pro 34L
BW/65654	SAPD	Water bath, SUB Aqua Pro Dual 5L and 12L





BW/65654



#### Baths, boiling, SBB Aqua Plus series

#### Polycarbonate lid and base tray included

- Features include:
   Continuous 100°C operation\*
- Steady or fast heat up
- Constant level device
- Two fixed cut-outs provide maximum safety



BW/65042

Technical Specifications					
Model	SBB Aqua 5 Plus	SBB Aqua 12 Plus	SBB Aqua 18 Plus	SBB Aqua 26 Plus	
Tank capacity	5 L	12 L	18 L	26 L	
Continuous temperature		1	00°C		
Temperature setting/energy regulation		and	alogue		
Working volume (lxwxd mm)	145 x 290 x 105	315 x 290 x 105	495 x 290 x 105	495 x 290 x 155	
Heater power/overall consumption	1.3/1.5 kW	1.35/1.5 kW	1.35/2.0 kW	1.35/2.0 kW	
Supply voltage	ly voltage 120V or 230V				
Safety temperature	two fixed cut-outs				
A lid or layer of polypropylene spheres must always be used.					

Cat. No.	Model	Capacity, litres
BW/65040	SBB Aqua 5 Plus	5
BW/65042	SBB Aqua 12 Plus	12
BW/65050	SBB Aqua 18 Plus	18
BW/65044	SBB Aqua 26 Plus	26



BW/65028

#### Flat lids with holes (105mm diameter)

Ring sets give alternative hole diameters of 78, 59, 43 and 31mm to accommodate tall vessels.

Cat. No.	Code	Positions	Suitable baths
BW/65026	LF6	2	SAP5, JBN5, JBA5, SBB Aqua 5 Plus
BW/65028	LF14	4	SAP12, JBN12, JBA12, SBB Aqua 12 Plus
BW/65030	LF28	6	SAP18 + SAP26, JBN18 + JBN26, JBA18, SBB
			Aqua 18 Plus + SBB Aqua 26 Plus

NB: Bath model SAPD requires 1 each of lids LF6 and LF14

#### Spheres, polypropylene

Provide a floating lid on water baths to minimize evaporation and allows easy immersion of flasks etc

Number of packs required to provide a single layer



BW/85268

Bath model	Quantity of packs
SAP2, SAP2S, SAP5 and SAP12	1
SAP18 and SAP26	2
SAP34	3
SAPD	2
SBB AQUA 5 Plus and SBB AQUA 12 Plus	1
SBB AQUA 18 Plus and SBB AQUA 26 Plus	2
JBN5 and JBN12	1
JBN18 and JBN26	2
JBA5 and JB12	1
JBA18	2

Cat. No.	Description	Pk Qty
BW/85268	Spheres PP 20mm dia.	200

#### Baths, water, JB digital range

The JB digital water bath ranges offer good temperature performance, in a value-for-money package. These new ranges offer excellent reliability, performance and longevity, alongside lockable controls to prevent accidental temperature changes, making them ideal for educational environments. The JB Nova range benefits from a drain tap on all baths 12L and above, together with a base tray and lid as standard.

#### JB Nova digital

JB Nova baths combine great temperature control, with a simple user interface and fast heat up to provide a high quality, general purpose bath for education, industry and clinical applications.

- Ambient +5 to 95°C
- Temperature setting resolution 0.5°C
- Set and Forget technology™ easy bath set up with simple controls and fast heat-up
   Display lock disables front panel controls
- Single point calibration facility
- Advanced dry start and run dry protection
- 3-year warranty as standard
- Polycarbonate lid and tray included



JB Nova

Technical Specifications			
Model JBN5 J	BN12	JBN18	BN26
Tank capacity 5L	12L	18L	26L
Temperature range	ambient	+5 to 95°C	
Temperature setting resolution	0	.5°C	
Stability @ 70°C	±(	0.5°C	
Temperature setting/energy regulation	d	igital	
Temperature display	3 digit	bright LED	
Working area (I/w mm) 131/281	281/306	485/281	481/278
Drain tap included -	Yes	Yes	Yes
Power consumption 230V/120V/kW 0.35/0.35	0.8/0.8	1.4/1.05	1.4/1.05
Supply voltage	120V	or 230V	
Safety	Fixed the	rmal cut-out	

Cat. No.	Code	Description
BW/65660	JBN5	Water bath JB NOVA 5 Litres
BW/65662	JBN12	Water bath JB NOVA 12 Litres
BW/65664	JBN18	Water bath JB NOVA 18 Litres
BW/65666	JBN26	Water bath JB NOVA 26 Litres

#### JB Academy, digital

The JB Academy range offers high quality and performance at an affordable price. JB Academy baths are supplied with a base tray and are ideal for price conscious end-users in education and industry.

- Ambient +5 to 95°C
- Temperature setting resolution 0.5°C
- Set and Forget technology™ easy bath set up with simple controls and fast heat-up
- Display lock disables front panel controls
- Advanced dry start and run dry protection
- Single point calibration facility
- 3-year warranty as standard
- Polycarbonate lid available as an optional accessory



JB Academy

Model	JBA5	JBA12	JBA18
Tank capacity	5L	12L	18L
Temperature range		ambient +5 to 95°C	
Temperature setting resolution		0.5°C	
Stability @ 70°C		±0.5°C	
Temperature setting/energy regulation		digital	
Temperature display		3 digit bright LED	
Working area (I/w mm)	131/281	281/306	485/281
Drain tap included	-	Yes	-
Power consumption 230V/120V/kW	0.35/0.35	0.8/0.8	1.4/1.05
Supply voltage		120V or 230V	
Safety		Fixed thermal cut-out	

Cat. No.	Code	Description
BW/65670	JBA5	Water bath JB Academy 5 Litres
BW/65672	JBA12	Water bath JB Academy 12 Litres
BW/65674	JBA18	Water bath JB Academy 18 Litres



BW/65704



BW/65010



BW/6512



BW/6513



BW/85268

# Baths, accessories

#### Lids

Recommended for use with temperatures above 60°C

#### Clear polycarbonate, gabled

Cat. No. Code Description	
BW/65704 AQL5 To fit JBA5 bath	
BW/65706 AQL12 To fit JBA12 bath	
BW/65708 AQL18 To fit JBA18 bath	

#### Stainless steel, gabled

Cat. No.	Code	Description
BW/65010	LU6	To fit JBA5 bath
BW/65012	LU14	To fit JBA12 bath
BW/65014	LU28	To fit JBA18 bath

For flat stainless steel lids with ring sets, please see BW/65026 to BW/65030 on page 42.

#### Test tube racks

For JB Aqua Plus and SUB Aqua Plus baths

Bath capacity	Number of J2 racks
5 litre	1
12 litre	2
18 litre	4
26 litre	4
Dual	1 + 2

Cat. No.	Code	Holes x Tube size	
BW/65120	J2-10	84 x 10mmØ	
BW/65122	J2-13	55 x 13mmØ	
BW/65124	J2-16	36 x 16mmØ	
BW/65126	J2-19	32 x 19mmØ	
BW/65128	J2-25	18 x 25mmØ	
BW/65130	J2-30	12 x 30mmØ	

#### Microcentrifuge tube racks

Cat. No.	Code	Holes x Tube size	
BW/65132	J2-SE	105 x 0.5ml	
BW/65134	J2-LE	65 x 1.5ml	

#### Spheres, polypropylene

Provide a floating lid on water baths to minimize evaporation and allows easy immersion of flasks etc

Number of packs required to provide a single layer

Bath model	Quantity of packs
SAP2, SAP2S, SAP5 and SAP12	1
SAP18 and SAP26	2
SAP34	3
SAPD	2
SBB AQUA 5 Plus and SBB AQUA 12 Plus	1
SBB AQUA 18 Plus and SBB AQUA 26 Plus	2
JBN5 and JBN12	1
JBN18 and JBN26	2
JBA5 and JB12	1
JBA18	2

Cat. No.	Description	Pk Qty
BW/85268	Spheres PP 20mm dia.	200

#### Stirred thermostatic baths and circulators

#### **OPTIMA** series

## Grant

A cost-effective range of multi-purpose systems combining Grant's legendary quality and reliability. Precise temperature control for a wide range of laboratory applications.

- Accurate and safe temperature control for samples and users
- Intuitive programming and thoughtful design features makes working with Grant stirred baths and circulators easy
- Robust, durable construction for longevity, reliability and long-term low cost of ownership
- A complete range 32 models to cover basic through to sophisticated needs, each model represents excellent value for money

#### **Applications**

Grant stirred baths and circulators provide a source of precision heating and cooling for many routine and sensitive analytical procedures including sample incubation, calibration and quality control testing. All models from the TC120 upwards are suitable for use as both open and closed loop circulators (i.e. remote vessel open or closed).

#### Model selection (operating temperature)

Any of the four Grant Optima™ digital thermostats can be combined with any of eight Grant tanks (five stainless steel and three plastic) to provide a choice of 32 models.

The following examples give popular combinations for different requirements.



BW/65312 plus BW/65476

#### Immersion Thermostat features

#### T100 & TC120 General purpose immersion thermostats

- Easy to use rotary dial and two function keys for quick temperature setting and menu navigation
- Stirred circulation within the bath ensures excellent temperature stability and uniformity
- Easy to view 4 digit display
- 3 programmable temperature presets
- Low liquid protection and over-temperature cut-out
- Countdown timer and visual alarm
- Integral pump for external fluid circulation (TC120)

#### TX150 & TXF200 Advanced immersion thermostats

- Full colour QVGA TFT screen displaying actual and set temperature and clear status icons
- Intuitive screen icons and menus allow fast and accurate setup
- USB interface allows connection to PC or laptop for programming or data logging
- Easy to configure automated temperature profiling and control functions
- TX150 can store 1 program with 30 segments, TXF200 stores up to 10 programs containing 100 segments
- Adjustable over-temperature cut-out
- High power integral pump for external fluid circulation (TXF200 variable speed)
- Two-point user calibration for optimum accuracy
- Countdown timer
- Visual, audible and programmable high and low temp alarms
- Socket for external temperature probe and programmable relay

#### Entry level combination

#### Model T100-ST12, range 0 to 100°C, stability $\pm$ 0.05°C

Well specified entry-level model with digital thermostatic control unit and stainless steel tank for straightforward laboratory applications requiring high precision temperature control.

- $\bullet$  Optima  $^{\mathsf{\tiny TM}}$  digital thermostat (T100) for precise temperature control
- Cooling/heating range 0 to 100°C\*\*
- Stability  $\pm 0.05$ °C
- Easy to use rotary dial and two function keys for quick temperature setting and menu navigation
- Excellent temperature stability and uniformity
- 3 programmable temperature presets

#### Mid range combination

#### Model TC120-ST12, range 0 to 120°C, stability $\pm$ 0.05°C

Versatile mid-range model with digital thermostatic control unit and stainless steel tank and a comprehensive specification to suit most applications for high precision temperature control.

- $\bullet$  Optima  $^{\text{\tiny M}}$  digital thermostat (TC120) for precise temperature control
- Integral pump for external fluid circulation
- $\bullet$  Cooling/heating range 0 to 120°C\*\*
- Stability  $\pm 0.05$ °C
- 3 programmable temperature presets
- Easy to use rotary dial and two function keys



BW/65314 plus BW/65476

<sup>\*\*</sup>operation at or below ambient temperatures requires accessory cooling

<sup>\*\*</sup>operation at or below ambient temperatures requires accessory cooling



BW/65318 plus BW/65480

#### High specification example

# Model TXF200-ST26, range -15 to 200°C, stability $\pm$ 0.01°C

High specification model with high performance digital thermostat and stainless steel tank for sophisticated applications requiring complex programming and/or ultra precise temperature control.

Grant

- Optima™ high performance digital thermostat (TXF200) for ultra precise temperature control
- Stability  $\pm 0.01$ °C
- $\bullet$  Cooling/heating range -15 to 200°C\*\*
- Full colour QVGA TFT screen
- $\bullet$  Easy to program via interface or remote via PC or Laptop using Labwise  $^{\scriptscriptstyle\mathsf{TM}}$  software
- Key functions easily accessed via home screen icons



BW/65312 plus BW/65486

#### **Budget** combination

#### Model T100-P12, range ambient + 5 to 99°C, stability $\pm$ 0.05°C

Economy model with digital thermostatic control unit and plastic tank for straightforward applications requiring accurate temperature control.

- Optima<sup>™</sup> digital thermostat (T100) for accurate temperature control
- Cooling/heating range ambient + 5 to 99°C
- Stability  $\pm~0.05^{\circ}C$
- 3 programmable temperature pre sets
- Low liquid protection and over-temperature cut-out

Cat. No.	Model	PRange	Description
BW/65312	T100	0 to 100	Thermostat digital Optima without clamp
BW/65314	TC120	0 to 120	Thermostat digital Optima without clamp
BW/65316	TX150	-15 to 150	Thermostat digital Optima without clamp
BW/65318	TXF200	-15 to 200	Thermostat digital Optima without clamp

<sup>\*\*</sup>operation at or below ambient temperatures requires accessory cooling

Technical Specifications	BW/65312	BW/65314	BW/65316	BW/65318
Optima™ thermostats	T100	TC120	TX150	TXF200
Temperature range C	0 - 100	0 - 120	-15 to 150	-15 to 200
Stability (DIN 12876) @ 70°C °C	± 0.05	± 0.05	± 0.01	± 0.01
Uniformity (DIN 12876) @ 70°C °C	± 0.1	± 0.1	± 0.05	± 0.05
Setting resolution °C	0.1	0.1	0.1	(0.01 with Labwise)
Display	4 digit LE	D	full colour QV	GA TFT
Timer function	=	1 to 9999 mins	1 min to 99 hrs	59 mins
No. of pre-set temperatures	3	3	3	3
Recalibration points	2	2	2	2
Offset adjustment	_	_	•	•
Socket for external probe (TXPEP, TXS	SEP) –	_	•	•
Communications interface	_	_	USB	USB
Programmable	=	_	remote via PC	direct via user interface
_			1 program /	or remote via PC/laptop
			30 segments	10 programs /
				100 segments
Relays	=	_	1	1
Safety overtemperature	fixed		adjustable cut-out	
fluid level — float	•	•	•	•
Alarms	=	•	high and low	high and low
(can be configured to switch a relay)				
Heater power 230 V kW	1.3	1.3	1.9	1.9
120 V kW	1.4	1.4	1.4	1.4
Electrical power 230 V kW	1.4 (50-60 Hz)	1.4 (50 Hz)	2.0 (50 Hz)	2.0 (50-60 Hz)
120 V kW	1.5 (50-60 Hz)	1.5 (60 Hz)	1.5 (60 Hz)	1.5 (50-60 Hz)
Height above tank rim mm	200	200	200	200
Depth below tank rim mm	135	135	135	135
Optima™ thermostat pumps (integra	ıl)			
Maximum pressure water mbar		210	310	530
Maximum flow water L/min		16	18	23 (adjustable flow rate)
Pipe bore inlet/outlet mm		6, 11	6, 11	6, 11

<sup>\*\*</sup>operation at or below ambient temperatures requires accessory cooling

#### S series tanks

Configured to allow dual-position fitting of the control unit for convenient access. Made from stainless steel which is easy to clean and resists corrosion. Outer casing is glass reinforced

plastic which is resistant to common laboratory acids and solvents. Between 60°C and 100°C and below room temperature a lid or layer of polypropylene spheres

should be used. Drain tap fitted on 12L capacity and larger.

Technical Specific	ations				
Code	ST5	ST12	ST18	ST26	ST38
Operating	010	0112	0110	0120	0100
range, °C	0 to 200	0 to 200	0 to 200	-15 to 200 -	15 to 200
Suitable					
immersion					
cooler	CIG	CIG	CIG	C1G, C2G	C1G, C2G
Tank capacity,					
litre	5	12	18	26	38
Top opening,					
l/w, mm	150x150	205x300	385x300	385x300	575x300
Liquid depth,	05 140	05 140	75 100*	105 100*	105 100*
min./max.mm Inner tank dims.,	85x140	85x140	75×130*	125x180*	125x180*
l/w/h, mm	300~150~150	300~150~150	505x300x150	505x300x200	690x300x200
Outer case dims,	30021302130	30021302130	303,300,130	303,300,200	070000000000000000000000000000000000000
I/w/h, mm	330x180x215	360x330x215	540x330x215	540x330x265	730x330x260
Overall dims					
inc. controller					
l/w/h, mm	330x180x395	360x330x395	540x330x395	540x330x405	730x333x450
*Max. depth can be	increased 10mi	m by removing	the circulation	tray, with only sli	ght loss of
performance					

Cat. No.	Code	Description
BW/65474	ST5	Tank, s/s 5 litre
BW/65476	ST12	Tank, s/s 12 litre
BW/65478	ST18	Tank, s/s 18 litre
BW/65480	ST26	Tank, s/s 26 litre
BW/65482	ST38	Tank, s/s 38 litre



ST Model baths

#### P series tanks

Cost effective plastic tanks, designed for use with water, for applications up to 99°C. Rugged construction in robust plastic, double walled for rigidity. Easy to clean.

A lid or layer of polypropylene spheres should be used for operation between 60°C and 100°C and

below room temperature.

Technical Specificatio	ns		
Code	P5	P12	P18
Operating range, °C	amb + 5 to 99	amb + 5 to 99	amb + 5 to 99
Tank capacity, litre	5	12	18
Top opening, I/w, mm	120x150	210x280	280x325
Liquid depth,			
min./max.mm	80x140	80x140	85x140
Inner tank dims.,			
l/w/h, mm	240x160x150	325x280x150	510x290x150
Outer case dims,			
l/w/h, mm	325x235x180	415x350x180	600x350x180
Overall dims			
inc. controller			
l/w/h, mm	390x200x380	415x350x380	600x350x380

Cat. No.	Code	Description	
BW/65484	P5	Tank, plastic 5 litre	
BW/65486	P12	Tank, plastic 12 litre	
BW/65488	P18	Tank, plastic 18 litre	



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BW/65486



BW/654 series



BW/65468

QR series



VR series



RS series

# **OPTIMA** accessories

Lids

Lids help to reduce evaporation and heat loss, and to avoid contamination of samples. Hinged lids can be opened to a stable, vertical position, or lifted off completely.

Technical S	Specification	าร					
Model	PL5	PL12	PL18	STL5	STL12	STL26	STL38
Туре	flat	curved	curved	flat	gabled, hinged	gabled, hinged	gabled, hinged
For bath	P5	P12	P18	ST5	ST12	ST26/ST18	ST38
Material	stainless	plastic	plastic	stainless	stainless	stainless	stainless

Cat. No.	Code	Description
BW/65460	PL5	Lid, s/s flat
BW/65462	PL12	Lid, plastic, curved
BW/65464	PL18	Lid, plastic, curved
BW/65466	STL5	Lid, s/s flat
BW/65468	STL12	Lid, s/s, gabled, hinged
BW/65470	STL26	Lid, s/s, gabled, hinged
BW/65472	STL38	Lid, s/s, gabled, hinged

#### Rack systems

These robust, stainless steel racks allow adaptation of the system to make the best use of the available bath capacity.

В	ath	ST5, P5	ST12,P12	ST18, P18	ST26	ST38
R	acks per bath	1 x QR	2 x VR	4 x VR	4 x VR	6 x VR

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#### QR racks to fit ST5 and P5 baths

Cat. No.	Code	Description
BW/65202	QR-13	Test tube rack 30 x 10-13mm
BW/65204	QR-19	Test tube rack 16 x 16-19mm
BW/65206	QR-24	Test tube rack 10 x 24mm
BW/65208	QR-30	Test tube rack 5 x 30mm
BW/65210	QR-SE	Test tube rack 44 x 0.5ml micro tubes
BW/65212	QR-LE	Test tube rack 35 x 1.5ml micro tubes

#### VR racks to fit baths ST12, P12 and larger

Cat. No.	Code	Description
BW/65214	VR-13	Test tube rack 65 x 10-13mm
BW/65216	VR-19	Test tube rack 36 x 16-19mm
BW/65218	VR-24	Test tube rack 23 x 24mm
BW/65220	VR-30	Test tube rack 14 x 30mm
BW/65222	VR-SE	Test tube rack 102 x 0.5ml micro tubes
BW/65224	VR-LE	Test tube rack 75 x 1.5ml micro tubes

#### Raised shelves

Cat. No.	Code	Description	
BW/65226	RS14	for bath S12	
BW/65228	RS22	for bath \$18	
BW/65230	RS28	for bath S26	
BW/65232	RS38	for bath S38	
BW/65238	SY1	Draining syphon.	
		0 71	

#### Spheres, polypropylene

Provide a floating lid on water baths to minimize evaporation and allows easy immersion of flasks etc

Number of packs required to provide a single layer

SAP2, SAP2S, SAP5 and SAP12 1 SAP18 and SAP26 2 SAP34 3 SAPD 2 SBB AQUA 5 Plus and SBB AQUA 12 Plus 1 SBB AQUA 18 Plus and SBB AQUA 26 Plus 2 JBN5 and JBN12 1 JBN18 and JBN26 2 JBA5 and JB12 1	Bath model	Quantity of packs
SAP34       3         SAPD       2         SBB AQUA 5 Plus and SBB AQUA 12 Plus       1         SBB AQUA 18 Plus and SBB AQUA 26 Plus       2         JBN5 and JBN12       1         JBN18 and JBN26       2	SAP2, SAP2S, SAP5 and SAP12	1
SAPD       2         SBB AQUA 5 Plus and SBB AQUA 12 Plus       1         SBB AQUA 18 Plus and SBB AQUA 26 Plus       2         JBN5 and JBN12       1         JBN18 and JBN26       2	SAP18 and SAP26	2
SBB AQUA 5 Plus and SBB AQUA 12 Plus 1 SBB AQUA 18 Plus and SBB AQUA 26 Plus 2 JBN5 and JBN12 1 JBN18 and JBN26 2	SAP34	3
SBB AQUA 18 Plus and SBB AQUA 26 Plus 2 JBN5 and JBN12 1 JBN18 and JBN26 2	SAPD	2
JBN5 and JBN12 1 JBN18 and JBN26 2	SBB AQUA 5 Plus and SBB AQUA 12 Plus	1
JBN18 and JBN26 2	SBB AQUA 18 Plus and SBB AQUA 26 Plus	2
	JBN5 and JBN12	1
JBA5 and JB12	JBN18 and JBN26	2
	JBA5 and JB12	1
JBA18 2	JBA18	2

Cat. No.	Description	Pk Qty	
BW/85268	Spheres PP 20mm dia.	200	



BW/85268

#### External probe

For use with TX150 and TXF200, for remote temperature control. Flexible nylon probe has a very fast response; 100mm long, 4.5mm dia. Robust stainless steel probe, slower response; 125mm long, 5mm dia. Fitted with 3 metres of cable. Special probes can be supplied for use in corrosive liquids, please enquire.

Cat. No.	Code	Description
BW/65430	TXPEP	Flexible plastic probe, 3m cable
BW/65432	TXSEP	Stainless steel probe, 3m cable



Grant

BW/6543

#### Cooling systems

Cooling systems allow thermostatic baths, circulators and immersion thermostats to operate at or below room temperature, by means of a coil dipped into the bath. The coil is made of nickel-plated copper, and is designed to fit in the bath such that it doesn't impinge on the working area (except ST5, BW/65474)

#### Refrigerated immersion coolers (C1G and C2G)

Refrigerated coolers consist of a cooling coil connected by a flexible pipe to a refrigeration unit, which is housed in an outer case; immersion coolers extract heat continuously, with temperature control carried out by the bath's control unit.



#### Heat exchange coil (CW5)

continuous operation above 40°C.

The CW5 is designed to be attached to a supply of cooling tap water, or a refrigerated circulator.

Technical Specifications				
Code	C1G	C2G	CW5	
Temperature range, °C	0 to 40*	-15 to 40*	2°C above	
Minimum temperature	0 ST26,	ST38: -15°C	coolant temp. 2°C above	
with ST series tanks, °C			coolant temp.	
Cooling power @20°C	350W	400W	n/a	
Cooling power @0°C	110W	320W	n/a	
Cooling power @-10°C	n/a	170W	n/a	
Overall consumption,VA	300	500	n/a	
Dimensions, d/w/h, mm	460x305x225	460x305x225	-	
Flexible pipe, length, mm	925	925		
Coil, diameter/length, mm	77x55	77x105	77x55	
Pipe bore inlet/outlet, mm			7	
Electrical supply V/Hz	220-240/50	220-240/50		
* Note: The cooling coil may be a	ontinuously immersed	in liquids up to 100	°C with the cooler	

Cat. No.	Code	Description
BA/65110	CIG	Refrigerated cooler
BA/65112	C2G	Refrigerated cooler
BA/65114	CW5	Water coil

switched off, and may be used to cool liquid down from 100°C, but it is not designed for



BA/65114

BA/6544 series

# Grant R2

BA/6544 with BW/65314

# OPTIMA series of modular low temperature refrigerated circulators and baths



Grant's range of powerful and efficient low temperature circulators and baths offers unrivalled system flexibility by allowing the user to combine one of the five new refrigeration base units with any of the popular Optima™ series thermostats. Combined with a wide range of accessories, Grant can offer a complete solution for virtually any controlled low temperature application.

With over seventy configurations to choose from:

#### 1) Select the thermostat

Using the Optima<sup>TM</sup> thermostats detailed on pages 45-46.

#### 2) Select the refrigeration unit

Quality is the keynote in the development of this range of powerful and efficient refrigeration units from Grant. Choose between two units with minimum operating temperatures from as low as -47°C. Quiet in operation, robust and corrosion resistant they offer long service life. All models are supplied with a bridge plate for mounting the thermostat unit, a removable lid and a detachable front grille for easy cleaning of the condenser. A host of other features are available, including fitted drain valves and refrigeration on/off control during a heating and cooling program.

#### 3) Select the add-on accessories

A comprehensive range of accessories is available, enabling the user to configure the system to suit any specific requirements. Choose from the full range of Grant accessories including: VTP/Optima pumps and Recirculating chillers.

#### Refrigeration units

Grant

The two refrigeration units offer:

Ozone friendly refrigerant, rapid cool down, quiet operation and a choice of 230V and 115V models PLUS a host of features:

- Constructed throughout from corrosion resistant materials with a stainless steel internal tank
- Removable front grille allows easy access to the condenser and the liquid drain valve for convenient routine cleaning and liquid changes
- All units are supplied with a bridge plate for mounting the thermostat and a removable lid with fitted handle
- Liquid drain valve
- 5°C thermostat on/off switch to stop the tank freezing when operating with water
- Dual-position fitting of thermostat for convenient access
- High-pressure switch supplied on R4 and R5 models
- By purchasing a TX150 or TXF200 thermostat, refrigeration units can be switched on and off during a heating and cooling programme.

Note: The refrigeration unit can be switched off independently of the thermostat, to allow heating only applications. All the refrigeration base units can be used up to a maximum temperature of  $100^{\circ}\text{C}$ .

Technical Specifications				
Model	R4	R5		
Temperature range ambient 20°C	-30 to 100	-47 to 100		
Relay control for refrigeration on/off	yes	yes		
Cooling power ambient 20°C				
@ 20°C	900W	1100W		
@ 0 °C	500W	1050W		
@ -10°C	300W	800W		
@ -20°C	180W	580W		
@ -30°C	40W	370W		
@ -40°C	~	130W		
@ -47°C	~	25W		
Refrigerant	R134a	R404a		
Weight Kg	37.8	47		
Overall dimensions wxdxh mm	390/490/530	415/575/585		
Tank capacity L	20	12		
Top opening mm	230/305	260/115		
Liquid depth min/max mm	85/140	125/180		
Drain	yes	yes		
Over temperature cut-out 100°C limit	yes	yes		
Water freezing protection thermostat	yes	yes		
Refrigeration				
high pressure switch	27bar	27bar		
Electrical power max 230V W	850 (50Hz)	1400 (50Hz)		
Electrical power max 120V W	780 (60Hz)	n/a		
EMC emissions Class	В	В		

Cat. No.	Code	Description
BA/65446	R4	Refrigeration unit 20 litre to -30°C
BA/65448	R5	Refrigeration unit 12 litre to -47°C

#### Refrigerated/heating circulating baths

A range of innovative, eco-friendly refrigerated/heating circulating baths offering significant running cost savings whilst delivering powerful cooling. A choice of models with temperature ranges -30°C to 200°C (model dependent) All products in the LT Ecocool™ range are supplied assembled as ready to use kits, complete with accessory hosing\*, clips and connectors as standard

\* Temperature range of hosing supplied: -40 to 100°C (can be cut to length as required).

#### Applications:

Industrial

Pharmaceutical Mini pilot plant reactors

Education Rotary evaporator cooling, replacement of running tap water cooling,

immersing small samples, photometry, chromatography systems

Grant

QC testing, sample preparation, general cooling, reaction chemistry,

temperature control, semi-conductor manufacturing, rheometry

Food Refractometry

Life-science Electrophoresis cooling
High temperature cooling Active up to 200°C

- eco mode optimises the cooling control needed, enabling rapid cool down when required
- Full colour 5 language QVGA TFT display on both the ecocool 150 and ecocool 200 units
- True energy saving against competitor units that only switch the compressor off
- Modern, sleek, attractive design
- Thermostat and chiller work in harmony, neither will operate alone, eliminating any danger of overheating or freezing
- Intuitive user interface
- Single front switch for user convenience
- No side vents, located to suit the user, not the unit

Technical Specifications			
Model	LT Ecocool 100	LT Ecocool 150	
Temperature range	-20 to 100°C	-25 to 150°C	
Temperature stability	±0.05°C	±0.02°C	
Flow rate (max)	17 L/min	14 to 22 L/Min (adjustable)	
Pump pressure (max)	250 mbar	530 mbar	
Tank volume	5 Litre	6 Litre	
Calibration points	2	5	
Cooling power (Typical) @ 20°C	250W	350W	
@ 10°C	230W	330W	
@ 0°C	185W	230W	
@ -10°C	115W	109W	
@ -20°C	45W	50W	
Programs		1 x 30 segments via	
		Labwise™	
Communications interface		USB	
Temperature probe socket		6 pin mini DIN	
Display	4 Digit LED	Full colour QVGA TFT	
Languages		5 (English, French, German,	
		Italian and Spanish	
Timer	1 min to 99 hrs 59	Pmins	
Temperature presets	3		
Alarms	High	High and low	
Safety	Adjustable over tempera		
Ready to use kits	Assembled and supplied with standard tubing, insulation,		
	clips and connec	tors	
Weight	29Kgs		
Dimensions	640 x 430 x 245		
Electrical power (max) 120V/230V	2.16/2.07 (50-60Hz)	2.28/2.76 (50-60Hz)	

Cat. No.	Description
BA/65460	Refrigerated/heating circulating bath LT Ecocool 100, capacity 5 litres, 100°C
BA/65462	Refrigerated/heating circulating bath LT Ecocool 150, capacity 6 litres, 150°C
Accessories Cat. No.	Description
BA/65466	Plastic flexible external probe for use with LT Ecocool 150
BA/65468	Stainless steel external probe for use with LT Ecocool 150
BA/65470	Vertical turbine pump for LT Ecocool bath, 240v, 1000mb
BA/65472	Vertical turbine pump for LT Ecocool bath, 240v, 1650mb
BA/65474	Insulated hose kit, -40 to 100°C, 2 x 2 meter lengths, can be cut to size, 10mm internal diameter x 14mm external diameter
BA/65476	High temperature insulated hose kit, -50 to 200°C, 2 x 2 meter lengths, can be cut to size, 8mm internal diameter x 11mm external diameter



BA/65460



BA/65470



BA/65474

BW/65330

 $\,$  BW/65332 & BW/65334 with accessories

# Shaking water bath, OLS26, a combined orbital & linear Grant shaking bath for ultimate flexibility and usability

- Unique magnetically coupled shaking mechanism, for quiet, reliable operation
- 0 to 99°C\* operation (requires accessory cooling (CC26) for below ambient operation)
- Adjustable shaking speed, over a wide range
- Adjustable linear stroke length, choice of three settings
- Dual display shows temperature and shaking speed
- Easy to switch between orbital and linear shaking modes
- Polycarbonate lid included
- Robust and reliable with 3 year guarantee extendable to 5 years
- Shaking tray included

#### Shaking water bath, linear, LSB12 and LSB18

The LSB shaking bath range offers a simple, safe and versatile solution for linear shaking applications in the laboratory

- Precision digital temperature control
- Ambient +5 to  $99^{\circ}$ C operating range
- Stability and uniformity ±0.1°C
- Adjustable shaking speed
- Easy to insert shaking tray, even when loaded
- Polycarbonate lid included
- Shaking tray included

Technical Specifications			
Model	OLS26	LSB12	LSB18
Minimum working volume (L)	9	5	7.5
Temperature range °C	0 to 99*	ambient +	5 to 99
Stability @ 70°C	$\pm 0.1$	±0.	1
Uniformity @ 70°C	$\pm 0.1$	±0.	1
Temperature setting/display °C	digital/2 x LED	digital/	LED
Temperature display resolution °C	0.1	0.1	
Orbital Shaking speed rpm	20 to 200** -		
Linear Shaking speed rpm		20 to 200**	
Orbital shaking radius mm	9	n/a	l
Linear shaking, stroke length mm	18, 28 and 36	20	
Shaking speed setting/display digital/LED		digital/	LED
Shaking speed display resolution rpm	1	1	
Shaking tray area, mm	380x235	240x235	420x235
Minimum working depth mm	70	60	
Overall power consumption kW @ 230	)V 1.4	0.8	1.4
Supply voltage	120 or 230V	120 or 2	230V
Safety over temperature/low liquid level		Adjustable cut	out
* Accessory cooling required for operat	ion around/below a	mbient	
**Depending on load			

Cat. No.	Code	Description
BW/65330	OLS26	Shaking water bath, orbital and linear
BW/65332	LSB12	Shaking water bath, 12 litres, linear only
BW/65334	LSB18	Shaking water bath, 18 litres, linear only

1	Notes
-	
-	
-	
-	

#### Accessories

#### Cooling systems

Grant

Accessory cooling is required for operation around or below room temperature.

#### CW26 heat exchange coil

The CW26 is designed to be attached to a supply of cooling tap water or a refrigerated circulator. It can be used down to 2°C above the temperature of the coolant. The coil is underneath the shaking tray.

#### CC26 immersion cooler

The CC26 is a refrigerated cooler; the coil fits underneath the shaking tray.

Cooling rate will depend on the ambient temperature, the supply voltage and the volume of liquid used. For use with OLS26 only

#### CC26 immersion cooler

Technical Specifications		
Liquid temperature range °C	0 to 35	
Extraction rate @ 20°C	350 W	
@ 0°C	250 W	
Power consumption VA	500	
Dimensions: case lxwxh, mm	410x285x225	
Flexible pipe length, mm	925	

Cat. No.	Code	Description
BS/65310 BS/65312	CW26 CC26	Heat exchange coil Immersion cooler
D3/03312	CC26	inimersion cooler



BS/65312 with bath

#### Lid

The stainless steel LS200 sloping lid is recommended for use above 60°C.

Cat. No.	Code	Description	
BS/65406	LS200	Lid for OLS26 only	



BS/65406

#### Base tray

Perforated stainless steel, allows bath to be used as an unstirred bath.

Cat. No.	Code	Description
BS/65362	SBT12	Perforated tray for model LSB12 bath only
BS/65364	SBT26	Perforated tray for model OLS26 bath



BS/65364

#### Tray, flask

Flask tray with threaded holes for 25 to 1000ml flask clips, SH plate holders and SR racks.

Maximum number of one size of clips that can be attached to each tray.

Clip size	TF12	TF18	TF26
25ml	18	33	28
50ml	14	26	24
100ml	9	17	15
250ml	5	14	8
500ml	4	6	6
1000ml	2	4	3
SH/DWP	2	4	4

Cat. No.	Code	Description
BS/65314	TF12	Flask tray for LSB12
BS/65316	TF18	Flask tray for LSB18
BS/65318	TF26	Flask tray for OLS26



BS/65318 with clips and glassware



BS/6532

#### Clips, flask

Flask clips for use with TF series trays.

Cat. No.	Code	Description
BS/65320	SC-25	Spring clamp for 25ml flasks
BS/65322	SC-50	Spring clamp for 50ml flasks
BS/65324	SC-100	Spring clamp for 100ml flasks
BS/65326	SC-250	Spring clamp for 250ml flasks
BS/65328	SC-500	Spring clamp for 500ml flasks
BS/65330	SC-1000	Spring clamp for 1000ml flasks
	BS/65320 BS/65322 BS/65324 BS/65326 BS/65328	BS/65320 SC-25 BS/65322 SC-50 BS/65324 SC-100 BS/65326 SC-250 BS/65328 SC-500



BS/65338

#### Tray, test tube

Test tube tray holds SR test tube and microtube racks or can be used as a plain tray.

Cat. No.	Code	Description
BS/65334	TS12	Test tube tray for LSB12, holds 3 SR test tube racks
BS/65336	TS18	Test tube tray for LSB18, holds 5 SR test tube racks
BS/65338	TS26	Test tube tray for OLS26, holds 5 SR test tube racks



BS/65348

#### Test tube racks

Cat. No.	Code	Description
BS/65340	SR-10	Test tube rack for 48 x 10mm tubes
BS/65342	SR-13	Test tube rack for 44 x 13mm tubes
BS/65344	SR-16	Test tube rack for 24 x 16mm tubes
BS/65346	SR-19	Test tube rack for 21 x 19mm tubes
BS/65348	SR-25	Test tube rack for 12 x 25mm tubes
BS/65350	SR-30	Test tube rack for 10 x 30mm tubes
BS/65352	SR-SE	Test tube rack for 119 x 0.5ml microtubes
BS/65354	SE-LE	Test tube rack for 48 x 1.5ml microtubes



BS/65360

#### Universal tray with springs

Designed for ultimate versatility as to the types and sizes of vessel which can be accommodated. Adjustable spring configuration for maximum flask capacity typically 45 x 25ml,  $28 \times 50$ ml,  $18 \times 100$ ml,  $11 \times 250$ ml,  $6 \times 500$ ml or  $3 \times 1$ litre flasks.

Cat. No.	Code	Description
BS/65356	TU26	Universal flask tray for OLS26
BS/65358	TU12	Universal flask tray for LSB12
BS/65360	TU18	Universal flask tray for LSB18

#### **Batteries**

#### Batteries, alkaline

Long lasting power alkaline manganese batteries. These leak proof batteries have a long shelf life.

Cat. No.	Size	Volts	Pk Qty	
BA/93002	D	1.5	2	
BA/93004	AAA	1.5	4	
BA/93006	AA	1.5	4	
BA/93008	С	1.5	2	
BA/93010	9V	9	each	



BA/93002

#### Beads

#### Beads, glass

Glass beads, designed to reduce bumping during boiling, refluxing and other distilling operations, can also be used in absorption columns, 5mm diameter.

Cat. No.	Description
BG/80000	Glass boiling, anti-bumping beads, 5 mm diameter, pack of 1 Kg

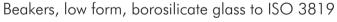


#### Beakers, low form, 1000 series

**PYREX**®

Pyrex borosilicate glass with spout and approximate graduations. To ISO 3819.

Cat. No.	Code	Capacity, ml	Height, mm	Dia, mm	Pk Qty
BE/12028	1000/05M	10	35	26	10
BE/12034	1000/11M	25	50	34	10
BE/12040	1000/02M	50	60	42	10
BE/12046	1000/04D	100	70	50	10
BE/12050	1000/06D	150	80	60	10
BE/12056	1000/10D	250	95	70	10
BE/12062	1000/14D	400	110	80	10
BE/12070	1000/18D	600	125	90	10
BE/12074	1000/20D	800	135	100	10
BE/12076	1000/22D	1000	145	105	10
BE/12080	1000/28D	2000	185	130	10
BE/12084	1000/30D	3000	210	150	4
BE/12088	1000/34D	5000	270	170	1
BE/12090	1000/38D	10000	350	217	1



With spout and approximate graduations.

Cat. No.	Capacity, ml	Pk Qty	
BE/62034	25	10	
BE/62040	50	10	
BE/62046	100	10	
BE/62056	250	10	
BE/62062	400	10	
BE/62070	600	10	
BE/62076	1000	10	
BE/62080	2000	4	

#### Beakers, low form, heavy duty

**PYREX**®

Pyrex borosilicate glass with reinforced rims and spouts, thicker walls and heavier bases for longer life and increased user safety. With approximate graduations.

Cat. No.	Code	Capacity, ml	Pk Qty
BE/12150	1003-150	150	12
BE/12156	1003-250	250	12
BE/12162	1003-400	400	12
BE/12170	1003-600	600	6
BE/12176	1003-1L	1000	6
BE/12180	1003-2L	2000	4
BE/12184	1003-3L	3000	1
BE/12186	1003-4L	4000	1
BE/12188	1003-5L	5000	1



BE/120



BE/62076



BE/12162



BE/122

#### Beakers, tall form, 1015 series

Pyrex borosilicate glass with spout and approximate graduations. To ISO 3819.

Cat. No.	Code	Capacity, ml	Pk Qty
BE/12240	1015/02M	50	10
BE/12246	1015/04D	100	10
BE/12250	1015/06D	150	10
BE/12256	1015/10D	250	10
BE/12262	1015/14D	400	10
BE/12270	1015/18D	600	10
BE/12276	1015/22D	1000	10
BE/12280	1015/26D	2000	10



Beakers, tall form, borosilicate glass to ISO 3819

With spout and approximate graduations.

Cat. No.	Capacity, ml	Pk Qty	
BE/62140	50	10	
BE/62146	100	10	
BE/62156	250	10	
BE/62162	400	10	
BE/62170	600	10	
BE/62174	800	10	
BE/62176	1000	10	
BE/62180	2000	6	
BE/62184	3000	6	



BE/12366

#### Beakers, conical, borosilicate glass

Pyrex borosilicate glass with spout.

Cat. No.	Code	Capacity, ml	Pk Qty
BE/12356	1020/06D	250	10
BE/12366	1020/16D	500	10



**PYREX**®

# **PYREX**®









BE/162

## Beakers, plastic

#### Beakers, tapered style, moulded graduation, polypropylene



- High clarity PP is autoclavable at 121°C.
- Durable and economical with distinct moulded graduations.
- Precise non-drip pouring spouts.
- S.P.I. recycling code and date of manufacture imprints.

Cat. No.	Code	Capacity, ml	Sub divs, ml	Pk Qty
BE/16234	BPM0025P	25	5	10
BE/16240	BPM0050P	50	10	10
BE/16246	BPM0100P	100	20	10
BE/16256	BPM0250P	250	50	10
BE/16262	BPM0400P	400	50	10
BE/16266	BPM0500P	500	50	10
BE/16270	BPM0600P	600	50	5
BE/16276	BPM1000P	1000	100	5
BE/16280	BPM2000P	2000	200	1



BE/163

#### Beakers, tapered style, printed graduations, polypropylene



Azlon

- Tapered stacking style space saving, easy to handle
- High clarity PP autoclavable at 121°C
- Durable and economical with crisp clear blue easy to read indelible graduations
- Precise non-dripping pouring spouts safe and easy to use
- Full range of sizes, 25ml to 3000ml all with SPI recycling codes imprinted

Cat. No.	Code	Capacity ml	Sub-div. ml	Base x rim dia mm	Pk Qty
BE/16334	BPB0025P	25	5	32 x 41.5	10
BE/16340	BPB0050P	50	10	39 x 50.5	10
BE/16346	BPB0100P	100	20	48.5 x 61.5	10
BE/16356	BPB0250P	250	50	65.5 x 80.5	10
BE/16362	BPBO400P	400	50	74.5 x 92.5	10
BE/16366	BPB0500P	500	50	84 x 102.5	10
BE/16370	BPB0600P	600	50	84 x 104	5
BE/16376	BPB1000P	1000	100	99 x 120	5
BE/16380	BPB2000P	2000	200	125 x 163	1



BE/963

#### Beakers, polypropylene, three pouring spouts

Tricorn beakers with three pouring spouts and approximate moulded graduations.

Cat. No.	Description	Pk Qty
BE/96340	Beaker, PP, Tri-corn, 50ml	25
BE/96346	Beaker, PP, Tri-corn, 100ml	25
BE/96356	Beaker, PP, Tri-corn, 250ml	25
BE/96362	Beaker, PP, Tri-corn, 400ml	25
BE/96374	Beaker, PP, Tri-corn, 800ml	25
BE/96376	Beaker, PP, Tri-corn,1000ml	25

# Beakers, classic design, printed graduations, polypropylene



- Azlon, designed to BS5404: Part 1 1976.
- Good chemical resistance.
- Can withstand temperatures up to 135°C.
- Graduations, indication of material and maximum heat resistance, are clearly printed using indelible solvent resistant blue ink.

Cat. No.	Code	Capacity, ml	Sub divs, ml	Pk Qty
BE/16428	BDA208P	10	1	10
BE/16434	BDA212P	25	2.5	10
BE/16440	BDA218P	50	5	10
BE/16446	BDA224P	100	5	10
BE/16456	BDA230P	250	10	10
BE/16462	BDA234P	400	20	10
BE/16466	BDA236P	500	20	10
BE/16470	BDA238P	600	20	5
BE/16476	BDA240P	1000	20	5
BE/16480	BDA242P	2000	50	1

### Beakers, low form, printed graduations, PMP (TPX)

Conforms to ISO 7056-1981 (E) and BS5404:part 1. EEC 90/128 92/93 and FDA 21 CFR 177.1520. Crystal clear. Autoclavable. Will withstand 170°C for short periods. Permanent blue graduations. Excellent chemical resistance.

Cat. No.	Code	Capacity, ml	Sub divs, ml	Pk Qty
BE/46834	1720	25	1	10
BE/46840	1721	50	2	10
BE/46846	1722	100	5	10
BE/46856	1723	250	10	10
BE/46866	1724	500	10	5
BE/46876	1725	1000	20	1
BE/46880	1726	2000	50	1
BE/46884	1727	3000	500	1
BE/46888	1728	5000	500	1

#### Beakers, PTFE

Beakers, isostatically moulded with super smooth internal finish and pouring spout. Maximum working temperature: 280°C.

Cat. No.	Capacity, ml	Dimensions, Ht x Od, mm
BE/40028	10	33 x 24
BE/40034	25	47 x 32
BE/40040	50	55 x 43
BE/40046	100	68 x 54
BE/40056	250	97 x 66
BE/40062	400	106 x 80
BE/40066	500	125 x 80
BE/40070	600	125 x 90
BE/40076	1000	155 x 100
BE/40080	2000	205 x 125

## Beakers, metal

#### Beakers, with spout, aluminium

Cat. No.	Capacity, ml	Dia x Ht, mm
BE/94256	250	67 x 76
BE/94266	500	82 x 102
BE/94276	1000	102 x 124
BE/94280	2000	127 x 165
BE/94288	5000	178 x 203

#### Beakers, with spout, stainless steel

Cat. No.	Capacity, ml	Dia x Ht, mm
BE/94354	200	60 x 75
BE/94360	350	65 x 115
BE/94368	550	75 x 125
BE/94371	700	75 x 165
BE/94376	1000	110 x 125
BE/94377	1250	100 x 165
BE/94380	2000	125 x 180
BE/94382	2500	150 x 160
BE/94388	5000	185 x 220



BE/164



BE/468



BE/400



BE/943

BH/15102

BH/15150 in situ



BH/151

#### **Block heaters**

#### Block heaters, digital, SBH:D



- Three block model available for extra capacity
- Digital setting and display
- Uniform and stable temperatures

Designed for the precise heating of test-tubes, micro centrifuge tubes, cuvettes and microtitre plates. The bright, easy to read LED display facilitates very easy setting of the required temperature and also accurate monitoring of the actual temperature. Excellent temperature stability and uniformity is maintained via sensitive electronic controls. Temperature range ambient +8°C to 130°C or 200°C. Heats to 100°C in less than 12 minutes. Supplied without blocks.

Technical Specifications			
	SBH130D	SBH200D	SBH200D/3
Max. Temp	130°C	200°C	200°C
Number of blocks	2	2	3
Temp. stability at 37°C	±0.1°C	±0.1°C	±0.1°C
Uniformity within block	±0.1°C	±0.1°C	±0.1°C
Display resolution	0.1°C	0.1°C	0.1°C
Dimensions, mm,	235 x 280	235 x 280	310 x 280
$(w \times l \times h)$	x 115	x 115	x 115
Net weight (without blocks)	2.3kg	2.3kg	3.2kg
Heater power	300W	300W	450W
Electrical supply	230V, 50Hz	230V, 50Hz	230V, 50Hz

Cat. No.	Code	Description
BH/15102	SBH130D	Block heater, 2 block, 130°C
BH/15104	SBH200D	Block heater, 2 block, 200°C
BH/15106	SBH200D/3	Block heater, 3 block, 200°C

#### Safety covers

Tough Perspex® covers. Easily fitted without using tools. Protects the user from 'spitting' tubes, and improves temperature stability by preventing draughts.

Cat. No.	Code	Description
BH/15150	SBH/2	Safety cover for 2 block models
BH/15152	SBH/3	Safety cover for 3 block and dual control models

#### Aluminium blocks



2stuart

For use with Stuart block heaters. Manufactured from anodized aluminium and all with a separate hole to accommodate a thermometer if desired. All blocks\* have dimensions (w x l x h) of 75 x 95 x 50mm and can be used in any combination.

Cat. No.	Code	Tube	No. of holes	Hole size, (dia. x depth) mm
BH/15112	SHT1/0	Plain block co	an be drilled as require	e
BH/15114	SHT1/10	10mm	20	10.5 x 47
BH/15116	SHT1/12	12mm	20	12.6 x 47
BH/15118	SHT1/12/33	12mm	20	12.6 x 33
BH/15120	SHT1/13	13mm	20	13.5 x 47
BH/15122	SHT1/16	16mm	12	16.5 x 47
BH/15124	SHT1/19	19mm	8	19.5 x 47
BH/15126	SHT1/20	2ml tubes	20	10.5 x 33
BH/15128	SHT1/21	Block with	removable channels	
		for glass and	d disposable cuvettes	
BH/15130	SHT1/22	1.5ml tubes	20	10.7 x 14 (9° taper)
BH/15132	SHT1/25	25mm	6	25.5 x 47
BH/15134	SHT1/28	28mm	6	28.0 x 47
BH/15136	SHT1/30	0.5ml tubes	30	7.8 (9° taper)
BH/15138	SHT1/30/1	30mm	4	30.1 x 47
BH/15140	SHT1/33	33mm	4	33.2 x 47
BH/15142	SHT1/48	0.2ml tubes	48	6.1 (9° taper)
BH/15144	SHT1/80	0.2ml strip	10 x 8	-
BH/15146	SHT1/96	96 well plate	_	7.5 (9° taper)
BH/15148	SHT1/384	384 well plate	-	3.6 (9° taper)
* Excluding SHT1,	/96 and SHT1/3	84 (150 x 95 x 61 n	nm).	

#### Dri-Block® heaters

Techne Dri-Block® heaters are the economical answer to every laboratory's need for a compact constant temperature heater suitable for test tubes, cuvettes, microcentrifuge tubes, 96 well plates and other small containers.



Dri-Blocks are particularly suitable for microbiology and clinical laboratories for incubation, boiling, inactivation, wet ashing, sample concentration, enzyme analysis and other general uses. They are also used for a variety of industrial applications.

- Temperature range up to 200°C
- Wide range of interchangeable insert blocks available to accommodate a variety of tubes
- Insert blocks for microcentrifuge tubes and 96 well plates available
- Zero voltage switching, all solid state control
- Insert block removal/extraction tool
- Models available with analogue or digital control.

Dri-Block® heater units have a recessed chamber to hold interchangeable insert blocks which must be purchased separately, see page 62.

Heat up rate on all units is rapid. Independent lights indicating mains power, heater action and overtemperature conditions are incorporated and an on/off switch is mounted on the rear panel. The units are light in weight and have extremely efficient insulation to ensure that the case remains cool enough to handle even at maximum operating temperatures.

All Techne products are designed and manufactured under BS EN ISO 9001:1994. They conform to the EMC and low voltage directives and all important RF interference and electrical safety regulations. All units are 120/230V 50-60 Hz

Technical Specifications						
	DB-2A	DB-3A	DB-2D	DB-3D	DB-4D	
Temp. range	25 - 100°C	25 - 200°C	25 - 100°C	25 - 200°C	Amb200°C	
Temp. stability						
@ 40°C	±0.05°C	±0.1°C	±0.05°C	±0.1°C	±0.1°C	
Temp.	Rotary	Rotary				
setting	graduated	graduated	Digital	Digital	Push button	
T	dial	dial	D. JIED	D. JIED	0	
Temp.	No	No	Red LED	Red LED	Orange	
display			4 digit	4 digit	LED 4 digit	
Uniformity within block						
at 40°C	0.2°C	0.2°C	0.2°C	0.2°C	0.1°C	
Set point accuracy	±2°C	±2°C	±1°C	±1°C	±1°C	
Max. No. blocks	2	3	2	3	4	
Heat up time,						
30 - 37°C	8 min	8 min	8 min	11 min	3 min	
Heat up time,						
30 - 56°C	9 min	12 min	9 min	15 min	11 min	
Heat up time,						
30 − max °C	12 min	30 min	12 min	25 min	15 min	
Size L x W x H	202x260	279x260	202x260	279x260	356x260	
(mm)	x105	x105	x105	x105	x105	

Cat. No.	Code	Description
BH/65504	DB2-A	ambient +5°C - 100°C analogue, 2 place
BH/65508	DB3-A	ambient +5°C - 200°C analogue, 3 place
BH/65510	DB2-D	ambient +5°C - 100°C digital, 2 place
BH/65512	DB3-D	ambient +5°C - 200°C digital, 3 place
BH/65518	DB4-D	ambient +5°C - 200°C digital, 4 place



BH/65504



BH/65508



BH/65510



BH/65512



BH/65518



BH/655



BH/65512

## Dri-Block® heaters, Accessories, Aluminium blocks

For use with Techne Dri-block®heaters. These blocks are made of an aluminium alloy with excellent thermal conductivity and are drilled with a choice of different hole sizes for tubes or containers. Two alternative sizes, undrilled, are available for customers who wish to machine to their own requirements. Each aluminium alloy insert block has a threaded thermometer hole which also accepts the insert block extraction tool for ease of removal from the heated chamber

TECHNE

Cat. No.	Part Number	Tube Size (diam)	Number of Holes
Size 95 x 76 x 51	mm		
BH/65540	F3501	Plain Block	None
BH/65542	F3502	6mm	30
BH/65544	F3503	10mm	20
BH/65546	F3504	12mm	20
BH/65548	F3505	13mm	20
BH/65550	F3506	15mm	12
BH/65552	F3507	16mm	12
BH/65554	F3508	19mm	8
BH/65556	F3509	25mm	6
BH/65558	F3510	10mm cuvettes 2 channels	
BH/65560	F4461	9mm & 7mm	10 & 20
BH/65562	F4462	24mm	6
BH/65564	F4463	26mm	6
BH/65566	F4464	1.5ml micro tubes	20
BH/65568	F4465	0.5ml micro tubes	30
BH/65570	F4466	Plastic spacer	None
BH/65572	F4470	2.0ml micro tubes	20
BH/65574	F4471	0.2ml micro tubes	72
BH/65576	F4476	Block for Gelation timer 1 san	nple cup
BH/65588	F4460	Plain block	thermometer hole only
Size 95x151x61n	nm		
BH/65584	F4473	Block for 96 x 0.2ml micro	
		tubes or 96 well plate	96 wells
Size 95 x 225 x 5	i1mm		
BH/65586	F3512	Plain block*	thermometer hole only
Size 95x151x48n	nm		
BH/65590	F4474	1.0ml Porvair Plate	96 wells
* For use with DB-	-3 and DB-3A only		

Notes	

#### Dri-Block®heaters, Sample concentrators

Designed to be used with Techne's 3 block Dri-Blocks® the sample concentrator accelerates the concentration of large numbers of samples achieving in minutes what would traditionally take several hours. As the samples are heated, gas is passed via the unique patented gas chamber through hypodermic needles on to the surface of the test solution. This technique is particularly useful in the preparation of samples for analytical techniques including drug screening, hormone assay, chromatographic analysis and scintillation counting.

TECHNE

The Sample Concentrators consist of a fully adjustable gas reservoir which mounts over a Dri-Block® heater with a temperature range of 25°C-200°C; the samples can then be heated to the required temperature to assist evaporation.

The standard needles are 127mm long and set in a silicone rubber matrix enabling their position to be changed to accommodate different tube configurations. PTFE coated needles are available for corrosive solutions.

The gas chamber is suitable for use with most gases and may be adjusted to suit the level of liquid in the sample tubes which should not exceed 2psi.

Both units measure 295 x 240 x 530mm (I x w x h)

Block heaters, aluminium insert blocks and needles are not included with the sample concentrator and must be ordered separately.

Two models are available; firstly, model FSC400D uses either Dri-Block® heater BH/65508 or BH/65512 which accepts blocks BH/65542 to BH/65556 or BH/65560 to BH/65568. Ideally, all 3 positions on the block heater should be used to avoid damage to the sample tubes and to prevent heat loss. It is advisable to fill any blank positions with plain block BH/65540

The second model is FSC496 and again uses Dri-Block® heater BH/65508 or BH/65512 which accepts a single block either BH65584 or BH/65590 plus spacers BH/655570 should be used for optimum performance and prevent tube damage

Suitable needles for model FSC400D are either BH/65526 or for corrosive samples, PTFE coated needles BH/65530, and for model FSC496D they are BH/65224 and BH/65528 respectively.

Cat. No.	Code	Description
BH/65520	FSC400D	Sample concentrator standard
BH/65522	FSC496D	Sample concentrator 96 well
Needles		
BH/65524	F7209	76mm
BH/65526	F7210	127mm
BH/65528	FSC4NCS	PTFE coated 76mm
BH/65530	FSC4NCL	PTFE coated 127mm



BH/65520 with block heater

#### Boats, combustion

#### Boat, combustion

Porcelain combustion boats 14mm wide.

Cat. No.	Length, mm	Height, mm
BO/93202	90	8
BO/93204	103	9



BO/9320



BO/3282

BO/3289

## Bottles, glass

Bottles, reagent, narrow neck, polythene stopper.

(volac)

Available in clear and amber glass

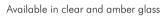
Cat. No.	Code	Capacity, ml	Neck	Pk Qty	
Clear glass					
BO/32820	RP705/A/10	30	16/16	10	
BO/32822	RP705/B/10	50	16/16	10	
BO/32824	RP705/C/10	100	16/16	10	
BO/32826	RP705/D/10	250	24/20	10	
BO/32828	RP705/E/2	500	24/20	2	
BO/32830	RP705/F/2	1000	29/32	2	
Amber glass					
BO/32890	RP705/AM/B/10	50	16/16	10	
BO/32892	RP705/AM/C/10	101	16/16	10	
BO/32894	RP705/AM/D/10	250	24/20	10	
BO/32896	RP705/AM/E/2	500	24/20	2	
BO/32898	RP705/AM/F/2	1000	29/32	2	



BO/3287



Bottles, reagent, narrow neck, glass stopper





**MBL**®

Code	Capacity, ml	Pk Qty
GS705/A/10	30	10
GS705/B/10	50	10
GS705/C/10	100	10
GS705/D/10	250	10
GS705/E/2	500	2
GS705/F/2	1000	2
GS705/AM/B/10	50	10
GS705/AM/C/10	100	10
GS705/AM/D/10	250	10
GS705/AM/E/2	500	2
GS705/AM/F/2	1000	2
	G\$705/A/10 G\$705/B/10 G\$705/C/10 G\$705/D/10 G\$705/E/2 G\$705/F/2 G\$705/AM/B/10 G\$705/AM/C/10 G\$705/AM/D/10 G\$705/AM/E/2	G\$705/A/10 30 G\$705/B/10 50 G\$705/C/10 100 G\$705/D/10 250 G\$705/E/2 500 G\$705/F/2 1000 G\$705/AM/B/10 50 G\$705/AM/C/10 100 G\$705/AM/D/10 250 G\$705/AM/D/10 250 G\$705/AM/E/2 500



BO/126

# Reagent bottles, soda glass, narrow neck with PE stopper, packs of 10

Cat. No.	Code	Capacity, ml
Clear glass		
BO/12620	SBC100	50
BO/12622	SBC102	100
BO/12624	SBC104	250
BO/12626	SBC106	500
BO/12628	SBC108	1000
Amber glass		
BO/12640	SBA100	50
BO/12642	SBA102	100
BO/12644	SBA104	250
BO/12646	SBA106	500
BO/12648	SBA108	1000

#### Bottles, reagent, narrow neck, glass stopper

- Pyrex borosilicate glass with ground neck
- Complies with ISO 4796-2

Cat. No.	Code	Capacity, ml	Neck	Pk Qty
BO/12702	1521/04D	100	14/15	10
BO/12704	1521/06D	250	19/26	10
BO/12706	1521/08D	500	24/29	10
BO/12708	1521/10D	1000	29/32	10
BO/12712	1521/16D	5000	45/40	1
BO/12714	1521/18D	10000	60/46	1
BO/12716	1521/22D	20000	60/46	1

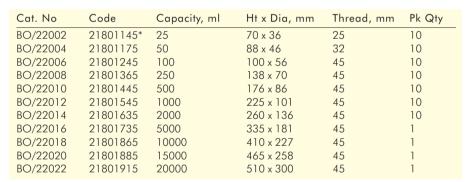
#### Bottles, reagent, wide neck, glass stopper

Clear soda glass, Available in amber glass on request.

Cat. No.	Capacity, ml
BO/92202	50
BO/92204	100
BO/92206	250
BO/92208	500
BO/92210	1000

#### Bottles, media lab, round shape, capped

Duran borosilicate glass bottles complete with cap and pouring ring complies with ISO 4796



<sup>\*</sup>This small bottle features a glass lip and does not require a pouring ring For caps and pouring rings see page 67

#### Bottles, media lab, round shape, amber, uncapped

Duran amber borosilicate glass bottles without cap or pouring ring

Cat. No	Code	Capacity, ml	Ht x Dia, mm	Thread, mm	Pk Qty
BO/22222	2180614*	25	70 x 36	25	10
BO/22224	2180617	50	88 x 46	32	10
BO/22226	2180624	100	100 x 56	45	10
BO/22228	2180636	250	138 x 70	45	10
BO/22230	2180644	500	176 x 86	45	10
BO/22232	2180654	1000	225 x 101	45	10
BO/22234	2180663	2000	260 x 136	45	10
BO/22236	2180673	5000	335 x 181	45	1
BO/22238	2180686	10000	410 x 227	45	1
BO/22240	2180688	15000	465 x 258	45	1
BO/22242	2180691	20000	510 x 300	45	1

<sup>\*</sup>This small bottle features a glass lip and does not require a pouring ring For caps and pouring rings see page 67



SCHOTT DURAN®



BO/12708



BO/922



BO/22012



BO/22232



BO/12110

#### Bottles, media lab, round shape, capped

Pyrex borosilicate glass bottles complete with cap and pouring ring • Complies with ISO 4796

- Ideal for mixing and storage of culture medium
- Wide neck for easy filling
- Sloping shoulders for smooth pouring action
- White graduations and marking spot
- Manufactured from temperature and chemically resistant borosilicate glass
- Neck fitted with pouring ring for drip-free performance
- $\bullet$  Withstands steam sterilisation or dry heat up to 140°C

Cat. No.	Code	Capacity, ml	Ht x Dia, mm	Thread, mm	Pk Qty
BO/12102	1516/01D*	25	70 x 36	25	10
BO/12104	1516/02D	50	88 x 46	32	10
BO/12106	1516/04D	100	100 x 56	45	10
BO/12108	1516/06D	250	138 x 70	45	10
BO/12110	1516/08D	500	176 x 86	45	10
BO/12112	1516/10D	1000	225 x 101	45	10
BO/12114	1516/12D	2000	260 x 136	45	10
BO/12116	1516/16D	5000	335 x 181	45	1
BO/12118	1516/18D	10000	410 x 227	45	1
BO/12120	1516/20D	15000	465 x 258	45	1
BO/12122	1516/22D	20000	510 x 300	45	1

<sup>\*</sup>This small bottle features a glass lip and does not require a pouring ring For caps and pouring rings see page 67



BO/12410

#### Bottles, media lab, amber, round shaped, uncapped

#### **PYREX**®

- Bottles only. Supplied without cap or pouring ring\*
- Manufactured from amber borosilicate glass
- UV absorbent up to 500nm
- Ideal for storage of light sensitive materials

Cat. No.	Code	Capacity, ml	Ht x Dia, mm	Thread, mm	Pk Qty
BO/12402	1519/01D*	25	70 x 36	25	10
BO/12404	1519/02D	50	88 x 46	32	10
BO/12406	1519/04D	100	100 x 56	45	10
BO/12408	1519/06D	250	138 x 70	45	10
BO/12410	1519/08D	500	176 x 86	45	10
BO/12412	1519/10D	1000	225 x 101	45	10
BO/12414	1519/12D	2000	260 x 136	45	10
BO/12416	1519/16D	5000	335 x 181	45	1
BO/12418	1519/18D	10000	410 x 227	45	1

<sup>\*</sup>This small bottle features a glass lip and does not require a pouring ring For caps and pouring rings see page 67



BO/12906

#### Bottles, media lab, square shape

**PYREX®** 

- Square shape allows closer stacking in water baths or on shelves
- Up to 20% saving of space compared to round bottles
- Bottle complete with cap and pouring ring
- Withstands steam sterilisation or dry heat up to 140°C
- Wide neck for easy filling

Capacity, ml	Ht x Dia, mm	Thread, mm	Pk Qty
D 100	100 x 56	45	10
D 250	138 x 70	45	10
D 500	176 x 86	45	10
D 1000	225 x 101	45	10
	D 100 D 250 D 500	D 100 100 x 56 D 250 138 x 70 D 500 176 x 86	D 100 100 x 56 45 D 250 138 x 70 45 D 500 176 x 86 45

#### Bottles, media lab, round shape, capped

Borosilicate glass complete with screw cap and pouring ring, neck size GL45.

Cat. No.	Capacity, ml	HxD mm	Pk Qty
BO/62102	100	100 x 56	10
BO/62104	250	138 x 70	10
BO/62106	500	176 x 86	10
BO/62108	1000	225 x 101	10
BO/62110	2000	260 x 135	10
Spare caps and rin	as available for above.		



BO/621

**PYREX**®

**PYREX®** 

#### Bottles, reagent, screw cap

- Ideal for storage of reagents, analytical standards, culture media, etc.
- Manufactured from Pyrex® borosilicate glass
- Excellent resistance to chemical attack and high temperatures
- Supplied with Phenolic screw caps having a PTFE faced sealing disc
- Autoclavable up to 121°C.
- White graduations and marking spot

Cat. No.	Code	Capacity, ml	H x D, mm	Cap size	, mm Pk Qty
BO/12502	1515/01D	25	65 x 35	20	10
BO/12504	1515/02D	50	80 x 43	25	10
BO/12506	1515/04D	100	105 x 53	25	10
BO/12508	1515/06D	250	135 x 66	30	10
BO/12510	1515/08D	500	175 x 81	30	10
BO/12512	1515/10D	1000	215 x 101	42	10
BO/12514	1515/12D	2000	245 x 136	60	10
BO/12516	1515/16D	5000	324 x 181	60	1
BO/12518	1515/18D	10000	395 x 227	60	1
BO/12518	1515/18D	10000	395 x 227	60	1



BO/125

#### Screw caps for media lab bottles, polypropylene

- For use with 1516, 1519 and 1520 bottles
- Ideal for media preparation work
- Polypropylene plug seal cap
- Autoclavable up to 140°C
- Available in choice of colours for easy identification of samples

Cat. No.	Code	For thread, mm	Colour	Pk Qty
BO/16002	4506/25D	25	Light blue	10
BO/16004	4506/32D	32	Light blue	10
BO/16006	4506/45D	45	Light blue	10
BO/16008	4506/45E	45	Green	10
BO/16010	4506/45F	45	Yellow	10
BO/16012	4506/45G	45	Grey	10



BO/160

## Screw caps for media lab bottles, thermoplastic polyester **PYREX**®

- For use with 1516, 1519 and 1520 bottles
- $\bullet$  Ideal for applications involving high temperatures or aggressive chemicals
- Thermoplastic polyester cap with PTFE faced sealing disc
- Withstands hot air sterilisation up to 180°C
- PTFE sealing disc resists chemical attack

Cat. No.	Code	For thread, mm	Colour	Pk Qty
BO/16014	4526/25D	25	Red	10
BO/16016	4526/32D	32	Red	10
BO/16018	4526/45D	45	Red	10

The cap may discolour when used at the maximum temperature of 200°C, however, this does not affect performance.



BO/1601

#### Pouring rings for media lab bottles, standard

- For use with 1516, 1519 and 1520 bottles
- Ensures drip-free pouring
- Clear polypropylene pouring ring
- Withstands autoclaving up to 140°C

BO/16020 4516/32D 32 Clear	10
BO/16022 4516/45D 45 Clear	10



BO/16020

#### Pouring rings for media lab bottles, high temperature

- For use with 1516, 1519 and 1520 bottles
- Ideal for applications involving high temperatures
- Red Ethylene-tetrafluoroethylene pouring ring
- Withstands hot air sterilisation up to 180°C

Cat. No.	Code	For thread, mm	Colour	Pk Qty
BO/16024	4536/32D	32	Red	10
BO/16026	4536/45D	45	Red	10



BO/16024

#### Spare caps and pouring rings for media lab bottles, polypropylene





BO/2230

Cat. No.	Code	For thread, mm	Pk Qty		
Caps	Caps				
BO/22302	2923913	25	10		
BO/22304	2923919	32	10		
BO/22306	2923928	45	10		
Pouring rings					
BO/22308	2924919	32	10		
BO/22310	2924228	45	10		

Spare phenolic caps



Pk Qty

20

20

20

10

5

20

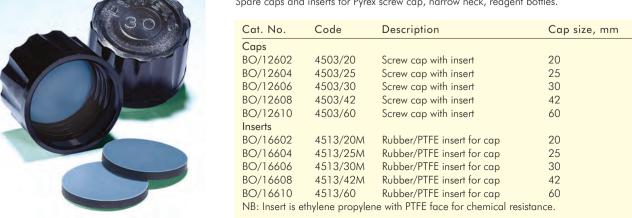
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20

10

5

Spare caps and inserts for Pyrex screw cap, narrow neck, reagent bottles.





BO/126

#### Bottles, dropping, "Polystop"

volac

Available in clear and amber glass with 16/16 polypropylene stopper including a strong glass dropper and vinyl teat.

Cat. No.	Code	Capacity	Pk Qty	
Clear glass				
BO/32402	L188/A/10	30ml	10	
BO/32406	L188/B/10	50ml	10	
BO/32408	L188/C/10	100ml	10	
Amber glass				
BO/32602	L188/AM/B/10	50ml	10	
BO/32604	L188/AM/C/10	100ml	10	



BO/3240

#### Bottles, dispensing, "Polystop"

(volac)

Available in clear and amber glass with polypropylene stopper including a graduated strong glass dropping pipette and vinyl teat. The pipettes have permanent amber markings.

10
2
2
10
2
2



BO/3230

#### Bottles, dropping T.K. pattern

Available in clear and amber glass with grove in stopper.

Cat. No.	Description
BO/32802	50ml clear glass
BO/32804	100ml clear glass
BO/32806	50ml amber glass

#### Bottles, media (Bijou), narrow neck, aluminium screw cap

Cat. No.	Capacity, ml	Pk Qty
BO/92102	7	288
BO/92104	14	288



BO/32804

#### Bottles, media, universal, wide neck, aluminium screw cap

Cat. No.	Capacity, ml	Pk Qty
BO/92108	28	144



BO/92102 and BO/92104



BO/92108



BO/8250 and BO/8260

#### Bottles, Winchester pattern, round

Glass bottles with narrow neck in clear or amber glass, fitted with caps as detailed below

Cat. No.	Capacity, ml	Cap Description	Pk Qty*
Clear glass			
BO/82502	30	Black plastic screw cap	138
BO/82504	100	Black plastic screw cap	104
BO/82506	500	Black plastic screw cap	24
BO/82508	1000	White PP wadless cap	12
BO/82512	1000	Black cap with polycone liner	12
Amber glass			
BO/82602	30	Black plastic screw cap	130
BO/82604	100	Black plastic screw cap	86
BO/82606	150	Black plastic screw cap	68
BO/82610	500	Black plastic screw cap	24
BO/82612	1000	Black plastic screw cap	12
BO/82614	2500	Black plastic screw cap	12

<sup>\*</sup>Pack quantities may be subject to change.



BO/824

#### Bottles, sloping shoulder flat

Available in clear and amber glass with narrow neck and black plastic screw cap.

Cat. No.	Capacity, ml	Pk Qty*
Clear glass		
BO/82402	100	90
BO/82404	150	56
BO/82408	300	36
BO/82410	500	36
Amber glass		
BO/82412	150	48
BO/82416	500	36

<sup>\*</sup>Pack quantities may be subject to change.



BO/8210

#### Bottles, wide neck, powder type

Available in clear and amber glass with black plastic screw cap

Cat. No.	Capacity, ml	Pk Qty*
Clear glass		
BO/82102	15	140
BO/82104	30	80
BO/82106	60	72
BO/82108	125	80
BO/82110	250	42
BO/82112	500	33
Amber glass		
BO/82202	15	140
BO/82204	30	127
BO/82206	60	60
BO/82208	125	49
BO/82212	500	16
BO/82214	1000	12

<sup>\*</sup>Pack quantities may be subject to change.

#### Bottles, extra wide neck

Clear glass with black plastic screw cap. Caps have a waxed cardboard liner

Cat. No.	Capacity, ml	Pk Qty*
BO/82302	30	110
BO/82304	60	72
BO/82308	250	48
BO/82310	500	24

<sup>\*</sup>Pack quantities may be subject to change.



BO/823

#### Bottles, Biological Oxygen Demand (B.O.D)



Clear glass with glass peg stoppers adjusted to leave a well for water seal and a pointed cone to prevent air entrapment.

Cat. No.	Code	Capacity, ml
BO/32702	GS748/A	250
BO/32704	G\$748/B	500



BO/327

#### Bottles, specific gravity

Available in both adjusted and unadjusted type.

Cat. No.	Capacity, ml	
Adjusted		
BO/92002	25	
BO/92004	50	
Unadjusted		
BO/92006	25	
BO/92008	50	



BO/920

# Bottles, plastic, polyethylene

#### Bottles, security, graduated, narrow neck, translucent, PE

Double sealing with insert cap to ensure tightness making them leakproof. Sloping shoulders reduce tendency for residue deposits. Tagging points on shoulder and cap ensures tamper-proof closure. Easy grip cap.

Cat. No.	Capacity, ml	Pk Qty
BO/46340	50	100
BO/46342	125	100
BO/46344	250	50
BO/46346	500	50
BO/46348	1000	20



BO/463



BO/462

## Bottles, security, graduated, wide neck, PE

Will withstand considerable pressure before rupture. Used for transporting sensitive liquid and solid samples from location to location, secured by tagging points on bottle and polypropylene cap. Confidential notes can be placed in the space between insert sealing plug and cap.

Cat. No.	Capacity, ml	Grads., ml	Pk Qty
BO/46220	50	10	10
BO/46222	100	25	10
BO/46224	250	25	10
BO/46226	500	50	10
BO/46228	1000	100	5
BO/46230	2000	100	Each

BO/5630

## Bottles, heavy duty, narrow neck, PE

Milk type bottle with polyethylene cap

Cat. No.	Capacity, ml	Pk Qty
BO/56302	250	10
BO/56304	500	10
BO/56306	1000	10



BO/5631

#### Bottles, with carrying handle, wide neck PE

BO/56310 2.5 BO/56312 5	Cat. No.	Capacity, litres	
	BO/56310	2.5	
PO/54214 10	BO/56312	5	
BO/30314 10	BO/56314	10	



BO/5632

## Bottles, with carrying handle, narrow neck PE

Cat. No.	Capacity, litres
BO/56320	2.5
BO/56322	5
BO/56324	10
BO/56326	25

# Bottles, plastic, LDPE

#### Bottles, plain round, LDPE

Natural bottles supplied without cap.

Cat. No.	Capacity, ml	Pk Qty	
BO/96402	60	50	
BO/96404	125	50	
BO/96406	175	50	
BO/96408	250	50	

Caps for BO/964 series bottles, 22mm R6, Black, ribbed polypropylene with EPE wad.

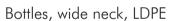
Cat. No.	Description
BC/96222	Black cap with EPE liner, pack of 50

# Azlon

#### Bottles, round, narrow neck, LDPE

- Translucent, flexible leak proof LDPE bottles with PP screw caps
- Heavy duty and very durable in use.
- Ideal for a wide range of liquid storage, media preparation and sampling applications.
- Excellent general chemical resistance.
- Supplied in easy-to-handle shrink-wrapped packs.

Cat. No.	Code	Capacity, ml	Pk Qty
BO/16202	BNL0030PN	30	10
BO/16204	BNL0060PN	60	10
BO/16206	BNL0100PN	100	10
BO/16208	BNL0125PN	125	10
BO/16210	BNL0150PN	150	10
BO/16212	BNL0250P	250	10
BO/16214	BNL0500P	500	10
BO/16216	BNL1000P	1000	5
BO/16218	BNL2000P	2000	5



**NALGENE** 

Translucent and flexible with excellent impact resistance. Ideal for shipping liquids. Leakproof.

Cat. No.	Code	Capacity, ml	Pk Qty
BO/36402	2103-0001	30	12
BO/36404	2103-0002	60	12
BO/36406	2103-0004	125	12
BO/36408	2103-0008	250	12
BO/36410	2103-0016	500	12
BO/36412	2103-0032	1000	6

### Bottles, carboy, wide neck, LDPE

**NALGENE** 

With heavy duty walls. For packaging and transporting. An additional external support is required for transporting corrosive materials. Also useful for storing and shipping chemicals and standards. Wide shoulder handles for easy carrying and pouring. Leakproof. Graduated in 5 litre increments.

Cat. No.	Code	Capacity, litre	
BO/66310	2210-0020	10	
BO/66315	2210-0040	15	
BO/66320	2210-0050	20	
BO/66325	2210-0065	25	
BO/66350	2210-0130	50	



BO/964



BO/162



BO/364



BO/663

## Bottles, wash, LDPE

#### Bottles, wash, narrow neck, LDPE

General purpose wash bottle





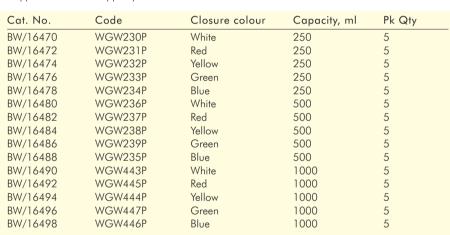
BW/564

#### Cat. No. Capacity, ml Pk Qty BW/56430 250 5 BW/56432 500 5 5 BW/56434 1000

#### Bottles, wash, wide neck, plain, LDPE



- Square shoulder wash bottles featuring a wide neck for easy spill free filling.
- Fitted with colour coded one-piece PP closures that maintain their shape in use and allow easy identification.
- Closures feature precision jet-tip aperture for fine control.
- Bottles feature SPI recycling codes and volume information on their base.
- Supplied in shrink-wrapped packs.





BW/1647

## Bottles, wash, printed, narrow neck, LDPE



ml

- Stylish labelled wash bottles enable easy identification of contents
- Indelibly printed with a choice of eight popular laboratory solvents, appropriate hazard symbols and CAS numbers
- The slim design enables comfortable handling and enhanced ease of use
- Fitted with colour coded PP, leak-proof, swivel dispensing closure
- Closures feature precision jet-tip aperture for fine control

Supplied capped in shrink-wrapped packs of five				
Cat. No.	Code	Printing and closure colour	Label	Capacity,
BW/16440	WGF530P	White	Water	250
BW/16442	WGF600P	White	Distilled Water	250
BW/16446	WGF531P	Red	Acetone	250
BW/16448	WGF532P	Green	Methanol	250
BW/16450	WGF533P	Blue	Isopropanol	250
BW/16452	WGF534P	Yellow	I.M.S.	250
BW/16454	WGF535P	Orange	Ethanol	250
BW/16456	WGF536P	White	Water	500
BW/16458	WGF601P	White	Distilled Water	500
BW/16462	WGF537P	Red	Acetone	500
BW/16464	WGF538P	Green	Methanol	500
BW/16466	WGF539P	Blue	Isopropanol	500
BW/16468	WGF540P	Yellow	I.M.S.	500
BW/16469	WGF541P	Orange	Ethanol	500



BW/1645

#### Bottles, wash, printed, wide neck, LDPE

- Multilingual labelled wide neck wash bottles (English, French, German & Spanish)
- Indelibly printed with a choice of water types.
- Fitted with white one-piece PP closures that maintain their shape in use.
- Closures feature precision jet-tip aperture for fine control.

Cat. No.	Code	Capacity, ml	Label	Pk Qty
BW/16424	WGW530PML	250	Water	5
BW/16426	WGW600PML	250	Distilled Water	5
BW/16428	WGW602PML	250	Deionised Water	5
BW/16324	WGW536PML	500	Water	5
BW/16328	WGW603PML	500	Deionised Water	5
BW/16330	WGW401PML	500	Sodium Hypochlorite	5



Azlon

Azlon

Azlon

BW/163

#### Bottles, wash, venting, wide neck, LDPE

- Wide neck wash bottles featuring the patented Driplok vapour venting valve that prevents hazardous volatile solvent drips.
- Indelibly printed in 4 languages: English, French, German and Spanish.
- Choose from 5 solvent labels all including the Globally Harmonized Symbols, NFPA diamond, risk phrases and safety information.
- Fitted with colour coded one-piece PP closures that maintain their shape in use.
- Closures feature precision jet-tip aperture for fine control.
- Supplied capped in shrink-wrapped packs of five

Cat. No.	Code	Label	Closure Colour	Pk Qty
250ml capacity	,			
BW/16350	WGW531VTML	Acetone	Red	5
BW/16352	WGW535VTML	Ethanol	Orange	5
BW/16354	WGW534VTML	I.M.S.	Yellow	5
BW/16356	WGW533VTML	Isopropanol	Blue	5
BW/16358	WGW532VTML	Methanol	Green	5
500ml capacity	1			
BW/16364	WGW537VTML	Acetone	Red	5
BW/16366	WGW541VTML	Ethanol	Orange	5
BW/16368	WGW540VTML	I.M.S.	Yellow	5
BW/16370	WGW539VTML	Isopropanol	Blue	5
BW/16372	WGW538VTML	Methanol	Green	5



BW/16358

#### Dispensing bottles, spouted cap, LDPE

- Round LDPE bottles fitted with spouted dropper closure.
- Closure features a captive sealing cap and can be cut to adjust flow rate.
- Suitable for use as a dropping or wash bottle.
- Good resistance to chemical attack.

Co	at. No.	Code	Capacity, ml	Pk Qty
ВС	0/16430	BGE814PNC	30	10
ВС	)/16432	BGE820PNC	60	10
ВС	0/16434	BGE828PNC	150	10
BC	0/16436	BGE830PNC	250	10
BC	0/16438	BGE836PNC	500	10



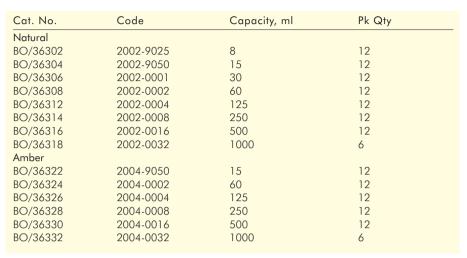
BO/1643

# Bottles, plastic, HDPE

#### Bottles, narrow neck, HDPE

NALGENE"

Available in both natural and amber these round style bottles with leakproof polypropylene screw cap are reliable and durable for long-term use. Ideal for shipping and packaging liquids. Rigid with excellent chemical resistance.





BO/363



BO/561

#### Bottles, narrow neck, with black screw cap, HDPE

Natural bottles supplied with black polypropylene cap.

Cat. No.	Capacity, ml	Pk Qty
BO/56102	50	850
BO/56104	100	450
BO/56106	250	260
BO/56108	500	120
BO/56110	1000	60



BO/161

### Bottles, round, narrow neck, HDPE



- Translucent, flexible leak proof HDPE bottles with PP screw caps
- Lightweight but very durable in use.
- Ideal for a wide range of liquid storage, media preparation and sampling applications.
- Excellent general chemical resistance.
- Supplied in shrink-wrapped packs.

Cat. No.	Code	Capacity, ml	Pk Qty
BO/16102	BNH0030PN	30	10
BO/16104	BNH0060PN	60	10
BO/16106	BNH0100PN	100	10
BO/16108	BNH0125PN	125	10
BO/16110	BNH0150PN	150	10
BO/16112	BNH0250P	250	10
BO/16114	BNH0500P	500	10
BO/16116	BNH1000P	1000	5
BO/16118	BNH2000P	2000	5

#### Bottles, graduated, square, wide neck, HDPE

**Kartell\_**ABWARE

Space saving bottles, ideal for long term storage of samples. Approximate graduations allow reproducible filling without the use of cylinders/beakers. Easy grip caps can be wired down for security. Head space between cap and insert plug can be used for confidential notes.

Cat. No.	Capacity, ml	Grads., ml	Pk Qty
BO/46382	25	5	10
BO/46384	50	10	10
BO/46386	100	20	10
BO/46388	250	50	10
BO/46390	500	100	10
BO/46392	1000	100	5
BO/46394	2000	100	Each



BO/463

## Bottles, general purpose, wide neck, HDPE

#### NALGENE'

Available in both natural and amber these general purpose bottles, with leakproof polypropylene screw closure, are durable and more rigid than LDPE. Suitable for shipping liquids.

Cat. No.	Code	Capacity, ml	Pk Qty
Natural			
BO/36124	2104-0001	30	12
BO/36126	2104-0002	60	12
BO/36128	2104-0004	125	12
BO/36130	2104-0008	250	12
BO/36132	2104-0016	500	12
BO/36134			
Amber	2104-0032	1000	6
BO/36140	2106-0002	60	12
BO/36142	2106-0004	125	12
BO/36144	2106-0008	250	12
BO/36146	2106-0016	500	12
BO/36148	2106-0032	1000	6



BO/3612

## Bottles, round, wide neck, HDPE



- ullet Screw caps have non-stick feature and open and close in less than 1 turns. 1/2
- Heavy duty and very durable in use.
- Ideal for a wide range of liquid storage, media preparation and sampling applications.
- Excellent general chemical resistance.
- Supplied in shrink-wrapped packs.

Cat. No.	Code	Capacity, ml	Pk Qty
BO/16130	BWH0030PN	30	10
BO/16132	BWH0060PN	60	10
BO/16140	BWH0250PN	250	10
BO/16142	BWH0500PN	500	10
BO/16144	BWH1000PN	1000	5
BO/16146	BWH2000P	2000	5



BO/161

#### Bottles, square, wide neck, HDPE

#### NALGENE'

Azlon

Square shape saves space. With leakproof polypropylene screw cap.

Cat. No.	Code	Capacity, ml	Pk Qty	
BO/36160	2114-0002	60	12	
BO/36162	2114-0006	175	12	
BO/36164	2114-0008	250	12	
BO/36166	2114-0016	500	12	
BO/36168	2114-0032	1000	6	



BO/3616



BO/4612

#### Bottles, wide neck, HDPE

Cylindrical bottles supplied with insert and cap. The very wide neck makes them especially suitable for powders and solids.

Cat. No.	Capacity, ml	Pk Qty
BO/46120	70	10
BO/46122	120	10
BO/46124	250	10
BO/46126	500	10
BO/46128	1000	5
BO/46130	2000	Each



BO/1612

### Bottles, plastic, HDPE Bottles, square, graduated, wide neck



- Lightweight rectangular bottles with plug seal and screw cap.
- Moulded in graduations for approximate volume measurement.
- Ideal for powders and granules
- Space saving design.
- Supplied in shrink-wrapped packs.

Cat. No.	Capacity, ml	Pk Qty
BO/16120	500	10
BO/16122	1000	5
BO/16124	2000	5



BO/4610

#### Bottles, carboy, heavy walled, narrow neck, HDPE **Kartell**\_ABWARE

Heavy walled (2mm) robust bottles which can withstand considerable abuse. The insert plug and soft seal cap makes them leakproof. The cap can be wired down for added safety. Complete with carrying handles.

Cat. No.	Code	Capacity, litres
BO/46102	1644	5
BO/46104	1646	10
BO/46106	1648	25
BO/46108	1650	50



BO/4611

## Bottles, carboy, heavy walled, wide neck, HDPE

Robust bottle, ideal for liquids or powders. Wide neck for easy filling and emptying. Insert seal for completely leakproof closure. Caps can be wired down for safety. Tommy bar lugs on 10 litre capacity to assist release. Carrying handles.

Cat. No.	Capacity, litres
BO/46110	5
BO/46112	10

## Bottle, pistol grip, HDPE

Designed to allow comfortable grip and minimise fatigue. 500ml capacity bottle. Trigger spray adjustable from fine to single jet.

(	Cat. No.	Description	Pk Qty
E	30/96110	Pistol grip bottle	10
Е	30/96112	Trigger spray	10

Bottle and trigger spray must be ordered separately.



BO/9611

# Bottles, plastic, PP

#### Bottles, narrow neck, PP, Autoclavable

NALGENE'

Azlon

Ideal for general lab applications. With leakproof polypropylene screw cap.

Cat. No.	Code	Capacity, ml	Pk Qty
BO/36202	2006-9125	4	12
BO/36204	2006-9025	8	12
BO/36206	2006-9050	15	12
BO/36208	2006-0001	30	12
BO/36210	2006-0002	60	12
BO/36212	2006-0004	125	12
BO/36214	2006-0008	250	12
BO/36216	2006-0016	500	12
BO/36218	2006-0032	1000	6



BO/362

#### Bottles, round, narrow neck, PP Autoclavable



• Heavy duty and very durable in use.

- Ideal for a wide range of liquid storage, media preparation and sampling applications.
- Excellent general chemical resistance.
- Supplied in shrink-wrapped packs.

Cat. No.	Ref.	Capacity, ml	Height, mm	Pk Qty
BO/16220	BNP0030PN	30	67	10
BO/16222	BNP0060PN	60	79	10
BO/16224	BNP0100PN	100	89	10
BO/16226	BNP0125PN	125	103	10
BO/16228	BNP0150PN	150	117	10
BO/16230	BNP0250P	250	140	10
BO/16232	BNP0500P	500	160	10
BO/16234	BNP1000P	1000	200	5
BO/16236	BNP2000P	2000	237	5



BO/162



BO/362

#### Bottles, wide neck, PP, Autoclavable

For chemicals, specimens and general use. With leakproof polypropylene screw closure.

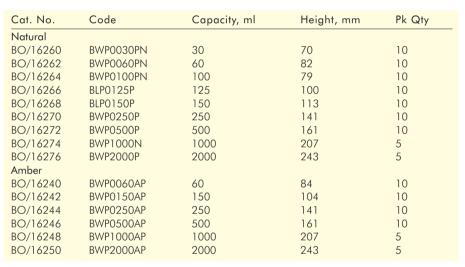
Cat. No.	Code	Capacity, ml	Pk Qty
BO/36220	2105-0001	30	12
BO/36222	2105-0002	60	12
BO/36224	2105-0004	125	12
BO/36226	2105-0008	250	12
BO/36228	2105-0016	500	12
BO/36230	2105-0032	1000	6

## Bottles, round, wide neck, PP, Autoclavable • Translucent rigid and leak-proof PP bottles with PP screw caps.



NALGENE"

- Available in natural and amber for light sensitive material
- ullet Screw caps have nonstick feature and open or close in less than 1 turns for ease of  $\frac{1}{2}$  use.
- Heavy-duty and very durable in use.
- Autoclavable at 121°C.
- Ideal for a wide range of liquid or solids storage media preparation and sampling applications.
- Excellent general chemical resistance.
- Supplied in shrink-wrapped packs.





Natural



Amber

#### Bottles, square, wide neck, PP

NALGENE'

Square shape saves space. With leakproof polypropylene closure. Autoclavable.

Cat. No.	Code	Capacity, ml	Pk Qty	
BO/36232	2110-0002	60	12	
BO/36234	2110-0006	175	12	
BO/36236	2110-0008	250	12	
BO/36238	2110-0016	500	12	
BO/36240	2110-0032	1000	6	



BO/3623

## Bottles, heavy duty, wide neck, PP, Autoclavable

NALGENE"

Large, thick-walled bottles designed for heavy-duty applications. Robust polypropylene closure with TPE (thermoplastic elastomer) gasket guarantees leakproof service under vacuum. Also useful as waste aspirator bottle.

Cat. No.	Code	Capacity, litres	Pk Qty
BO/36242	2126-1000	1	6
BO/36244	2126-2000	2	2
BO/36246	2126-4000	4	1



BO/3624

#### Bottles, carboy, wide neck, PP, Leakproof

NALGENE'

Azlon

Popular round shape carboy with handles and white polypropylene leakproof screw closure with TPE gasket. Excellent for large batches of culture media, distilled water and other solutions.

Cat. No.	Code	Capacity, litres
BO/36310	2250-0020	10
BO/36320	2250-0050	20
BO/36350	2250-0130	50



BO/36320

#### Bottles, carboy, heavy-duty, PP, Autoclavable

- Polypropylene providing good chemical resistance
- Squat form for easy location on shelves, bench top and in transit
- Moulded in handle for safe and secure carrying
- Moulded graduations for quick easy volume reference
- Autoclavable for easy cleaning and sterilisation
- Caps have moulded drill guides for easy location of probes and feed-lines.

Cat. No.	Code	Capacity, litres	Cap size, mm	Height with ca px max width mm
BO/16905	BNP05B	5	45	270 X 220
BO/16910	BNP10B	10	90	360 X 280
BO/16920	BNP20B	20	90	420 X 350



BO/169



BO/800

## Bottles, Water Sampling – PET

Water test bottles PET, available plain or dosed with Sodium Thiosulphate to inhibit the action of Chlorine, Bromine and Ozone dissolved in water, filled to the requirement of ISO 19458 at 20mg per litre

All the bottles carry a printed label, have a tamper evident white screw cap and have been sterilised by Gamma irradiation at between 25-40 kgy.

Cat. No.	Cat. No. Description		Pk Qty
Undosed			
BO/80000	Water sampling, labelled, sterile	330	54
BO/80002	Water sampling, labelled, sterile	500	40
BO/80004	Water sampling, labelled, sterile	1000	18
Dosed with Sodi	um Thiosulphate		
BO/80020	Water sampling, labelled, sterile	330	54
BO/80022	Water sampling, labelled, sterile	500	40
BO/80024	Water sampling, labelled, sterile	1000	18

BO/1666

#### Bottles, square, narrow neck, Polycarbonate Media



- Highly transparent
- Linerless Polypropylene cap
- Suitable for up to 10 sterilisations by autoclave to 121°C
- Ideal for preparation and storage of Biological media, reagents and aqueous solutions
- Leakproof
- Heavy duty and durable in use
- Square design for economic use of space

Cat. No.	Capacity, ml	Dimensions Base x height mm	Neck I.D mm	Pk Qty
BO/16660	250	59 X 139	28	24
BO/16662	500	73 X 172	28	12
BO/16664	1000	92 X 213	28	12
BO/16666	2000	115 X 266	40	6



BO/1667

## Bottles, round, narrow neck, Polycarbonate, Media



- Highly transparent
- Linerless Polypropylene cap
- Suitable for up to 10 sterilisations by autoclave to 121°C
- Ideal for preparation and storage of Biological media, reagents and aqueous solutions
- Leakproof
- Heavy duty and durable in use
- Classic round design

Cat. No.	Capacity, ml	Dimensions Height x O.D. mm	Neck I.D mm	Pk Qty
BO/16670	500	175 x 81	28	12
BO/16672	1000	216 x 97	28	12





- Highly transparent
- Coloured Polypropylene cap
- $\bullet$  Suitable for up to 10 sterilisations by autoclave to 121°C
- Ideal for preparation and storage of Biological media, reagents and aqueous solutions
- Leakproof and shatterproof
- Withstands temperatures at -80°C

Cat. No.	Capacity, ml	Dimensions Height x O.D. mm	Neck I.D mm	Pk Qty
BO/16680	5	52 x 22	14	100
BO/16682	10	62 x 24	14	100



BO/1668

# Bottle rack

## Bottle rack, polythene covered wire

To hold 12 x 60ml reagent and/or dropping bottles.

Cat. No.	Description
BR/96102	12 place



BR/96102

## Bottle carrier, for Winchester

Also takes Euro bottles. Open type, with handle.

Cat. No.	Description
BC/99102	Single
BC/99104	Double
BC/99106	Quadruple
BC/99108	To hold 6x1 litre bottles
BC/99110	To hold 6x500ml bottles



BC/991

#### Bottle carrier, for Winchester

Suitable for carrying plain 2.5litre Winchesters, enclosed type with handle.

Cat. No.	Description	
BC/56102	Single	



BC/56102

# **Brushes**

#### Brushes, beaker

Bristle head with wooden handle. Head 65mm dia. X 145mm long. Overall length 405mm.

Cat. No.	Description	Pk Qty
BB/93202	Beaker brushes	5



BB/93202

## Brushes, bottle

Nylon head with wire handle. Packs of 10.

Cat. No.	Head dia. X length, mm	Overall Length, mm	For bottle ml	
BB/93304	45 x 65	300	125	
BB/93306	50 x 75	350	250	
BB/93308	65 x100	400	500	
BB/93310	75 x 150	460	1000	



BB/9330



BB/9332

## Brushes, burette

Bristle head with wire handle. Packs of 10.

Cat. No.	Head dia. mm	Overall Length, mm	For burette ml
BB/93322	13	500	10
BB/93324	16	600	25
BB/93326	19	750	50
BB/93328	25	900	100

## Brushes, cylinder Nylon head with fan shaped end and wire handle. Packs of 5.

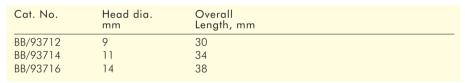
Cat. No.	Head dia. X length, mm	Overall Length, mm
BB/93332	65 x 120	650
BB/93334	65 x 140	650



BB/93334

## Brushes, dabber

Soft hair bristles in metal mount with wooden handle. Each.





BB/9371

## Brushes, flask

Bristle head with hinged central joint and rubber covered stem with wooden handle. Packs of 5.

Cat. No.	Head dia. X length, mm	Overall Length, mm
BB/93340	50 x 100 3	80



BB/93340

## Brushes, flat form

Hair bristles in metal mount on wooden handle. Suitable for general dusting.

Cat. No.	Brush width
BB/93752	25mm



BB/93752

#### Brushes, nail

Wooden nail brush, double sided. Each.

Cat. No.	Description
BB/93704	Nail brush

## Brushes, pencil form

Soft hair bristles in metal mount with wooden handle. No. 8 size. Packs of 5.

Cat. No.	Description
BB/93702	Pencil brush No. 8

#### Brushes, round form

Soft hair in guill mount. Packs of 10.

Cat. No.	Head dia., mm	Overall Length, mm
BB/93700	6	70

#### Brushes, sieve

Double ended brush with nylon bristles on wooden handle. Each.

Cat. No.	Description
BB/93802	Sieve brush

#### Brushes, test tube, fan shaped end

Bristle or nylon head and wire handle. Packs of 10.

Cat. No.	Head dia., mm	For tubes dia., ml
Bristle		
BB/93402	10	10 – 12
BB/93404	30	16 - 25
Nylon		
BB/93502	10	10 - 12
BB/93504	30	16 - 25

#### Brushes, test tube, with cotton end

Bristle or nylon head and wire handle. Packs of 10.

Cat. No.	Head dia., mm	For tubes dia., ml
Bristle		
BB/93510	16	12 - 16
BB/93512	30	19 - 25
Nylon		
BB/93602	16	12 - 16
BB/93604	30	19 - 25

#### Brushes, tube

Nylon brush, 70mm long, set in the centre of a wire handle. Packs of 10.

Cat. No.	Brush dia., mm	Overall Length, mm
BB/93610	3	400
BB/93612	6	400
BB/93614	12	600

# **Buckets**, Laboratory

#### Buckets, spouted, HDPE

- Double spouted for easy pouring
- Handle grip for easy lifting and pouring
- Available in black or white
- Moulded graduations in 0.5 litre divisions

Cat. No.	Code	Capacity, litres	Colour	Dimensions Dia. x ht, mm
BU/16102	BWX104	10.5	Black	286 x 283
BU/16104	BWX106	17	Black	330 x 315
BU/16106	BWX112	10.5	White	286 x 283
BU/16108	BWX114	17	White	330 x 315

#### Buckets, square, HDPE, 14 Litre capacity

- Square shape allows economical use of space
- Handle grip for east lifting and carrying
- Available in black and white
- Moulded graduations in 0.5 litre divisions

Cat. No.	Code	Colour	Dimensions Ixwxh, mm		
BU/16122	BWX108	Black	292 x 292 x 292		
BU/16124	BWX116	White	292 x 292 x 292		
Lids for above	Lids for above				
BU/16126	BWX110	Black	280 x 280 x 45		
BU/16128	BWX118	White	280 x 280 x 45		



BB/93704



BB/93702



BB/93802



BB/9340



BB/93510



BB/93610



Azlon

Azlon

BU/1610



BU/1612

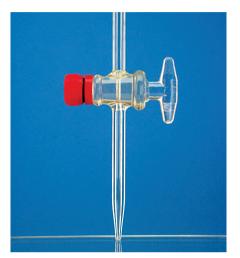
BU/5201

# Burettes, single bore

#### Burettes, class 'B', soda glass, glass key

Single bore burette, amber graduations. Complies with BS 846.

Cat. No.	Capacity, ml	
BU/52010	10 x 0.1	
BU/52012	25 x 0.1	
BU/52014	50 x 0.1	
BU/52016	100 x 0.2	



BU/3202

## Burettes, class 'AS', borosilicate glass, glass key



Single bore burette with interchangeable glass key and white graduations, complies with BS846. Available uncertified or with a works certificate.

Cat. No.	Code	Capacity, ml
Uncertified		
BU/32022	RB9803/NC/Y	10 x 0.02
BU/32024	RB9803/NC/G	25 x 0.1
BU/32026	RB9803/NC/H	50 x 0.1
BU/32028	RB9803/NC/I	100 x 0.2
With certificate		
BU/32032	RB9803/WAC/Y	10 x 0.02
BU/32034	RB9803/WAC/G	25 x 0.1
BU/32036	RB9803/WAC/H	50 x 0.1
BU/32038	RB9803/WAC/I	100 x 0.2

## Burettes, single bore, class B, Glass Key



- Complies with ISO 385
- Replacement glass keys are available in the event of loss or damage: keys are fully interchangeable.
- Graduations in easy to read blue enamel
- Manufactured from borosilicate glass

Cat. No.	Code	Capacity, ml	Grads., ml	Tol ± ml		
BU/12302*	BRB050P	10	0.02	0.05		
BU/12304	BRB056P	25	0.1	0.1		
BU/12306	BRB058P	50	0.1	0.1		
BU/12308	BRB060P	100	0.2	0.2		
*BU/12302 has a funnel top to aid filling						



BU/1230

#### Burettes, single bore, class B, PTFE key



- Complies with ISO 385
- Grease-free PTFE stopcock with 1.5mm bore
- Graduations in easy to read blue enamel
- Manufactured from borosilicate glass

Cat. No.	Code	Capacity, ml	Grads., ml	Tol $\pm$ ml	Length, mm
BU/12320	BRB070P*	10	0.05	0.05	850
BU/12322	BRB074P	25	0.10	0.10	620
BU/12324	BRB075P*	25	0.10	0.10	620
BU/12326	BRB076P	50	0.10	0.10	820
BU/12328	BRB077P*	50	0.10	0.10	820
* These burett	es have a funn	el top for easier fil	ling.		



BU/1232

## Burettes, PTFE key, class 'AS'

**PYREX**®

- Complies with ISO 385
- Manufactured from precision-bore tubing (borosilicate glass) for high accuracy
- Each burette individually engraved with serial number for complete traceability (certified burettes have a 5 point certificate)
- Each burette individually engraved with outflow time to confirm performance
- Graduations in white enamel for increased visibility with dark solutions
- Grease-free interchangeable PTFE key

Cat. No.	Capacity, ml	Grads., ml	Tol $\pm$ ml
Uncertified			
BU/12402	10	0.02	0.02
BU/12404	25	0.1	0.05
BU/12406	50	0.1	0.05
BU/12408	100	0.2	0.1
With certificate			
BU/12412	10	0.02	0.02
BU/12414	25	0.1	0.05
BU/12416	50	0.1	0.05
BU/12418	100	0.2	0.1

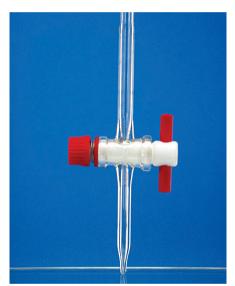


## Burettes, class 'AS', borosilicate glass, P.T.F.E. key



Single bore with interchangeable P.T.F.E. key and white graduations, complies with BS 846. Available uncertified or with a works certificate.

Cat. No.	Code	Capacity, ml
Uncertified		
BU/52022	RB9806/NC/Y	10 x 0.02
BU/52024	RB9806/NC/G	25 x 0.1
BU/52026	RB9806/NC/H	50 x 0.1
BU/52028	RB9806/NC/I	100 x 0.2
With certificate		
BU/52032	RB9806/WAC/Y	10 x 0.02
BU/52034	RB9806/WAC/G	25 x 0.1
BU/52036	RB9806/WAC/H	50 x 0.1
BU/52038	RB9806/WAC/I	100 x 0.2



BU/5202

## Burettes, class 'B', Rotaflo®, P.T.F.E. key

**MBL**<sup>®</sup>

Soda glass, single bore with amber graduations. Rotaflo® stopcocks require no lubrication, do not seize with caustic solutions and give fine drop control, complies with BS846.

Cat. No.	Capacity, ml
BU/12202	10 x 0.1*
BU/12204	25 x 0.1
BU/12206	50 x 0.1
BU/12208	100 x 0.2
*supplementary to BS range.	



BU/1220



BU/5205

BU/12006



BD/15008

## Burettes, double bore

Burettes, double bore, class 'B' glass key.

Soda glass with amber graduations, complies with BS 846.

Cat. No.	Capacity, ml	
BU/52050	10 x 0.1	
BU/52052	25 x 0.1	
BU/52054	50 x 0.1	
BU/52056	100 x 0.2	

## Burettes, automatic zero

#### Burettes, Sofnol/Nalfloc, water testing

Soda glass automatic zero, with reservoir

Cat. No.	Capacity, ml
BU/12006	10 x 0.1
BU/12008	20 x 0.1

Replacement/spare parts are available, please ask for details.

#### Burettes, automatic zero, Class 'AS'

**PYREX®** 

Borosilicate glass, with PTFE key and white ceramic graduations. Burettes and reservoir bottles should be ordered separately.

Cat. No.	Capacity, ml	Joint size	Tol $\pm$ ml	
Burettes				
BU/12010	10 x 0.02	29/32	0.02	
BU/12012	25 x 0.05	29/32	0.03	
BU/12016	50 x 0.10	29/32	0.05	
Cat. No.	Code	Description		

BU/12020	3297/12	Reservoir, glass, 2000ml, 29/32 ground neck
BU/12022	3297/14AS	Rubber blowing bulb

## Burettes, Digital

#### Burette, digital, Digitrate Pro

Digitrate  $\text{Pro}^{\text{TM}}$  dispenser for precise titrations with an accuracy of  $\pm 0.2\%$ , the head is rotatable through 360° with a see through barrel providing bubble-free titration. The borosilicate glass barrel and PTFE plunger makes it possible to use this unit with aqueous solutions and some aggressive liquids.

The scale is divided in 0.01ml divisions with an inaccuracy of  $\leq$ 1%

- Continuous display of volume dispensed.
- Zero reset feature for multiple titrations
- Automatic switch-off when left unattended, preserving previous titration volume
- $\bullet\,$  All wetted parts are chemically resistant and autoclavable at  $+121~^{\circ}\text{C}$
- Safety pedestal valve with off function to prevent accidental delivery
- Borosilicate glass barrel, protected with a transparent PP protection sleeve, easily removed for cleaning
- 3.6V Lithium battery giving minimum life of 60,000 three-minute titrations
- Low battery warning
- Simple user calibration and reset for ISO 9000 requirements
- Standard 30mm neck provided with 3 adapters 33, 38 and 45mm

Cat. No.	Description
BD/15006	Burette, digital 0 to 30ml x 0.01ml
BD/15008	Burette, digital 0 to 50ml x 0.01ml

#### Accessories

Reservoirs, amber borosilicate glass with side neck for refilling without removing the burette.

Cat. No.	Description
BD/12002	1400
BD/12004	2500

#### Burette, Digital, Brand Titrette®

The Brand Titrette® is the first bottle- top burette to satisfy Class A error limits for glass burettes. They have east dropwise titration, ultra-high precision, replaceable pistons and cylinder assemblies and are available with or without an RS 232 PC interface.

Supplied with 2 x AAA batteries, 3 x Polypropylene bottle adapters GL45-32, GL45, S40, GL29-32 and 2 coloured light shield inspection windows and operating manual.

Models with a RS 232 interface come with a 2 meter long interface cable, (Sub-D plug connector 9-pin), CD driver software which includes an example application in XLS-file format as well as an extended operation manual.

- High accuracy precision titration within Class A limits
- Smooth, low force operation for sensitive drop-wise titration
- Compact design, light and stable
- Easy handling, no switching between "fill" and "titrate"
- Simple maintenance, cleaning and part replacement
- Optional RS 232 interface for data transmission directly to a PC

Cat. No.	Description
BD/70000	Burette, digital, 25ml, Titrette® Class A DE-M marked with titration/ recirculation valve
BD/70002	Burette, digital, 50ml, Titrette® Class A DE-M marked with titration/recirculation valve
BD/70004	Burette, digital, 25ml, Titrette <sup>®</sup> Class A DE-M marked with titration/recirculation valve and RS 232 interface
BD/70006	Burette, digital, 50ml, Titrette® Class A DE-M marked with titration/recirculation valve and RS 232 interface
BD/70020	Reservoir bottle, clear glass 29/32 neck for digital burettes
BD/70022	Reservoir bottle, amber glass 29/32 neck for digital burettes



BD/70000

## **Burners**

#### Burners, Bunsen

For use with natural (Methane) gas

Cat. No.	O.D. of burner tube, mm
BB/94202	11
BB/94204	13



BB/9420

#### Burners, Bunsen

For use with bottled (Propane) gas

Cat. No.	O.D. of burner tube, mm
BB/94306	11
BB/94308	13



BB/9430

## Burners, Bunsen, universal

For use with a wide rage of gases

Cat. No.	O.D. of burner tube, mm
BB/94508	13



For use with natural (Methane) gas

Cat. No.	O.D. of burner tube, mm
BB/94610	8



BB/94610



BB/9471

#### Burner, Meker pattern

Available in two sizes and for use with either natural (Methane) gas or LPG. The top burner is fitted with a perforated steel head which gives off multiple small but very hot flames. Each burner is supplied with 4 jets.

Cat. No.	Туре	O.D. of burner head	Height
BB/94712	Natural Gas	25mm	133mm
BB/94714	L.P.G.	25mm	133mm
BB/94716	Natural Gas	43mm	180mm
BB/94718	L.P.G.	43mm	180mm



BB/94708

#### Burner, Cartridge

Burner, brass with a replaceable plated steel perforated head, for use with Propane/Butane mix gas cartridges. When used with a 220gm cartridge the typical burn time is 2.5 hours. The replacement gas cartridges have been designed to enable the burner to be detached and reattached as often as needed.

Available with or without cylinders which are sold singly.

Cat. No.	Description
BB/94706	Burner head only
BB/94708	Burner head and gas cylinder complete
BB/94710	Propane/ Butane gas mix cartridge only



BB/931

#### Burner, spirit, safety

Glass spirit burner, 100ml with metal cap and screw top wick holder to prevent spillage.

Cat. No.	Description
BB/93110	Spirit burner complete
BB/93112	Spare wick, 1 meter length, for cutting to size



BB/980

#### Mats, ceramic, asbestos free

Cat. No.	Size, mm	Pk Qty	
BB/98002	150 x 150	10	
BB/98004	230 x 230	5	
BB/98006	300 x 300	5	
BB/98008	375 x 375	1	
BB/98010	450 x 450	1	



BB/93004

#### Gas lighter, triggered spark

Piezo electric

Cat. No.	Description
BB/93004	Gas Lighter

## **Calculators**

#### Basic calculator

- Battery and solar powered
- Non stick plastic keys
- Large 8 digit LCD display
- Memory, percentage and square root keys

Cat. No.	Description
CA/95002	Calculator, Basic



CA/95002

#### Scientific calculator

- 240 functions
- TwinLine display- see sum and answer together.
- S-VPAM logic calculations using the correct priority of operation.
- Regression analysis, match 2 variable data to different mathematical models.
- Battery powered 9,000 hours continuous use.
- Slide on protective hard case

Cat. No.	Description	
CA/95016	Calculator, Scientific	



CA/95016

# Centrifuges

#### Micro-centrifuge

Versatile, personal micro-centrifuge for quick, low speed centrifugation. The quiet running motor offers different speeds (2000g / 5000g or 6000 / 9,200 RPM) depending on the application. The unit can be operated in continuous mode, pulsed for a short burst of rapid centrifugation, or timed to spin from 1-15 minutes. Regardless of setting, rotors stop once the lid release button is pushed. A ring of LED lights illuminate when the unit is active and can be viewed through the transparent lid. The colour can be changed to a choice of red, green and blue, or turned off by a switch under the unit.

Supplied with 3 rotors, an 8-Place fixed angle rotor for 1.5mL tubes, a rotor 4x 0.2ml PCR tube strips, with 8 adapters for 0.5mL tubes and a 4-place rotor to spin 5mL micro-centrifuge tubes.

Cat. No.	Description
CE/10000	Centrifuge, micro, 5000xg, with 3 rotors and adapters
CE/10002	Tube inserts, spare
CE/10004	Rotor for safety cap tubes CT/12050



CE/10000



CE/81020

## Centrifuge, bench top

Clifton Range

Bench top centrifuge suitable for a variety of applications, compact and robust making it ideal for low speed centrifugation and perfect for the fractionation of samples and separation of biological cells. Supplied with a 6 place angle rotor for 15ml tubes which is removable for easy cleaning. Buckets are also included as are a set of 6 tubes, which makes the centrifuge ready for immediate use. Adaptors are available for 3, 4 and 5ml tubes plus a range of 15ml graduated and ungraduated tubes, both of which can be fitted with caps that can be ordered separately.

A rubber seal is fitted to avoid debris leaving the rotor area when the lid is locked down and a viewing window in the lid allows observation of samples. A timer provides the choice of continuous or timed operation up to 100 minutes.

- Supplied with angle rotor 6 place x 15ml, buckets and 6 plain tubes
- Audible and visual alarm for end of process
- Timer control < 100 min or continuous
- 10 Programme memory
- Imbalance cut-out
- Lid lock
- Lid drop protection
- Auto lid release on completion
- Operation instructions

Technical Specifications	
Maximum RPM/ RCF	4,000 / 2,075 x g
Acceleration/ Deceleration	≤ 20 seconds
Noise level	≤ 52 dB
Power requirement	230v / 50-60Hz
Power consumption	440W
Weight without rotor	17.5kg
Packed weight	19kg



CE/81028

Cat. No.	Code	Description
CE/81020	NE 010G	Centrifuge, compact benchtop, 4000rpm with 6 place x 15ml angle rotor, buckets and tubes
CE/81022	T010-3	Adapter, 3ml, single tube
CE/81024	T010-4	Adapter, 4ml, single tube
CE/81026	T010-5	Adapter, 5ml, single tube
CE/81028	300900	Tube, polystyrene, clear 16 x 95mm, round bottom graduated at 2.5, 5.0 and 10ml, pk 20
CE/81030	400900	Tube, polypropylene, clear 16 x 95mm, round bottom graduated at 2.5, 5.0 and 10ml, pk 20
CE/81032	300705	Tube, polystyrene, clear 16 x 100mm, round bottom, pk 20
CE/81034	400705	Tube, polypropylene clear 16 x 100mm, round bottom, pk 20
CE/81036	307202	Cap, push-on for 16mm tubes, internal ribs, leak-proof, pk of 20
CE/81038	429946	Tube, Sterile 15mm conical, capped, pk of 20
CE/81040	429910	Tube,15mm conical, capped, pk of 20

Notes	

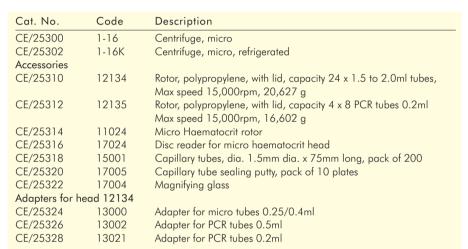
#### Centrifuge micro, bench top



One of a new generation of easy to use micro centrifuges from Sigma, Easy to use, just close the lid and hit start, or make use of the programming options.

- Bright display
- Minimal temperature increase during run
- Ten programmes
- Maintenance-free brushless drive motor
- Motorized lid lock, auto lid open
- Last run memory
- Two acceleration- and deceleration curves, soft or fast
- Stainless steel bowl
- Emergency lid lock release
- Window in the lid for external speed control
- Over speed controller
- Manufactured according to EN 61010-2-020
- Conforms to RoHS
- Available in a refrigerated version

Technical Specifications	1-16		1-16K
Timer		10 sec to 99min 59sec	
Power consumption (W)	170		420
Max capacity ml		36 x 2	
Max speed rpm		15,000	
Min speed rpm		200	
Temperature setting range °C	-		-10  to  +40





CE/25300



CE/25312



Adaptor



CE/25300 and CE/25302



CE/25340

#### Centrifuges, general purpose



Sigma Universal table top centrifuge Models 3-16L and refrigerated version 3-16KL with patented one-button control with illuminated buttons. Cycle counting for each rotor with indication of when the rated limit is reached. Maximum capacity 4 x 400ml.

- Speed range up to 15,300 rpm
- Various angle and swing-out rotors available
- Maximum capacity of 4 x 400 ml down to micro tubes with different adapters in the same bucket
- Maintenance-free induction drive motor
- Magnetic rotor identification prevents the rotor from exceeding active rotor identification
- Stainless steel bowl
- Window in the lid for external speed control
- Backlit keys for start, stop, lid open
- Imbalance switch
- Excess temperature cut-out for the motor
- Easy lid opening, pneumatic spring support
- Produced according to national and international safety regulations EN 61010-2-020

Cat. No.	Code	Description
CE/25340	3-16L	Centrifuge, general purpose.
CE/25342	3-16KL	Centrifuge, general purpose, refrigerated, guaranteed 4°C at maximum speed
Please note,	also available	e in a heated version, please ask for details
Accessories		
CE/25344	12154	Angle rotor 24 place for 1.5 to 2.0ml tubes
CE/25346	19776	Angle rotor 6 place for 50ml culture tubes
CE/25348	13060	Adapters for 15ml culture tubes, set of 2 (3 sets required to fill rotor to capacity)
CE/25350	11180	Swing out rotor, 4 place for 400ml bucket/ carriers
CE/25352	13190	Bucket/ carrier, 400ml, set of 2 (2 sets required to fill rotor to capacity)
CE/25354	17377	Adapters, 4 place x 50ml, set of 2 (2 sets to fill rotor to capacity)
CE/25356	17359	Adapters, 9 place x 15ml for culture tubes, set of 2 (2 sets required to fill rotor to capacity)
CE/25358	11240	Microtitre plate swing out rotor 2 place for use with model 3-16KL



CE/25370

## Centrifuge, high speed refrigerated bench top model



Sigma Model 3-30KS high speed centrifuge with one-button control and motorized lid lock, maximum RCF of  $65,000 \times g$ , maximum capacity of  $6 \times 85ml$ . Temperature range -20 to  $+40^{\circ}C$ 

- High speed refrigerated bench top centrifuge for max. speed 30,000 rpm, gravitational fields up to more than 65,000 x g
- Only 57cm wide
- Brushless drive practically maintenance free
- Reliable drive system
- A microcontroller controls time, temperature, speed or g-force
- Illuminated symbol keys start, stop, lid open
- Window in the centrifuge lid for external speed control
- Very low noise level
- Possibility of precooling rotors during standstill, refrigerant R404a, (CFC-free)
- Pneumatic spring supported lid with two motorized lid locks
- Magnetic rotor identification prevents the rotor from exceeding speed limit
- Stainless steel bowl
- Imbalance switch

Cat. No.	Code	Description
CE/25370	3-30KS	Centrifuge, high speed, refrigerated
Please note, a	also available	e in a heated version, please ask for details
Accessories		
CE/25344	12154	Angle rotor 24 place for 1.5 to 2.0ml tubes
CE/25372	13003	Adapter for 1.5ml reaction vials for more than 30,000 xg
CE/25374	12157	Angle rotor 20 place for 10ml tubes
CE/25376	12158	Angle rotor 6 place for 30ml tubes
CE/25378	12155	Angle rotor 4 place for 80/85ml tubes

#### Centrifuge, Sigma 4-16S and 4-16KS



Sigma Models 4-16S and refrigerated version 4-16KS set the standard for general purpose bench top centrifuges. Maximum RCF 20,376 x g for 4-16S and 25,155 x g for the 4-14KS. A large capacity of 4 x 750ml makes these centrifuges very versatile. The refrigerated version can guarantee a temperature of 4°C at maximum speed for all rotors.

- Various angle and swing-out rotors available
- Lid can easily be opened due pneumatic swing support
- Maximum capacity of 4 x 750ml down to micro tubes with different adapters in the same bucket
- Maintenance-free induction drive motor
- Microcontroller controls speed or gravitational field
- 2 Motorized lid locks
- Suitable for low speeds e.g. for cell sedimentation, accuracy +/- 1 rpm
- Magnetic rotor identification prevents the rotor from exceeding recommended maximum speed
- Imbalance switch
- Window in the lid

Cat. No.	Code	Description
CE/25380	4-16S	Centrifuge, general purpose, high capacity
CE/25382	4-16KS	Centrifuge, general purpose, high capacity, refrigerated
Please note, o	also availabl	e in a heated version, please ask for details
Accessories		
CE/25384	12449	Angle rotor 48 place for 1.5 to 2.0ml tubes, Biosafe
CE/25386	12269	Angle rotor 8 place for 50ml tubes, Biosafe
CE/25348	13060	Adapters for 15ml culture tubes, set of 2 (4 sets required to fill rotor to capacity)
CE/25388	11660	Swing out rotor, Biosafe, 4 place for buckets
CE/25390	13450	Buckets for swing out rotor, (2 sets required to fill rotor to capacity)
CE/25392	17677	Adapter 5 place for 50ml culture tubes (2 sets required to fill rotor to capacity)
CE/25394	17659	Adapter 12 place for 15ml culture tubes (2 sets required to fill rotor to capacity)
CE/25396	17653	Adapter 26 place for 1.5 to 2.0 ml tubes (2 sets required to fill rotor to capacity)



CE/25380



CE/25384



## Do More with OHAUS

From stirrers to shakers, centrifuges to dry block heaters, lifts to clamps, the newly expanded OHAUS portfolio is filled with products perfect for life science applications, giving you countless opportunities to maximize your reach in your customer's laboratories.

Don't limit yourself to just measurement — Do More!









www.ohaus.com



CE/40002



CE/40010



CE/40022



CE/40024

#### Centrifuges, compact multi-function

The Ohaus Frontier™ 5706 is a small benchtop multi-function centrifuge ideal for a multitude of spin-down applications. Characterized by reliability, various safety features, the ability to accommodate test tubes of various sizes and intuitive operation, Frontier 5706 was built to meet the basic need for liquid separation in the life sciences.

#### Standard Features Include:

- Extremely simple and intuitive operation
- With an easy-to-turn control knob, a large LCD display and the capabilities to set and view both speed in rpm and g-force, obtain precise results and enhanced functionality from this easy-to-use centrifuge.
- Compatibility with test tubes of various sizes

  Can accommodate all standard tube sizes from 1.5 mL to 50 mL, providing centrifugation for a
  wide variety of applications. It also has a large capacity, and can hold six 50 mL tubes.
- Several safety features that protect against injury
   Amongst the safety features are a sturdy mechanical lid with locking system and a rotor imbalance
   sensor that stops the centrifuge if the rotors become imbalanced or sudden shock occurs, protecting
   the operator from being injured by the high-speed spinning rotors.

\*N.B. Not all the rotors and accessories that are available are listed

Technical Specifications	Model FC5706
Speed range	200rpm - 6000rpm in 50rpm increments
Maximum RCF	4427 x g in 10g increments
Maximum capacity rotor	6 x 50ml
Cooling	Air cooled
Running time	10 seconds to 99 hours 99 minutes 59 seconds or continuous
Noise level (Depending on rotor)	≤60 ±2dB(A)
Electrical supply	230V/50 - 60Hz
Voltage fluctuation	±10%
Current consumption	0.55A
Power consumption	100W
Dimensions (WxDxH)	291 x 392 x 266mm
Weight (without rotor)	10.5Kg

Cat. No.	Code	Description
CE/40002	5706	Centrifuge, compact multi-function, 200 to 6000rpm
Rotors and a	dapters:	
CE/40010	30130877	Angle rotor, 12 x 15ml
CE/40020	30130889	Tube adapter, 7ml, pack of 2
CE/40022	30130890	Tube adapter, 5ml, pack of 2
CE/40024	30130886	Tube adapter, 1.5ml/ 2.0ml, pack of 6
CE/40030	30130878	Angle rotor, 6 x 50ml
CE/40040	30130891	Tube adapter, 30ml, pack of 2
CE/40042	30130893	Tube adapter, 15ml, pack of 2
CE/40044	30130894	Tube adapter, 15ml RB/Falcon pack of 2

## Centrifuge, micro/ haematocrit

Micro high-speed centrifuge capable of generating  $17,317 \times g$  supplied with a  $24 \times 1.5/2ml$  tubes and offering a choice of 3 additional heads, one of which can be used with haematocrit capillary tubes. The touch wheel control on a protective splash-proof interface allows for responsive operation, even when wearing gloves.

The 99 memory sets allow the operator to store and recall commonly used parameters, rotor imbalance is detected by inbuilt sensing system which stops the rotor when immediately when identified.

Cat. No.	Code	Description
CE/40300	30370691	Centrifuge, Micro, 230V, with angle rotor, 24 × 1.5/2.0 mL
CE/40302	3047202	Rotor, angle, Biocontainment 24 $ imes$ 1.5/2.0 mL, sealable,
CE/40304	3047203	Rotor, angle 18 x 2ml spin columns
CE/40306	3047204	Rotor, Haematocrit, 24 x capillaries, V2
CE/40308	301330885	Adapter, 1 x 0.5ml diameter 8mm, pack of 6
CE/40310	301330884	Adapter, 1 x 0.2/ 0.4ml diameter 8mm, pack of 6

#### Centrifuge micro, High-speed ambient and refrigerated

The Ohaus Frontier™ 5515 and 5515R microliter benchtop centrifuges provide high-speed operation for spin-down applications requiring a wide variety of tube volumes and capacities. With refrigeration capabilities (FC5515R), 10 acceleration/deceleration settings, multiple safety features, and an unmatched capacity, Frontier provides stable liquid separation for applications requiring high-speed operation.

#### Standard Features Include:

- Easy-to-use control panel
- Accepts seven sizes of rotors\* that provide flexibility for varied centrifugation needs
- Easy-to-turn rotary knob for parameter adjustments
- Waterproof keypad provides protection that helps significantly increase the lifespan of the product
- One-touch toggling between speed, g-force, and on the R model, the temperature also
- LCD display which projects information in real-time
- View and adjust user parameters from the main screen; no need to navigate through sub-screens
- Powerful induction motor reaches speeds up to 15,200 RPM in less than 16 seconds
- Maximum g-force of 21,953 RCF
- 10 acceleration/deceleration settings
- 99 memory sets for commonly-used speed, time, and temperature settings (R Model Only)
- R model has refrigeration capabilities from 40°C to -20°C, cools down from 23°C to 4°C in less than 10 minutes. Pre-cool feature quickly lowers the temperature of rotor and chamber before a run
- Motorized lid-locking system prevents centrifuge from opening during operation
- Rotor imbalance sensing system stops the motor should the rotors become imbalanced.
- The signature snap-on rotor and lid locking system allows for quick installation of rotors with just one press of a button

\*N.B. Not all the rotors and accessories that are available are listed

Technical Specifications	FC5515	FC5515R
Speed range	200rpm - 15200rpm	n in 10rpm increments
Maximum RCF	21953 x g in	10g increments
Maximum capacity (rotor)	44 x 1.5/ 2.	Oml: 12 x 5ml
Temperature range	Air cooled	-20° to 40°C in
		1°C increments
Running time	10 seconds to 99hr 99 mi	n 59 seconds or continuous
Noise level (varies by rotor)	$\leq$ 60 + 2 dB(A)	$\leq$ 57 + 2 dB(A)
Electrical supply	230V/5	0 - 60Hz
Fluctuation	±	10%
Current consumption	1.3 A	2.4 A
Power consumption	270W	500W
ECM		emissions. Basic immunity FCC emissions
Dimensions	287 x 393 x 292mm	287 x 561 x 292mm
Weight (without rotor)	20Kg	44Kg

Cat. No.	Code	Description
CE/40100	5515	Micro Centrifuge, high speed 200 to 15200rpm
CE/40102	5515R	Micro Centrifuge, high speed 200 to 15200rpm, refrigerated, 40°C
		to -20°C
Rotors and ac	dapters::	
CE/40110	30130870	Angle rotor, 24 x 1.5/ 2.0ml
CE/40120	30130885	Tube adapter, 0.5ml, pack of 6
CE/40122	30130884	Tube adapter, 0.4/0.2ml, pack of 6
CE/40130	30130871	Angle rotor, 24 x 1.5/ 2.0ml Biocontainment
CE/40140	30130879	Angle rotor, 44 x 1.5/ 2.0ml
CE/40150	30130874	Angle rotor, 4 x 8 place PCR strips
CE/40160	30130881	Rotor, Haematocrit, 24 x capillaries
CE/40170	30130873	Angle rotor, 12 x 5ml, Biocontainment



CE/40100



CE/40110



CE/40102



CE/40170



CE/40110



CE/40200



CE/40202



CE/40204

### Centrifuges, Universal, ambient and refrigerated.

Powerful and versatile centrifuges for virtually every laboratory application. The Frontier 5000 series Multi Pro centrifuges are designed for universal use in research, industrial and clinical laboratories and can be combined with a wide range of rotors and accessories for customised use. Available in 4 versions with capacities from low microliter up to 6 x 250ml and featuring high speed performance at maximum volume. With automatic rotor identification and safety features, these multipurpose centrifuges are a must for any lab. Maximum speed range of 15,000 to 18,000RPM with both ambient and refrigerated versions available to suit your application. Ideal for spinning most tubes and bottles in the lab, including microtubes, blood tubes, round bottom and conical tubes as well as microtiter plates.

#### Standard features:

- Automatic rotor identification
- Simple one-hand operation using the selection button/rotary knob
- Large back-lit LCD display shows centrifugation settings and real time parameters on one interface
- Programme storage up to 99 runs including parameter settings and rotor types
- Maintenance-free induction drive
- Thread-free rotor locking mechanism
- Optimised airflow system to keep samples cool on non-refrigerated models
- Pre-cooling programme to quickly reach desired temperature on refrigerated models
- Chemical and corrosion-resistant stainless steel housing ensures durability in laboratory environments
- Self-diagnostic programme to record usage and error history for easy maintenance and to minimise downtime
- Additional safety features for increased protection of the operator
- Over-speed protection, immediately activated upon rotor insertion
- Active imbalance detection with individual imbalance tolerances set for each rotor
- Motorised lid-locking system to protect operators
- Sealed and bio-containment rotors to avoid harmful aerosols

#### Models FC5718 and FC5718R

- Compatible with up to 19 optional rotors and 122 accessories\*
- Capacities from microliter to 4 x 100ml
  High speed centrifugation (>10000rpm) from 0.2ml up to 85ml tubes
- Temperature variable range of -20 to +40°C on refrigerated version
- Optical cytology accessories
- \*Not all rotors and accessories are listed, please enquire

#### Models FC5816 and FC5816R

- Compatible with up to 13 optional rotors and 71 accessories\*
- Capacities from microliter up to 6 x 250ml
- Improved sample processing through-put with additional rotor for blood collection tubes and standard clinical tubes
- High speed centrifugation (>10000rpm) from 0.2ml up to 250ml tubes

\*Not all rotors and accessories are listed, please enquire

Notes	

Technical Specifications	FC5718	FC5718R		
Maximum speed	18000rpm; 10rpm/ set			
Maximum RCF	23542 x g; 10 x g/set			
Maximum capacity	4 x 100ml			
Temperature range	Air cool	-20 to 40°C		
Running time	Short spin, 10 seconds to 99hr 59 min	59 seconds		
	or continuous			
Noise level (depending on rotor)	$\leq$ 60 $\pm$ 2dB(A)			
Number of compatible rotors	19			
Acceleration/ Deceleration levels	10			
Allowable Kinetic energy	16672 Nm	25111 Nm		
Electrical supply	230V/50-60Hz			
Voltage fluctuation	±10%			
Current consumption	2.0 A	3.0 A		
Power consumption	455W 660W			
Dimensions	408 x 499 x 351mm	407 x 731 x 359mm		
Weight without rotor	43Kg	60Kg		



CE/40204

Technical Specifications	FC5816	FC5816R
Maximum speed	15000rpm; 10rpm/ set	16000rpm; 10rpm/ set
Maximum RCF	21379 x g; 10 x g/set	24325 x g; 10 x g/set
Maximum capacity	6 x 250ml	
Temperature range	Air cool	-20 to 40°C
Running time	Short spin, 10 seconds to 99hr 59 mir	59 seconds
	or continuous	
Noise level (depending on rotor)	$\leq$ 61 $\pm$ 2dB(A)	$\leq$ 63 $\pm$ 2dB(A)
Number of compatible rotors	13	
Acceleration/ Deceleration levels	10	
Allowable Kinetic energy	34363 Nm	
Electrical supply	230V/50-60Hz	
Voltage fluctuation	±10%	
Current consumption	2.4 A	3.7A
Power consumption	530W	785W
Dimensions	446 x 538 x 354mm	723 x 538 x 354mm
Weight without rotor	52Kg	77Kg



CE/40206

Cat. No.	Code	Description
CE/40200	5718	Centrifuge, Universal, 18000rpm, 4 x 100ml
CE/40202	5718R	Centrifuge, Universal, 18000rpm, 4 x 100ml, refrigerated, -20 to 40°C
CE/40204	5816	Centrifuge, Universal, 15000rpm, 6 x 250ml
CE/40206	5816R	Centrifuge, Universal, 16000rpm, 6 x 250ml, refrigerated, -20 to 40°C
Accessories	for FC5718 s	series only
CE/40230	30314823	Rotor, swing-out, 4 x 100ml
CE/40232	30314861	Bucket, 100ml with cap, pack of 2
CE/40234	30314881	Bucket and rack, 2 x 50ml for conical bottom tubes 29mm dia. Pk2
CE/40236	30314882	Bucket and rack, 3 x 15ml for conical bottom tubes 17mm dia. Pk2
CE/40212	30314834	Rotor, angle, 12 x 15ml
CE/40022	30130890	Tube adapter, 5ml, pack of 2
CE/40020	30130889	Tube adapter, 7ml, pack of 2
CE/40228	30314841	Rotor, angle, 4 x 8 well PCR strips
	for FC5816	series only
CE/40214	30314820	Rotor, swing-out 4 x 250ml
CE/40262	30314901	Screw cap, rack of 250ml rotor, pack of 2
CE/40266	30314902	O-ring, rack of 250ml rotor, pack of 10
CE/40268	30314906	Rack, 3 x 50ml for conical bottom tubes 29mm dia, pack of 2
CE/40250	30314912	Rack, 9 x 15ml for round bottom tubes 17mm diameter, pack of 2
CE/40252	30314907	Rack, 1 x 50ml for round bottom tubes 34mm diameter, pack of 2
CE/40216	30314821	Rotor, angle, 6 x 250ml
CE/40254	30304371	Adapter, 4 x 15ml for Falcon tubes 17mm diameter, pack of 2
CE/40256	30304373	Adapter, 1 x 50ml for round bottom tubes 29mm diameter, pack of 2
	to fit all mod	
CE/40220	30304361	Rotor, angle, 24 x 1.5/ 2.0ml sealable
CE/40226	30314838	Rotor, angle, 24 x 1.5/2.0ml sealable
CE/40260	30314835	Rotor, angle, 44 x 1.5/ 2.0ml
CE/40122	30130884	Tube adapter, 0.4/0.2ml, pack of 6
CE/40120	30130885	Tube adapter, 0.5ml, pack of 6
CE/40222	30314824	Rotor, swing-out 2 x 3 Micro-titration plates
CE/40264	30314891	Adapter, 48 x 1.5/2.0ml tubes diameter 11mm, pack of 2
CE/40224	30314826	Rotor, angle, 6 x 85ml
CE/40240	30314893	Adapter, 1 x 15ml for round bottom tubes 17mm diameter, pack of 2
CE/40242	30314895	Adapter, 1 x 50ml for round bottom tubes 29mm diameter, pack of 2



CE/40250



CE/150

#### Micro Haematocrit Centrifuge

Tried and tested instrument that has become the industry standard. Durable construction of diecast aluminium casing with a cream stoved enamel finish while the steel lid has a matt black stoved enamel finish. It has a 2m power cord and is supplied with 100 of each heparinised and plain tubes. Overall dimensions are 23cm high x 27cm diameter. The 24 place haematocrit rotor is machined from forged aluminium billet.

- High speed 12,000rpm 14,000g
- Push button double pole electric braking
- · Safety interlocking steel lid
- Smooth acceleration
- 0-15 minute timer

#### Accessories

Micro haematocrit reader: Compact and easy to use, gives quick accurate readings of packed cell volumes.

Cristaseal: After filling the capillary tubes the dry end is pressed into the Cristaseal with a twisting motion producing a firm seal with flat boundaries.

Cat. No.	Code	Description	Pk Qty
CE/15002	01400	Micro haematocrit centrifuge	Each
CE/15004	01971	24 place micro haematocrit rotor	Each
CE/15006	01502	Micro haematocrit reader	Each
CE/15008	01503	Cristaseal	10 trays
CE/15010	01603	Heparinised capillary tubes	
		75mm 59ml	10 vials of 100 tubes
CE/15012	01604	Plain capillary tubes	
		75mm 59ml	10 vials of 100 tubes

## Centrifuge tubes

#### Centrifuge tubes

- The maximum RCF values quoted are based on use in appropriate balanced centrifuge rotors. Environmental conditions and some reagents may affect the performance of vessels. Care should always be taken when using vessels near their maximum limits.
- For correct performance all centrifuge vessels must be filled to 80% of their capacity unless otherwise stated.
- When autoclaving always ensure caps are loosened or removed to prevent accidental implosion.
- Always examine centrifuge vessels before use. Do not use if scratched, chipped or abraded

#### Microcentrifuge tubes



- Made from virgin PP to withstand vigorous applications
- Positive snap seal closure for leak tight seals
- Suitable for autoclaving at 121°C & freezing to -40°C
- Conical bottom with attached cap
- Flat needle-pierceable tops allow easy sample removal
- Graduation lines for volume estimation at a glance
- Natural colour (Additional colours, Green, Blue, Yellow and Red are available in the 1.5ml size, enquire for prices)

Cat. No.	Code	Description	Pk Qty
CT/56202	MICR-050	0.5ml Micro centrifuge tube, spin rated to 38000RCF	1000
CT/56204	MICR-150	1.5ml Micro centrifuge tube, spin rated to 21380RCF	1000
CT/56198	MICR-200	2.0ml Micro centrifuge tube, spin rated to 18000RCF	1000

#### Microcentrifuge tubes, Safety cap

- Autoclavable with open cap at 121°C for 20 minutes
- Centrifugable up to 30000g
- RNase, DNase, DNA and pyrogen free
- High chemical resistance
- Graduated
- No risk of accidental opening during incubation
- Produced in a controlled clean room

Cat. No.	Capacity ml
CT/56150	0.5ml
CT/56152	1.5ml
CT/56154	2.0ml

Safety microcentrifuge tubes featuring a specially designed cap that securely snaps the tube shut for use where sample integrity is of the utmost importance.

- Autoclavable at 121°C, freezable to -90°C
- Closed cap water bath to 80°C
- Withstands centrifugation up to 30,000 g
- RNase, DNase and pyrogen free

Cat. No.	Description
CT/12050	Tube, microcentrifuge with safety cap, non-sterile, 5ml

#### Individual PCR Tubes



- 0.2ml and 0.5ml flat capped tubes are compatible with all current thermal cycler blocks with heated lids.
- Integral snap shut caps.
- Certified free from DNase, RNase and endotoxins.
- Natural colour (Also available in Red and Yellow, enquire for prices)

Cat. No.	Code	Description	Pk Qty
CT/56312	THER-02N	0.2ml, thin walled with domed cap	1000
CT/56314	THER-02NF	0.2ml, thin walled with flat cap	1000
CT/56318	THER-05NX	0.5ml, thin walled with flat cap	1000

#### Microtube rack, acrylic

Rack for 5ml Microcentrifuge tubes, 20 place, acrylic, houses all major brands of 5mL tubes. The tubes sit upright and are supported at two levels in the rack. The crystal clear colour of the rack allows for easy sample viewing.

Cat. No.	Description
TR/12000	Rack, Microcentrifuge tube, acrylic, 20 x 5ml

#### PCR Strip Tubes



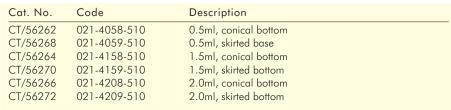
- Compatible with all current 0.2ml 96 well cycler blocks with heated lids
- Compatible with all 8-Channel pipettors
- Certified free from DNase, RNase and endotoxins.

Cat. No.	Code	Description	Pk Qty
CT/56320	THER-08N	Strip of 8 x 0.2ml tubes, no caps	2 x 125
CT/56322	THER-ST8	Strip of caps, domed for 0.2ml tubes	2 x 125
CT/56330	THER-ST8F	Strip of caps, flat for 0.2ml tubes (RT-PCR Compatible)	2 x 125
CT/56324	THER-266	Strip of 8 x 0.2ml tubes with domed clapperboard	
		style caps	2 x 125
CT/56326	THER-A8N	Strip of 8 x 0.2ml tubes with integral, individual	
		hinged flat pierceable caps.	2 x 125

For suitable racks please see racks section on page 361.

## Microcentrifuge tubes, screw cap.







CT/56152



CT/12050



CT/56318



TR/12000



CT/5632



CT/12030 and CT/12032

## Disposable polypropylene centrifuge tubes and caps

Disposable polypropylene centrifuge tubes and caps with recessed lid and sealing ring to prevent leaking. Chloroform resistant graduations and frosted writing area allows for permanent identification and labelling. Autoclavable to 121°C and can be stored in freezers to -80°C. Manufactured in ISO 9001:2000 and 100,000 grade cleanrooms. Gamma irradiated, RNase & DNase free, DNA free,

- Supplied in a case of 500 with inner bags of 25
- Can be spun up to 12,000g (15mL) & 15,000g (50mL)
- $\bullet$  Easy-to-read graduations accurate to  $\pm 2\%$ , 0.5mL increments (15mL) or 2.5mL increments (50mL)

Cat. No.	Description
CT/12030	Centrifuge tube with cap, disposable, sterile, 15ml
CT/12032	Centrifuge tube with cap, disposable, sterile, 50ml

## Centrifuge tubes, plastic 15ml and 50ml, graduated

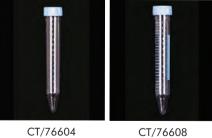


Code	Nominal Cap. ml	l x d (mm)	Max RCF (xg)	Material	Grads.*	Sterility	Cap type	Base shape	Inner Pack	
BULK-151	15	118 x 16.5	6400	PP	М	NS	None	Conical	~	
2087-000	15	118 x 16.5	1800	PS	M	NS	FT	Conical	~	
2088-000	15	118 x 16.5	6400	PP	M	NS	FT	Conical	~	
2099-STP	15	118 x 16.5	1800	PS	Р	S	FT	Conical	50/Rack	
2098-STP	15	118 x 16.5	6400	PP	Р	S	FT	Conical	50/Rack	
2087-00P	15	118 x 16.5	1800	PS	Р	NS	FT	Conical	~	
2088-00P	15	118 x 16.5	6400	PP	Р	NS	FT	Conical	~	
CTT029	15	118 x 10	2000	PS	Р	S	FT	Conical	50	
CTT026	15	118 x 10	6000	PP	Р	S	FT	Conical	50	
CTT038	50	114 x 13	9400	PP	Р	S	FT	Conical	50	
2092-000	50ml	115 x 28	10000	PP	M	NS	FT	Conical	50	
2092-00P	50ml	115 x 28	10000	PP	Р	NS	FT	Conical	~	
2096-000	50ml	115 x 28	10000	PP	M	NS	FT	Conical	~	
2093-000	50ml	115 x 28	1700	PP	M	NS	FT	Skirted	~	
2093-NAT	50ml	115 x 28	1700	PP	M	NS	FT	Skirted	~	
2082-STR	50ml	115 x 28	10000	PP	M	S	FT	Conical	25/Sleeve	
2082-STP	50ml	115 x 28	10000	PP	Р	S	FT	Conical	25/Sleeve	
2093-STR	50ml	115 x 28	1700	PP	M	S	FT	Skirted	25/Sleeve	
*P = printed (	*P = printed graduations M = moulded graduations Cap type $FT = Flat top$									



CT/76602

CT/76212



CT/76608

Cat. No.	Code	Description	Pk Qty
CT/76212	BULK-151	15ml centrifuge tube, non-sterile	1000
CT/76604	2087-000	15ml centrifuge tube, non-sterile	1000
CT/76214	2088-000	15ml centrifuge tube, non-sterile	1000
CT/76606	2099-STP	15ml centrifuge tube, sterile	500
CT/76612	2098-STP	15ml centrifuge tube, sterile	500
CT/76608	2087-00P	15ml centrifuge tube, non-sterile	1000
CT/76610	2088-00P	15ml centrifuge tube, non-sterile	1000
CT/86200	CTT029	15ml centrifuge tube, sterile	500
CT/86202	CTT026	15ml centrifuge tube, sterile	500
CT/86204	CTT038	50ml centrifuge tube, sterile	500
CT/76220	2092-000	50ml centrifuge tube, blue cap non-sterile	500
CT/76224	2092-00P	50ml centrifuge tube, blue cap non-sterile	500
CT/76226	2096-000	50ml centrifuge tube, natural cap non-sterile	500
CT/76228	2093-000	50ml centrifuge tube, blue cap non-sterile	500
CT/76230	2093-NAT	50ml centrifuge tube, natural cap non-sterile	500
CT/76232	2082-STR	50ml centrifuge tube, blue cap, sterile	500
CT/76234	2082-STP	50ml centrifuge tube, blue cap, sterile	500
CT/76236	2093-STR	50ml centrifuge tube, blue cap, sterile	500













CT/76214

CT/76610

CT/76220

CT/76224

CT/76226

CT/76228

CT/76230

#### Nalgene Oak Ridge centrifuge tubes

NALGENE

Supplied with linerless, non-contaminating, screw cap which is leak proof during normal use. Suitable for use up to 50,000xg in refrigerated and non refrigerated centrifuges. Autoclavable.

Polycarbonate, transparent, with polypropylene cap

Cat. No.	Code	Capacity,ml	length x dia, mm	Pk Qty
CT/36632	3118-0030	30	95 x 26	10
CT/36634	3118-0050	50	107 x 29	10



CT/3663

C1/36632	3118-0030	30	95 x 26	10
CT/36634	3118-0050	50	107 x 29	10

Polyallomer, transparent, with polypropylene cap

Cat. No.	Code	Capacity,ml	length x dia, mm	Pk Qty
CT/36902	3119-0010	10	81 x 16	10
CT/36904	3119-0030	30	95 x 26	10
CT/36906	3119-0050	50	107 x 29	10



CT/3690

PTFE/FEP, translucent with ETFE screw cap

For correct performance these tubes must be filled to 100% capacity

Cat. No.	Code	Capacity,ml	length x dia, mm	Pk Qty
CT/36702	3114-0010	10	81 x 16	10
CT/36704	3114-0030	30	95 x 26	10
CT/36706	3114-0050	50	107 x 29	10



CT/3670

## Centrifuge tubes, borosilicate glass, 10 - 45ml

PYREX®	
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Cat. No.	Code	Nominal Cap, ml	l x d (mm)	Max RCF (xg) <sup>1</sup>	Grad's	Base shape	Pk Qty
CT/12002	1660/02M	10	90 x 16	6200	None	Round	40
CT/12004	1680/02M	12	110 x 17	3000	None	Cone	40
CT/12006	3460/02M	12	110 x 17	3000	Printed	Cone	40
CT/12008	1660/06M	25	90 x 24	3000	None	Round	40
CT/12014	1680/08M	45	90 x 30	3000	None	Round	40



CT/12002 CT/12004 and CT/12006

## Centrifuge tubes, soda glass, 15ml

MAX RCF 1300g,1mm wall thickness,15ml capacity

Cat. No.	Code	I x d	Description	Pk Qty
CT/92002	G131/01	112 x 17	Conical with rim	100
CT/92004	G131/71	112 x 17	Conical rimless	100
CT/92006	G132/01	112 x 17	Conical graduated with rim	100
CT/92008	G138/01	110 x 17	Cylindrical with rim	100



CT/9200

## Centrifuge tubes, glass, to ASTM D96

**PYREX**®

printed graduations, maximum RCF 3000 x g.

Cat. No.	Code	Nominal cap, ml	L x neck ID	Shape	Pk Qty
CT/12010	3440/02M	100	157 x 17 mm P	ear ear	2
CT/12012	3450/02MP	100	200 x 17 mm (	Cone	2

CT/12010 also complies with ASTM D-1966 and CT/12012 also complies with ASTM D91, D-893 and D-1796



CT/12010

CT/12012



CH/80114

#### Chairs and stools

Laboratory chairs and stools, Polyurethane, can be cleaned to clean room standard as well as the general laboratory environment, adjustable height.

Cat. No.	Description
CH/80112	Laboratory high chair with backrest and footrest, seat adjustable 55 to 80cm
CH/80114	Laboratory low chair with backrest, seat adjustable 43 to 56cm
CH/80116	Laboratory high stool with footrest, seat adjustable 60 to 85cm
CH/80118	Laboratory low stool, seat adjustable 40 to 58cm

# Chloride meter

#### Chloride analyser, model 926 Mk 3



Designed for the determination of Chloride ions based on a coulometric titration wherein the reagent (Silver lons) is precisely and quantitatively generated by passing a constant current between electrodes. This is performed at the time of analysis and the end point is determined when excess Silver lons cause a change in conductivity. This change is identified by the detector electrodes. The accuracy of the method used is directly affected by the volume of the sample dispensed by the pipette. A fixed volume; 500µl for Model 926, and either 100µl or 20µl for model 926S, is pipetted into the buffer solution. A further 6 samples from the 926, and 19 from the 926s may be added into the buffer before the instrument prompts a reagent change. Key application areas:

#### Industrial model 926

Designed for the detection of salt and salinity in industrial processes where they represent serious contamination. The coulometric method provides a sensitivity enabling ppm ranges to be read in boiler feed water. In addition it is ideal for polymer washes, borehole slurries as well as soil salinity

Intended for general laboratory use, the 926 is calibrated in ppm (mg/l) Chloride. The Select button offers the immediate conversion of Chloride content into mg, % Salt (Sodium Chloride) of the original sample, assuming a ratio of 1g of sample to 100ml diluent.

#### Clinical model 926S

Designed for Chloride measurement in biological samples and calibrated in mmol/l. Raised Chloride concentration in the sweat of young children is a Cystic Fibrosis indicator, original samples as little as 20µl from all types of sweat generators are sufficient diagnose the condition. The Select button offers the immediate switches between sample volumes of  $20\mu l$  or  $100\mu l$ .

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CM/35002

Technical Specific	ations	
Model	926	926S
Application	Industrial	Clinical
Units	mg/l	mmol/l
Sample size	500μl	100µl or 20µl
Readout range	10-999 mg/l	
	2-165mg, % Salt	10-299 mmol/l
Accuracy	±3mg/l at the 200 mg/l level	Results would be within one
		Standard deviation of the mean
		values of recognised QC schemes
		i.e. within $\pm 2.2$ mmol/l at the 100
		mmol/l level
Reproducibility	CV < 1% for 20 replicate samples	CV 100 $\mu$ l sample <1% 20 $\mu$ l
	@ 200 mg/l (excluding	sample <1.5%
	pipetting errors	
Measurement time	36 seconds to 200 mg/l	26 seconds to 100 mmol/l
Voltage (Mains adapter input)	100 - 240V~, 50 - 60	Hz, 0.6A
Dimensions	315 x 200 x 250	mm
Net weight	1.9Kg	
Items supplied	Printer cable 9 way RS232, buffer	Printer cable 9 way RS232, buffer
with unit	(500ml), 200Mg/l standard	(500ml), 100 mmol/l standard
	(100ml), 1 pack of anodes, 1 pack	(100ml), 1 pack of anodes, 1 pack
	of electrodes, 2 marked beakers,	of electrodes, 2 marked beakers,
	Silver electrode polish, stirrer,	Silver electrode polish, stirrer,
	operator manual, universal mains	operator manual, universal mains
	adapter and USB lead A(M) - B(M)	adapter and USB lead A(M) - B(M)

#### Active Salt software for 926 Industrial models only:

The active salt software adds to the versatility of the 926 Industrial Chloride analyser\*. Originally designed for use within the cheese industry, it may be applied to any food product requiring salt analysis in a food processor's QA/ QC laboratory.

Active salt can collect data from a balance with RS232 output and the results from a Chloride analyser. One PC with one Active salt package can collect data from two analysers and two balances.

\*Not suitable for use with the clinical version 926S

#### Advantages include:

- Advantages include: No transcription errors
- · Instant product slat content calculations
- No need to achieve specific sample and diluent weights

Cat. No.	Description	
CM/35002	Chloride analyser model 926 Industrial	
CM/35004	Chloride analyser model 926S Clinical	
CM/35034	Acid Salt software	
CM/35006	Set of 3 anodes	
CM/35008	Set of cathode and detector electrodes	
CM/35010	Electrode polish for cleaning electrodes	
CM/35012	Combined acid buffer, 500ml	
CM/35014	Marked reaction beaker	
CM/35016	Standard 200mg/l, 6 x 100ml	
CM/35036	Standard 100mmol/l, 6 x 100ml	



CM/35004

## Chromatography columns

#### Chromatography column, with Rotaflo® stopcock

Pyrex glass with sintered disc porosity 0 and Quickfit ground glass socket.

1	MADE IN
- (1	QUICKFIT
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Cat. No.	Size, dia. x l, mm	Socket
CH/12012	10 x 200	14/23
CH/12022	20 x 300	19/26

## With sintered disc porosity 0 and GP Rotaflo® stopcock



Cat. No.	Size, dia. x l, mm	Socket
CR20/30	20 x 300	19/26
CR20/50	20 x 500	19/26
CR30/50	26 x 500	24/29
CR60/50	40 x 500	40/38

## Chromatography column, with Quickfit® socket and cone

Pyrex glass with sintered disc porosity 0. Joint size B24 socket and B19 cone



Cat. No.	Size, dia. x l, mm	Pk Qty
CH/12002	18 x 200	5
CH/12004	18 x 300	5



CH/1200

# **Chromatography papers**

#### Chromatography papers

#### Whatman<sup>\*</sup>

Two grades of paper, 1 CHR for general purpose use and 3mm CHR for higher sample loading and blotting electrophoretic gels. Supplied in packs of 100 sheets or 100m reels.

Cat. No.	Code	Grade	Size, cm	
Sheets				
CH/17002	3001-845	1 CHR	10 x 30	
CH/17004	3001-861	1 CHR	20 x 20	
CH/17006	3001-878	1 CHR	25 x 25	
CH/17008	3001-917	1 CHR	46 x 57	
CH/17010	3030-861	3mm CHR	20 x 20	
CH/17012	3030-917	3mm CHR	46 x 57	
CH/17014	3030-931	3mm CHR	58 x 68	
Reels				
CH/17026	3001-604	1 CHR	1 cm wide	
CH/17028	3001-614	1 CHR	2 cm wide	
CH/17030	3001-640	1 CHR	3 cm wide	
CH/17032	3001-652	1 CHR	4 cm wide	
Other sizes ava	ilable on request			



CH/170



# Chromatography select vial kits

A range of convenient kits for chromatography autosamplers. Each box contains 100 vials, caps and seals in a new clamshell pack made from specially selected chromatographically clean materials. Please advise make of sampler when requesting prices and ordering.

Cat. No.	Code	Description	Pk Qty
CV/63292	2-CV(A)7-CP	2mL amber, crimp top vials, with	
		rubber/PTFE crimp caps.	100
CV/63296	2-CV7-CP	2mL clear, crimp top vials, with	
CV//2000	0.01/07.00	rubber/PTFE crimp caps.	100
CV/63298	2-CVST-CP	2mL clear, crimp top vials, with silicone/PTFE crimp caps.	100
CV/63300	2-RV8-CP	2mL clear, snap top vials with	100
C v / 0 3 3 0 0	2-100-01	rubber/PTFE snap caps.	100
CV/63302	2-RVST-CP	2mL clear, snap top vials with	
		silicone/PTFE snap caps.	100
CV/63304	2-SV101-CP	2mL clear, screw top vials with	
		silicone/PTFE screw caps.	100
CV/63308	2-SVW(A)8-CP	2mL amber, screw top vials, with	100
CV/63312	2-SVW8-CPK	rubber/PTFE screw caps. 2mL clear, screw top vials, with	100
CV/03312	2-37 770-CIR	rubber/PTFE screw caps.	100
CV/63314	2-SVWBSTX-CP	2mL clear, screw top vials, with	100
		bonded silicone/PTFE pre-cut screw caps.	100
CV/63316	2-SVWST-CPK	2mL clear, screw top vials, with	
		silicone/PTFE screw caps.	100
* These vials use	the 8-SCJ type caps		

CH/92004

# Chromatography separating chambers

#### Standard separating chamber

For standard 20x20cm plates. Has a broad ground-flanged edge and flat chamber bottom. The heavy lid ensures a tight seal.

#### Batch separating chamber

Vertical, integral grooves allow the insertion of 5 plates 200x200mm. Ideal for quantitative trace analysis where this chamber can be used to wash the plates before use and to store them.

#### HPTLC separating chamber

Suitable for 100x100mm plates. Has broad, moulded flange edge and lid.

Cat. No.	Description
CH/92002	Standard separating chamber with lid
CH/92004	Batch separating chamber with lid
CH/92006	HPTLC Separating chamber with lid

#### Chromatography plates

Merck silica gel 60 has a unique polymeric binder that results in a uniform, hard surface that will not easily crack or blister. This smooth, extremely dense plate coating ensures narrow bands and maximum separation efficiency with the lowest background noise. Layer thickness 250  $\mu m$ , particle size of 10 - 12  $\mu m$ . Inorganic fluorescent indicators for UV detection of colourless substances.

The pre-scored plates offer easy snapping into smaller sizes with up to seven formats in one plate:  $200\times200$ ,  $150\times200$ ,  $100\times200$ ,  $50\times200$ ,  $100\times150$ ,  $100\times100$ , and  $50\times10$  mm TLC plates, unmodified silica gel 60

Cat. No.	Description	Pk Qty
CH/17340	Chromatography plate, Plastic sheet SI60 F254, 4 x 8cm.	50
CH/17342	Chromatography plate, Glass plate, SI60 F254, 5 x 20cm.	25
CH/17344	Chromatography plate, Plastic sheet, SI60, F254, 20 x 20cm.	25
CH/17346	Chromatography plate, Aluminium sheet, SI60, 5 x 10cm.	50
CH/17348	Chromatography plate, Aluminium sheet, SI60, 20 x 20cm.	25
CH/17350	Chromatography plate, Aluminium sheet, SI60, F254, 20 x 20cm.	25
CH/17352	Chromatography plate, Glass plate, SI60, F254, 5 x 10cm.	25
CH/17354	Chromatography plate, Glass plate, SI60, F254, 10 x 20cm.	50
CH/17356	Chromatography plate, Glass plate, SI60, GLP, F254, 20 x 20cm.	25
CH/17358	Chromatography plate, Glass plate, SI60, F254, 20 x 20cm	
	pre-scored to 5 x 20cm.	25



CH/17348

#### Silica Gel for Chromatography columns

Cat. No.	Description	Pk Qty
CH/17360	Silica Gel 60, chromatography grade, (0.2 - 0.5mm)	1Kg
CH/17362	Silica Gel 60, chromatography grade, (0.063 - 0.200mm)	1Kg
CH/17364	Silica Gel 60, chromatography grade, (0.040 - 0.063mm)	1 Kg

#### **Cleaning**

#### Lipsol Detergent

- Excellent cleaning performance, ideal for use with laboratory glassware, plasticware, rubber, ceramics and stainless steel
- Economical price
- Non-corrosive, non-irritant and totally biodegradable surface-active cleaning agent
- Free of chlorine bleaches, phosphates and enzymes

Cat. No.	Description	Pk Qty
CD/12000	Lipsol concentrate	2 x 5 Litre Jerry Cans



CD/12000

#### Disinfectant, virucidal, Virkon

A wide spectrum disinfectant which has been proven to be effective against all 22 virus families affecting man and animals, including HIV and Hepatitis B, and successfully tested on over 400 strains of bacteria. In short, Virkon kills all known key human pathogens.

Virkon is still the ultimate high level surface disinfectant suitable for use on surfaces in Healthcare, Laboratory, Food preparation and production, Catering, Residential, Hotel, Transport, Emergency Services and Public environments. In addition to Virkon powder a new 5gm tablet provides a quick way to make up 500ml of 1% Virkon solution. The tablet dissolves cleanly and quickly, and is conveniently shaped to pop into the neck of a trigger spray bottle for rapid and safe application of the solution. Virkon can also be applied, in powder form, direct to spillages of blood and other body fluids. Noncorrosive when used as directed, non-bleaching, bio-degradable. Use 1% solution.

Cat. No.	Size	Pk Qty
CD/51002	50g sachet	50
CD/51004	500g squeeze puff pack	6
CD/51006	1 x 5kg drum	each
CD/51008	10 x 5 gm Tablet	20 tubs
CD/51010	50 x 5 gm Tablet	12 tubs



CD/5100

#### Surface Decontaminant

DR-NAse Free spray is a surface decontaminant that is specially formulated to eliminate RNase and DNAse from laboratory glassware, plastics, stainless steel and any laboratory surface. Ideal for cleaning equipment, pipettors, gel boxes and any laboratory ware that cannot be autoclaved. Easy to use, apply to the area to be decontaminated and rinse, DR-NAse Free leaves no residue that could interfere with subsequent enzymatic reactions.

DR-NAse Free offers a nontoxic formula that replaces carcinogenic chemicals such as DEPC. No need to bake glassware, it is non-abrasive and leaves no residue that can interfere with gel polymerization. Being non-biohazardous, it can be stored on the laboratory bench for convenience, case of 1.

Cat. No.	Description
CD/10000	Decontaminant, surface spray, DR-NAse Free, 70 cl spray bottle



CD/1000

#### Decon 90

decon

The leading surface active cleaning agent and radioactive decontaminant, for laboratory, medical and industrial critical cleaning applications. Biodegradable, bactericidal, phosphate free, non-flammable and totally rinsable. Offering improved performance without the unacceptable hazards associated with the storage, handling, use and disposal of corrosive acids. Decon 90 provides consistent and reliable cleaning and decontamination in the modern environment.

Suitable for cleaning glassware, plastics, ceramic surfaces and ferrous metals.

Cat. No.	Size, litre
CD/61002	1
CD/61004	5
CD/61008	20



CD/61004



CD/61304





CD/61104



CD/61204



CC/47022





CC/47060

CC/47062

#### Neutracon

A specialised surface active cleaning agent for safe cleaning and decontamination of sensitive materials which may be corroded, etched, discoloured or weakened by acidic or alkaline cleaning agents. Biodegradable, phosphate free, non-corrosive, non-flammable and totally rinsable. Specifically formulated to provide an effective near neutral cleaning agent with maximum cleaning and decontaminating properties.

Decon Neutracon is safe to use on non-ferrous metals, soft glass, coated lenses, polymer surfaces and other sensitive materials which must not be cleaned by acid or alkaline cleaning agents.

Cat. No.	Size, litre
CD/61302	1
CD/61304	5

#### Decon Decomatic



A liquid surface active cleaning agent for use in all types of laboratory, medical and industrial glassware washing machines. Biodegradable, bactericidal, phosphate free, non-foaming, non-flammable and totally rinsable. Decon Decomatic has been formulated to provide outstanding detergent and free rinsing action for improved results from every type of glassware washing machine which accepts a main wash detergent in liquid form. May also be used as a pre-soak prior to machine washing.

Cat. No.	Size, litre
CD/61104	5
CD/61106	10

#### Decon Acid Rinse



decon

Acid rinse (neutraliser) and pre-wash (preliminary) cleaner. For use in all types of laboratory, medical and specialised industrial glassware washing machines used in conjunction with main wash detergents. Biodegradable, bactericidal, non-foaming, non-flammable and totally rinsable. Decon Acid Rinse improves the performance of glassware washing machines by preventing the carryover of traces of the main wash detergent which may be alkaline or contain phosphates and by inhibiting the deposition of salts from 'hard' water supplies.

Cat. No.	Size, litre
CD/61204	5

#### Paper towels and cleaning cloths.

Paper towel, perforated roll, sheet size 24 x 46cm.

Cat. No.	Code	Description
CC/47022	7285	Single ply, blue, for removal of lighter soiling from surfaces, pack of 24 rolls
CC/47030	7308	Two ply, blue, strong, fast absorbing with good wet strength pack of 24 rolls
Accessories		
CC/47034	7041	Dispenser for single and double ply paper towels

Cleaning cloth, blue, centrefeed roll of 150 sheets highly absorbent, strong and durable (wet or dry), resists most solvents, reduces residue, allows fast light-duty cleaning.

Cat. No.	Code	Description
CC/47060	8380	Cleaning cloth roll, in free standing dispenser box

Cleaning cloth, re-useable, quarter folded, for heavy-duty tasks, highly absorbent, strong and durable (wet or dry), resists most solvents, reduces residue.

Cat. No.	Code	Description
CC/47062	8388	Cleaning cloth folded, in 4 water repellent wallets of 50 sheets

#### Medical wipes

Medical wipe, white interfolded, case of 66 cartons of 80 sheets (5280 sheets total).

Cat. No.	Code	Description
CC/47000	7432	Medical wipes, white, interfolded



CC/47000

#### Facial towels

Facial tissues, suitable for use in high hygiene washrooms.

Cat. No.	Code	Description
CC/47064	8837	Facial tissues, case of 21 boxes of 100 sheets each



CC/47064

#### Cleansing wipes

Cleansing wipes for hand and surface.

Cat. No.	Code	Description
CC/47070	7784	Hand and surface sanitising wipes, alcohol free, 12 tubs of 50 sheets
CC/47072	7772	Surface wipes, pre-soaked, pack of 6 tubs of 50 sheets



CC/47070

#### Hand cleaning

HypaClean Foam Hand Sanitiser, alcohol free, reducing the risk of skin irritation A wall mounted dispenser is available separately to hold 1 litre pouches, each provides approximately 2000 hand washes.

- Foaming hand sanitiser effective against bacteria, viruses, mycobacterium and spores
- Independently proven to EN1500

Cat. No.	Description
CC/47100	Hand sanitiser, alcohol free, pack of 6 x 1 litre
CC/47102	Dispenser, wall fitting for hand sanitiser
CC/47104	Sanitiser, bench top, pump action, pack of 12 x 500ml



CC/47100







CC/47104



CC/15100



CC/15104



CC/15010 and CC/15014

#### **Colony Counters**

#### Hand held colony counter

Multi-function, hand-held electronic colony counter using a Sharpie pen for marking to prevent missing or double counting colonies. A thumb button is included in the package which allows you to use the colony counter as a digital tally counter.

- Select between an audible beep or an LED flash to acknowledge count
- Store up to 32 separate counts and display the total of all counts
- Count up/ down verification
- Quick and easy change of marker pen
- Lock counter off to allow use of the marker without registering additional counts

Cat. No.	Description	
CC/15100	Hand held colony counter package comprising of counter, black Sharpie marker	
	pen, 3V CR1225 battery, weighted stand and thumb button.	
Replacement pen	ns, sold in packs of 12	
PC/93312	Pens Sharpie marker pens, Black	
PC/93314	Pens Sharpie marker pens, Red	
PC/93316	Pens Sharpie marker pens, Blue	
PC/93318	Pens Sharpie marker pens, assorted	

Mini light box for use with the hand held colony counter, or used as a stand-alone item. Small enough to be stored in a drawer, it greatly saves on bench space.

- Viewing area, 100 x 127 mm is perfect for quick screening of 96-well plates, Petri dishes, electrophoresis gels, slides and transparencies
- Powered by four AA batteries which are included.
- Compact size, 161 x 135 x 44mm
- The magnifier swivels and gives 1.75x magnification
- Lens measures 185 x 100mm and the stand is 207mm high

Cat. No.	Description	
CC/15102	Mini light box with batteries	
CC/15104	Mini magnifier for use with light box	
BA/93006	Batteries, Alkaline size AA, spare for Mini light unit, pack of 4	

#### SC6 PLUS Colony Counter



Touch pressure with felt tip marker on petri dish registers cumulative count on the digital display with confirmation by audible tone (can be turned on or off). The pressure required to register a count can be adjusted to suit each user. Averaging facility calculates average count over multiple plates Counting results as well as useful statistics including SD can be sent directly to the accessory printer or to a computer via a USB cable supplied. Sub-stage illumination by low energy bright LED's allows glare-free optimum viewing. A switchable black background is provided to enhance viewing of translucent and difficult to see colonies. Supplied with two Wolffhuegel graticules and dish centering adapters to facilitate use with 50mm to 90mm dishes. A choice of magnifiers and a printer are available as optional accessories.

- Pressure sensitive counting
- Average count facility
- Bright white energy saving LED lighting
- With BioCote antimicrobial protection
- Audible confirmation
- · Choice of light or dark background
- Connectivity to printer or computer

Technical	${\sf Specifications}$

Lighting White LED array Digital display 3 digit LED Count 0 to 999 310 x 300 x 140 Dimensions (w x d x h) mm Mass, kg

Electrical supply 120 to 230V, 50 / 60Hz, 70W

1
1
1
1
on discs 10
2
5

#### **Colorimeters**

#### The CHROMA Model 260 Programmable Colorimeter



Full programmability allowing up to 100 methods to be installed by the user. This permits semi-automatic operation with the user only required to insert the prompted filter. An RS232 output allows the use of a serial printer and every result, blank and calibration is time stamped. The unit allows quick Absorbance and Transmission measurements with Auto- Zero, Concentration with Standard Solutions or Factor as well as the Kinetic Reaction Rate and End Point methods. Supplied with power supply, cuvette holder, cuvettes and bulb.

Technical Specifications				
Display	LCD Programmable			
Wavelength	Range 400-750 nm			
Wavelength Settings	Selection of Drop-in Filters available			
Bandpass	Gelatin 40 nm, Interference 6-10 nm			
Modes	Absorbance, Transmission. Concentration, Factor, Kinetic (Rate and End Point) (Sample and Reagent blank)			
Methods	100 programmable			
Sample Numbering	Sequential and alpha-numeric 16 characters			
Absorbance Range	0.000 to 1.999			
Absorbance Resolution	0.001			
Transmission Resolution	0.001			
Light Source	Pre-focused tungsten lamp			
Detector	Silicon Photo diode			
Output	RS232			
Stability	$<\pm$ 0.005A in any 15 min period			
Photometric Reproducibility	± 1%T using same cuvette or test tube			
Size and weight	218L x 230W x 188H (mm), 2.2Kg net			
Power Requirements	90-264 VAC Auto-ranging or 12 V DC Battery			



CO/45104

#### Gelatin filters

These are low cost selection devices which produce or transmit a wide band of radiation usually  $\pm$  20 nm. Most colorimetric analyses have a wide absorption band which allows excellent results to be obtained in conjunction with the CHROMA colorimeters. Coverage of all wavelengths in the visible spectrum is catered for using a set of 8 Gelatin filters. Most colorimeters are used for only one type of analysis and will require the use of only one filter.

#### Interference filters

These are used to select wavelengths more accurately by providing a narrow bandpass typically of around 10nm. The interference filter also only absorbs approximately 10% of the incident radiation over the whole spectrum thereby allowing light of higher intensity to reach the detector.

#### Sample containers

Sample containers are offered in a variety of forms depending on whether the important factor is sample size, speed of measurement or accuracy. For large dilute samples, sets of 12 matched test tubes are available. For smaller more concentrated samples cuvettes are offered.

#### Sample holders

Each instrument is supplied with a standard 10 mm cuvette holder for use with 45 mm high  $10 \times 10$  mm glass or plastic cuvettes.

Cat. No.	Description	Pk Qty
CO/45104	Colorimeter model 260	
CO/45120	Filter, Gelatin 430nm	
CO/45122	Filter, Gelatin 470nm	
CO/45124	Filter, Gelatin 490nm	
CO/45126	Filter, Gelatin 520nm	
CO/45128	Filter, Gelatin 540nm	
CO/45130	Filter, Gelatin 580nm	
CO/45132	Filter, Gelatin 600nm	
CO/45134	Filter, Gelatin 710nm	
CO/45010	Gelatin filters, set of 8	
	430, 470, 490, 520, 540, 580, 600 and 710nm	1
CO/45012	Interference filters 405nm	1
CO/45014	Interference filters 510nm	1
CO/45016	Interference filters 546nm	1
CO/45018	Interference filters 600nm	1
CO/45020	Interference filters 660nm	1
CO/45022	Interference filters 680nm	1
CO/45026	Test tubes matched, small	12
CO/45028	Test tubes matched, medium	12
CO/45030	Test tubes matched, large	12
CO/45032	Cuvettes plastic disposable,10mm	100
CO/45034	Cuvettes, plastic disposable,10mm	1000
CO/45052	Cuvette holder, 10mm & large test tube	1



CO/85402

#### Colour measuring

#### Lovibond Tintometer LC100

Lovibond

The Lovibond LC100 enables settings and maintaining colour standards throughout the manufacturing process. It is a lightweight tool that is easy to handle and ready to use. In just over a second, it not only provides a reading of the sample, but also a report telling how close the colour is to a measured standard.

The LC100 automatically creates conformance reports in either PDF or Excel formats for each stored sample against each standard. These can easily be shared with a PC or directly to a compatible printer (via USB stick).

The SV100 holder supports the LC100 at an ergonomic viewing angle to enable the measurement in Lovibond optical cells. A secure cap is provided to cover the sample, protecting it from any excessive ambient light, enabling guick yet accurate readings.

Together, the Lovibond LC100 and SV100 create an integrated package that is the ideal solution for the colour measurement of food, powder, cosmetics, pastes and pharmaceuticals.

Technical Specifications	
Measuring Geometrics	45/0 Image Capture
Light Source	Independent tri-directional 25 LED (8 visible wavelengths; 1 UV)
Illuminant/Observer	D65&A(10)
Standards/ Sample storage	30/350
Measurement Time	1.8 seconds
Measuring area	4 & 8mm
Short term repeatability	Typical 0.10 ∆ E 94 on White (D65/10)
Display	4.5cm Colour TFT
Data interface	USB
Operating temperature	0° to 40°C (50° to 104°F)
Storage temperature	-20° to 60°C (-4° to 140°F)
Humidity range	20-80% RH (non-condensing)
Altitude	2000m

Cat. No.	Code	Description
CO/85400	401100	Lovibond LC100 Spectrophotometer
CO/85402	401120	Integrated package, LC100 and SV100 kit



CO/85002

#### Lovibond Tintometer Model F

The Model F is a versatile instrument for measuring the colour, in terms of Lovibond units, of products that transmit light as well as opaque solids, powders and pastes. The user simultaneously compares the colour of light that is either transmitted through or reflected from the sample with that transmitted through a series of glass colour filters in 3 primary colours - red, blue and yellow. The slides are adjusted until a visual colour match is found for the light from the sample and the colour is then expressed in Lovibond units.

The Tintometer Model F is specified in official test methods for colour determination. Each version is supplied with a complete set of Lovibond glass filters (Red 0.1 - 70; Yellow 0.1 - 70; Blue 0.1 - 40; Neutral 0.1 - 3.0), a sample chamber insert for easy cleaning, rectangular fused glass cells of the appropriate size and instructions. Optional sample holders are available for measuring light-reflecting products. Includes a 12 Volt ac power pack switchable to suit 110/220/Volt supply.

Cat. No.	Code	Description
CO/85002	180000	Tintometer Model F
CO/85004	180110	Replacement sample chamber insert for Model F
CO/85010	606130	5 1/4 optical glass cell
CO/85012	606080	1 optical glass cell
CO/85014	606070	1/2 optical glass cell

#### Colour measuring Lovibond PFXi-195 series, automatic transmittance

#### Objective Colour Data for Process Control

The Lovibond® PFXi-195 Series is a highly efficient colorimeter for optically clear samples that meets the demand for consistent and reliable colour data. It removes all subjectivity involved in colour grading, supplying unbiased readings that are unaffected by operator or environment.

#### Comprehensive Selection of Standard Colour Values

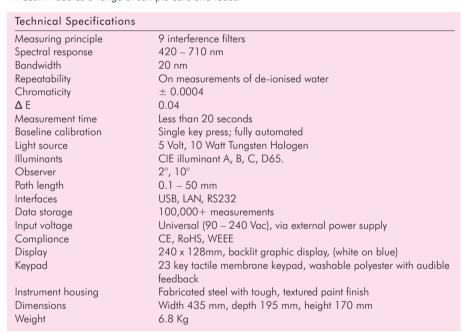
The PFXi-195 Series, automatically measures colour and displays the results directly, either according to the traditional grading scales that have been widely adopted as industry standards for colour assessment and control, or in terms of internationally recognised CIE values and spectral data.

- RCMSi Remote Calibration & Maintenance Service via internet
- USB & LAN Interface
- Large clear LCD screen for ease of use and ability to display graphs and data in a wide variety of languages
- Extensive yet flexible choice of standard colour scales
- Remote upgrade facility for adding scales once in service
- Allows calculation and description of off-hue status
- Gives closest match to stored references
- Generates a customised colour scale from reference samples
- Robust steel construction with excellent chemical resistance
- Easy maintenance with removable sample chamber
- Supplied with colour control software for data analysis
- Output conforming to GLP including date, time, sample & user ID
- Accommodates a range of sample cells and tubes.



Lavibond

CO/850 series





CO/850 series

Each PFXi-195 is supplied with Windows® compatible software, Lovibond® optical glass cells for the included colour scales, a spare lamp, instructions and an RCMSi Starter Pack

Cat. No.	Model	Application	Standard Colour Scales
CO/85030	PFXi-195/1	Liquid chemicals & industrial oils	Pt-Co/Hazen/APHA, Gardner, Iodine, CIE values, spectral data
CO/85032	PFXi-195/2	Petroleum oils & fuels	Saybolt, ASTM Color, Pt-Co/Hazen/APHA, CIE values, spectral data
CO/85034	PFXi-195/3	Dark oils & fats	FAC, Gardner, CIE values, spectral data
CO/85036	PFXi-195/4	Beers, malts & caramels	EBC (CIE & 430 nm), ASBC (CIE & 430 nm), Series 52 (Brown), CIE values, spectral data
CO/85038	PFXi-195/5	Pharmaceutical solutions	European Pharmacopoeia (includes automatic selection of colour series), US Pharmacopoeia, Pt-Co/Hazen/APHA, CIE values, spectral data
CO/85040	PFXi-195/6	Industrial oils & surfactants	Klett Color (blue filter KS-42), Pt-Co/Hazen/APHA, Hess-Ives Color Units, CIE values, spectral data
CO/85042	PFXi-195/7	Sugar solutions, syrups & honey	ICUMSA Colour (420, 560, 710 nm), Honey Colour (Pfund Equivalents), Series 52 (Brown), CIE values, spectral data
CO/85044	PFXi-195/8	Waters & waste waters	ADMI (spectral & tristimulus filter methods), Pt-Co/Hazen/APHA, CIE values, spectral data
CO/85046	PFXi-195/9	Transparent samples	CIE values (standard selection), LCh colour space, Hunter L, a, b colour space, spectral data



#### CO/35150

# DIST 1

CO/35142



CO/35136

#### Conductivity meters

#### Conductivity meters, pocket testers



Primo Conductivity/TDS testers are microprocessor based pocket testers with auto calibration and temperature compensation. All meters feature a narrow diameter probe for limited access applications. Three versions available with the Primo 2 also reading temperature.

Cat. No.	Model	Range
CO/35150	Primo	0 – 1999 ppm
CO/35154	Primo5	0 – 1999 mS/cm

#### Conductivity meters, pocket testers



DIST pocket conductivity/TDS testers are a range of low cost pocket conductivity testers featuring a large LCD display and easy to hold rounded case. A choice of four models, each features single-point manual calibration and auto temperature compensation.

Cat. No.	Model	Range Resoluti	on
CO/35142	HI-98301	0 – 1999 ppm	1 ppm
CO/35144	HI-98302	0 – 10.00 ppt	0.01 ppt
CO/35146	HI-98303	0 - 1999 mS/cm	1 mS/cm
CO/35148	HI-98304	$0-19.99~\mu\text{S/cm}$	0.01 mS/cm

#### Conductivity/TDS/Temperature meters, portable



Robust, efficient and easy to use with a simple two-button operation.

- Simultaneous readings EC or TDS and temperature
- Waterproof to IP67, slim, easy to hold case
- One button Calibration with on-screen instructions
- Large easy to read display
- All readings temperature compensated
- Adjustable temperature coefficient and EC/TDS conversion factor
- Battery life indicator
- Supplied with batteries, instructions, calibration sachet, hard carry case.

Technical Specifications	HI-99300	HI-99301
Conductivity range	0 – 3999μS/cm	0.00 to 20.00mS/cm
TDS range	0 to 2000ppm	0.00 to 10.00ppt
Temperature range	0.0 to 60 °C	C
Accuracy;	+/- 2% FS	
Battery;	3 x 1.5V AAA approx. 500 ho	ours continuous use
Dimensions;	152 x 58 x 30	mm
Weight;	205g	

Cat. No.	Code	Description
CO/35136	HI-99300	Portable conductivity/TDS/Temperature meter HI-99300
CO/35138	HI-99301	Portable conductivity/TDS/Temperature meter HI-99301
Accessories		
CO/31138	HI-710023	Orange protective rubber boot
CO/31122	HI-7030M	12.88mS/cm calibration solution 230ml
CO/31116	HI-7031M	1413µS/cm calibration solution 230ml
CO/31128	HI-7032M	1382ppm calibration solution 230ml
CO/31136	HI-70442M	1500ppm calibration solution 230ml

#### Professional Waterproof EC/TDS/Resistivity/Salinity



The HI98192 is a waterproof, portable conductivity meter that has an expanded conductivity range from  $0.000~\mu\text{S/cm}$  to 400~mS/cm, as well as TDS, resistivity and three salinity scales. This meter automatically recognizes the probe type (two or four ring) and allows the user to adjust the nominal cell constant. HI98192 is also ready to perform all three stages of USP 645 method required for EC measurement of ultrapure water.

Choose from seven memorized standards and obtain up to a five point conductivity calibration. For salinity (% range), HI7037 standard allows users to make a one point calibration.

EC and TDS measurements are fully customizable and include: cell constant selection between 0.010 and 10.000, selection of linear or natural water (non-linear) or no temperature compensation (for actual conductivity reading), configurable temperature compensation coefficient range from 0.00 to 10.00%/°C, choice of reference

- Waterproof to IP67 (including probe sockets).
- Large dot matrix display with backlight.
- On-screen calibration instructions.
- GLP and on screen help
- Log on demand & lot logging with variable intervals.
- USB for data download (cable and software supplied).
- Up to 5 point calibration.
- USP645 for ultrapure water with memorised buffers.
- Adjustable TDS factor 0.40 to 1.00.
- Temperature coefficient 0.00 10.00%/C.
- Auto Temperature compensation.
- Auto range and Auto-end feature.

Ranges	:
EC	

EC 0.001  $\mu$ S/cm to 1000.0mS/cm TDS 0.00 mg/l to 400.0g/l Resistivity 1.0 $\Omega$ cm to 100.0 m $\Omega$ cm

Salinity 0.0 to 400.0% NaCl; 0.00 to 42.00 PSU;

0.00 to 80.00 Seawater scale

Temperature -20 to 120°C

Cat. No.	Description
CO/35180	Hanna HI-98192 Professional Waterproof EC/TDS/Resistivity/Salinity meter
	supplied with EC probe with built-in temperature sensor, buffer solutions,
	USB cable and software, beakers, batteries and carry case



CO/35180

Notes	



CO/60008



CO/60010

#### Conductivity meters, portable, Mettler F3, FiveGO

Ideally suited for mobile applications in the laboratory, at-line, or outdoors, the new FiveGo portable conductivity meter provides high performance and measurements at the click of a button The robust and waterproof design makes the FiveGo instruments the perfect companion to get reliable measurement data even in harsh conditions.

Time is an ever more valuable asset, but thanks to the FiveGo's intuitive operation, robust design and extensive memory functions, you can maximize your time spent measuring instead of dealing with complex system and measurement setups.

Meters to measure pH or dissolved Oxygen, are also available in the FiveGo range.

- Large display with simple menu, measurements can be made with just a few clicks.
- Ergonomic designed for either left or right handed use, with a foldable foot stand which provides
  optimal viewing while situated on a lab bench.
- Waterproof protection to IP67, with carry case
- Optimally designed for mobile measurements in a wide range of workplaces, including Environment, Academia, Food and Beverage, Agriculture and Industry

Technical Specifications	
Measuring range	0.00µS/cm - 200mS/cm (conductivity)
	1.01 mg/l -200 g/l (TDS)
	0°C to 100°C (32°F to 212°F)
Resolution	Automatic range 0.1°C
Accuracy	$\pm 0.5\%$ of the measured value $\pm 0.5^{\circ}\mathrm{C}$
Automatic and manual	
end point recording	Yes
Acoustic end point signal	Yes
Visual end point signal	Yes
Temperature compensation	Linear 0.00%/°C to 10.00%/°C
reference temperature	20 and 25°C
Calibration	1 point, 3 predefined standards
Memory size	200 measurements, current calibration
Sensor input	LTW 7-pin
IP Protection	IP67
Power supply	4 x AAA batteries
Operating hours	>200 hours
Display	3.1 segmented LCD
Housing	ABS
Dimensions	188 x 77 x 33mm
Weight	0.26kg

Cat. No.	Description
CO/60008	Conductivity meter FiveGo F3 without electrode, for applications that require a specific sensor not included in a kit
CO/60010	Conductivity meter FiveGo F3 Standard kit, comprising of meter with LE703 IP67 sensor, for applications involving aqueous samples with mid to high conductivity
CO/60012	Conductivity meter FiveGo F3 Field kit, comprising of meter with LE703 IP67 sensor, for applications involving aqueous samples with mid to high conductivity in the field, with carrying case

Notes	

#### Conductivity meter, portable, Seven2Go

These meters are simple to use and reliable, they are engineered to provide users with fast quality data and one-handed operation. Their robust design makes them very durable and ideally suited for mobile applications in the laboratory, at-line, and being waterproof, in the field.

- Simple menu for straight out of the box operation
- T-Pad navigation control for fast and comfortable movement through menus
- ISM (Intelligent Sensor Management) ready, recognises sensors and stores their details
- Waterproof tested to IP67 and drop test resistance
- Automatic/ Manual temperature capture
- Predefined conductivity standards
- User-defined conductivity standards
- Manual cell constant entry
- All models come with operating instructions, quick guide, test report, declaration of
- •conformity and batteries
- Both models are available in 4 variations.

#### Variation Ideally suited for

Sensor input

Weight Power supply

Display

Measurements

Operating hours

S3 Meter	Depending on electrode that is used with the unit
S3 Standard	Aqueous samples with mid to high conductivity
S3 Field kit	As above but especially suited for measurements on the go
S3 Bioethanol kit	Bioethanol and biofuels.
S7 Meter	Depending on electrode that is used with the unit
S7 Standard	Aqueous samples with mid to high conductivity
S7 Field kit	As above but especially suited for measurements on the go
S7 USP/EP kit	Ultra-pure water and low conductivity samples

Technical Specifications	
Conductivity Range	$0.010 \mu\text{S/cm}500 \text{mS/cm}$ (Model S7 = $0.010$
	μS/cm1000 mS/cm)
Conductivity Resolution	0.0011 (auto-range)
Conductivity Accuracy (sensor input)	± 0.5%
TDS Range	0.01 mg/L300 g/L (Model S7 = 0.01 mg/L
	600 g/L)
TDS Resolution	0.011 (auto-range)
TDS Accuracy (sensor input)	± 0.5%
Specific resistance range	0.01100.0 M cm
Specific resistance resolution	0.010.1 (auto-range)
Specific resistance accuracy (sensor input)	± 0.5%
Salinity Range	0.0142 psu
Salinity Resolution	0.010.1 (auto-range)
Salinity Accuracy (sensor input)	± 0.5%
Conductivity Ash Range	0.012022%
Conductivity Ash Resolution	0.011 (auto-range)
Conductivity Ash Accuracy (sensor input)	0.50%
Temperature range	–5.0…105.0 °C
Temperature resolution	0.1 °C
Temperature accuracy (sensor input)	± 0.2 °C
Calibration points	1

LTW 7-pin (IP67)

222 x 70 x 35 mm

270 g (Model S7 = 290g)

4x 1.5 V AA or 1.3 V NiMH acc. (Model S7 also has

250...400 hours (Model S7 = 200...250 hours)

Segmented LCD (Model S7 = Graphic LCD )

Cat. No.	Code	Description
CO/60030	30207954	S3 Meter with electrode clip, no electrodes supplied
CO/60032	30207955	S3 Standard kit, with plus InLab 738-ISM and sachets of conductivity standards 1413 µS/cm and 12.88 mS/cm.
CO/60034	30207956	S3 Field kit, as the-Standard kit, plus bottles for calibration and uGo™ carrying case.
CO/60036	30207957	S3 Bioethanol kit, as field kit, but with InLab 725 instead of InLab 738-ISM and conductivity standard 84 µS/cm.
CO/60038	30207961	S7 Meter with LabX direct pH*, USB cable, electrode clip, base accessory, no electrode supplied
CO/60040	30207962	S7 Standard kit, with plus InLab 738-ISM, sachets of conductivity standard 1413 µS/cm and 12.88 mS/cm.
CO/60042	30207963	S7Field kit, as standard kit plus bottles for calibration and uGo™ carrying case.
CO/60044	30207873	S7 USP/EP Kit as standard kit with but with InLab 742-ISM instead of InLab 738-ISM.
*Mettler LabX dire	ect pH is Mettler's data	collection software for all portable and benchtop Seven

series conductivity, dissolved oxygen and pH meters

USB)



CO/60032



CO/31106



CO/31100



PH/35132

#### Edge conductivity TDS meter, HANNA

e meters

Tablet style slim line Conductivity meters with large LCD display. Black Edge meters have the capability to read pH and Dissolved Oxygen with the purchase of additional probes. The white meter is designed for measuring conductivity only. The capacitive touch keypad is easy to clean, and readings can be transferred to a PC without the need for additional software. For complete flexibility of use, the Hanna Edge Conductivity/TDS meter can be used hand-held, and also as a bench model or wall mounted with the stand and wall mounting bracket provided.

- Two USB ports, one standard and one micro
- Large 5.5 LCD screen
- Clear full text display
- 3.5mm Jack electrode input
- Reads Conductivity, TDS, Salinity and Temperature
- Choice of 5 calibration standards
- Auto ranging, or manual range selection
- Automatic temperature compensation or NoTC (Absolute)
- GLP data records date, time, offset and cell constant value (K)
- Adjustable temperature conversion and EC to TDS conversion factor
- Basic or advanced mode
- Log on demand or interval logging of up to 1000 readings
- Built-in battery allows use away from mains connection
- Micro USB for PC connection & Charging
- USB port for exporting data with flash drive
- Bench stand with Electrode holder, and wall mount included

Supplied with EC/TDS/Temperature probe, USB power lead, Mini USB PC cable, power lead, calibration sachets, quality certificate and instruction manual.

Technical Spe	Technical Specifications					
Parameter	Range	Resolution	Accuracy			
EC	0.0 – 29.99 μS/cm	0.01µS/cm	± 1% of reading			
	30.0 – 299.9 μS/cm	0.1µS/cm	(0.05 mS/cm or 1 digit			
	300 – 2999 μS/cm	1 μS/cm	whichever greater)			
	3.00 – 29.99 mS/cm	0.01mS/cm				
	30.0 – 200 mS/cm	0.1mS/cm				
	up to 500.0 μS/cm actual EC					
TDS	0.0 - 14.99 mg/l (ppm)	0.01 ppm	± 1% of reading			
	15.0 – 149.9 mg/l (ppm)	0.1 ppm	(0.03 ppm or 1 digit			
	150 – 1499 mg/l (ppm)	1 ppm	whichever greater)			
	1.50 – 14.99 g/l (ppt)	0.01 g/l				
	15.0 – 100.0 g/l (ppt)	0.1 g/l				
	up to 400.0 ppt actual TDS					
NaCl	0.0 – 400.0 %	0.1%	± 1% of reading			
Temperature	-20 – 120.0°C	0.1°C	± 0.4 °C			
Salinity;	0.0 to 400.0 % NaCl	0.1%	± 1% of reading			
	0.01 to 42.00 PSU	0.01	± 1% of reading			
	0.0 to 80.0 g/l	0.01	± 1% of reading			
Dimensions	202 x 140 x 12.7mm					
Weight	250g					

Cat. No.	Code	Description
CO/31106	HI-2003-02	Hanna White Edge conductivity, TDS meter with HI-
		763110 probe
CO/31100	HI-2030-02	Hanna Black Edge conductivity, TDS meter with HI-
		763110 probe (can also measure Dissolved Oxygen and
		pH with the purchase of additional probes)
Accessories:		
PH/35132	HI-11310	pH electrode with integrated temperature sensor
DO/35052	HI-764080	Dissolved Oxygen probe with temperature sensor
CO/31116	HI-7031M	1413uS/cm calibration solution 230ml
CO/31122	HI-7030M	12.88mS/cm calibration solution 230ml
CO/31128	HI-7032M	1382ppm calibration solution 230ml

#### Conductivity meters, Bench, Mettler FiveEeasy Plus

The FiveEasy Plus conductivity meter, provides high performance and measurements at the click of a button. Compact in design, and featuring various data export opportunities, the FiveEasy series instruments are the perfect companion to get reliable measurement data, all at a reasonable price. Time is an ever more valuable asset, but thanks to the FiveEasy Pro's intuitive operation and extensive memory functions, you can maximize your time spent measuring instead of dealing with complex system and measurement setups.

A FiveEasy pH meter is available to provide the complete laboratory package

- Available in 2 versions, 0.01  $\mu$ S to 200mS/cm and 0.01  $\mu$ S to 500mS/cm (conductivity)
- Large display with simple menu, measurements can be made with just a few clicks.
- The compact design means that it takes up minimal bench space. The sensor holder can be easily removed and stored on the side of the meter after use
- Data can be exported either directly to a printer or a PC for further processing using its RS232 or USB ports.
- Optimally designed for work on bench surfaces in a wide range of workplaces, including laboratories in academia.

Technical specifications	FiveEasy Plus F30	FiveEasy Plus FP30
Measuring range	0.01 µS/cm to 200mS/cm	0.01 $\mu$ S/cm to 500 mS/cm
	(conductivity)	(conductivity)
	0.01 mg/l to 200 g/l (TDS)	0.01 mg/l to 300 g/l (TDS)
	0 to 100°C (32 to 212°F)	0.00 to 42 psu (salinity)
		-5 to 105°Cto 105°C (23 to
		221°F)
Resolution	Automatic range	
Error limits	$\pm 0.5\%$ of the measured value	$\pm 0.5\%$ of the measured value
	±0.5°C	±0.3°C
Temperature compensation	Linear: 0.00 %/ °C to	
	reference temperature	20 and 25°C
Automatic and manual end	Ü	
Acoustic end point signal	Yes	
Visual end point signal	Yes	
Calibration	1 point	1 point
	3 predefined standards	3 predetermined standards
		Manual cell constant input
Memory size	Current calibration	200 measurements
		Current calibration
Sensor input	Mini-DIN	
RS232 interface	No	Yes
USB interface	No	Yes
Reference input	No	
Analog output	No	10//00
Power supply	Input: 100 to 240V 50/60H	
Display	4.3 segmented	I LCD
Housing	ABS	0
Dimensions	227 x 147 x 7	Umm
Weight	0.63 kg	

Cat. No.	Description
CO/60050	Conductivity meter, bench type, FiveEasy Plus F30 without electrode for
	applications that require a specific sensor not included in a kit
CO/60052	Conductivity meter, bench type, FiveEasy Plus F30 Standard kit, comprising of
	meter with LE703 sensor for applications involving aqueous samples with mid to
	high conductivity
CO/60054	Conductivity meter, bench type, FiveEasy Plus FP30 without electrode for
	applications that require a specific sensor not included in a kit
CO/60056	Conductivity meter, bench type, FiveEasy Plus FP30 Standard kit, comprising of
	meter with LE703 sensor for applications involving aqueous samples with mid to
	high conductivity
CO/60006	Replacement conductivity electrode with 1 meter cable



CO/60050



CO/60052

#### Conductivity meter, bench, model 4510



A general purpose Conductivity/TDS/Temperature meter for use in laboratory applications.

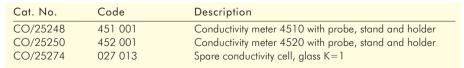
- · Designed for routine laboratory applications
- Custom back-lit LCD
- Simultaneous display of conductivity or TDS and temperature
- Automatic temperature compensation
- 32 location memory
- Bi-directional RS232 link to printer or PC
- Easy to clean surfaces

#### Conductivity meter, bench, model 4520

A fully specified laboratory Conductivity/Resistivity/TDS/Salinity/Temperature Meter that includes full support for Good Laboratory Practices (G.L.P.) The meter supports 1, 2 or 3 point conductivity calibration. Powerful data logging capabilities are included with the ability to store up to 500 readings either manually, at timed intervals or alarm events.

- Back-lit graphics display
- Dual parameter display
- Low conductivity analysis
- Multi language operation
- 500 location memory
- Infra-red data link (IrDA)
- · Real time clock
- Bi-directional RS232 link to printer or PC





Only with cell constant > 10



CO/25248



CO/25250



### Together, making light work

**Since 1972** 





## The 74 Series Single-beam spectrophotometers.

Single-beam spectrophotometers. Visible & UV/visible.

#### The 76 Series

Split-beam spectrophotometers. Visible & UV/visible.



Intuitive Cloud-enabled technology.

Monitor, store, share and manage your data securely.



#### Conductivity electrodes

#### Electrodes, conductivity

These cells are compatible with most conductivity meters with an offering for all applications from routine field work to the most demanding of laboratory research or process application. All probes are supplied with 1 metre cable.

\*Please advise make and model of conductivity meter.



#### **Technical Specifications**

Range: 0-150mS
Temp Range: 0-50°C
Body Type: Glass
Plate Material: Platinum
Diameter: 120x12mm
Cell Constant: K=1

Cat. No. Description
CO/55002 General electrode



#### **Technical Specifications**

Range: 0-500µS
Temp Range: 0-50°C
Body Type: Epoxy
Plate Material: Carbon
Diameter: 120x12mm
Cell Constant: K=0.1

Cat. No. Description
CO/55010 Pure water



#### **Technical Specifications**

Range: 0-500µS
Temp Range: 0-50°C
Body Type: Glass
Plate Material: Platinum
Diameter: 120x12mm
Cell Constant: K=0.1

Cat. No. Description
CO/55004 Pure water

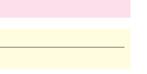


#### **Technical Specifications**

Range: 0-150mS
Temp Range: 0-50°C
Body Type: Glass
Plate Material: Platinum
Diameter: 120x12mm
Cell Constant: K=1

 Cat. No.
 Description

 CO/55006
 Flow through



#### Technical Specifications

Range: 0-0.5S
Temp Range: 0-50°C
Body Type: Epoxy
Plate Material: Carbon
Diameter: 120x12mm
Cell Constant: K=10

Cat. No. Description
CO/55012 Solutions with high conductivity



#### Technical Specifications

Range: 0-1S
Temp Range: 0-50°C
Body Type: Epoxy
Plate Material: Carbon
Diameter: 120x12mm
Cell Constant: K=0.55

Cat. No. Description
CO/55014 General purpose



#### **Technical Specifications**

Range: 0-10mS
Temp Range: 0-50°C
Body Type: Epoxy
Plate Material: Carbon
Diameter: 120x12mm
Cell Constant: K=1

Cat. No. Description
CO/55008 Paint, Ink, Dyes, Foodstuffs



#### Technical Specifications

Range: 0-200mS
Temp Range: 0-70°C
Body Type: Glass
Plate Material: Platinum
Diameter: 120x12mm
Pressure: 100 psi / 3Bar
Cell Constant: K=1

Cat. No. Description
CO/55016 Industrial pipeline

#### Conductivity standards

#### Conductivity standards

#### Reagecon

Reagecon offer one of the largest ranges of certified conductivity standards with values ranging from 1.3  $\mu$ S/cm to 500,000  $\mu$ S/cm.

- Fully traceable All values are directly traceable to NIST Certified Reference Material.
- $\bullet$  Certified Accuracy Range has an accuracy of  $\pm$  1.0% (except 1.3  $\mu$ /cm
- Guaranteed Stability
- Matrix Matched
- USP 24 compliant values.
- All Standards come complete with Certificate of Analysis detailing; test method used, result of test, traceability information, Lot No., Expiry date and comprehensive Measurement of Uncertainty Data.
- Temperature dependence data, Lot No. and expiry date are also printed on product labels.

Cat. No.	Code	Description	Pack Size
CO/61002	CSKC13	1.3 <i>μ</i> S/cm	1 x 250mL
CO/61004	CSKC136	$1.3  \mu \text{S/cm}$	6 x 250mL
CO/61006	CSKC5	5 μS/cm	1 x 500mL
CO/61008	CSKC10	10 <i>μ</i> S/cm	1 x 500mL
CO/61010	CSKC20	20 μS/cm	1 x 500mL
CO/61012	CSKC50	50 μS/cm	1 x 500mL
CO/61014	CSKC84	84 μS/cm	1 x 500mL
CO/61016	CSKC100	100 μS/cm	1 x 500mL
CO/61018	CSKCS	147 μS/cm	1 x 500mL
CO/61020	CSKC200	$200\mu\text{S/cm}$	1 x 500mL
CO/61022	CSKC500	500 μS/cm	1 x 500mL
CO/61024	CSKC1000	1000 μS/cm	1 x 500mL
CO/61026	CSKCL	1413 μS/cm	1 x 500mL
CO/61028	CSKC10M	10,000 $\mu$ S/cm	1 x 500mL
CO/61030	CSKC12880	12,880 <i>μ</i> S/cm	1 x 500mL
CO/61032	CSKC20M	$20,000  \mu \text{S/cm}$	1 x 500mL
CO/61034	CSKC50M	50,000 $\mu$ S/cm	1 x 500mL
CO/61036	CSKC100M	$100,000~\mu\text{S/cm}$	1 x 500mL
CO/61038	CSKC150M	150,000 $\mu$ S/cm	1 x 500mL
CO/61040	CSKC200M	200,000 $\mu$ S/cm	1 x 500mL
CO/61042	CSKC300M	$300,000~\mu\text{S/cm}$	1 x 500mL
CO/61044	CSKC350M	$350,000  \mu \text{S/cm}$	1 x 500mL
CO/61046	CSKC450M	450,000 $\mu$ S/cm	1 x 500mL
CO/61048	CSKC500M	$500,000~\mu\text{S/cm}$	1 x 500mL



CO/610



CO/31120

#### HANNA Calibration Conductivity/TDS/Salinity Solutions



Cat. No.	Code	Description
CO/31110	HI-7033M	84µS/cm Calibration solution, 230ml
CO/31112	HI-7033L	$84\mu$ S/cm Calibration solution, 500ml
CO/31116	HI-7031M	1413µS/cm Calibration solution, 230ml
CO/31118	HI-7031L	1413µS/cm Calibration solution, 500ml
CO/31120	HI-70031P	1413µS/cm Calibration solution, 25 x 20ml sachets
CO/31122	HI-7030M	12.88µS/cm Calibration solution, 230ml
CO/31124	HI-7030L	12.88µS/cm Calibration solution, 500ml
CO/31126	HI-70030P	12.88µS/cm Calibration solution, 25 x 20ml sachets
CO/31128	HI-7032M	1382ppm Calibration solution, 230ml
CO/31130	HI-7032L	1382ppm Calibration solution, 500ml
CO/31132	HI-70032P	1382ppm Calibration solution, 25 x 20ml sachets
CO/31134	HI-7037L	100% NaCl Seawater standard solution, 500ml
CO/31136	HI-70442M	1500ppm Calibration solution, 230ml



CO/31134



CD/1660



CD/80006



CD/96312

#### **Containers**

#### Containers, disposable, polystyrene, sterile



- All Sterilin polystyrene containers are CE marked to comply with the In-vitro diagnostic medical devices directive (98/79/EC)
- Aseptically manufactured from cytotoxicity tested FDA approved virgin polystyrene
- Containers are leak tested to BS EN14254 and most sizes have a choice of metal or plastic caps

Cat. No.	Code	Description	Materials base/cap	Pk Qty			
7ml containers 50.2mm high, cap diameter 22.5mm							
CD/16602	129A	Bijou, no label	PS/PE	700			
CD/16604	129B	Bijou, plain label	PS/PE	700			
30ml containers	93.1mm high, co	ip diameter 30.1mm					
CD/16612	128A	Universal, no label	PS/PP	400			
CD/16614	128B	Universal, printed label	PS/PP	400			
CD/16616	128C	Universal, plain label	PS/PP	400			
CD/16620	128SA	Universal, spoon, no label	PS/PE	400			
CD/16622	128SB	Universal, spoon, printed label	PS/PE	400			
CD/16624	128SC	Universal, spoon, plain label	PS/PE	400			
60ml containers	60.7mm high, co	ıp diameter 44.2mm					
CD/16630	125AM	Unlabelled, metal cap	PS/ME	300			
CD/16632	125BM	Printed label, metal cap	PS/ME	300			
CD/16634	125CM	Plain label, metal cap	PS/ME	300			
60ml containers	60.7mm high, co	ıp diameter 44.6mm					
CD/16636	125AP	Unlabelled, plastic cap	PS/PE	300			
CD/16638	125BP	Printed label, plastic cap	PS/PE	300			
CD/16640	125CP	Plain label, plastic cap	PS/PE	300			
150ml container	150ml containers107.5mm high, cap diameter 54.9mm						
CD/16654	165A	No label, metal cap	PS/ME	120			
CD/16656	165B	Printed label, metal cap	PS/ME	120			
CD/16658	165C	Plain label, metal cap	PS/ME	120			

#### Plastic containers with screw cap, aseptically produced.

Cat. No.	Description	Pk Qty
CD/80000	Container, universal, 30ml, polystyrene plastic cap, no label	400
CD/80002	Container, universal, 30ml, polystyrene plastic cap, plain label	400
CD/80004	Container, universal, 30ml, polystyrene plastic cap, patient label	400
CD/80006	Container, specimen, 60ml polypropylene, metal cap, no label	300
CD/80008	Container, specimen, 60ml polypropylene, metal cap, patient label	300
CD/80010	Container, specimen, 60ml polypropylene, metal cap, plain label	300
CD/80012	Container, specimen, 60ml polypropylene, plastic cap, no label	300
CD/80014	Container, specimen, 60ml polypropylene, plastic cap, patient label	300
CD/80016	Container, specimen, 60ml polypropylene, plastic cap, plain label	300
CD/80018	Container, specimen, 100ml polystyrene, metal cap, no label	160
CD/80020	Container, specimen, 100ml polystyrene, metal cap, plain label	160
CD/80022	Container, specimen, 100ml polystyrene, metal cap, patient label	160

#### Containers, multi-purpose with red screw cap

Can be used for urine samples, leak-proof. Available in both sterile and non-sterile versions.

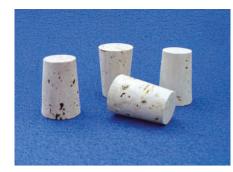
Cat. No.	Capacity, ml	Sterile	Material	Graduation/ Labelling area	Pk Qty
CD/96300	30	No	Polypropylene	No	1000
CD/96302	30	Yes	Polypropylene	No	1000
CD/96304	60	No	Polypropylene	Yes	600
CD/96306	60	Yes	Polypropylene	Yes	500
CD/96308	120	No	Polypropylene	Yes	500
CD/96310	120	Yes	Polypropylene	Yes	250
CD/96312	200	No	Polypropylene	No	200
CD/96314	200	Yes	Polypropylene	No	150
CD/96316	200	Yes	Polystyrene	No	150

#### Cork

#### Cork, bark, long form

Tapered

Cat. No.	Bottom dia.,mm	Top dia.,mm	Length,mm	Pk Qty	
CO/98002	6	9.5	13	100	
CO/98004	8	11	16	100	
CO/98006	10.5	13.5	22.5	100	
CO/98008	12	15	21	100	
CO/98010	14	17	22	100	
CO/98012	15.8	19	27	100	
CO/98014	18	21	32	100	
CO/98016	19	22	32	100	
CO/98018	22	25.5	32	50	
CO/98020	25.5	28.5	32	25	
CO/98022	28.5	32	32	25	
CO/98024	32	35	32	25	
CO/98026	35	38	32	20	
Other sizes available on request.					
CO/98050	Assorted pack containi and 6 of each size 25.5		12, 15.8, 21, 22	150	



CO/980



CO/9400

CO/94008

#### Cork borers, nickel plated

Sets of cork borers of different sizes.

Cat. No.	Description	Dia., mm
CO/94002	1- 6	
	1	5
	2	6.25
	3	7.5
	4	8.75
	5	10
	6	11.25
CO/94004	1-12 Includes 1-6 plus	
	7	12.5
	8	13.75
	9	15
	10	16.25
	11	17.5
	12	18.75
CO/94006	1-18 Includes 1- 12 plu	
	13	20
	14	21.25
	15	22.5
	16	23.75
	17	25
	18	26.25

#### Cork borer sharpener

Suitable for sharpening all sizes of  $\operatorname{cork}$  borer.

Cat.	No.				
CO/9	94008				

#### Cork, rings

Support rings, suitable for use with round bottom, flat bottom, floretine, wide neck reaction and kjeldahl flasks.

Cat. No.	Size, mm, o.d. x i.d.	Pk Qty	Flask sizes ml
CO/98102	75 x 45	2	100, 150, 250
CO/98104	115 x 85	2	500
CO/98106	150 x 120	each	1000, 2000
CO/98108	195 x 160	each	3000, 4000, 5000



CO/981



CW/9820

#### Cotton wool

#### Cotton wool, roll

Cat. No.	Description
CW/98202	Non-absorbent, 500g
CW/98204	Absorbent, 500g



CO/95002

#### Counters

#### Counter, Tally

A choice of either hand held or bench mounted models. The reset thumb screw is removable to prevent resetting. Maximum number 9999.

Cat. No.	Model
CO/95002	TL4, hand held
CO/95004	TL6, bench mounted



CO/95012

#### **Totalisers**

An intuitive differential cell counter that simplifies blood cell counts. When a total of 100 cells are counted, an alarm sounds. The percentage of each type of cell can then be read directly from the window above each key. A simple counter-clockwise rotation of the end knobs will zero all the counts.

- Each key has the name and picture of a particular cell above it, representing groups of leucocytes
- The key legend strips are easily removed to allow customisation
- 8 Place set to count Basophils, Eosinophils, Myelophils, Juven., Stab., Seg., Lymphocytes, Monocytes
  5 Place set to count Basophils, Eosinophils, Seg., Lymphocytes, Monocytes
- Sturdy solid construction with firm dependable keys

Cat. No.	Description
CO/95010	Totaliser 5 place counting machine
CO/95012	Totaliser 8 place counting machine

Notes	

#### Crucibles

#### Crucibles, Nickel, 0.5mm wall thickness

Supplied individually.

Cat. No.	Capacity	Diameter	Height
CR/94102	10ml	25mm	30mm
CR/94106	30ml	40mm	40mm
CR/94108	50ml	45mm	45mm
CR/94110	70ml	50mm	50mm
Nickel crucibles with 1.	.0mm, 1.5mm and 2.0mm	wall thickness are avail	able, details on request



CR/9410

#### Crucible lids for above, Nickel

Supplied individually.

Cat. No.	To fit crucible capacity
CR/94132	10ml
CR/94136	30ml
CR/94138	50ml
CR/94140	70ml

#### Crucibles, Zirconium, 1.0mm wall thickness

Supplied individually.

Cat. No.	Capacity	Diameter
CR/94112	10ml	25mm
CR/94114	25ml	35mm
CR/94116	30ml	40mm
CR/94118	50ml	45mm
CR/94120	70ml	50mm



CR/9411

#### Crucible lids for above, Zirconium

Supplied individually.

Cat. No.	To fit crucible capacity
CR/94142	10ml
CR/94144	25ml
CR/94146	30ml
CR/94148	50ml
CR/94150	70ml



CR/9416

#### Crucibles, stainless steel

Lower cost alternative, more durable and longer lasting than porcelain. Easier to clean and are shatter-proof. Thickness 0.7mm.

Cat. No.	Capacity, ml	Diameter,mm	Height,mm	Pk Qty
CR/94160	15	30	30	10
CR/94162	25	35	35	10
CR/94164	50	45	45	10
CR/94166	70	50	50	10

#### Crucible lids for above, Stainless steel

Cat. No.	To fit crucible capacity	Pk Qty
CR/94170	15ml	10
CR/94172	25ml	10
CR/94174	50ml	10
CR/94176	70ml	10



CR/9417



CR/942

#### Crucibles, Platinum, with plain rim

All weights are approximate, tolerance of  $\pm$  5%

Cat. No.	Capacity,ml	Diameter,mm	Height,mm	Weight, gm
CR/94202	10	26	29	8.5
CR/94204	15	29	33	11.5
CR/94206	20	32.5	36	18
CR/94208	25	35	39	19
CR/94210	30	37.5	41	24
CR/94212	40	41.5	46	31
CR/94214	50	44	49	42

#### Crucible lids for above, Platinum

All weights are approximate, tolerance of  $\pm$  5%

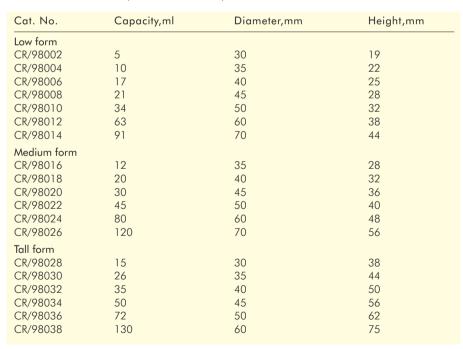
Cat. No.	To fit crucible capacity	Weight, g
CR/94222	10ml	2.8
CR/94224	15ml	3.6
CR/94226	20ml	4.5
CR/94228	25ml	5.2
CR/94230	30ml	6
CR/94232	40ml	7.2
CR/94234	50ml	8



CR/98008

#### Crucible, porcelain

Glazed inside and out except base, without lids, packs of 10



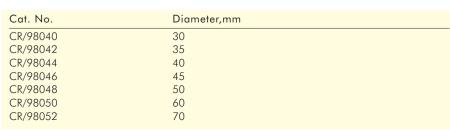


CR/98016



CR/98032

#### Crucible lids for above, Porcelain, Pack of 10





CR/9804

#### Crucibles, silica

Glazed Inside and out. Without Lid. Supplied individually.

Cat. No.	Cap,ml	Dia x H,mm	
Squat Form			
CR/92002	5	29 x 29	
CR/92004	10	41 x 29	
CR/92006	15	43 x 34	
CR/92008	25	49 x 37	
CR/92010	50	59 x 46	
CR/92012	80	69 x 50	
CR/92014	150	84 x 58	
Tall Form			
CR/92052	20	35 x 38	
CR/92054	30	43 x 39	
CR/92056	50	51 x 51	
CR/92058	200	76 x 81	



CR/92012

#### Crucible lid, Silica

Cat. No.	Diameter,mm	To fit crucible capacity				
Ring handle for squat form crucibles						
CR/92022	29	5ml				
CR/92024	43	10ml				
CR/92024	43	15ml				
CR/92026	49	25ml				
CR/92028	59	50ml				
CR/92030	69	80ml				
CR/92032	84	150ml				
Flat form, pear shaped	for tall form crucibles					
CR/92036	35	20ml				
CR/92038	43	30ml				
CR/92040	51	50ml				
CR/92042	76	200ml				

Notes	



CR/920 silica ware

#### Capsules, silica, circular and rectangular

Cat. No.	Code	Capacity,ml	Top Dia x H,mm
CR/92070	72016	20	48 x 15
CR/92076	72019	45	56 x 28
CR/92078	72022	80	75 x 28
CR/92080	72024	_	60x28x12 LxWxH
CR/92084	72025	-	52x42x18 LxWxH



CR/1202

#### Crucibles, sintered glass

**PYREX**®

- Ideal for drying precipitates to constant mass at 110°C
- Suitable for ignition work up to 450°C
- Manufactured from chemically resistant Pyrex® borosilicate glass

Cat. No.	Code	Capacity, ml	Diameter x height,mm	Porosity	Pore Size (mic)	Pk Qty
CR/12010	3660/02M	30	30 x 53	1	100 - 160	5
CR/12012	3660/04M	30	30 x 53	2	40 - 100	5
CR/12014	3660/06M	30	30 x 53	3	16 - 40	5
CR/12016	3660/08M	30	30 x 53	4	10 - 16	5
CR/12018	3680/02M	60	40 x 65	1	100 - 160	5
CR/12020	3680/04M	60	40 x 65	2	40 - 100	5
CR/12022	3680/06M	60	40 x 65	3	16 - 40	5
CR/12024	3680/08M	60	40 x 65	4	10 - 16	5



CR/12030

#### Crucibles, holders, glass

PYREX®

Allows Gooch crucibles to be fitted to a Buchner filter flask. Useful for filtering and washing precipitates prior to drying. All stems 75mm long with an O.D. of 9mm.

Cat. No.	Code	To ft crucible	I.D.,mm	Height excluding stem, mm	For crucible capacity,ml
CR/12028	3690/04M	3660	40	68	30
CR/12030	3690/08M	3680	47	78	60



CR/1603

#### Crucibles, cones, rubber

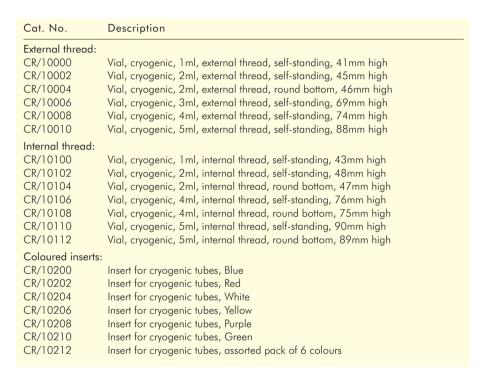
Cat. No.	Base Dia,mm	Top Dia,mm	Pk Qty	For crucible capacity,ml
CR/16036	24	33	10	30
CR/16038	27	42	10	60

#### **Cryogenic Vials**

#### Cryogenic storage vials

Cryogenic storage vials which feature a co-moulded screw cap that combines polyethylene (PE) with a thermoplastic elastomer (TPE) that eliminates the need for silicone O-rings. Traditional vials have the potential for contamination if the O-ring is lost, cut or bulge due to over-tightening of the cap.

- Available with round or self-standing bottoms; external or internal threaded caps
- Pressure tested at 95 kPa to provide a 100% leak proof seal
- Manufactured in a class 10,000 clean room
- Certified DNase RNase, pyrogen, ATP and Human DNA free
- Gamma sterilized 50 per pack in resealable safety bag
- Temperature range -196° 121°C
- Each vial includes printed barcode and white writing surface for specimen identification
- Multi-coloured cap inserts are available to aid in visual identification



#### Cryogenic workstation

Suitable for use with up to 40 self-standing cryogenic vials, enabling laboratory technicians to open and close vials with one hand. It is possible to store these racks in temperatures ranging from -196°C to +121°C.

Cat. No.	Description
CR/10300	Workstation for up to 40 self-standing Cryogenic vials, Blue
CR/10302	Workstation for up to 40 self-standing Cryogenic vials, Red

#### System 100™ Cryogenic vials

#### **NALGENE**

Innovative Vials increase storage capacity in mechanical and vapour-phase freezers. Gasketed closure ensures leak-proof performance in centrifuge up to 8,000g. Externally threaded vials for aseptic technique. White marking area & fill lines printed. Polypropylene vial and cap with silicone gasket. Radiation sterilized. Non-cytotoxic and non pyrogenic. Self standing. 25/bag

Cat. No.	Code	Capacity	Dia x H,mm	Sterile	Pk Qty
CR/36514	5000-1012	1.0ml	12x38	Yes	500
CR/36516	5000-1020	1.5ml	12x48	Yes	500

#### Cryogenic vial colour coders

#### NALGENE"

Polystyrene coders fit into top of NALGENE cryogenic vial closures for use with CR/36514 and CR/36516. Provide quick visual identification of specific vials to simplify inventory maintenance. Cut out for easy handling, Write-on surface.

Cat. No.	Code	Colour	Pk Qty
CR/36220	5045-0001	White	100
CR/36222	5045-0002	Yellow	100
CR/36224	5045-0003	Blue	100
CR/36226	5045-0004	Green	100
CR/36228	5045-0005	Red	100



CR/10000







CR/10300



CR/3651



CR/362

CR/36512

#### Cryogenic storage

#### Cryogenic vial holder 25-place

NALGENE'

Polycarbonate. Allows single-handed vial manipulation. Bottom of well locks with base of vial. Spacing around each hold is greater than 5030-0510 to grasp vials easily. Accepts all Nalgene cryogenic vials listed. Autoclavable.

Cat. No.	Code	Capacity	Dimensions, WxDxH, mm
CR/36512	5030-0505	25 vials	97x102x22



CR/36502

#### Cryogenic vial holder 50-place

NALGENE'

White Polycarbonate. Allows single-handed vial manipulation. Bottom of each well interlocks with base of vial. Accommodates up to 50 vials in a  $5 \times 10$  array. Accepts all Nalgene cryogenic vials listed.

Cat. No.	Code	Dimensions, WxDxH, mm
CR/36502	5030-0510	102x197x28



CR/10400

#### Storage boxes, Cryogenic, 81 and 100 place

Durable Polypropylene storage boxes are the perfect solution for freezer storage and organization. Matte surface on box sides are suitable for printing and or labelling. Boxes withstand temperatures from -80°C to +121°C and will not degrade like cardboard boxes.

#### 81 Place boxes:

- Tight fitting lid, samples will not fall out; even when held upside down.
- Fits in standard  $5\frac{1}{4}$  square, stainless steel, freezer racks.
- Holds 0.35, 1.5 and 2ml microtubes as well as most brands of vials.
- Alphanumeric grid for sample identification.
- Clear top for visual inspection, base is available in 4 fluorescent colours as well as natural or in a pack of assorted colours.
- Fits most standard 2 stainless steel freezer racks.

#### 100 Place boxes:

- Lock-and-seal triple hinged locking front clasp keep samples secure.
- Holds 0.35, 1.5 and 2ml microtubes as well as most brands of vials.
- Dual alphanumeric grid (Inside and outside) for sample identification.
- Clear top for visual inspection, base is available in 4 fluorescent colours as well as natural or in a pack of assorted colours
- An all-black box is also available for light-sensitive samples.



CR/10420

Cat. No.	Description
Polypropylene 8	1 place Cryogenic storage box, 5 1/2 x 5 1/2 x 1 3/4 inches, pack of 5
CR/10400	Storage box, Cryogenic 81 place, polypropylene, natural
CR/10402	Storage box, Cryogenic 81 place, polypropylene, blue
CR/10404	Storage box, Cryogenic 81 place, polypropylene, green
CR/10406	Storage box, Cryogenic 81 place, polypropylene, purple
CR/10408	Storage box, Cryogenic 81 place, polypropylene, orange
CR/10410	Storage box, Cryogenic 81 place, polypropylene, assorted colours
Polypropylene 8	1 place Cryogenic storage box, 5 1/2 x 5 1/2 x 2 11/32 inches, pack of 5
CR/10420	Storage box, Cryogenic 100 place, polypropylene, natural
CR/10422	Storage box, Cryogenic 100 place, polypropylene, blue
CR/10424	Storage box, Cryogenic 100 place, polypropylene, green
CR/10426	Storage box, Cryogenic 100 place, polypropylene, purple
CR/10428	Storage box, Cryogenic 100 place, polypropylene, orange
CR/10430	Storage box, Cryogenic 100 place, polypropylene, assorted colours
CR/10432	Storage box, Cryogenic 100 place, all black for light sensitive samples



CR/10450

#### Storage box, gridless, clear

Polypropylene box without dividers, 2 inches tall, to store larger tubes (lying flat) and laboratory vials that won't fit in standard freezer boxes. The bottom of the box includes venting holes.

Cat. No.	Description
CR/10450	Storage box, gridless, clear polypropylene, 5 1/4 x 5 1/4 x 2 inches

#### Storage boxes, freezer, Polycarbonate

Polycarbonate freezer boxes, with clear lid, available with 25, 81, and 100-place divisions with locator grids to facilitate sample identification. The 25 & 81 place boxes have individual cell compartment dividers and the 100-place box holds tubes in place with a pegged grid divider. Designed to withstand temperatures from -196°C to 121°C, the boxes have drain holes for venting and safety and a keyed lid prevents misalignment of the grid.

Cat. No.	Description
CR/10460	Storage boxes, freezer, 3 x 3 x 2 1/16 inches, 25 place
CR/10462	Storage boxes, freezer, 5 1/4 x 5 1/4 x 2 inches 81 place
CR/10464	Storage boxes, freezer, 5 1/4 x 5 1/4 x 3 11/16 inches 81 place
CR/10466	Storage boxes, freezer, 5 1/4 x 5 1/4 x 2 inches, 100 place



CR/10460

#### Cryobox

Made from strong polycarbonate, these durable cryogenic storage boxes are designed to be used at temperatures between -196°C and +121°C and are autoclavable at 120°C, 15psi (1 bar) for 20 minutes. Different styles are available to accommodate 25, 81 or 100 cryovials. A transparent cover allows the user to see the contents of the box and is keyed to the base to prevent misalignment control. Boxes are colour coded, either with coloured grids on the 25 and 81 place boxes, or coloured bases for the 100 place boxes. An innovative vial picker is supplied with each box to facilitate easy removal of vials.

#### 25 Place Cryostore box from 1-2ml Cryovials

Cat. No.	Description	Capacity	Dimensions LxWxH,mm	Colour	Pk Qty
CR/91000	Cryostore™ storage box	25	76x76x52	Blue	8
CR/91002	Cryostore™ storage box	25	76x76x52	Green	8
CR/91004	Cryostore™ storage box	25	76x76x52	Red	8
CR/91006	Cryostore™ storage box	25	76x76x52	Yellow	8

#### 81 Place Cryostore box for 1-2ml Cryovials

Cat. No.	Description	Capacity	Dimensions LxWxH,mm	Colour	Pk Qty
CR/91020	Cryostore™ storage box	81	133x133x52mm	Blue	4
CR/91022	Cryostore™ storage box	81	133x133x52mm	Green	4
CR/91024	Cryostore™ storage box	81	133x133x52mm	Red	4
CR/91026	Cryostore <sup>™</sup> storage box	81	133x133x52mm	Yellow	4

#### 100 Place Cryostore box for 1-2ml Cryovials

Cat. No.	Description	Capacity	Dimensions LxWxH,mm	Colour	Pk Qty
CR/91040	Cryostore™ storage box	100	133x133x52mm	Blue	4
CR/91042	Cryostore™ storage box	100	133x133x52mm	Green	4
CR/91044	Cryostore™ storage box	100	133x133x52mm	Red	4
CR/91046	Cryostore <sup>™</sup> storage box	100	133x133x52mm	Yellow	4



CR/91004

#### Storage boxes, Cardboard, White, 133mm x 133mm

- $\bullet$  Temperature-resistant down to -80°C
- Also available with a waterproof plastic coating
- Wide variety of inserts available (supplied separately)
- Four additional colours are available, blue, red, green and yellow
- Five different heights

#### Water repellent standard coating, without inserts

Cat. No.	Height	Pk Qty
CR/27010	32mm	10
CR/27012	50mm	10
CR/27014	75mm	10
CR/27016	100mm	10
CR/27018	130mm	10



CR/91020



Storage box with insert



Insert



CR/340



CR/36550



CR/33052



CR/15000

Inserts for storage boxes 133mm x 133mm, ultra-low temperature resistant cardboard, water repellent finish

Cat. No.	Tube diameter	Format	Height	Pk Qty			
CR/27020	12mm	9x9	25mm	10			
CR/27022	12mm	9x9	30mm	10			
CR/27024	12mm	9x9	40mm	10			
CR/27026	12mm	9x9	65mm	10			
CR/27028	11mm	10x10	25mm	10			
CR/27030	11mm	10x10	30mm	10			
CR/27032	11mm	10x10	40mm	10			
CR/27034	11mm	10x10	65mm	10			
CR/27050	16mm	7 x 7	25mm	10			
CR/27052	16mm	7 x 7	30mm	10			
CR/27054	16mm	7 x 7	40mm	10			
CR/27056	16mm	7 x 7	65mm	10			
NB. Other in	NB. Other inserts are available, please enquire						

Storage boxes, half and quarter size with separate inserts, temperature resistant down to -80°C, water repellent finish

Cat. No.	Description	Format	Tube size	Pk Qty
CR/27036	Half format box 134 x 67mm x 50mm			10
CR/27038	Half format grid insert	8 x 4	14.5mm	10
CR/27040	Half format grid insert	10 x 5	11.0mm	10
CR/27042	Quarter format box 75 x 75 x 50mm			10
CR/27044	Quarter format insert	5 x 5	11.0mm	10

#### Cryogenic vial accessories

#### CryoCane™

NALGENE'

Aluminium canes to hold five or six Nalgene Cryovials in Liquid Nitrogen freezers. 5015-0001 holds vials 1.0, 1.2, 1.5 or 2.0ml. 5015-0002 also takes 5.0ml vials. They are colour coded and can be used with Cryosleeves CR/36550.

Cat. No.	Code	Length	Capacity	Pk Qty
CR/34040	5015-0001	290mm	5 vials	12
CR/34042	5015-0002	300mm	6 vials	12

#### CryoSleeve™

**NALGENE** 

Clear PVC sleeve encloses a Nalgene CryoCane for extra security during handling and storage. Allows quick location of empty spaces in the cane and easy identification of a particular vial or vials without removing the sleeve.

Cat. No.	Code	Length	Pk Qty
CR/36550	5016-0001	273mm	100

#### Cryoware marker set

NALGENE'

For marking cardboard and polycarbonate. Ink will not fade at ultra-low temperature. Smudge proof. Pack contains one each red, green, blue and black ultra fine point pens.

Cat. No.	Code	Pk Qty
CR/33052	6313-0010	4

#### Cryo aprons

Cryo aprons, blue, with multi-layers to protect the torso and legs against temperature from -160°C to +150°C. The waterproof nylon outer cover offers protection from contact with ultra- cold surfaces and from splashes.

Ideal for working in deep-freeze environments, with cryogenic liquids, dry ice, liquid nitrogen (vapour phase) or when working with autoclaves. The aprons have adjustable straps and quick release buckles at the waist and neck.

Cat. No.	Description	
CR/15000	Apron, cryogenic, blue, 915mm long	
CR/15002	Apron, cryogenic, blue, 1070mm long	
CR/15004	Apron, cryogenic, blue, 1220mm long	
CR/15006	Apron, cryogenic, blue, 1380mm long	

#### Gloves, Cryogenic

Designed to provide protection down to -190°C. Supplied in pairs.

Cat. No.	Description
CR/91100	Cryo gloves 7½ - 8
CR/91102	Cryo gloves 8½ - 9
CR/91104	Cryo gloves 9½ - 10
	, ,



CR/9110

#### Ice buckets

lce buckets and pans, lightweight but durable, made of high density expanded polystyrene. The thick walls provide stability, rigidity and strength. Suitable for use with a variety of cooling mediums, such as wet ice, dry ice and slurry.

The 3 pans and 2 buckets available in the range have excellent insulating properties to help keep temperature sensitive samples safely chilled, but will not leave condensation the benchtop. Supplied with tight fitting lids to minimise evaporation loss and maximise cooling.

Cat. No.	Description	
CR/10500	Bucket, ice, 2.5 litre, Black, 10 7/8 x 12 1/8 x 4 1/2 inches	
CR/10502	Bucket, ice, 5 litre, Blue, 10 7/8 x 12 1/8 x 6 3/4 inches	
CR/10504	Pan, ice 1 litre, Black, 5 3/4 x 5 3/4 x 3 1/2 inches	
CR/10506	Pan, ice 4 litre, Blue, 12 x 9 x 5 inches	
CR/10508	Pan, ice 7.5 litre, Green, 14 5/8 x 12 1/8 x 4 7/8 inches	



CR/10500 & CR/10508

#### Cryogenic labels, strips and dots

Cryogenic labels, made from chemically inert polyester with a unique adhesive formulated to adhere to laboratory glass and plastic ware. The labels will withstand conventional freezing (-80°C) and can also be used for most cryogenic storage applications (vapour phase nitrogen storage at -196°C). No need for separate labelling solutions for your cryo-preservation units and your ultra-low freezers, they can also be used in incubators.

The labels do not require self-lamination to be effective, and will fit most storage systems without the label sticking or being torn off. A variety of colours and sizes are available to suit most requirements, available as standard or for use with laser printers

- Suitable for use on Microcentrifuge tubes, cryovials, racks, boxes and microtiter plates
- No need to self-laminate
- Thinner labels mean they will fit most storage systems
- Bold colours for easy identification of samples
- Guaranteed not to come unstuck under normal use

Cat. No.	Description
Strips:	
LA/10000	Labels, cryogenic, 33 x 13mm, White for 1.5 to 2.0ml tubes
LA/10002	Labels, cryogenic, 33 x 13mm, Blue for 1.5 to 2.0ml tubes
LA/10004	Labels, cryogenic, 33 x 13mm, Red for 1.5 to 2.0ml tubes
LA/10006	Labels, cryogenic, 33 x 13mm, Green for 1.5 to 2.0ml tubes
LA/10008	Labels, cryogenic, 33 x 13mm, Yellow for 1.5 to 2.0ml tubes
LA/10010	Labels, cryogenic, 33 x 13mm, Purple for 1.5 to 2.0ml tubes
LA/10012	Labels, cryogenic, 20 x 6mm, White for 0.2ml PCR tubes
Dots	
LA/10100	Labels, cryogenic, 9.5mm dia, White for 0.5 to 1.5ml tubes, pack of 1000
LA/10102	Labels, cryogenic, 9.5mm dia, White for 0.5 to 1.5ml tubes, pack of 5000
LA/10104	Labels, cryogenic, 9.5mm dia, Blue for 0.5 to 1.5ml tubes, pack of 1000
LA/10106	Labels, cryogenic, 9.5mm dia, Red for 0.5 to 1.5ml tubes, pack of 1000
LA/10108	Labels, cryogenic, 9.5mm dia, Green for 0.5 to 1.5ml tubes, pack of 1000
LA/10110	Labels, cryogenic, 9.5mm dia, Yellow for 0.5 to 1.5ml tubes, pack of 1000
LA/10112	Labels, cryogenic, 9.5mm dia, Purple for 0.5 to 1.5ml tubes, pack of 1000
LA/10114	Labels, cryogenic, 9.5mm dia, various colours, for 0.5 to 1.5ml tubes, pack of 5000
LA/10116	Labels, cryogenic, 13mm dia, White for 1.5 to 2ml tubes, pack of 1000
LA/10118	Labels, cryogenic, 13mm dia, White for 1.5 to 2ml tubes, pack of 5000



LA/10030

Suitable for use with laser printers:

Cat. No.	Description
Strips:	
LA/10200	Labels, cryogenic, 25 x 13mm, white for 0.5ml tubes
LA/10202	Labels, cryogenic, 33 x 13mm, white for 1.5ml to 2ml tubes
LA/10204	Labels, cryogenic, 33 x 13mm, assorted colours, for 1.5ml to 2ml tubes
LA/10206	Labels, cryogenic, 67 x 25mm, white, for racks and boxes
LA/10208	Labels, cryogenic, 38 x 6mm, white, for 96/384 plates
LA/10210	Labels, cryogenic, 38 x 6mm, assorted colours for 96/384 plates
Dots	
LA/10212	Labels, cryogenic, 9.5mm dia. white for 0.5 to 1.5ml tubes
LA/10214	Labels, cryogenic, 13mm dia. white for 1.5 to 2.0ml tubes
LA/10216	Labels, cryogenic, 19mm dia., white for 15 to 50ml tubes



LA/10030

#### Label dispenser, Acrylic

Dispenser, manufactured from durable acrylic which is easy to clean. Accommodates up to 6 rolls of cryogenic dots or strip labels. The 4 rubber feet holds the dispenser in place when used on countertops, it can also be wall mounted (screws not included).

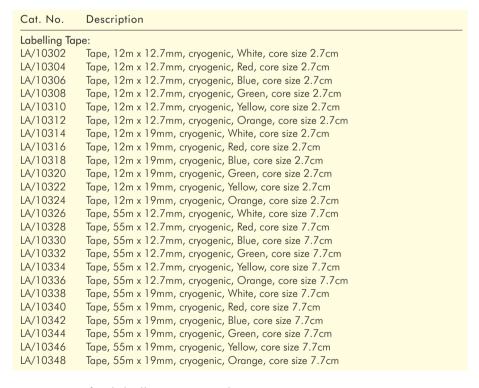
Cat. No.	Description
LA/10030	Dispenser, acrylic holds up to 6 packs of cryogenic labels and dots

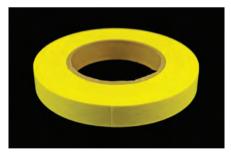


LA/10316

#### Tape, labelling, cryogenic to -80°C

Laboratory tape, for labelling and easy identification of samples. Available in 4 sizes and 6 different colours. The paper based surface is suitable for all types of marker - fibre tips, ball point and gel pens. Ideal for use on most smooth plastic, glass and metal surfaces and can withstand temperatures down to -80°C.





LA/10346

#### Dispensers for labelling tape reels

Tape dispensers for labelling tape, available in 2 sizes, small for reels with 2.7cm cores and a large version for tapes with a 7.7cm core. Both units are of solid metal construction and feature suction cups on the bottom of the unit to securely hold the dispenser to the benchtop.

Both dispensers feature 4 positions that are easy to load and remove the tape reels and provide access to high volumes of tape from one handy location.

Cat. No.	Description
LA/10360	Dispenser, tape, small, 4 place, for tapes with 2.7mm core
LA/10362	Dispenser, tape, large, 4 place, for tapes with 7.7mm core



LA/10360 & LA/10362

#### Cryo 1°C freezing containers Mr Frosty

#### NALGENE'

Polycarbonate with blue high-density polyethylene closure. White high-density polyethylene vial holder and foam insert. Provides the critical, repeatable -1°C/minute cooling rate required for successful cell cryopreservation and recovery. Requires only 100% isopropyl alcohol and mechanical spark proof freezer. Labelled with graphic, step-by-step instructions.

Holds up to 18 vials. Holder prevents vials from contacting alcohol – no contamination by wicking; no removal of labels or printing on vials. Containers with alcohol can be stored at room temperature, saving freezer space.

Cat. No.	Code	Dimensions Dia. x Height,mm	Pk Qty
CR/36500	5100-0001	117x86	Each



CR/36500

#### Quick chill™ unit

#### NALGENE

Rapidly and repeatedly chills biological samples for use in molecular biology applications such as ethanol precipitation of DNA/RNA samples. The guick chill unit can be used repeatedly for up to 45 minutes, eliminating the inconvenience of dry ice/alcohol baths. Durable polycarbonate and pre-filled with a non-toxic insulating solution. Holds 12 x 0.2ml to 1.5ml micro centrifuge tubes. There is no direct contact between the tubes and the insulating solution so labels and markings won't come off. Break-resistant, stackable design. Rubber feet prevent slipping. Contains inserts.

Cat. No.	Code	Tube array	Dim.(lxwxh),mm
CR/33010	5114-0012	3 x 4	151 x 108 x 125



CR/33010

#### Labtop coolers -20°C

#### NALGENE'

Blue polycarbonate lower section filled with a non-toxic gel; gel-filled white or non-filled clear polycarbonate lid with handle. The cooler with the gel filled lid (CR/33004) will maintain a temperature below -15°C for up to 2 hours. The cooler with the non-filled clear lid (CR/33002) will maintain a temperature below -15°C for up to 1 hour. Coolers accommodate 0.2 to 2.0ml microcentrifuge tubes and cryogenic vials. Sixteen inserts included convert 1.5ml holes to accept 0.2 or 0.5ml tubes.

Cat. No.	Code	Tube array	Dim.(lxwxh),mm
CR/33002	5115-0012	3 x 4	151 x 108 x 125
CR/33004	5115-0032	4 x 8	243 x 157 x 146



CR/33004

#### Labtop coolers 0°C

#### **NALGENE**

Green polycarbonate lower section filled with a non-toxic gel; gel-filled white or non-filled clear polycarbonate lid with handle. 0°C coolers can be used to replace messy ice baths. The gel filled model (CR/33008) will maintain a temperature below 1°C for up to 5 hours; the non-gel filled (CR/33006) for up to 31/2 hours. Both are supplied with 16 inserts to convert 1.5ml holes to accept 0.2 to 0.5ml microcentrifuge tubes. Coolers accommodate tube height up to 125mm when lid is latched.

Cat. No.	Code	Tube array	Dim.(lxwxh),mm
CR/33006	5116-0012	3 x 4	151 x 108 x 125
CR/33008	5116-0032	4 x 8	243 x 157 x 146



CR/33006



CF/5200 Dewar vacuum vessels

# DILVAGE DILVAG

CF/531 Dewar vacuum vessels

#### Liquid Nitrogen handling and storage

#### Dewar flasks

Supplied in hygienic satin finish stainless steel, Dilvac Dewar flasks have borosilicate glass inner vessels. Designed for safe use of liquid gases, all Dilvac Dewar flasks are manufactured to exacting standards and represent the highest quality units available today for laboratory use. Tall form with toggle-clamp lid attachment, vent and handle.

Cat. No.	Dia.x Height,mm	Capacity, Litre
CF/52002	116 x 228	1
CF/52004	142 x 268	2
CF/52006	182 x 350	4.5
CF/52008	245 x 335	7

#### Flask refills

Cat. No.	Dia.x Height,mm	Capacity, Litre
CF/52012	85 x 185	1
CF/52014	106 x 205	2
CF/52016	150 x 280	4.5
CF/52018	200 x 285	7

Shallow form without handle or lid, designed to accept standard boiling flasks up to 2 litres capacity. May be used with magnetic stirrers.

Cat. No.	Dia.x Height,mm	Capacity, Litre
CF/53102	105 x 75	0.17
CF/53104	130 x 90	0.38
CF/53106	150 x 95	0.57
CF/53108	175 x 105	1
CF/53110	186 x 138	1.9

#### Flask refills

Cat. No.	Dia.x Height,mm	Capacity, Litre
CF/52112	77 x 50	0.17
CF/52114	100 x 65	0.38
CF/52116	115 x 70	0.57
CF/52118	138 x 80	1
CF/52120	155 x 120	1.9
C1/32120	133 X 120	1.7



CR/3610

#### Cryogenic, vessels

NALGENE'

Made from high density polyethylene these shatterproof dewars are designed for short-term storage of ice water, dry ice and liquid nitrogen. The chemically resistant HDPE double walls are filled with urethane foam and withstand temperatures from -196°C to +100°C. Vented, insulated cover. Moulded-in ribs, cover securing tabs, pour spout and bottom grip area for added safety. Convenient bail-type handle.

Cat. No.	Code	Capacity, Litre
CR/36102	4150-1000	1
CR/36104	4150-2000	2
CR/36106	4150-4000	4
CR/36108	4150-9000	10

#### Cryolab series

The Cryolab range of dewars offers economical storage of LN2 within the laboratory for users of smaller volumes.

Constructed in strong lightweight aluminium with high reflectivity multi-layer super insulation and capacities from 2 litres to 50 litres, the Cryolab series also has a complete range of accessories to facilitate safe handling and ease of operation.

TATEBOURNE

All units are guaranteed for three years.

Cryolab Model	2	5	10	20	25	35	50
Capacity-litres	2	5	10	20	25	35	50
Evaporation-litres/day	0.08	0.18	0.2	0.18	0.25	0.27	0.28
Static hold time-days*	25	28	50	111	100	130	178
Empty weight-kg	2.8	4.1	5.6	9.1	7.4	12.2	15.5
Full weight-kg	4.4	8.1	13.7	25.3	27.6	40.5	55.9
Neck diameter (mm)	32	51	51	51	51	63	63
Overall height (mm)	385	495	560	570	585	650	810
Overall diameter (mm)	185	216	305	407	395	407	407

Cat. No.	Model/Code	Description
CR/54002	Cryolab 2	2 litre dewar
CR/54004	Cryolab 5	5 litre dewar
CR/54006	Cryolab 10	10 litre dewar
CR/54008	Cryolab 20	20 litre dewar
CR/54010	Cryolab 25	25 litre dewar
CR/54012	Cryolab 35	35 litre dewar
CR/54014	Cryolab 50	50 litre dewar
Accessories fo	r Cryolab series	
CR/54018	,	Pouring Trolley for Cryolab 25
CR/54020		Roller Base for Cryolab 25
CR/54022		Roller Base for Cryolab 20, 35 & 50
		and Biolab 8, 12, and 20
CR/54024		Liquid withdrawal device LN2 for Cryolab 5, 10, 20 & 25
CR/54026		Liquid withdrawal device LN2 for Cryolab 35 & 50
Other accessor	ries available on reque	st



Cryolab vessel with withdrawal device fitted.



Bio 12 to 36



Bio 2 to 35



CR/53020 with CR/54022

#### Bio series

Designed with the storage of smaller volumes of biological material in mind, the Bio series offer an excellent solution as a lab user's first cryobiological tank.

The Bio Series range is divided into two groups: High Capacity models for maximum payload & Extended Hold Time models for storage over the longer term. All units feature an integral lockable lid assembly in high strength polycarbonate to secure and protect samples from unauthorised access. All Bio Series models are supplied complete with canisters and low loss neck plugs. All units are guaranteed for three years.

STATEBOURNE

#### High Capacity Refrigerators

Technical Specifications					
Model	Bio 12	Bio 21	Bio 22	Bio 34	Bio 36
Liquid volume-litres	12	21	21	34	35
Static evaporation rate-lt/day	0.19	0.19	0.28	0.18	0.3
Static holding time-days	63	110	75	189	117
Field Working time-days**	39	69	47	118	75
Neck diameter (mm)	70	89	120	89	120
Overall height (mm)	470	579	537	710	710
Overall diameter (mm)	408	480	480	480	480
No. of canisters	9	6	10	6	10
Weight full-kg	20.4	32.6	32.7	45.3	47.4
Weight empty-kg	10.8	15.6	15.7	17.8	19.1
Vial capacity	N/A	N/A	N/A	684	1020
Canister dimensions					
diameter x height (mm)	46 x 120	68 x 120	73 x 120	69 x 275	73 x 275
Straw capacity- 0.25ml	4680	4920	8200	9840	16400
** Working time = holding time	e divided by	1.6			
Actual working time will vary de			application	ns.	

#### Extended Holding Time Refrigerators

Technical Specifications						
Model	Bio 2	Bio 3	Bio 8	Bio 10	Bio 20	Bio 35
LN2 capacity-litres	2	3	8	10	20	35
Evaporation rate-lt/day	0.08	0.11	0.1	0.1	0.1	0.1
Holding time-days	25	27	80	100	200	350
Working time-days**	16	17	50	63	125	219
Weight empty-kg	3	4.3	8.6	7.9	11.1	18.6
Weight full-kg	4.6	6.7	15.1	16	27.3	46.9
Neck diameter (mm)	32	51	51	51	51	51
Overall height (mm)	390	464	475	640	640	730
Overall diameter (mm)	185	216	407	305	407	480
No. of canisters	3	6	6	6	6	6
Canister dimensions						
diameter x height (mm)	25 x 120	38 x 120	38 x 120	38 x 275	38 x 275	38 x 275
Vial capacity-2ml	N/A	N/A	N/A	180	180	180
Straw capacity-0.25ml	360	1200	1200	2400	2400	2400
** Working time = holding tim	ne divided by	1.6				
Actual working time will vary o	lepending or	n individual	application	ns.		

Cat. No.	Model/Code	Description
CR/53002	Bio 12	12 litre High capacity refrigerator
CR/53004	Bio 21	21 litre High capacity refrigerator
CR/53006	Bio 22	21 litre High capacity refrigerator
CR/53008	Bio 34	34 litre High capacity refrigerator
CR/53010	Bio 36	36 litre High capacity refrigerator
CR/53012	Bio 2	2 litre Long holding time refrigerator
CR/53014	Bio 3	3 litre Long holding time refrigerator
CR/53016	Bio 8	8 litre Long holding time refrigerator
CR/53018	Bio 10	10 litre Long holding time refrigerator
CR/53020	Bio 20	20 litre Long holding time refrigerator
CR/53022	Bio 35	35 litre Long holding time refrigerator
Accessories for B	io series	
CR/54022		Roller Base for Bio 8, 12, 20 and Cryolab 20, 35 and 50
CR/53028		Roller Base for Bio 21, 22, 34, 35 & 36 and Biotrack 750
Other accessories	s available on request	

#### Biorack series

The Biorack series combines the efficiency of narrow neck storage refrigerators with the convenience of internal racks for easy retrieval and inventory of specimens.

Uniquely, each Biorack unit is supplied complete with Nalgene™ Cryoboxes of either 100 or 25 cell design for the storage of 2ml cryovials. A range of sizes is available from 750 vials for the low volume user, up to 6000 vials for main cell banks. All units are supplied with aluminium lockable lids for additional security. LN2 consumption per vial stored is among the lowest available.

A wide range of accessories to suit the Biorack series is available including the Cryoguard alarm. Protective clothing is also available and is recommended when operating containers of this type.

Model	Biorack	Biorack	Biorack	Biorack
	750	3000	4800	6000
LN2 Capacity (litres)	35	85	131	160
Evaporation Rate (litres/day)	0.30	0.63	0.63	0.63
Static Holding Time (days)*	117	135	208	254
Weight Empty (kg)	19	42	46	64
Weight Full (kg)	47	110	152	193
Neck Diameter (mm)	120	216	216	216
Overall Height (mm)	747	738	913	1027
Total 2ml Cryovial Capacity	750	3000	4800	6000
Cryoboxes format	5 x 5	10 x 10	10 x 10	10 x 10

Cat. No.	Model/Code	Description			
CR/53040	Biorack 750	35 Litre racked storage refrigerator			
CR/53070	Biorack 3000	85 Litre racked storage refrigerator			
CR/53074	Biorack 4800	131 Litre racked storage refrigerator			
CR/53072	Biorack 6000	160 Litre racked storage refrigerator			
Accessories for	Accessories for Biorack series				
CR/53028	9902112	Roller Base for Bio 21, 22, 34, 35, 36 and Biorack 750			
CR/53046	9902147	Roller Base for 3000, 4800 and 6000			

Other accessories available on request



Biorack series



Bio storage cannisters

#### Biotrek series shipping cannisters

Aluminium LN2 dry shippers.

The Biotrek 3 and 10 models are manufactured in aluminium and stainless steel respectively for outstanding durability in the most arduous of field conditions.

Internally they both contain a special cryo-absorbent material which absorbs liquid nitrogen to ensure that although any samples held are not immersed in liquid they are as close as possible to liquid nitrogen temperature.

A wide range of biological specimens may be held in the Biotrek 3 while the Biotrek 10 can also accommodate blood and bone marrow bags because of its extra wide neck and internal configuration.

Model	Biotrek 3	Biotrek 10
No. of canisters	1	5
iquid volume-litres	4.2	13
Static evaporation rate-litres/day	0.15	0.7
Static holding time-days	30	18
Neck diameter (mm)	51	216
Overall height (mm)	455	658
Overall diameter (mm)	216	408
Weight full-kg	8.5	27
Weight empty-kg	5.1	16.5
Vial capacity (in canisters)	30	510
Vial capacity (in cryoboxes)	-	500

Cat. No.	Model	Description
CR/53050	Biotrek 3	4.2 litre aluminium LN2 dry shipper
CR/53052	Biotrek 10	13 litre aluminium LN2 dry shipper

Accessories for both models are available on request, please state proposed use when enquiring. To transport these cylinders, additional items are required, a backpack is available for the 3 litre model and hard shipping cases are available for both the Biotrek 3 and the Biotrek 10, please request details.



CR/53052 & CR/53050

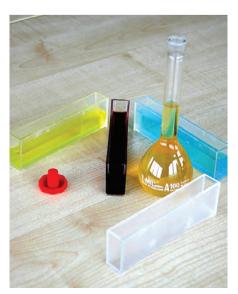




CU/46302



CU/820



CU/82026 in use

#### **Cuvettes**

#### Cuvettes

Cuvettes, disposable, modern manufacturing technology results in a cuvette that gives excellent optical transmission range, all have a 10mm path length.

Cat. No.	Description	Material	Volume	Range nm	Pk Qty
CU/46020	Semi-micro	Polystyrene	1.6ml	340 - 900	1000
CU/46022	Macro	Polystyrene	4.0ml	340 - 900	1000
CU/46024	Semi-micro	UV Plastic	1.6ml	220 - 900	100
CU/46026	Macro	UV Plastic	4.0ml	220 - 900	100
CU/46028	Semi-micro	PMMA	1.6ml	300 - 900	1000
CU/46030	Macro	PMMA	4.0ml	301 - 900	1000
CU/46032	Lid	Polypropylene	-	-	1000

#### Cuvettes, solvent resistant, 10mm path length

- Applicable wavelength range 220 to 900nm
- Resistant against polar solvents
- Very low extinction values
- Excellent optical transmission range

Cat. No.	Description	Volume	Range nm	Pk Qty
CU/46034	Semi micro, 12.5 x 12.5 x 45mm	1.6ml	220 - 900nm	100
CU/46036	Macro, 12.5 x 12.5 x 45mm	4.0ml	220 - 900nm	100

#### Cuvette holder, PE



Can accommodate  $10 \times 10$ mm cuvettes vertically in firm recesses for preparation work, or  $10 \times 10$ mm cuvettes horizontally for storage and protection. In storage mode the racks are stackable.

Cat. No.	Code	Description
CU/46302	260	Cuvette rack 170 x 50 mm, pk of 5

#### Cuvettes, 340 - 2500 nm, optical glass

Lovibond

Standard type physical size (h x w) 45 x 12.5 mm

Cat. No.	Optical path length
CU/82002	1 mm
CU/82004	2 mm
CU/82006	5 mm
CU/82008	10 mm
CU/82010	20 mm
CU/82012	40 mm
CU/82014	50 mm
CU/82016	100 mm

#### Cuvettes, wide photometry, 340 - 2500 nm, optical **Laviband** glass

Physical size (h x w)  $40 \times 24 \text{ mm}$ 

Cat. No.	Туре	Optical path length	
CU/82022	Wide	5 mm	
CU/82024	Wide	10 mm	
CU/82026	Wide	50 mm	

### Cuvettes, precision, glass and quartz

Starna precision made cuvettes are fully fused using heat alone. They are available in different materials for use at different wavelengths. Each cuvette is marked with a code.

Technical Specifications							
Window material Code Colour code Wavelength							
Optical glass	G	Yellow	360nm-2500nm				
Far UV Quartz	Q	Blue	200nm-2500nm				
NIR Quartz	I	Red	220nm-3800nm				

Cat. No.	Window material	Light-path mm	Int. Width mm	Volume (μl)
Macro cells				
CU/32004	Optical Glass G	5	9.5	1750
CU/32066	Special optical glass	10	10	3500
CU/32002	UV Quartz		9.5	3500
CU/32006		10	9.5	3500
CU/32008		20	9.5	7000
CU/32010		40	9.5	14000
CU/32060		50	9.5	17500
CU/32012	Far UV Quartz Q	5	9.5	1750
CU/32014		10	9.5	3500
CU/32016		20	9.5	7000
CU/32018		40	9.5	14000
CU/32062		50	9.5	17500
CU/32020	NIR Quartz I	10	9.5	3500
CU/32022	Optical Glass G	10	9.5	3500
CU/32024	Far UV Quartz Q	10	9.5	3500
CU/32026	NIR Quartz I	10	9.5	3500
Semi-Micro cells	S			
CU/32068	UV Quartz	10	4	1400
CU/32036	Far UV Quartz Q	5	4	700
CU/32038		10	4	1400
CU/32040		20	4	2800
CU/32042*	Far UV Quartz Q	10	4	1400
CU/32044	Far UV Quartz Q	10	4	1400
Micro cells				
CU/32046	Far UV Quartz Q	10	2	700
CU/32048*	Far UV Quartz Q	10	2	700
CU/32050	Far UV Quartz Q	5	2	200
CU/32052	Far UV Quartz Q	10	2	400
Fluorescence ce				
CU/32054	Far UV Quartz Q	10 x 10	10	3500
CU/32056	Far UV Quartz Q	10 x 10	10	3500
CU/32058	Far UV Quartz Q	10 x 4	4	1400
CU/32064	Far UV Quartz Q	10 x 2	2	3500
55,02001	. G. OT GOGILE G		4	0000

\* These products are self masking. Cells can be supplied with matched transmissions. Please ask for details.









CU/32018

CU/32050





CU/32006

CU/32042





CU/32044

CU/32048





CU/32060

CU/32056

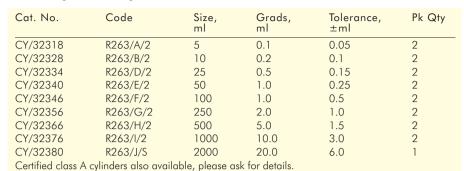


CY/323

### Cylinders, measuring

### Cylinders, measuring, with spout, Class A

Borosilicate glass with hexagonal foot.



### POEX 28 2-7- A 2

CY/12070

### Cylinders, measuring with spout, Class A

**PYREX®** 

(volac)

Borosilicate glass with white graduations, complies with ISO 4788.

Cat. No.	Code	Capacity, ml	Graduations, ml	Tolerance (±ml)
CY/12060	3201/02	5	0.10	0.05
CY/12062	3201/04	10	0.20	0.10
CY/12064	3201/06	25	0.58	0.25
CY/12066	3201/08	50	1.00	0.50
CY/12068	3201/10	100	1.00	0.50
CY/12070	3201/12	250	2.00	1.00
CY/12072	3201/14	500	5.00	2.50
CY/12074	3201/16	1000	10.00	5.00
CY/12076	3201/18	2000	20.00	10.00



CY/12208

### Cylinders, measuring with spout, Class A Works Certified PYREX®

Borosilicate glass with white graduations, complies with ISO 4788, individually tested and supplied with a certificate showing exact volume contained at 5 points on the scale. Each cylinder is marked with a unique serial number for traceability to National standards.

Cat. No.	Code	Capacity, ml	Graduations, ml	Tolerance (±ml)				
CY/12200	3201/02WC*	5	0.10	0.05				
CY/12202	3201/04WC*	10	0.20	0.10				
CY/12204	3201/06WC	25	0.58	0.25				
CY/12206	3201/08WC	50	1.00	0.50				
CY/12208	3201/10WC*	100	1.00	0.50				
CY/12210	3201/12WC*	250	2.00	1.00				
CY/12212	3201/14WC	500	5.00	2.50				
CY/12214	3201/16WC	1000	10.00	5.00				
CY/12216	3201/18WC	2000	20.00	10.00				
*Conforms wi	*Conforms with USP requirements							

### Cylinders, measuring, with spout, Class B

PYREX®

Pyrex® borosilicate glass with detachable plastic foot.

Cat. No.	Code	Size, ml	Grads, ml	Tolerance, ±ml	Pk Qty
CY/12028	3205/04MP	10	0.2	0.2	2
CY/12034	3205/06MP	25	0.5	0.5	2
CY/12040	3205/08P	50	1.0	1.0	2
CY/12046	3205/10P	100	1.0	1.0	2
CY/12056	3205/12P	250	2.0	2.0	2



CY/120

### Cylinder, measuring, with spout, Class B

Borosilicate glass with hexagonal foot and blue graduations.

Cat. No.	Code	Size, ml	Grads, ml	Tolerance, ± ml	Pk Qty
CY/12118	CRC201	5	0.1	0.1	10
CY/12128	CRC202	10	0.2	0.2	2
CY/12134	CRC204	25	0.5	0.5	2
CY/12140	CRC206	50	1	1	2
CY/12146	CRC209	100	1	1	2
CY/12156	CRC211	250	2	2	2
CY/12166	CRC213	500	5	5	2
CY/12176	CRC214	1000	10	10	2
CY/12180	CRC216	2000	20	20	1



CY/12156

### Cylinders, measuring, stoppered, Class A

Borosilicate glass with hexagonal foot and interchangeable polypropylene stopper.

Cat. No.	Code	Size, ml	Grads, ml	Tolerance, ± ml	Pk Qty
CY/32428	R264/NC/B/2	10	0.2	0.1	2
CY/32434	R264/NC/D/2	25	0.5	0.15	2
CY/32440	R264/NC/E/2	50	1.0	0.25	2
CY/32446	R264/NC/F/2	100	1.0	0.5	2
CY/32456	R264/NC/G/2	250	2.0	1.0	2
CY/32466	R264/NC/H/2	500	5.0	1.5	2
CY/32476	R264/NC/I/2	1000	10.0	3.0	2
CY/32480	R264/NC/J/S	2000	20.0	6.0	1
Certified class	A cylinders also ava	ilable, pleas	e ask for details.		



(volac)

### Cylinder, measuring, stoppered, Class B

Borosilicate glass with hexagonal foot, plastic stopper and blue graduations.

Cat. No.	Code	Size, ml	Grads, ml	Tolerance, ± ml	Stopper size	Pk Qty
CY/13140	CRC306	50	1	1	19/26	2
CY/13146	CRC309	100	1	1	24/29	2
CY/13166	CRC312	500	5	5	34/35	2

Other sizes are available subject to minimum order quantities, please enquire.

## CY/13140

### Cylinders, measuring, stoppered, Class B

Soda glass with interchangeable plastic stopper and round foot.

Cat. No.	Capacity, ml	Pk Qty	
CY/52018	5	2	
CY/52028	10	2	
CY/52034	25	2	
CY/52040	50	2	
CY/52046	100	2	
CY/52056	250	2	
CY/52066	500	2	
CY/52076	1000	2	
CY/52080	2000	1	



CY/52040



CY/162

### Cylinders, measuring, moulded graduations, PP

- Safe unbreakable in normal use, robust plastic construction
- Conforms to class B tolerances
- Ultra clear polypropylene, with good chemical resistance
- Large pouring spout for easy dispensing
- Conforms to ISO 6706
- Stable hexagonal base with non slip anti-suction feature
- Easy to read as liquids have virtually no meniscus in plastic cylinders

Cat. No.	Code	Size, ml	O.D. x Height,mm	Sub Div, ml	Tolerance, ± ml	Pk Qty
CY/16228	CP0010P	10	14 x 140	0.2	0.2	10
CY/16234	CP0025P	25	20 x 170	0.5	0.5	10
CY/16240	CP0050P	50	26 x 200	1	1	10
CY/16246	CP0100P	100	31 x 250	1	1	5
CY/16256	CP0250P	250	42 x 315	2	2	1
CY/16266	CP0500P	500	55 x 360	5	5	1
CY/16276	CP1000P	1000	66 x 440	10	10	1
CY/16280	CP2000P	2000	83 x 535	20	20	1

Note: Temperatures above 80°C may affect accuracy



CY/462

### Cylinders, measuring, moulded graduations, PP



Azlon

Azlon

Conform to ISO 6706 - 1981 (E) and BS 5404 Part 2 1977. Special polypropylene giving very high translucency. Autoclavable to  $121^{\circ}$ C for 20 mins., continuous work at  $100^{\circ}$ C.

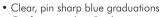
Permanent graduations are moulded in for reproducibility. No wetting. Chemically cleaner than glass. Chemically non-absorbent. Excellent chemical resistance. Pentagon base for added stability.

Cat. No.	Code	Capacity, ml	Grads, ml	Pk Qty
CY/46228	1075	10	0.2	10
CY/46234	1077	25	0.5	5
CY/46240	1078	50	1.0	5
CY/46246	1079	100	1.0	5
CY/46256	1080	250	2.0	1
CY/46266	1081	500	5.0	1
CY/46276	1082	1000	10.0	1
CY/46280	1094	2000	20.0	1



CY/163

### Cylinders, measuring, printed graduations, PP



- Conforms to class B tolerances
- $\bullet$  Ultra clear polypropylene, with good chemical resistance
- Food safe
- Large pouring spout for easy dispensing
- Conforms to ISO 6706
- Stable hexagonal bases with non slip anti-suction feature
- Easy to read as liquids have virtually no meniscus in plastic cylinders

Cat. No.	Code	Size, ml	O.D. x Height,mm	Sub Div, ml	Tolerance, ± ml	Pk Qty
CY/16328	CPB0010P	10	14 x 140	0.2	0.2	10
CY/16334	CPB0025P	25	20 x 170	0.5	0.5	10
CY/16340	CPB0050P	50	26 x 200	1	1	10
CY/16346	CPB0100P	100	31 x 250	1	1	5
CY/16356	CPB0250P	250	42 x 315	2	2	1
CY/16366	CPB0500P	500	55 x 360	5	5	1
CY/16376	CPB1000P	1000	66 x 440	10	10	1
CY/16380	CPB2000P	2000	83 x 535	20	20	1

Note: Temperatures above 80°C may affect accuracy

### Cylinders, measuring, moulded graduations, PMP

- Clear, easy to read moulded graduations
- Conforms to class B tolerances
- Transparent, robust PMP
- Excellent chemical resistance
- Conforms to ISO 6706
- Large pouring spout for easy dispensing
- Easy to read as liquids have virtually no meniscus in plastic cylinders

Cat. No.	Code	Size, ml	O.D. x Height,mm	Tolerance, ± ml	Pk Qty
CY/16828	CT0010P	10	14 x 140	0.2	10
CY/16834	CT0025P	25	20 x 170	0.5	5
CY/16840	CT0050P	50	26 x 200	1	5
CY/16846	CT0100P	100	31 x 250	1	5
CY/16856	CT0250P	250	42 x 315	2	1
CY/16866	CT0500P	500	55 x 360	5	1
CY/16876	CT1000P	1000	66 x 440	10	1
CY/16880	CT2000P	2000	83 x 535	20	

Note: Temperatures above 80°C may affect accuracy



Azlon

Kartell

(volac)

CY/168

### Cylinders, measuring, moulded graduations, PMP

Conforms to ISO 6706 - 1981 (E) and BS 5404 Part 2 1977. Crystal clear. Autoclavable. Can be used for liquids up to 170°C. No wetting. No meniscus. Permanent graduations are moulded in for reproducibility. Chemically cleaner than glass. Chemically non-absorbent. Excellent chemical resistance. Pentagon base for added stability.

Cat. No.	Code	Capacity, ml	Grads, ml	Pk Qty
CY/46828	1570	10	0.2	10
CY/46834	1571	25	0.5	5
CY/46840	1572	50	1.0	5
CY/46846	1573	100	1.0	5
CY/46856	1574	250	2.0	1
CY/46866	1575	500	5.0	1
CY/46876	1576	1000	10.0	1
CY/46880	1577	2000	20.0	1



CY/468

### Cylinders, Nessler, soda glass

For colour comparison. Supplied in matched pairs.

Cat. No.	Description	Pk Qty	
CN/32002	50ml single mark	pair	
CN/32004	100/50ml two marks	pair	



CN/32004

### Cylinders, receivers, Crow pattern, Type 1, Class B

Cat. No.	Capacity, ml
CY/52202	100



CY/52202



DA/95400



DA/95402



DA/95404



DA/95406



DA/95408

### **Dataloggers**

### Data Logging Solutions & Monitoring Systems

The Comark Diligence range of small, low powered, battery-operated Data Loggers are ideal for applications where monitoring is taking place remotely, but where crucially, the monitoring history is of key importance. Using Wi-Fi connectability, readings can be taken and using your existing Wi-Fi network, the live data can be fed back to a PC or to the Comark Cloud – which can then be viewed 24/7 from any Internet enabled device.

Offering you unlimited storage of the Temperature and Humidity data (model RF313-TH only) from your Diligence Wi-Fi Data Loggers, across multiple locations, the Comark Cloud is supplied free for one year. The Diligence Plug and Play Wi-Fi System will also provide you with real-time audio and visual alerts via a local alarm module for immediate on-site action, as well as E-Mail and SMS alerts\* for off-site notifications and action giving you peace of mind and allowing you to intervene at the earliest possible moment.

Supplied with a Micro USB lead and USB port for recharging (can only be recharged when the unit is between 0 to  $\pm 40^{\circ}$ C).

\*Via an email to SMS service such as Textmagic.com

Common features on all models:

- · Rechargeable internal lithium polymer battery
- Easy data logger set-up using free PC software application
- Temperature selection in °C or °F
- Data can be viewed via the graphing tool or can be exported to MS Excel
- · Configurable high and low alarms with indicator
- Wireless connectivity to PC via Wi-Fi
- Max and Min readings
- IEEE 802.11b/g/n compliant
- Protection rating IP55
- · Memory stores all data even if Wi-Fi is temporarily disconnected
- Fully featured LCD segment display
- Low battery indicator
- Wi-Fi connection indicator
- Cloud Licence valid 1 year

Model RF311-T for measuring environmental temperatures, temperature Range: -20 to +60°C. With built in temperature data logger with Wi-Fi capability and integrated display, capable of logging greater than 1 million data entries, supplied with wall bracket.

Model RF312-TP for measuring temperature with thermistor probes. Temperature Range: -40 to  $+125^{\circ}$ C, supplied with removable thermistor probe, the unit is capable of logging greater than 1 million data entries.

Model RF313-TH for measuring environmental temperature and humidity, temperature Range:  $-20^{\circ}$ C to  $+60^{\circ}$ C, Humidity measurement range from 0 to 100% with built in temperature data logger with Wi-Fi capability and integrated display. Capable of logging greater than 500,000 data set entries, supplied with wall bracket.

Model RF314-TC for measuring temperature with thermocouple probes. With built in temperature data logger with Wi-Fi capability and integrated display, capable of logging greater than 1 million data entries. Measurement range -270°C to 1300°C (probe dependent) supplied with a K type thermocouple probe but will support J, K, N and T types as well.

Model RF324 standalone alarm for use with Diligence Wi-Fi Data Loggers, it can monitor all the loggers in the Diligence Wi-Fi range. The unit will pick up alarm messages from any Diligence Wi-Fi sensor within Wi-Fi range. It displays Red LED lights (through a Red translucent rear moulding) and sounds when a sensor alarm has been triggered, typically 100dBA at 1 meter (there are nine standard sounds to choose from). Alarm messages are streamed wirelessly over any Wi-Fi network and can be viewed on a PC using the free Diligence Wi-Fi Pro Software package supplied. The RF324 Alarm has been designed to be continuously powered via the mains however it does contain a rechargeable lithium polymer battery for limited power during the event of a mains failure.

Please note that these units do not have to be connected via Wi-Fi. They can be operated off line using the free easy set up software supplied with the unit connected to a PC locally. When connecting this way, many of the Wi-Fi features and benefits will not be available, for example SMS messaging. We also recommend that the unit is coupled with a RF324 audible and visual local alarm.

Cat. No.	Code	Description
DA/95400	RF311-T	Datalogger RF311-T for measuring environmental temperatures
DA/95402	RF312-TP	Datalogger RF312-TP for measuring temperature using thermistor probes
DA/95404	RF313-TH	Datalogger RF313-TH for measuring temperature and humidity
DA/95406	RF314-TC	Datalogger RF314-TC for measuring temperature using thermocouple probes
DA/95408	RF324	Alarm, local providing audible and visual alert, for use with data loggers
DA/95410	CLOUD 12	Licence, Cloud valid for 12 months for one unit after first free year

### Bluetooth data loggers

This self-contained wireless data logger enables you to access data anytime from your iOS or android mobile device over a 100-foot range, and it requires no dedicated equipment beyond an iOS or android device for configuring the logger or reading out data.

- Wireless communication via Bluetooth Smart
- Easy to deploy and offload using free HOBO mobile App
- 2 Channel
- Measures temperature and relative humidity
- Data available by USB, wireless and display
- Visual and audible high & low alarm thresholds
- Stores 84,000 measurements
- Accuracy: +/- 0.2°C and +/- 2%RH
- Find me/pager feature
- Internal sensor

Ranges:	
Temperature	-20° to 70°C (-4° to 158°F)
Accuracy	$\pm 0.21$ °C from 0° to 50°C
	$\pm 0.38^{\circ} F$ from 32° to 122°F
Resolution	0.024°C at 25°C
	0.04°F at 77°F
Drift	<0.1°C (0.18°F per year)
RH Sensor	1% to 90%
Accuracy	±2% from 20% to 80%
	typical at 25°C (77°F)
Hysteresis	±2% RH
Resolution	0.01% at 25°C (77°F)
Drift	1% per year typical
Response time:	
Temperature in moving air 1 m/s, (2.2 mph)	7.30 minutes
Relative humidity in airflow of 1 m/s (2.2 mph)	20 seconds to 90% Logger:
Radio power	1 mW (0 dBm)
Approximate transmission range	30.5 meters (100 feet) line-of-sight
Wireless standard	Standard Bluetooth Smart (Low energy 4)

Cat. No.	Code	Description
DA/95500	MX1101*	Bluetooth temperature/RH datalogger

<sup>\*</sup>Requires software, see end of listing.



DA/95500



DA/95500

### USB Downloadable data loggers

The single channel HOBO U12 is ideal for food, pharmaceutical, autoclave and other applications where high-accuracy temperature data is critical. With its broad temperature range (-40 to 125°C) and food-grade stainless steel housing, the U12 Stainless steel Temperature Data Logger withstands process conditions from pasteurization to flash freezing and washdown and is ideal for high-temperature or deep underwater applications.

- Manufactured from food-grade 316 Series Stainless Steel
- High-accuracy, extended temperature range
- Suitable for high pressure applications to 2200psi
- Fast readout via direct USB interface

IMPORTANT: HOBO data loggers require HOBOware software (USB interface cable included with CD purchase). See entry below.

Cat. No.	Code	Description
DA/95600	U12-015*	HOBO U12 stainless steel data logger

<sup>\*</sup>Requires software, see end of listing.



DA/95600



DA/95602



DA/95604



DA/95650

### Temperature data loggers

The HOBO UX100-001 Temp logger records temperature in indoor environments with its integrated sensor. Ideal for monitoring laboratory conditions, tracking storage conditions and temperature trends in server rooms.

- Temperature range -20° to  $+70^{\circ}\text{C}$  ( -4° to  $+158^{\circ}\text{F}$ )
- Accuracy  $\pm 0.21$  °C from 0° to 50°C ( $\pm 0.38$  °F from 32° to +122 °F)
- Easy-to-view LCD display
- Large memory capacity
- Visual high & low alarm thresholds
- New Burst and Statistics logging modes

Cat. No.	Code	Description
DA/95602	UX100-001*	HOBO UX100 Environmental temperature data logger

<sup>\*</sup>Requires software, see end of listing.

### Temperature and Humidity data loggers

The HOBO UX100-011 Temp/RH data logger records temperature and relative humidity (within 2.5% accuracy) in indoor environments with its integrated sensors. Ideal for monitoring both temperature and humidity levels in sensitive areas.

- Easy-to-view LCD display
- · Large memory capacity
- Visual high & low alarm thresholds
- New Burst and Statistics logging modes
- User-replaceable RH sensor
- $\bullet$  Temperature range -20° to +70°C ( -4° to +158°F)
- Accuracy  $\pm 0.21$  °C from 0° to 50°C ( $\pm 0.38$  °F from 32° to +122 °F)
- $\bullet$  RH:  $\pm 2.5\%$  from 10% to 90% typical

Cat. No.	Code	Description
DA/95604	UX100-011*	HOBO UX100 Environmental temperature/RH data logger

<sup>\*</sup>Requires software, see end of listing.

### Downloadable Datalogger, multi-channel

The HOBO UX120-006M Analog Logger is a high-performance, LCD display data logger for building performance monitoring applications. It provides twice the accuracy of previous models, a deployment-friendly LCD, and flexible support up to four external sensors for measuring temperature, current, CO2, voltage and more. Ideal for energy audits, building commissioning studies, equipment scheduling, and more.

- Twice the accuracy over previous models with 16-bit resolution
- Flexible support for a wide range of external sensors
- LCD confirms logger operation and displays near real-time measurement data
- Provides minimum, maximum, average and standard deviation logging options
- On-screen alarms notify you when a sensor reading exceeds set thresholds
- Stores 1.9 million measurements for longer deployments between offloads

Cat. No.	Code	Description
DA/95650	UX120-006M*	Hobo 120 4-channel Analog data logger
Sensors:		
DA/95652	TMC1-HD	Waterproof sensor, 1 ft cable, -40° to 50°C (water/soil); -40° to 100°C (air)
DA/95654	TMC6-HD	Waterproof sensor, 6 ft cable, -40° to 50°C (water/soil); -40° to 100°C (air)
DA/95656	TMC6-HE	Wide range temperature sensor for flat surfaces and pipes, 2 meter cable, range -40 to 100°C in air, supplied with fixing kit
DA/95658	TMC6-HC	Stainless steel needle probe, 102 x 3.2mm fitted with handle and 1.8 meter PVC cable and plug

<sup>\*</sup>Requires software, see end of listing.

### Software options

Please note, free software is available for download from manufacturers website. (The free download from our site is not the full version of HOBOware Pro, this is offered below.)

Bluetooth loggers will require the HOBOmobile app, a free download from the iOS App store or play store that makes it easy to configure the dataloggers and manage the collected data. Using an iPhone or Android phone, users can view data in graphs, check the operational status of loggers, share data files and graph images for analysis in Excel, Numbers and other applications and store data in the cloud. HOBOmobile also makes it fast and easy to set up audible alarm notifications so users are immediately notified of problems.

Cat. No.	Code	Description
DA/95670	BHW-PRO-CD	HOBOware PRO V.3 for PC and Mac, full version

### Datalogger for humidity and temperature

Compact and easy-to-use dual channel data logger for efficient monitoring and data collection of temperature and humidity values. Ideal for monitoring food, medical product storage, warehousing and distribution, containers, industrial processes, laboratory environments, museums and libraries. Supplied with wall holder, padlock, software, USB cable and battery

- $-40^{\circ}$  to  $70^{\circ}$ C x  $0.1^{\circ}$ , 0% to 100%RH x 0.1%
- Measures °C or °F
- USB interface for set-up and data transfer to PC or Laptop
- Set-up allows the user to select logging rate, unit of measurement, recording settings, Alarm limits and to enable & disable LEDs
- User selectable logging intervals Min 1 second Max 24 hours
- Logs up to 16,350 temperature and 16,350 humidity readings
- Green LED for Logging Confirmation
- 2 programmable Alarm thresholds (High/Low)
- Red LED if Alarm limits are exceeded
- Large 29mm LCD display for time and date (changes between the date & time every 10 secs) and current readings
- Min/Max values and logger full indicator
- Low Battery indication
- Impact-resistant ABS and rubber moulded case, wall holder and padlock
- Analysis software with graphical display of data total readings, zoom facility to individual readings, visual indication of Alarm levels, summary of data logging settings & readings and data list of results
- Readings downloaded can be exported to a Microsoft Excel Spread sheet

Technical Specifications	Temperature	Humidity	
Range	-40 to +70°C	0% to 100% RH	
Resolution	0.1°C	0.1% RH	
Accuracy	$\pm 1^{\circ}$ C (-40 to +40°C)	±5% RH (0% to 35% & 80% to 100%)	
	$\pm 2^{\circ}$ C (+40 to +70°C	±3% RH (35% to 80%)	
Max reading	16,350 on each channel (Temp and %RH)		
Power	3.6V ½ AA Lithium battery		
Dimensions	92 x 47 x 30mm		
Weight	86g		

Cat. No.	Description
DA/95142	Data logger, temperature and humidity ET-175
DA/95144	3.6V ½AA Lithium Battery
DA/95146	Standard calibration certificate, temperature and humidity, 2 point **

<sup>\*\*</sup> Standard certificates are issued at 2 Temp points: 20°C & 40°C and 2 RH points: 35% & 75% @ 20°C, additional points can be added between -10 to +50°C and between 30% to 95%RH. Please contact our sales office for pricing stating points required.



DA/95142



DA/95144

Notes	



### **Density Meters**

### Densito and DensitoPro

The Densito and DensitoPro portable density meters measure the density of liquids as well as many of its derivatives, such as Brix, % Alcohol and many more. DensitoPro comes with an RFID and barcode reader, allowing for a simple point-and-shoot sample ID entry.

The meters can be used in a variety of industries such as chemical for checking the purity of solvents, food & beverage for measuring sugar content, electroplating for monitoring bath content and many more. Accurate results (up to three decimal places) within seconds.

- Set measurement limits for your product to instantly identify out of limits results
- Rugged construction with a protective cover, available as an accessory, for harsher environments
- Can be used whilst wearing protective gloves
- Integrated pump for easy filling and draining
- Manage data and create graphs with EasyDirect
- Results can be printed using a USB or Bluetooth printer
- · Built-in RFID barcode reader (DensitoPro only)

Technical Specifications			
0 - 3 g/cm <sup>3</sup>			
$\pm 0.001 \text{ g/cm}^3$			
$\pm \ 0.0001 \ g/cm^3$			
0°C - 50°C			
0.1°C			
-10°C - 50°C			

Cat. No.	Code	Description
DM/65010	30330857	Density meter, Densito, hand held, 0 g/cm³ - 3gcm³
DM/65012	30330858	Density meter, DensitoPro, hand held, 0 g/cm³ - 3gcm³, with barcode reader
DM/65020	30330860	Protective cover
DM/65022	30330861	Carry case for Densitometer



### **Desiccators**

### Desiccator / humidity cabinet

The Mark III Desiccator Cabinet is a direct development from its popular predecessor. Following consultation with users, Townson and Mercer have developed a desiccator/humidity cabinet with a new level of operating excellence.

Applications include the dry storage of specimens, testing specimens under constant humidity, environmental testing of electrical assemblies, metallic products, natural and synthetic materials. The desiccator cabinet can achieve temperature stability within an hour of setting. Recommended chemicals, to give different RH values at 20°C, are printed on the cabinet. Changes in humidity will differ from as little as 0.02% to as much as 0.8% per °C above 20°C.

- Easy setting with a temperature indicated scale.
- Rapid air circulation over the desiccant tray and shelves giving swift stabilisation of humidity and temperature.
- Stainless steel desiccant tray.
- Controlled temperature distribution over each shelf.
- RH stability between 0 and 100% can be obtained using appropriate substances at ambient temperatures.
- Spring loaded door mechanism maintaining cabinets seal and internal atmosphere.
- Solid state electronic control and switching, gives greater stability and prolongs life of control circuit.
- Indication of moisture change from direct reading hygrometer.
- Accurate and controllable up to  $50^{\circ}\text{C} \pm 1^{\circ}\text{C}$  fluctuation.
- All units are CE marked and manufactured to the highest standards under ISO 9001

Technical Specifications				
Cabinet size (h x w x d	Cabinet size (h x w x d mm)			
	External:	570 x 410 x 300		
	Internal:	430 x 325 x 185		
Cabinet:		Stainless Steel		
Door and shelves:		Plate Glass		
Fittings:		Plated/Painted Steel		
Interior finish:		Stainless Steel		
Exterior finish:		Powder coated		
Voltage:		220/240 Volts 50/60 Hz		
Power:		200 Watts		
Net weight		17kg		
(All figures are approxi	mate and exclu	ude protrusions.)		

Cat. No.	Code	Description
DE/75012	04800648	Desiccator/Humidity Cabinet Mark III
DE/75014	02601270	Thermometer -10 °C to +50 °C
DE/75016	04800730	Thermometer support blocks (pair)

### Desiccators, borosilicate glass with handle lid

With ground glass flange and zinc disc.

Cat. No.	Size top I.D., mm	
DE/62002	100	
DE/62004	150	
DE/62006	200	
DE/62008	250	
Accessory		
S0915/R4	Silica gel self indicating 1-3mm, 500g.	

### Desiccators, vacuum, borosilicate glass

With ground glass flange, complete with stopcock and zinc disc.

Cat. No.	Size top I.D., m	m
DE/62014	150	
DE/62016	200	
DE/62018	250	
Accessory S0915/R4 Silica ge	el self indicating 1-3mm, 50	Og.



DE/75012



DE/62004



DE/62014



DE/1650



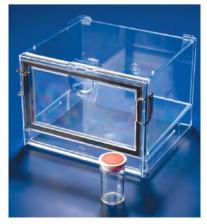
DE/36502



DE/32504



DE/3600



DE/16606

### Desiccator, vacuum, polycarbonate

- Tough transparent polycarbonate cover and base.
- Polycarbonate stopcock with PTFE plug.
- Will safely withstand high vacuum pressures making it safe and virtually unbreakable.
- Ceramic plate permits the use of incandescent crucibles.

Cat. No.	Code	I.D,mm	Plate Size, mm	Overall height,mm
DE/16502	DWA215	215	205	262
DE/16504	DWA245	245	236	296

### Desiccator, vacuum, polycarbonate

### **NALGENE**

Azlon

Transparent light weight and unbreakable. For vacuum and non-vacuum applications. Holds vacuum of 711mmHg for 24 hours. For room temperature use only. Silicone O-ring seal does not require grease. Not suitable for use with organic solvents. Supplied without disc.

Cat. No.	Code	Size top I.D., mm
DE/36502	5311-0250	251

### Desiccator plate, ceramic-metal

### **NALGENE**

Unbreakable, with greater resistance to thermal shock than porcelain. Fire polished, corrosion resistant, inert non-stick glass surface bonded to metal. The plate is marked with numbered quadrants for easy location of contents. Autoclavable.

Cat. No.	Code	Diameter, mm
DE/32504	5312-0230	230

### Desiccator plates, porcelain

Cat. No.	Description
DE/62030	Porcelain plate for 100mm desiccator DIN, 90 mm
DE/62032	Porcelain plate for 150mm desiccator DIN, 140 mm
DE/62034	Porcelain plate for 200mm desiccator DIN, 190 mm
DE/62036	Porcelain plate for 250mm desiccator DIN, 235 mm
DE/62038	Porcelain plate for 300mm desiccator DIN, 280 mm

### Desiccator cabinets, acrylic

### **NALGENE**

Provide dust and moisture-proof storage in refrigerators, freezers and on the bench top. Useful to store anhydrous, hygroscopic biological and chemical compounds, electronic assemblies or any components requiring controlled storage conditions. Neoprene gasket on door ensures a tight seal. Door is secured with two stainless steel latches and full height hinge. Removable lipped tray holds solid desiccant. Shelves are removable, adjustable and vented to maximise air flow.

Cat. No.	Code	Dim.(HxWxD), mm	Shelves
DE/36002	5317-0070	178x303x305	2
DE/36004	5317-0120	305x305x305	3
DE/36006	5317-0180	457x305x305	4

### Desiccator cabinet, polystyrene



- Clear, high impact polystyrene cabinet
- Space saving stacking feature
- Airtight door with foam rubber gasket
- Supplied with sealed jar of silica gel

Cat. No.	Code	Internal LxWxH, mm	External LxWxH, mm	Door opening, mm
DE/16606	DWA301	201x180x130	225x200x168	188x110

For Dewars, please see Cryogenics page 138.

### **Dipslides**

### **Dipslides**

Dipslides are a simple and easy to use swabbing and sampling device which provide a simple and easy-to-use alternative to the plate count technique for assessing microbial contamination. Used in conjunction with the Challenger incubators each Dipslide is a self contained unit avoiding the need for laboratory based procedures such as plating out on Petri dishes.

Dipslide units consist of nutrient agars on a sampling paddle, permanently attached to an easy to hold cap, contained in a clear plastic container and batch numbered for quality control purposes. The unique hinged design improves access to angled surfaces.

- Large paddle for easy reading
- Flexible paddle for maximum surface contact
- Airtight lid (Easy to lift off)
- Conveniently boxed in 10's
- Comparator chart provided

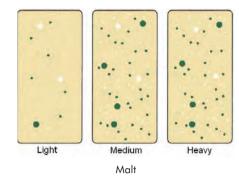
Manufactured in a clean environment and stored at constant temperature prior to despatch all materials and each batch are traceable from source to customer.

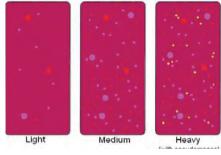
Dipslides are non-hazardous. Used & contaminated slides should be sterilised before disposal, by immersing in a disinfectant, or by autoclave, or incineration.

Dipslides can be used to monitor microbial growth wherever the potential may exceed 1000 organisms per ml of sample fluid.

Culture media:		
DS/95006	Side 1 Nutrient & TTC supplement	Side 2 Malt Extract
DS/95008	Side 1 Pseudomonas	Side 2 MacConkey 3
DS/95010	Side 1 Nutrient & TTC supplement	Side 2 MacConkey 3

Cat. No.	Code	Description	Pk Qty	
DS/95006	TTC/Malt dip slides		10	
DS/95008	Pseudomonas/MaConkey No 3		10	
DS/95010	TTC/McConkey No	3	10	





MaConkey

### Dipslide incubator, MX25 "The Challenger"

Features all-new Precision Electronic Temperature Control Technology - a fully integrated solution, including Worldwide Universal Power Supply. Complete with Interchangeable power plugs for UK, Europe, America & Australia, with the added benefit of automatic voltage selection for 110/240 Volts mains. For greater functionality, an accessory cigar lighter cable is available offering in-vehicle incubation. The incubator runs from 12 Volts DC, meaning the mains stays at the adaptor/plug. This reduces the risk to users in situations where the Incubator could be used with liquid samples or wet hands, protecting you and your field team. Temperature Control Technology is fully solid state with no moving parts, element switching is transistorised and designed for constant long term operation. This unique combination means sustained temperature optimisation, providing the most convenient and quickest possible indication of results in your samples. The incubator also has a heat reservoir chassis - this holds latent heat during operation adding thermal inertia to keep temperature stable even when larger, cold liquid loads are introduced.

Typical load capacity - 20-25 Dip slides or 30 x 95mm petri dishes

Technical Specifications	
Power supply	Adaptor – 100-240V AC @ 360 mA
Power supply	Incubator 12 Volts DC @ 2 Amps
Temperature Control	Darlington switched solid state
Temperature Range	Ambient $+$ 5 to 45°C $+$ /- 0.5°C
Chamber Size (useable)	18 x 18 x 15 cm (Height) cap 5.2 litres
External dimensions	26 x 32 x 27 cm
Weight	2.1 Kg

Cat. No.	Code	Description
DS/95002	MX25	Mains or 12V battery incubator



DS/95002



BB/167

### Dishes, Aluminium

### Dishes, Aluminium

Lightweight aluminium weighing boats, flat bottom, crimped wall for rigidity with finger tab to assist handling, FDA food-grade compliant.

Cat. No.	Dimensions, dia x height	Pk Qty
BB/16700	43 x 12mm	100
BB/16702	57 x 14mm	100
BB/16704	70 x 16mm	100

### **Dispensers**

### Dispensers, bottle-top, BibbyPet



The BibbyPet is a new bottle-top dispenser with an innovative design concept that makes it a real low cost alternative for routine dispensing. Based on a replaceable polypropylene/polyethylene dispensing cartridge the BibbyPet is ideal for use with aqueous solutions, alkalis, dilute acids and polar solvents such as ethanol or acetone. Both the dispensing cartridge and valves can be quickly and easily replaced. The BibbyPet has a 45mm thread and is supplied complete with adapters for bottles with 32mm and 40mm threads. Both the 10ml and the 25ml versions have an accuracy of  $\pm$  1.2% and a repeatability of 0.2%

- Economical
- Semi-automatic
- Replaceable dispensing cartridge and valves

Cat. No.	Code	Description
DI/13002	BD10	10ml capacity BibbyPet with 0.2ml setting
DI/13004	BD25	25ml capacity BibbyPet with 0.5ml setting
DI/13006	BD1010	Dispensing cartridge 10ml, pack of 3
DI/13008	BD1012	Dispensing cartridge 25ml, pack of 3
DI/13010	BD1014	Discharge tube
DI/13012	BD1016	Suction tube, 250mm, pack of 2
DI/13016	BD1020	Valve set, including seals



DI/13002



DI/131 with accessory bottle

### Dispensers, bottle top, Pressmatic



The high specification and innovative design of the Pressmatics make them the ideal dispenser for almost any solution, including concentrated acids and alkali reagents.

A new recirculation system cuts down on solution wastage during priming. The Pressmatic fits directly onto a 45mm thread and is supplied with three adapters to fit most laboratory bottles. Every unit is individually calibrated to 0.7% accuracy and supplied with a certificate.

- New design with recirculation valve
- Chemically resistant and non-sticking ceramic piston
- Simple & accurate volume setting
- Fully rotational on bottle for optimum positioning
- Accuracy within 0.7%
- $\bullet$  Can be autoclaved at 121°C

Cat. No.	Code	Capacity, ml	
DI/13102	PD1R	0.2 to 1.0	
DI/13106	PD5R	1.0 to 5.0	
DI/13108	PD10R	2.0 to 10.0	
DI/13110	PD30R	5.0 to 30.0	
DI/13112	PD60R	10.0 to 60.0	

### Accessory bottles for Pressmatic dispensers

Cat. No.	Description
DI/13116	1000ml, amber
DI/13120	1000ml, clear

### Dispenser, bottle-top, Brand Dispensette® S

Brand Dispensette® S bottle top dispensers DE-M marking, supports a very wide range of applications for the dispensing of aggressive reagents directly from a supply bottle. The dispensers can be used for concentrated bases, saline solutions, a variety of organic solvents and concentrated acids, for example, H3PO4 and H2SO4, (there are certain exceptions such as HCL, HNO3, and HF etc.)

Due to an improved flow technology, priming is faster and less force is needed during dispensing, especially for instruments with large volumes. Available in analogue or digital versions, with or without return recirculation valves.

The Dispensette® S Organic version is ideal for dispensing solvents such as chlorinated and fluorinated hydrocarbons like trichlorotrifluoroethane, and dichloromethane or acids such as concentrated HCL and HNO3 (except HF) as well as trifluoroacetic acid (TFA), tetrahydrofuran (THF) and peroxide Dispensers with a 5 or 10ml capacity are supplied with a set of 5 adapters; GL 24–25, GL 28/S 28, GL 32–33, GL 38 and S 40 and have a filling tube length of 125 to 240mm.

Dispensers with larger volumes than 10ml are supplied with 3 adapters; GL 32-33, GL 38 and 5 40 and have a filling tube length of 170 to 330mm.

Cat. No.	Range ml	Subdivision ml	Accuracy ≤ ± %	Tested volume μl					
Analogue witho	Analogue without recirculation valve								
DI/70000	0.5 - 5	0.1	0.5	25					
DI/70002	1 - 10	0.2	0.5	50					
DI/70004	2.5 - 25	0.5	0.5	125					
DI/70006	5 - 50	1	0.5	250					
DI/70008	10 - 100	1	0.5	500					
Analogue with i	recirculation valve								
DI/70020	0.5 - 5	0.1	0.5	25					
DI/70022	1 - 10	0.2	0.5	50					
DI/70024	2.5 - 25	0.5	0.5	125					
DI/70026	5 - 50	1	0.5	250					
DI/70028	10 - 100	1	0.5	500					
Digital without	recirculation valve								
DI/70040	1 - 10	0.05	0.5	125					
DI/70042	2.5 - 25	0.1	0.5	250					
DI/70044	5 - 50	0.2	0.5	500					
Digital with reci	rculation valve								
DI/70060	1 - 10	0.05	0.5	125					
DI/70062	2.5 - 25	0.1	0.5	250					
DI/70064	5 - 50	0.2	0.5	500					
Analogue Orga	ınic with recirculation v	alve							
DI/70080	0.5 - 5	0.1	0.5	25					
DI/70082	1 - 10	0.2	0.5	50					
DI/70084	2.5 - 25	0.5	0.5	125					
DI/70086	5 - 50	1.0	0.5	250					
DI/70088	10 - 100	1.0	0.5	500					





DI/70022



DI/70060



DI/760082



DI|43002

### Dissection

### Dissecting set, basic

Comprising the following instruments, in a PVC roll. All instruments are stainless steel except where stated.

Cat. No.	Description	Qty	
DI/43002	Scalpel, 35mm blade	1	
	Scalpel, 45mm blade	1	
	Needles, straight, sharp (wooden mount)	2	
	Seeker, bent, blunt (wooden mount)	1	
	Pair of forceps, blunt, 125mm	1	
	Pair of forceps, sharp, 125mm	1	

Pair of scissors, fine points, 112mm Pair of scissors, blunt, 125mm



DI/48004

### Canvas roll

Cat. No. DI/48004





DI/44006

### Awl, stainless steel 28mm spike in milled aluminium handle

Cat. No.	Pk Qty
DI/44006	5



DI/44124

### Needle holder, aluminium with screw chuck





Needle, dissecting, all stainless steel, straight, sharp, overall length 130mm

Cat. No.	Pk Qty
DI/44118	5



DI/44120

Needle, stainless steel, straight, sharp, in non-metal handle, overall length 135mm



Cat. No.	Pk Qty
DI/44120	10

### Needle, Borrodaile, all stainless steel, overall length 125mm



Cat. No.	Pk Qty
DI/44122	3



DI/44122

### Seeker, stainless steel, bent, blunt, in plastic mount



Cat. No.	Pk Qty
DI/44114	10



DI/44114

### Seeker, all stainless steel, bent, blunt



Cat. No.	Pk Qty
DI/44116	3



DI/44116

### Section lifter, stainless steel, blade 55mm long, overall length 125mm



Cat. No.	Pk Qty
DI/44112	2



DI/44112

### Forceps, sharp points, narrow flutes, with guide pin, stainless steel



Straight points

Cat. No.	Length, mm	Pk Qty
DI/44132	115	5
DI/44134	125	5
DI/44136	150	5



DI/44132

### Forceps, blunt points, narrow flutes, without guide pin, stainless steel



Cat. No.	Length, mm	Pk Qty
DI/44138	115	5
DI/44140	125	5
DI/44142	150	5



DI/44138

### Forceps, sharp, narrow flutes, curved points, with guide pin, stainless steel

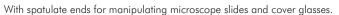


Cat. No.	Length, mm	Pk Qty
DI/44144	125	2



DI/44144

### Forceps, stainless steel





Cat. No.	Description
MS/49670	Microscope slide forceps, spatulate ends



MS/49670



DI/44146

### Forceps, Storkbill tweezers, stainless steel



Cat. No.	Length, mm	Pk Qty
DI/44146	110	5



DI/44148

### Forceps, Featherweight tweezers, stainless steel



Swann-Moston ®

Cat. No.	Length, mm	Pk Qty
DI/44148	102	5



DI/44126

### Forceps, locking, blue, nylon

Cat. No.	Pk Qty
DI/44126	12



DI/24010



DI/24020



DI/24030

### Scalpels, disposable, sterile



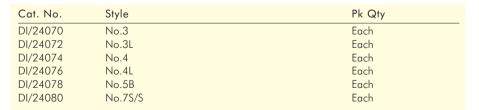
Cat. No.	Blade style	Pk Qty
DI/24010	No.10	100
DI/24012	No.10A	100
DI/24014	No.11	100
DI/24016	No.12	100
DI/24018	No.15	100
DI/24020	No.20	100
DI/24022	No.21	100
DI/24024	No.22	100
DI/24026	No.22A	100
DI/24028	No.23	100
DI/24030	No.24	100





DI/24078

### Scalpel handles, Stainless steel



### Scalpel handles, acrylic

Swann-Moston®

Type 5A and 6A.

5A accepts standard scalpel blades style 10, 10A, 11, 12, and 15.

6A accepts standard scalpel blades style 20, 21, 22, 22A, 23, 24, 25, 26 and 27.

Cat. No.	Туре	Pk Qty
DI/26002	5A	Each
DI/26004	6A	Each



### Scalpel blades, carbon steel, No. 3 Fitment

Swann-Moston®

To fit handles 3, 3L, 5A and 7

Cat. No.	Code	Style	Pk Qty
Non Sterile, inn	er foil packs of 5		
DI/24040	0101	No.10	100
DI/24042	0102	No.10A	100
DI/24044	0103	No.11	100
DI/24046	0104	No.12	100
DI/24048	0105	No.15	100
Sterile, inner ind	dividual foil packs		
DI/24140	0201	No.10	100
DI/24142	0202	No.10A	100
DI/24144	0203	No.11	100
DI/24146	0204	No.12	100
DI/24148	0205	No.15	100



### Scalpel blades, carbon steel, No. 4 fitment



To fit handles 4, 4L, and 6A

Cat. No.	Code	Style	Pk Qty
Non Sterile, inne	er foil packs of 5		
DI/24050	0106	No. 20	100
DI/24052	0107	No. 21	100
DI/24054	0108	No. 22	100
DI/24056	0109	No. 22A	100
DI/24058	0110	No. 23	100
DI/24060	0111	No. 24	100
DI/24062	0112	No. 25	100
DI/24064	0113	No. 26	100
DI/24066	0114	No. 27	100
Sterile, inner ind	lividual foil packs		
DI/24150	0206	No. 20	100
DI/24152	0207	No. 21	100
DI/24154	0208	No. 22	100
DI/24156	0209	No. 22A	100
DI/24158	0210	No. 23	100
DI/24160	0211	No. 24	100
DI/24162	0212	No. 25	100
DI/24164	0213	No. 26	100
DI/24166	0214	No. 27	100



### Scalpel blade remover

For the simple and safe removal of scalpel blades. Single use, plastic, sterile, disposable. For removal of all blades except size 12. Pack of 50.

Cat. No. DI/24068



DI/24068



DI/4408

### Scalpels, solid forged, polished blade, stainless steel



Cat. No.	Blade Size, mm	Pk Qty
DI/44080	30	2
DI/44082	35	2
DI/44084	45	2
DI/44086	50	2

DI/4409

### Scissors, dressing

Stainless steel, straight, closed shanks, sharp/sharp



Cat. No.	Length, mm	Pk Qty
DI/44092	125	2
DI/44094	150	2



DI/4409

### Scissors, dissecting

Stainless steel, straight, open shanks, sharp/sharp



Cat. No.	Length, mm	Pk Qty
DI/44096	112	3
DI/44098	125	3
DI/44100	150	2



DI/44106

### Scissors, dressing

Stainless steel, straight, probe/sharp.



Cat. No.	Length, mm	Pk Qty
DI/44106	125	2



SC/4400

### Scissors, general purpose, stainless steel



Cat. No.	Length,mm	Pk Qty
SC/44004	150	1
SC/44006	175	1



SC/44102

### Scissors, blunt ends, closed shank, stainless steel



Cat. No.	Length, mm	Pk Qty
SC/44102	125	1



DI/16252

### Cutting board, polypropylene

Good chemical resistance, unbreakable, non-absorbent and easy to clean, autoclavable. Azlon



Cat. No.	Code	Dimensions, mm	Pk Qty
DI/16252	BWY300	300 x 210 x 9	1

### Dissolved oxygen meters

### Dissolved Oxygen meter, Edge, Hanna



Tablet style slim line Dissolved Oxygen meters with large LCD display. Black Edge meters have the capability to read pH, Conductivity and TDS with the purchase of additional probes. The white meter is designed for measuring Dissolved Oxygen only. The capacitive touch keypad is easy to clean, and readings can be transferred to a PC without the need for additional software.

For complete flexibility of use, the Hanna Dissolved oxygen meter can be used hand-held, and also as a bench model or wall mounted with the stand and wall mounting bracket provided.

Two USB ports, one standard and one micro

- Large 5.5" LCD screen
- Clear full text display
- 3.5mm Jack electrode input
- Clark type polarographic probe with replacement membrane cap
- Calibration at 1 or 2 points, 0% and 100% (air)
- Automatic temperature compensation from 0-50°C
- GLP data records date, time, calibration standards, altitude value and salinity value
- Altitude compensation -500 to 4000 meters
- Salinity compensation 0-40g/L
- Supplied with dissolved Oxygen probe, electrolyte refill solution, 2 x DO membrane caps, 2 x membrane cap rings, quality certificate and instruction manual

Technical Specifications		
Range, D.O.	0.00 to 45.00ppm, 0.00 to 300.0% saturation	
Resolution	0.01ppm, 0.1% saturation	
Accuracy	$\pm$ 1.5% of reading $\pm$ 1 digit	
Calibration points	One or two points at 0% and 100% (in air) Temperature	
compensation	ATC (0 to 50°C: 32.0 to 122.0°F)*	
Salinity compensation	0 to 40g/L (with 1g/L resolution)	
Altitude compensation	-500 to 4000m (with 100m resolutions)	
* temperature limits will be reduced to actual probe/sensor limits		

Cat. No.	Code	Description
<u>Cui. 140.</u>	Code	Description
DO/35056	HI-2004-02	Hanna White Edge dissolved oxygen meter with DO probe HI-764080
DO/35050	HI-2040-02	Hanna Black Edge dissolved oxygen meter with DO probe HI-764080 (can also measure Conductivity/TDS and pH with purchase of additional probes)
Accessories		
PH/35132	HI-11310	pH electrode with integrated temperature sensor
CO/35140	HI-763100	Conductivity/TDS electrode with temperature sensor
DO/35006	HI-7041S	Probe refill electrolyte





DO/35050



PH/35132 CO/35140



DO/35006



DO/35102

# HANNA 12:33:21 DD 5.72 mg/L 761mmHg 24.3°C LOG AutoEnd H198193 Dissolved Cxygen HELP CAL GLP RANGE SETUP RCL MODE

DO/35120

### Dissolved Oxygen meter, waterproof, portable HI-9146-04



An accurate field instrument with a large LCD display reading Dissolved Oxygen in mg/l, or % saturation, with a simultaneous temperature reading. Automatic calibration is performed in saturated air, and readings can be compensated for salinity and altitude.

Complete with a protective sleeve for the membrane when in use.

Supplied with DO probe, 2 membranes, electrolyte solution and batteries in a hard carry case. Unit has a 2-year guarantee.

- Reads in mg/l and % oxygen
- Temperature, altitude and salinity compensation
- Mains or battery power
- Auto-off feature

Technical Specifications		
Range	mg/l	0.00 to 45.00
	% Saturation	0.0 to 300.0
	Temperature	0.0 to 50.0°C
Resolution	mg/l	0.01
	% Saturation	0.1
	Temperature	0.1°C
Accuracy	mg/l	±1.5% full scale
	% Saturation	$\pm$ 1.5% full scale
	Temperature	±0.2°C
Calibration		Automatic in air at 100%
Altitude		0 to 4000m (resolution 100m)
Salinity		0 to 80 g/l (resolution 1g/l)
Battery		3 x 1.5V AAA
Dimensions		185 x 72 x 36mm
Weight		300g

Cat. No.	Code	Description
DO/35102	HI-9146-04	Waterproof DO meter with altitude & salinity comp 4m cable
DO/35004	HI-7040L	Zero oxygen test solution 460ml
DO/35006	HI-7041S	Probe refill electrolyte 30ml
DO/35108	HI-76407/2	Replacement probe 2m cable
DO/35110	HI-76407A/P	Replacement membranes pack
DO/35112	HI-76407/4F	Replacement probe 4m cable
DO/35114	HI-76407/10F	Replacement probe 10m cable

### Dissolved Oxygen and BOD meter, waterproof, professional HI-98193



The HI-98193 portable dissolved oxygen meter has extended ranges of up to 50 ppm and 600% saturation. When measuring dissolved oxygen, compensations for salinity, temperature and pressure are essential to improve the accuracy and precision of readings. Salinity compensation allows for direct determination of dissolved oxygen in saline waters.

- Waterproof to IP67 (including probe sockets).
- Log on demand (400 samples)
- USB for data download (cable and software supplied).
- Automatic calibration at one or two points (0% & 100%)
- Salinity and Altitude compensation
- Auto Temperature compensation.
- Built-in barometer for Pressure compensation

Technical Specifications		
Dissolved Oxygen	Range 0.00 to 50.00 mg/l; 0.0 to	Accuracy
Atmospheric pressure	600.0% 450 to 850mm Hg	± 1.5% of reading ± 1 digit
Temperature	-20 to 120°C	±0.2°C

Cat. No.	Description
DO/35120	Hanna HI-98193 Professional Waterproof Dissolved Oxygen and BOD meter supplied with DO probe with built-in temperature sensor on 4m cable, Oxygen solution and probe electrolyte, PTFE membrane caps and O rings x2, USB cable and software, beakers, batteries and carry case

### Mettler F4, FiveGo portable Dissolved Oxygen meters

Ideally suited for mobile applications in the laboratory, at-line, or outdoors, the new FiveGo portable dissolved Oxygen meter provides high performance and measurements at the click of a button

The robust and waterproof design makes the FiveGo instruments the perfect companion to get reliable measurement data even in harsh conditions.

Time is an ever more valuable asset, but thanks to the FiveGo's intuitive operation, robust design and extensive memory functions, you can maximize your time spent measuring instead of dealing with complex system and measurement setups.

Meters to measure pH or conductivity, are also available in the FiveGo range

- Large display with simple menu, measurements can be made with just a few clicks.
- Ergonomically designed for either left or right handed use, with a foldable foot stand which provides optimal viewing while situated on a lab bench.
- Waterproof protection to IP67, with carry case
- Optimally designed for mobile measurements in a wide range of workplaces, including Environment, Academia, Food and Beverage, Agriculture and Industry.

Technical Specifications	
Measuring range	0.1 to 400%
	0.01 to 45.00 mg/l, ppm
	0°C to 50°C
	375 to 825 mm Hg
	500 to 1100 mbar
	500 to 1100 hPa
	0.0 to 50.0 ppt
Resolution	0.1%
	0.01 mg/l
	0.01 ppm
	0.1°C
	1 mm Hg, 1 mbar, 1 hPa
	0.1 ppt
Accuracy	$\pm$ 1% / $\pm$ 1% mg/l / $\pm$ 1% PPM
	± 0.3°C
Automatic and manual end point recording	Yes
Acoustic end point signal	Yes
Visual end point signal	Yes
Temperature compensation	ATC and MTC
Calibration	2 points, 100°C and 0°C
Memory size	200 Measurements, current calibration
Sensor inpute	BNC, Cinch, NTC 30 k $\Omega$
IP Protection	IP67
Power supply	4 x AAA batteries >200 hours
Operating hours	
Display Housing	3.1" segmented LCD ABS
Dimensions	188 x 77 x 33mm
Weight	0.26kg
vveigiii	U.ZUKY

Cat. No.	Description
DO/60002	Dissolved Oxygen meter FiveGo F4 without electrode, for applications that require a specific sensor not included in a kit
DO/60004	Dissolved Oxygen meter FiveGo F4 Standard kit, comprising of meter with LE621 IP67 sensor, for applications involving aqueous samples
DO/60006	Dissolved Oxygen meter FiveGo F4 Field kit, comprising of meter with LE621 IP67 sensor, for applications involving aqueous samples in the field, with carrying case



METTLER TOLEDO

DO/60002



DO/60004



DO/60042

### Dissolved Oxygen meter, portable, Seven2Go

These meters are simple to use and reliable, they are engineered to provide users with fast quality data and one-handed operation. Their robust design makes them very durable and ideally suited for mobile applications in the laboratory, at-line, and being waterproof, in the field.

METTLER TOLEDO

- Simple menu for straight out of the box operation
- T-Pad navigation control for fast and comfortable movement through menus
- ISM (Intelligent Sensor Management) ready, recognises sensors and stores their details
- Waterproof tested to IP67 and drop test resistance
- 2 Predefined oxygen standards
- Automatic/Manual temperature capture
- Automatic/Manual pressure compensation
- All models come with operating instructions, quick guide, test report, declaration of Conformity and batteries
- Available in polarographic and optical versions

Variation	Ideally suited for
S4 Meter	Depending on electrode that is used with the unit
S4 Standard	Aqueous samples, alcoholic and non-alcoholic beverages.
S4 Field kit	As above but especially suited for measurements on the go
S9 Meter	Depending on electrode that is used with the unit
S9 Standard	Fast results in aqueous samples.
S9 Field kit	As above but especially suited for measurements on the go
S9 BOD kit	BOD measurements in all types of water samples.

Technical Specifications	S4 DO (polarogra	aphic)	S9 DO (optical)
Range	0.01-99.99 mg/L		0.01-50.00 mg/L
D: 1 1	(ppm)	0.010/	(ppm)
Display resolution		0.01%	. 0 1 // :
Accuracy (with sensor)	$\pm$ 0.2 mg/L in range 0-15 mg/L	2	± 0.1 mg/L in range 0-8 mg/L
	± 10% in range		± 0.2 mg/L in range
	15-60 mg/L		8-20 mg/L
			± 10% in range
			20-50 mg/L
Units		mg/L, ppm	
Saturation range	0.1-600.0%		0.1-500.0%
Saturation resolution		0.1%	
Saturation accuracy (with sensor)		± 10%	
Pressure range		500-1100 mbar	
Pressure resolution		1 mbar	
Pressure accuracy		± 2%	
Choice of pressure units	ml	bar, hPa, mmHg, Atm	
Temperature range	0.0-60.0 °C		0.0-50.0 °C
Temperature resolution		0.1 °C	
Temperature accuracy	. 0.0.00		. 0.1.00
(with sensor) Auto/manual	± 0.2 °C		± 0.1 °C
temperature capture	Yes		Yes (automatic only)
Calibration points	2		2
Sensor inputs	BNC / RCA (cinch)	Mini LTW (IP67)	
Communication interfaces			Micro-USB (USB Device)
Dimensions		222 x 70 x 35 mm	
Weight	270g		290g
Power supply	4 x 1.5 V AA or		4 x 1.5 V AA or
Operating hours	1.3 V NiMH acc 250-400 hrs		1.3 V NiMH acc, or USB 200-250 hrs
Display	Segmented LCD		Graphic LCD
Display	oog.nomed LCD		Oraphic LCD

Cat. No.	Code	Description			
DO/60040	30207958	S4 Meter with electrode clip, no electrodes supplied			
DO/60042	30207959	S4 Standard kit, plus InLab 605-ISM, and zero oxygen tablets.			
DO/60044	30207960	S4 Field kit, as the standard kit, plus bottles for calibration and UGo™ carrying case.			
DO/60046	30207970	S9 Meter with LabX direct pH*, USB cable, electrode clip, base			
		accessory, no electrode supplied			
DO/60048	30207971	S9 Standard kit, plus InLab OptiOx®, and zero oxygen tablets.			
DO/60050	30207972	S9 Field kit, as standard kit plus bottles for calibration, uGo™			
		carrying case and InLab OptiOx protective guard.			
DO/60052	30207939	S9 BOD kit, as field kit, plus InLab OptiOx, BOD adapter.			
*Mettler LabX	*Mettler LabX direct pH is Mettler's data collection software for all portable and benchtop Seven				
series conduct	series conductivity, dissolved oxygen and pH meters.				

### Dissolved oxygen meter, bench top, model 9500

PJenway\*

Azlon

A fully specified laboratory dissolved oxygen/temperature meter that includes full support for the B.O.D. 5-day test protocol. Powerful data logging capabilities are included with the ability to store up to 250 readings either manually, at timed intervals or alarm events.

- Back-lit LCD graphics display
- Multi language operation
- Pressure and salinity correction of results
- 250 location memory
- Infra-red link (IrDA)
- Real time clock
- B.O.D. capability
- Bi-directional RS232 link to printer or PC

### **Technical Specifications**

DO2 0 - 199%, 0 - 25.0%, 0 - 19.99mg/l Ranges Resolution 1%, 0.1%, 0.01mg/l ±2% within 10°C of calibration temperature Accuracy

-10 - +60°C / +14 - +140°F Temperature Range 0.1°C / 1°F Resolution

 $\pm 0.5^{\circ}\text{C} \ / \ \pm 1^{\circ}\text{F}$ Accuracy 0 - 60°C / +32 -+140°F 0 - 60°C / +32 -+140°F ATC Range Manual Temp. Comp. Range

0-19.99mg/l Alarm Points  $9V \text{ a.c} \pm 10\% @ 50/60 Hz$ 

Dimensions (WxDxH), mm 210x250x55 Mass, kg 0.85

Cat. No.	Code	Description			
DO/25022	9500	Dissolved oxygen meter			
Optional accessories					
DO/25010	983 030	Vial of zero powder			
DO/25026	522 019B	Membrane kit & KCl			
CO/25024	037 701	40 column printer			

### **Draining racks**

### Draining rack, epoxy coated

- High quality draining racks suitable for use with plastic and glass labware
- Made of chemically resistant epoxy coated steel
- There are eight pegs 110 mm long and twenty four pegs 80 mm in length
- Overall dimensions of the rack are 410 x 300 mm
- Can be used in various formats see ordering information for details
- Rack with free-standing support is shown

Cat. No.	Code	Description
DR/16606	RWK070	Rack only
DR/16614	RWK070FS	Rack with integral free standing support

### Draining rack, wall mountable, polystyrene

- Lightweight easy to assemble polystyrene draining racks designed to be wall mounted
- · Pegs simply slot into place on the back board and are spaced to allow various sizes of labware to fit
- ullet Water is collected in the trough at the base of the rack and drains away via a rubber tube which can be directed into a nearby sink or container
- Supplied with wall mounting accessories
- A set of narrower pegs for test tubes, volumetric flasks, etc. is also available

Cat. No.	Code	Description	Peg I x o.d., (mm)	Rack h x w, (mm)
DR/16602	WRP001P	Rack, including 72 pegs, trough and draining tube	120 x 16	650 x 450
DR/16604	WRP002P	Set of 11 narrow pegs	100 x 6	



DO/25022



DR/16614



DR/16602



DR/25012

### Drying racks and cabinets

### The Nelldorn Dryer

An economical and efficient method of drying and storing most containers, glassware and plasticware. A large volume of air is drawn over the thermostatically controlled heating elements and forced through each drying tube. This rapid flow of warm air dries glass or plastic quickly without harm. The process uses a minimum of electricity (typically less than 2 units) and is therefore considerably cheaper than oven type dryers. The unit has an adjustable timer which will automatically switch off the dryer after the pre-set time from 0-120 minutes.

- Cost efficient
- Capacity of 60 items
- Dries in 15 to 20 minutes
- Wall mounting or bench standing
- Thermostatic control
- Variable 120 minute timer
- Quick and Efficient

### **Technical Specifications**

(Refers to tube length against drying capacity)

152mm 100mm Overall dimensions: (WxDxH) 490 x 190 x 430 (mm)

Cat. No.	Description
DR/25012	Nelldorn dryer 220/240V, 13A



DC/65000

### Drying/Warming Cabinets



GENLAB drying / warming cabinets are suitable for drying a range of items such as glassware and instruments and any general purpose warming applications. There are two variations available which are the standard non-insulated units and insulated units for improved efficiency plus energy and cost savings.

- 4 sizes: 125 to 1000 litres
- Maximum temperature 50°C above ambient

The exterior is constructed from sheet steel finished in an easy clean powder coated paint and fitted with adjustable shelf runners, removable plated wire grid shelves and ventilation outlets. The insulated range of units gives a far greater temperature control, allowing greater accuracy during the drying and warming process.

- The 125 and 250 litre models have sliding, toughened glass doors.
- The 500 and 1000 litre models have hinged, toughened glass doors.

Heating is provided by Incoloy sheathed elements positioned in the base of the unit. The 500 and 1000 litre models have fan assistance as standard.

Control is via a direct reading thermostat with calibrated scale and tamper proof lock. All units also have a mains switch with indicator and heat indicator.

### Non Insulated models

Cat. No.	Model	Capacity L	Int. dims cm (HxWxD)	Ext. Dims, cm (HxWxD)	No of shelves
DC/65000	DC125	125	43 x 72 x 40	60 x 74 x 42	3
DC/65002	DC250	250	52 x 98 x 48	66 x 100 x 50	3
DC/65004	DC500	500	138 x 58 x 62	168 x 60 x 65	3
DC/65006	DC1000	1000	138 x 116 x 62	168 x 118 x 65	3

### Insulated models

Cat. No.	Model	Capacity L	Int. dims cm (HxWxD)	Ext. Dims, cm (HxWxD)	No of shelves
DC/65008	IWC100	100	40 x 67 x 37	60 x 75 x 42	3
DC/65010	IWC200	200	49 x 93 x 45	66 x 100 x 50	3
DC/65012	IWC425	425	135 x 53 x 59	168 x 60 x 65	3
DC/65014	IWC885	885	135 x 111 x 59	168 x 118 x 65	3



DC/65006

### Drying/warming Cabinets



Made of steel and finished in white powder coated paint with heat proof toughened glass doors and wire mesh shelves. Heating elements are waterproof and are located under the perforated floor which is finished in polished stainless steel. Temperature control is by Simmerstat giving any desired temperature up to a maximum of 50°C above ambient temperature. Smaller models have sliding doors whilst 255L models and above have hinged doors. Electrical supply, all models 220/240V 50Hz.



DC/75004

Cat. No.	Model	Fan system	Internal dims (HxWxD)	External dims (HxWxD)	Capacity	Weight	No. of shelves	Electrical loading
DC/75002	SS	None	430x750x340mm	530x760x360mm	113L	22Kg	3	500W
DC/75004	LS	None	530x990x390mm	630x1000x410mm	226L	36Kg	3	750W
DC/75022	B2	None	685x630x590mm	864x635x610mm	255L	45Kg	1	1000W
DC/75024	BC2	Circulating	685x630x590mm	964x635x610mm	255L	45Kg	1	1000W
DC/75026	BX2	Extract	685x630x590mm	1064x635x610mm	255L	45kKg	1	1000W
DC/75028	B1	None	685x1165x610mm	864x1168x610mm	480L	63Kg	1	1500W
DC/75030	BC1	Circulating	685x1165x610mm	964x1168x610mm	480L	63Kg	1	1500W
DC/75032	BX1	Extract	685x1165x610mm	1064x1168x610mm	480L	63Kg	1	1500W
DC/75006	F2	None	1430x630x590mm	1626x635x610mm	540L	75Kg	4	1500W
DC/75008	FC2	Circulating	1430x630x590mm	1726x635x610mm	540L	75Kg	4	1500W
DC/75010	FX2	Extract	1430x630x590mm	1826x635x610mm	540L	75Kg	4	1500W
DC/75014	Fl	None	1430x1165x590mm	1626x1168x610mm	1000L	125Kg	4	2500W
DC/75016	FC1	Circulating	1430x1165x590mm	1726x1168x610mm	1000L	125Kg	4	2500W
DC/75018	FX1	Extract	1430x1165x590mm	1826x1168x610mm	1000L	125Kg	4	2500W
DC/75020	FCX1	Circulating/ Extract	1430x1165x590mm	1800x1168x610mm	1000L	125Kg	4	2500W



DC/75016 DC/75004 DC/75002 and DC/75004

EP/70000

EP/70040



EP/70080

### Electrophoresis

### Horizontal electrophoresis gel units

Mini horizontal gel unit suitable for quick sample checks, following restriction digestion or PCR. An economical choice for separation of up to 64 samples.

Technical Specifications	
Active gel size	7 x 7cm + 7 x 10cm
Sample capacity	1-32 x (7cm x 7cm)
	1-64 x (7cm x 10cm)
Buffer tank volume	225ml
Combs available	
Thickness	0.75, 1.0, 1.5, 2.0mm
Number of teeth	1, 2, 4, 8MC, 8, 10, 12MC, 16
Unit dimensions (WxLxH)	9 x 21 x 9cm

Cat. No.	Code	Description
EP/70000	MSMINIDUO	Multi Sub Mini, horizontal electrophoresis unit with 7 x
		7cm and 7 x 10cm. UV tray, 2 x 8 sample combs, lid,
		power cables, loading guides and dams
EP/70010	MS7-LG	Loading guides
EP/70012	MS7-UVS	Gel scoop, UV, 7cm
EP/70020	MS7-8-1	Comb, 8 sample, 1 mm thick
EP/70022	MS7-10-1	Comb, 10 sample, 1mm thick
EP/70024	MS7-12MC-1	Comb, 12 sample, MC, 1mm thick

Midi horizontal gel unit, with the same runs as the Mini but for up to 100 samples

Technical Specifications	
Active gel size	10 x 7cm + 10 x 10cm
Sample capacity	1-50 x (10cm x 7cm)
	1-100 x (10cm x 10cm)
Buffer tank volume	300ml
Combs available	
Thickness	0.75, 1.0, 1.5, 2.0mm
Number of teeth	1, 2, 4, 8, 10MC, 12, 16, 20MC, 25
Unit dimensions (WxLxH)	12.5 x 22 x 9cm

Cat. No.	Code	Description
EP/70040	MSMIDIDUO	Multi Sub Midi, horizontal electrophoresis unit with 10 x 7cm and 10 x 10cm UV tray, 2 x 16 sample combs, lid,
		power cables, loading guides and dams
EP/70050	MS10-LG	Loading guides
EP/70052	MS10-UVS	Gel scoop, UV, 10cm
EP/70060	MS10-8-1	Comb, 8 sample, 1 mm thick
EP/70062	MS10-12-1	Comb, 12 sample, 1 mm thick
EP/70064	MS10-16-1	Comb, 16 sample, 1mm thick

Multi Sub Trio horizontal gel unit, the perfect system for routine agarose electrophoresis. Up to 210 samples with multichannel compatible comb options for faster loading.

Technical Specifications	
Active gel size	15 x 7cm, 15 x 10cm + 15 x 15cm
Sample capacity	1-70 x (15cm x 7cm)
	1-140 x (15cm x 10cm)
	1-210 x (15cm x 15cm)
Buffer tank volume	500ml
Combs available, thickness	0.75, 1.0, 1.5, 2.0mm
Number of teeth	1, 2, 4, 10, 10MC, 12, 14MC, 16MC, 18MC, 20, 28MC,
	30MC, 35
Unit dimensions (WxLxH)	17.5 x 26.5 x 9cm
, ,	

Cat. No.	Code	Description
EP/70080	MSCHOICETRIO	Multi Sub Choice Trio, horizontal electrophoresis unit with 15 x 7, 15 x 10 and 15 x 15cm UV tray, 2 x 20 sample combs, lid, power cables, loading guides and casting dams
EP/70090	MS15-LG	Loading guides
EP/70092	MS15-UVS	Gel scoop, UV, 15cm
EP/70100	MS15-10-1	Comb, 10 sample, 1mm thick
EP/70102	MS15-12-1	Comb, 12 sample, 1mm thick
EP/70104	MS15-20-1	Comb, 20 sample, 1 mm thick
EP/70106	MS15-35-1	Comb, 35 sample, 1mm thick

Multi Sub Maxi horizontal gel unit suitable for RFLP analysis, Southern and Northern blotting preps and high throughput analysis with up to 450 samples

Technical Specifications	
Active gel size	20 x 10cm + 20 x 20cm
Sample capacity	1-200 x (20cm x 10cm)
	1-450 x (20cm x 20cm)
Buffer tank volume	1200ml
Combs available	
Thickness	0.75, 1.0, 1.5, 2.0mm
Number of teeth	1, 2, 4, 10, 16, 20MC, 25, 30, 36, 40MC, 50 25
Unit dimensions (WxLxH)	23 x 39.5 x 9cm

Cat. No.	Code	Description
EP/70110	MSMAXIDUO	Multi Sub Maxi, horizontal electrophoresis unit with 20 x
		10 and 20 x 20cm UV tray, 2 x 20 sample combs, lid, power cables, loading guides and dams
EP/70120	MS20-LG	Loading guides
EP/70122	M20-UVS	Gel scoop, UV, 20cm
EP/70130	MS20-16-1	Comb, 16 sample, 1mm thick
EP/70132	MS20-20MC-1	Comb, 20 sample, MC,1mm thick
EP/70134	MS20-25-1	Comb, 25 sample, 1mm thick
EP/70136	MS20-30-1	Comb, 30 sample, 1mm thick
Accessories		
EP/70140	CSL-GLT	Gel levelling table
EP/70142	CSL-RULER	Fluorescent ruler, UV



EP/70110

### Vertical electrophoresis gel units

OmniPage Mini vertical gel unit will run 1-4 handcast gels in mini format, the sliding clamp assembly ensures fast set up times and leak-free operation. The insert for both gel casting and running eliminates time-consuming transfer of fragile gels. Designed for rapid turnaround of data, allowing PAGE, 2-D and blotting to be completed within a working day.

8 x 8.5cm
PAGE: 80 (20/Gel)
Blot*: 4
2D*: 10 tubes
Min: 250ml, Max: 1200ml
19 x 13 x 15cm

Cat. No.	Code	Description
EP/70150	CVS10DSYS	OmniPAGE Mini, 10 x 10cm, 2 sets of glass plates with
		1mm thick spacers, 2 x 12 sample combs, cooling pack,
		blanking plate and casting base
EP/70152	VS10DCAST	Dual caster, omniPAGE Mini, 10 x 10cm
EP/70154	CVS10EXCASTER	Casting stand, external without base
EP/70160	VS10NG	Glass plates, notched, 10 x 10cm, 2mm thick, pack of 2
EP/70162	VS10PG	Glass plates, plain, 10 x 10cm, 2mm thick, pack of 2
EP/70170	VS10-8MC-1	Comb, 8 sample, MC,1 mm thick
EP/70172	VS10-10-1	Comb, 10 sample,1mm thick
EP/70174	VS10-12-1	Comb, 12 sample, 1mm thick
EP/70176	VS10-16MC-1	Comb, 16 sample, MC, 1mm thick
Accessories		
EP/70200	CVS1CBS	Blotting unit, complete system for mini vertical
		electrophoresis and blotting
EP/70202	VS10BI	OmniBlot mini insert including 4 x cassettes and 16 foam pads

<sup>\*</sup>Will require purchase of additional items



EP/70150



EP/70160



EP/70180



EP/70212



EP/70230



EP/70240



EP/70244

### Horizontal electrophoresis gel units (continued)

VS20 Wave maxi vertical gel unit will run 1-4 large format gels at maximum resolution, there are fewer screws compared to traditional formats resulting in rapid set-up times. The detachable cooling core gives fast, smile-free electrophoresis. The seamless injection moulded construction eliminates potential leakage-prone glue joints.

Optional blotting insert and 2-D module are available, please enquire.

Technical Specifications	
Active gel size	16 x 17.5cm
Sample capacity	PAGE: 192 (48/Gel)
	Blot*: 4x Wave gels
	2D*: 10 tubes
Buffer tank volume	Min: 1200ml, Max: 5300ml
Unit dimensions (WxLxH)	30 18 x 27cm

Cat. No.	Code	Description
EP/70180	VS20WAVESYS	VS20WAVESYS with glass plates with bonded 1mm thick spacers, 2 x 24 sample combs, cooling coil, dummy plate and casting base
EP/70190	VS20-18MC-1	Comb, 18 sample, MC,1mm thick
EP/70192	VS20-24-1	Comb, 24 sample, 1 mm thick
EP/70194	VS20-30-1	Comb, 30 sample, 1 mm thick
Accessories		
EP/70210	VS20CBS	Blotting unit, complete system for maxi vertical electrophoresis and blotting
EP/70212	VS20BI	Sub blot maxi insert, including 4 x cassettes and 18 foam pads

Will require purchase of additional items.

### Blot transfer systems

TankBlot Electroblotters are designed primarily for wet electroblotting of proteins- Western blotting. Up to 5 gel blot hinged cassettes can be used at any one time for added convenience. The unit accommodates gel thicknesses from 0.25 up to 3mm.

Technical Specifications	Mini	Maxi
Max Sample capacity	5 Blots 10 x 10cm	5 Blots 20 x 20cm
		20 Blots 10 x 10cm
Buffer tank volume	1000ml Min	4300ml Min
	1500ml Max	6000ml Max
Unit dimensions (WxLxH)	19 x 13 x 19cm	24 x 16 x 19cm

Cat. No.	Code	Description
EP/70220	EBM10	Electro blot mini, 10 x 10cm, five position with 5 cassettes, tank, lid, 12 x fibre pads and cooling pack
EP/70230	EMB20	Electro blot maxi, 20 x 20cm, five position with 5 cassettes, tank, lid, 12 x fibre pads and cooling pack
Accessories		
EP/70222	SBC10C	Omniblot mini cassette including 2 foam pads
EP/70224	SBC10F	Fibre pads, pack of 8
EP/70232	SBC20C	Sub Blot maxi cassette including 2 foam pads
EP/70234	SBC20F	Fibre pads, pack of 6

### Semi Dry blotter systems

These Semi Dry blotters offer rapid transfer times for DNA, RNA and protein blotting, typically 15 to 30 minutes, Can be used for all types of blotting: Western, Southern and Northern via uncomplicated buffer and set-up procedures. Offering economic transfers due to very low buffer volumes. Accommodates gels from 0.25 up to 10mm thick, with a screw-down lid and uniform heat dispersion

Cat. No.	Code	Description
EP/70240	SD10	Semi dry blotter system, mini, 10 x 10cm
EP/70242	SD20	Semi dry blotter system, maxi, 20 x 20cm
EP/70244	CSL-SDCAB	Cables, red and black for semi dry blotter system

### Power supplies and cables

The nanoPAC mini power supplies are economical to run and are ideal for use with DNA/ RNA (horizontal) and protein (vertical) electrophoresis systems.

- Ultra-compact size saves bench space
- Enhanced built-in safety features
- Conspicuous 3-digit LED
- Alarm function
- Polycarbonate housing

The PowerPro series is designed to power both multiSUB horizontal and omniPAGE vertical electrophoresis systems.

- Routine horizontal electrophoresis using multiSUB Mini, Midi and Choice
  Vertical electrophoresis using omniPAGE mini
- Use standard 110V/230V AC supply

Electrophoresis system	Suggested power supplies
multiSUB Midi	
multiSUB Choice multiSUB Maxi	nanoPAC300, nanoPAC500 or PowerPRO300
omniPAGE Mini	
omniPAGE Wave Maxi	powerpro 500 or nanoPAC500
SD10 Mini SD20Maxi	powerPRO3AMP
3	

Cat. No.	Code	Description	Output
EP/70250	nanoPAC-300	Power supply, OmniPac mini	300V, 400mA 60W
EP/70252	nanoPAC-500	Power supply, OmniPac mini	500V, 400mA 120W
EP/70254	POWERPRO300	Power supply, OmniPac midi	300V, 700mA 50W
EP/70256	POWERPRO500	Power supply, OmniPac maxi	500V, 400mA 200W
EP/70258	POWERPRO3AMP	Power supply, OmniPac maxi	300V, 3000mA 300W
EP/70260	CSL-CAB	Cable, electrophoresis, red and black	

### Agarose, powdered and liquid buffers

EP/70310 Buffer, running, powdered Tris-Borate EDTA, 10 x 1 litre EP/70312 Buffer, running, Tris-Acetate EDTA, 50 x 1 L EP/70314 Buffer, running, Tris-Acetate EDTA 50 x 5 L EP/70316 Buffer, running, Tris-Borate EDTA 10 x 1 L EP/70318 Buffer, running, Tris-Borate EDTA 10 x 5 L  DNA ladders EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500µl vial EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500µl vial EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500µl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500µl vial Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1 ml EP/70342 Protein ladders			
EP/70312 Buffer, running, Tris-Acetate EDTA, 50 x 1L EP/70314 Buffer, running, Tris-Acetate EDTA 50 x 5L EP/70316 Buffer, running, Tris-Borate EDTA 10 x 1L EP/70318 Buffer, running, Tris-Borate EDTA 10 x 5L  DNA ladders EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500μl vial EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml Protein ladders			
EP/70310 Buffer, running, powdered Tris-Borate EDTA, 10 x 1 litre EP/70312 Buffer, running, Tris-Acetate EDTA, 50 x 1 L EP/70314 Buffer, running, Tris-Acetate EDTA 50 x 5 L EP/70316 Buffer, running, Tris-Borate EDTA 10 x 1 L EP/70318 Buffer, running, Tris-Borate EDTA 10 x 5 L  DNA ladders EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500µl vial EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500µl vial EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500µl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500µl vial Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1 ml EP/70342 Protein ladders			
EP/70314 Buffer, running, Tris-Acetate EDTA 50 x 5L EP/70316 Buffer, running, Tris-Borate EDTA 10 x 1L EP/70318 Buffer, running, Tris-Borate EDTA 10 x 5L  DNA ladders EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500μl vial EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml Protein ladders			
EP/70316 Buffer, running, Tris-Borate EDTA 10 x 1L EP/70318 Buffer, running, Tris-Borate EDTA 10 x 5L  DNA ladders  EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500μl vial  EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial  EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial  EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial  Loading dye  EP/70340 Loading dye, Bromophenol blue 10 x 1ml  EP/70342 Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
EP/70318 Buffer, running, Tris-Borate EDTA 10 x 5L  DNA ladders  EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500μl vial  EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial  EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial  EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial  Loading dye  EP/70340 Loading dye, Bromophenol blue 10 x 1ml  EP/70342 Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
DNA ladders         EP/70330       100bp DNA ladder, 100 - 3000bp, 1 x 500μl vial         EP/70332       100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial         EP/70334       1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial         EP/70336       50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial         Loading dye       EP/70340         Loading dye, Bromophenol blue 10 x 1ml         EP/70342       Loading dye, Bromophenol blue 10 x 10ml         Protein ladders			
EP/70330 100bp DNA ladder, 100 - 3000bp, 1 x 500μl vial EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial  Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
EP/70332 100bp DNA ladder, 100 - 1500bp, 1 x 500μl vial EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500μl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500μl vial  Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
EP/70334 1Kb DNA ladder, 250 - 10Kp, 1 x 500µl vial EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500µl vial  Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
EP/70336 50bp DNA ladder, 50 - 1500bp, 1 x 500µl vial  Loading dye EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
Loading dye  EP/70340  Loading dye, Bromophenol blue 10 x 1ml  EP/70342  Loading dye, Bromophenol blue 10 x 10ml  Protein ladders			
EP/70340 Loading dye, Bromophenol blue 10 x 1ml EP/70342 Loading dye, Bromophenol blue 10 x 10ml Protein ladders			
EP/70342 Loading dye, Bromophenol blue 10 x 10ml Protein ladders			
Protein ladders			
EP/70350 Protein ladder Pink plus pre-stained 10 -175kDa with 10,40 &90K re bands, 500ul	eference		
EP/70352 Protein ladder, Blue wide range, 10 - 245kDa, 500µl			
Running, powdered			
EP/70360 Running buffer, powdered Tris-Glycine-SDS, 10 x 1 litre pouch			
EP/70362 Running buffer, powdered Tris-Tricine-SDS, 10 x 1litre pouch			
EP/70364 Running buffer, powdered MES-SDS,10 x 1litre pouch			
Running, liquid			
EP/70370 Running buffer, liquid, Tris-Glycerine, 10 x 1litre			
EP/70372 Running buffer, liquid, Tris-Glycerine SDS, 10 x 1litre			
Paper membrane			
EP/70380 Paper membrane, blotting, Nitrocellulose type SCN, pore size 0.45, 3 meter roll	30cm x		
EP/70382 Paper membrane, blotting, Nitrocellulose type SCN, pore size 0.20, 3 3meter roll	30cm x		
PVDF membrane			
EP/70390 PVDF membrane, 0.45 $\mu$ m, 28cm x 3meter roll			
EP/70392 PVDF membrane, 0.22μm, 28cm x 3meter roll			
Blotting paper EP/70396 Filter paper, blot, absorbent, 20 x 20cm, pack of 50			



EP/70250



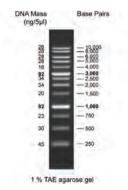
EP/70256



EP/7030



EP/70312



EP/70334



EP/70352



ER/15030





ER/15032 & bath

### Evaporators, rotary

### Evaporators, rotary



Stuart rotary evaporators are available with a choice of 3 patterns of condenser depending on the application and space available:

- Diagonal glass condenser for standard distillations
- Vertical glass condenser for the distillation of solvents with higher boiling points.
- Cold finger glass condenser for use with ice or dry ice for volatile or low boiling point solvents. No cooling water required and the large, 1 litre trap, features a drain to assist emptying.

For each condenser pattern, there is also a plastic coated option for extra safety when using glassware under vacuum.

(Please note plastic coated glassware is limited to 80°C and therefore unsuitable for use with oil baths)

### Common features:

- Digital control
- Can be orientated for left or right hand operation
- Simple counterbalanced lift mechanism
- PTFE/ glass liquid pathway for chemical inertness
- Long life graphite impregnated PTFE vacuum seal
- Efficient flask and vapour tube ejection system

### Glass set 00

Diagonal coil condenser, vapour tube for diagonal condenser, receiving flask 1000ml, Florentine flask 1000ml, feed tube with stopcock, vacuum seal, conical joint clip, spherical joint clip.

### Glass set 0

Vertical coil condenser, vertical coil adaptor, vapour tube for vertical condenser, receiving flask 1000ml, Florentine flask 1000ml, feed tube with stopcock, vacuum seal, conical joint clip, spherical joint clip.

### Glass set 02

Cold finger condenser, vertical coil adaptor, drain for cold finger condenser, vapour tube for cold finger condenser, receiving flask 1000ml, Florentine flask 1000ml, feed tube with stopcock, vacuum seal, conical joint clip, spherical joint clip.

### Glass set 00P

As glass set 00 but with plastic coating

### Glass set 01P

As glass set 01 but with plastic coating

### Glass set 02P

As glass set 02 but with plastic coating

### Technical Specifications

Speed range 10 to 310rpm
Vacuum 3mm Hg
Lift distance 180mm

Dimensions (wxdxh) 385 x 335 x 470-610mm Electrical supply 100-240V, 50-60Hz



A precise digital bath, specifically designed to be used with the Stuart rotary evaporators to give maximum efficiency for the smallest footprint. The clear LED digital display shows the actual bath temperature or the set temperature.

- Digital temperature display
- Corrosion resistant bowlEasy to clean
- Integrated carry handle
- Cool touch chemically resistant outer case

Technical Specifications	
Temperature range	Ambient to 90°C
Display resolution	1°C
Temperature control	±1°C
Capacity	4.3 Litres
Heater nower	1400W

285 x 295 x 244mm Dimensions

Cat. No.	Code	Description
ER/15030	RE400	Rotary evaporator complete with glass set 00
ER/15032	RE401	Rotary evaporator complete with glass set 01
ER/15034	RE402	Rotary evaporator complete with glass set 02
ER/15036	RE400P	Rotary evaporator complete with glass set OOP
ER/15038	RE401P	Rotary evaporator complete with glass set 01P
ER/15040	RE402P	Rotary evaporator complete with glass set 02P
ER/15024	RE400DB	Water bath, ambient to 90°C
ER/15026	SRC5	Recirculating cooler, -20°C
ER/15022	RE3022C	Rotary Vacuum pump, vacuum 9mbar
Glassware and	spares	
ER/15106	FD50/4RE	Florentine flask 50ml (pack of 2)
ER/15108	FD100/4RE	Florentine flask 100ml
ER/15110	FD250/4RE	Florentine flask 250ml
ER/15112	FD500/4RE	Florentine flask 500ml
ER/15116	FD1L/4RE	Florentine flask 1 litre
ER/15120	FD2L/4RE	Florentine flask 2 litre
ER/15124	RE100/RF/50	Receiving flask 50ml
ER/15126	RE100/RF/100	Receiving flask 100ml
ER/15128	RE100/RF/250	Receiving flask 250ml
ER/15130	RE100/RF/500	Receiving flask 500ml
ER/15132	RE100/RF/500P	Receiving flask 500ml plastic coated
ER/15134	RE100/RF/1L	Receiving flask 1 litre
ER/15136	RE100/RF/1LP	Receiving flask, 1 litre, plastic coated
ER/15170	RE400/CO	Condenser, diagonal for glass set 00
ER/15172	RE400/COP	Condenser, diagonal plastic coated, for glass set 00P
ER/15174	RE400/VC	Condenser, vertical for glass set 01
ER/15176	RE400/VCP	Condenser, vertical, plastic coated, for glass set 01P
ER/15178	RE400/CF	Condenser, cold finger for glass set 02
ER/15180	RE400/CFP	Condenser, cold finger, plastic coated, for glass set 02P
ER/15182	RE400/VR	Feed tube/vacuum release, all glass sets
ER/15154	RE400/VT	Vapour tube diagonal condensers, glass sets 00 & 00P
ER/15184	RE400/VT/CF	Vapour tube for vertical coil condensers, glass sets 01, 01P, 02, 02P
ER/15158	RE100VS	Vacuum seal, all glass sets
ER/15186	RE400/CONNECT	Connector, PTFE screw thread, all glass sets, pack of 10
ER/15188	RE400/ADPT	Adaptor for VC/CF condenser
JC35		Joint clip, spherical, for receiving flask, all glass sets (Pack of 2)
KC29		Joint clip, plastic for evaporating flask, all glass sets

Tubing for vacuum connection (8mm heavy wall)  $\,$  please order TU/76226  $\,$ Tubing for condenser connection (8mm standard wall) please order TU/76108



ER/15034



ER/15034 & bath



ER/15024



ER/15210



ER/15212

### RV 8 Rotary Evaporator

RV 8 Rotary Evaporator, manual basic model is ideal for use in any laboratory environment. With digital displays for speed and heating bath temperature enable optimum control of all distillation processes.

- 4 litre water/ oil heating bath with handles
- Locking button for heating bath temperature
- Integrated safety lift-out function in case of power failure
- Clearly legible, glass-covered, black-and-white display panel
- Locking mechanism
- Manual lift for precise positioning of the glassware
- Adjustable immersion angle
- Single-handed manual lift handling
- Speed range: 5 300 min-1
- Low device voltage (24V) ensures user safety
- Flask clamping
- · High-efficiency

RV 10 digital V-C Rotary Evaporator with universal heating bath HB10, vertical glassware, state-of-the-art safety features and digital connectivity. The condenser has specially designed glass guides for extremely efficient delivering of reliable and reproducible process results.

Safety features include an automated lift-out function in case of power outage, individually settable temperature circuits, dry-run protection, and adjustable lower end stop and lock function of bath setting. Coated glassware is available for increased safety needs. The RS 232 interface allows for remote control via IKAs "labworldsoft" software programme The unit includes heating bath HB 10 and RV 10.10 coated vertical glassware.

### Common features:

- Universal water/oil heating bath with handles
- RS 232 and IR Interface
- Highly efficient 1500 cm<sup>2</sup> condenser unit
- Timer function
- Dry-run protection
- Safety temperature circuits
- Lower-end stop
- Choice of coated glassware
- · End point recognition
- Clockwise and anti-clockwise rotation

RV 10 Auto Pro V Rotary Evaporator with bright, high-contrast, TFT, colour-graphic control panel, an integrated vacuum controller, cooling water monitoring and mature safety standards. Features include automatic control of the vacuum and cooling water volume. The condenser has specially designed glass guides for extremely efficient delivering of reliable and reproducible process results. The extended ramp programming capability allows users to carry out customized procedures. The RV 10 Auto Pro has the same safety features as the RV 10 digital VC.

Coated glassware is available for increased safety needs. The RS 232 interface allows for remote control via IKAs "labworldsoft" software package and an update option with the firmware update tool. The device comes complete with vacuum hoses and hose connectors for your in-house cooling water supply.

Technical Specifications	RV8 V	RV10 Digital V-C	RV10 Auto Pro V
Speed range	5-300 rpm		20-280 rpm
Head angle adjustable		0 to $45^{\circ}$	
Maximum volume		4 Litres	
Temperature range	F	Room temperature to +180°C	
General data:			
Protection class according			
to DIN EN 60529		IP 20	
Voltage/ Frequency		220 - 240V / 50/60Hz	
Dimensions mm (WxLxH)	510x345x490		530x410x430

Cat. No.	Code	Description
ER/15210	10003483	IKA rotary evaporator model RV8-V with 4L HB10 Digital heating bath and set of RV10.1 vertical glassware
ER/15212	10004803	IKA rotary evaporator model RV10 V-C, with 4L HB10 Digital heating bath and set of RV10.10 vertical coated glassware
ER/15214	10004815	IKA rotary evaporator model RV10 control Auto Pro V with4L HB10 Digital heating bath, VACSTAR digital vacuum pump, an integrated vacuum controller and set of RV10.1 vertical glassware

### **PYREX**®



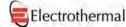






### Extraction

### Extraction, Soxhlet Mantles

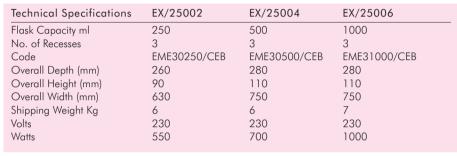


### Extraction, Soxhlet Mantles

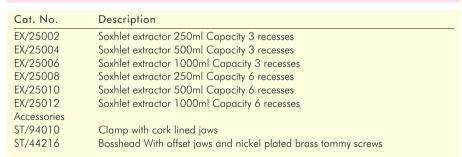
- Choice of three or six recesses
- Built-in electronic controller
- Vented case ensures case remains cool to the touch

### Product description

- Individual built-in solid state electronic controls enable easy regulation of each heater, while removing sparking associated with mechanical switching.
- Units include three 0.5 (12.7mm) diameter support rods.
- External surfaces are PTFE-coated and resistant to most chemical solutions.
- Element temperature range to 450°C.
- The coiled heating element is suspended within a thermal insulating cartridge to provide maximum heat transfer and support while removing sparking associated with mechanical switching.
- Heater cartridge can readily be replaced when necessary.
- For additional operator protection a safety earth screen encloses the heaters.
- Unique air flow ensures unit is safe to the touch.
- Pilot lights indicate when power is on and supplied to heaters.



T :  C:f::	EV /0.5000	EV/05010	EV/25012
Technical Specifications	EX/25008	EX/25010	EX/25012
Flask Capacity ml	250	500	1000
No. of Recesses	6	6	6
Code	EME60250/CEB	EME60500/CEB	EME61000/CEB
Overall Depth (mm)	260	280	280
Overall Height (mm)	90	110	110
Overall Width (mm)	1200	1440	1440
Shipping Weight Kg	11.5	12.5	15.5
Volts	230	230	230
Watts	1000	1300	1900





EX/25002



EX/25010

Notes	

#### Extraction glassware assemblies

**PYREX®** 

Each assembly comprises the basic components for solid-liquid extraction.

- Flask
- Soxhlet extractor
- Associated lids and clips
- Condenser

Cat. No.	Code	Flask capacity, ml	Thimble size, mm
EX/12008	100RASX	250	30 x 100 (ET/17020)
EX/12010	200RASX	500	43 x 123 (ET/17024)

Large capacity Soxhlet extraction unit comprising of the following individual parts. Please note, for a full working assembly, all parts must be ordered.

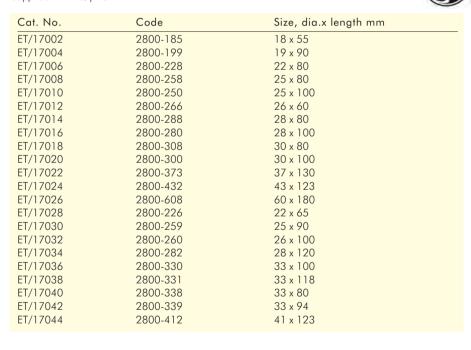
Cat. No.	Description
EX5/75	Extractor Soxhlet 600ml, 75mm B34/35
DA5/75	Adapter multisocket lid 75mm
JC75F	Clip for 75mm flange
FR1L/5S	Flask round base short neck 1 litre 34/35
CX5/25/SC	Condenser Davies 200mm
ET/17026	Extraction thimble, single thickness 60 x 180



EX/12010

#### Extraction thimbles, single thickness

For use in soxhlet extractors. 1 mm wall thickness. Supplied in Pk Qty 25.





ET/170



# Johnson Will Paris



# Filtration papers

#### Johnson's Qualitative Filter Paper

Qualitative filter papers are recommended for use in analytical methods which determine or identify particular constitutes of a mixture regardless of the amount present. They are often used in routine separation work that still requires high purity and consistent performance.

Standard qualitative filter papers are suitable for quadrant folded or gravity flow applications. They are

Standard qualitative filter papers are suitable for quadrant folded or gravity flow applications. They are cellulose based providing high purity but will weaken when wet. The inherent strength of standard grades does not pose a problem when they are used in routine quadrant folded applications.

Technical Specifications					
Grade	302	303	304	305	324
Weight (g/m²)	160	100	85	95	130
Thickness (µm)	370	200	200	215	430
Porosity (mm H <sub>2</sub> O)	360	300	220	60	90
Retention (microns)	4-7	6-10	10-12	20-25	20
Wet resistance (kg/cm)	0.55	0.4	0.35	0-40	0.4
Filtration rate	Medium	Medium	Fast	Very fast	Very fast creped

#### Filter paper cross reference

GE	Johnsons	Sartorius
1	304	292
2	303	292a
3	302	3S/H
4	305	1288
40/43	354	389
41/54/541	373	388
42	351	393
42/50/542	352	391
44	371	390

Circles, grade 303 Supplied in boxes of 100

Cat. No.	Code	Dia, mm	
FP/97104	303055	55	
FP/97106	303070	70	
FP/97108	303090	90	
FP/97110	303110	110	
FP/97112	303125	125	
FP/97114	303150	150	
FP/97116	303185	185	
FP/97118	303240	240	

#### Circles, grade 305 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97304	305055	55
FP/97306	305070	70
FP/97308	305090	90
FP/97310	305110	110
FP/97312	305125	125
FP/97314	305150	150
FP/97316	305185	185
FP/97318	305240	240

Circles, grade 302 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97204	304055	55
FP/97206	304070	70
FP/97208	304090	90
FP/97210	304110	110
FP/97212	304125	125
FP/97214	304050	150
FP/97216	304185	185
FP/97218	304240	240

#### Circles, grade 304 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97004	304055	55
FP/97006	304070	70
FP/97008	304090	90
FP/97010	304110	110
FP/97012	304125	125
FP/97014	304150	150
FP/97016	304185	185
FP/97018	304240	240
FP/97022	304320	320

#### Circles, grade 324 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97406	324070	70
FP/97408	324090	90
FP/97410	324110	110
FP/97412	324125	125
FP/97414	324150	150
FP/97416	324185	185
FP/97418	324240	240

#### Johnson's Quantitative Filter Paper

This series of extremely high purity, acid washed filter paper is designed for use in analytical and gravimetric analysis. The quantitative grades are manufactured from top quality cotton linters using ultra pure water and further treated with acid to remove any remaining organic and inorganic impurities.

#### Ashless Grade (Ash 0.002%)

Grades 351, 352 and 354 are high purity filter papers suitable for routine quantitative gravimetric techniques and in the preparation of samples for use in the analysis involving instrumental techniques.

#### Hardened Ashless Grade (Ash 0.02%)

Grades 371, 372 and 373 are specially treated hardened ashless papers ideal for critical quantitative analysis techniques requiring increased wet strength and handling capacity. They have a tough, smooth surface free from loose fibres and ideal for collecting wet precipitates.

Each grade is widely used because of their high chemical resistance to strong acids and alkali.

Technical Specifica	Technical Specifications					
Grade	351	352	354	371	372	373
Properties	Slow	Medium	Very fast	Slow	Medium	Very fast
Weight (g/m²)	80	80	80	80	80	80
Thickness (µm)	290	270	250	250	270	290
Porosity (mm H <sub>2</sub> O)	210	160	40	210	160	40
Retention (microns)	7-9	8-12	12-16	7-9	8-12	12-16

#### Circles, Ashless, Grade 351 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97706	351070	70
FP/97708	351090	90
FP/97710	351110	110
FP/97712	351125	125
FP/97714	351150	150
FP/97716	351185	185

#### Circles, Ashless, Grade 352 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97506	352070	70
FP/97508	352090	90
FP/97510	352110	110
FP/97512	352125	125
FP/97514	352150	150
FP/97516	352185	185
FP/97518	352240	240

#### Circles, Ashless, Grade 354 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97606	354070	70
FP/97608	354090	90
FP/97610	354110	110
FP/97612	354125	125
FP/97614	354150	150
FP/97616	354185	185
FP/97618	354240	240

#### Circles, Hardened Ashless, Grade 371 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97806	371070	70
FP/97808	371090	90
FP/97810	371110	110
FP/97812	371125	125
FP/97814	371150	150
FP/97816	371185	185

#### Circles, Hardened Ashless, Grade 372 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/97910	372110	110
FP/97912	372125	125
FP/97914	372150	150
FP/97916	372185	185

#### Circles, Hardened Ashless, Grade 373 Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/98006	373070	70
FP/98008	373090	90
FP/98010	373110	110
FP/98012	373125	125
FP/98014	373150	150
FP/98016	373185	185
FP/98018	373240	240







FP/98304

# Johnson 50A047 Glass Microfibre Filter Paper Grade 50A Ø47mm

FP/98104

#### Johnson's Glass Microfibre Filters

These glass microfibre filters are manufactured from 100% borosilicate glass. Due to their intrinsic properties, these filters have a wide range of applications in laboratory analysis especially when fine filtrations and high loading capacity is required.

Applications include environmental analysis for water, wastewater, process biochemistry and gravimetric analysis involving ignition of the sample.

Technical Specifi	cations	;		
Grade	50A	50B	50C	50D
Weight (g/m²)	37	140	55	120
Thickness (µm)	190	700	270	530
Retention (microns)	1.2	1	1.2	2.7

Filter paper cross reference

GE	Johnsons	Sartorius
GF/A	50A	MGA
GF/B	50	MGB
GF/C	50C	MGC
GF/D	50	MGD
GF/F	N/A	MG

Circles, grade 50A Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/98104	50A047	47
FP/98106	50A055	55
FP/98110	50A090	90
FP/98112	50A110	110
FP/98114	50A125	125

Supplied in boxes of 100

Circles, grade 50B

Cat. No.	Code	Dia, mm
FP/98202	50B025	25
FP/98204	50B047	47
FP/98206	50B055	55
FP/98210	50B090	90
FP/98212	50B110	110
FP/98214	50B125	125

Circles, grade 50C Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/98302	50C025	25
FP/98304	50C047	47
FP/98306	50C055	55
FP/98310	50C090	90
FP/98312	50C110	110
FP/98314	50C125	125

Circles, grade 50D Supplied in boxes of 100

Code	Dia, mm
50B025	25
50B047	47
50B070	70
50B090	90
50B110	110
	50B025 50B047 50B070 50B090

Notes	



Grade	Typical Thickness (µm)	Basis Weight (g/m²)	Flow Rate / Aspect	Nominal Particle Retention in Liquid* (µm)
1	180	88	Medium flow	11
2	190	103	Medium flow	8
3	390	187	Medium flow, thick	6
4	205	96	Very fast	25
5	200	98	Slow	2.5
6	180	105	Medium to slow	3

Filter papers, standard, grade No.1, medium flow 11µm Supplied in boxes of 100 Filter papers, standard, grade No.2, medium flow 8µm Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17102	1001.042	42.5
FP/17104	1001.055	55
FP/17106	1001.070	70
FP/17108	1001.090	90
FP/17110	1001.110	110
FP/17112	1001.125	125
FP/17114	1001.150	150
FP/17116	1001.185	185
FP/17118	1001.240	240
FP/17120	1001.270	270
FP/17122	1001.320	320

Cat. No.	Code	Dia, mm
FP/17202	1002.042	42.5
FP/17204	1002.055	55
FP/17206	1002.070	70
FP/17208	1002.090	90
FP/17210	1002.110	110
FP/17212	1002.125	125
FP/17214	1002.150	150
FP/17216	1002.185	185
FP/17218	1002.240	240
FP/17222	1002.320	320



FP/173

Filter papers, standard, grade No.3, medium flow, thick 6µm Supplied in boxes of 100 Filter papers, standard, grade No.4, very fast flow  $25\mu m$  Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17304	1003.055	55
FP/17306	1003.070	70
FP/17308	1003.090	90
FP/17310	1003.110	110
FP/17312	1003.125	125
FP/17314	1003.150	150
FP/17316	1003.185	185
FP/17318	1003.240	240

Cat. No.	Code	Dia, mm
FP/17402	1004.042	42.5
FP/17404	1004.055	55
FP/17406	1004.070	70
FP/17408	1004.090	90
FP/17410	1004.110	110
FP/17412	1004.125	125
FP/17414	1004.150	150
FP/17416	1004.185	185
FP/17418	1004.240	240
FP/17422	1004.320	320

Filter papers, standard, grade No.5, slow flow 2.5µm Supplied in boxes of 100

Filter papers, standard, grade No.6, medium to slow flow 3µm Supplied in boxes of 100

Cat. No.	Code	Dia, mm	
FP/17504	1005.055	55	
FP/17506	1005.070	70	
FP/17508	1005.090	90	
FP/17510	1005.110	110	
FP/17512	1005.125	125	
FP/17514	1005.150	150	
FP/17516	1005.185	185	
FP/17518	1005.240	240	

Cat. No.	Code	Dia, mm
FP/17606	1006.070	70
FP/17608	1006.090	90
FP/17610	1006.110	110
FP/17612	1006.125	125
FP/17614	1006.150	150
FP/17616	1006.185	185
FP/17618	1006.240	240



FP/175

#### GE Glass microfibre filter papers



Dia, mm

55

70

90

110

125

150

185

240



FP/175

Technical Specifications					
Grade	Typical Thickness (µm)	Basis Weight (g/m²)	Typical Ash Content**	Flow Rate/ Aspect	Nominal Particle Retention in Liquid* (µm)
40	210	95 g/m <sup>2</sup>	0.01%	Medium	8
41	220	85	0.01%	Fast	20
42	200	100	0.01%	Slow	2.5
44	180	80	0.01%	Slow to medium	3
**Ash content is determined by ignition of the cellulose filter at 900°C in air					
*Particle retention rating at 98% efficiency					

Filter papers, ashless, grade No.40, medium flow 8µm

Supplied in boxes of 100

Filter pa	pers, ashless, grade No.41
fast flow	20μm
Supplied	in boxes of 100

Code

1441.055

1441.070 1441.090

1441.110

1441.125

1441.150

1441.185

1441.240

Cat. No.

FP/17554

FP/17556

FP/17558

FP/17560

FP/17562

FP/17564 FP/17566

FP/17568

Cat. No.	Code	Dia, mm
FP/17454	1440.055	55
FP/17456	1440.070	70
FP/17458	1440.090	90
FP/17460	1440.110	110
FP/17462	1440.125	125
FP/17464	1440.150	150
FP/17466	1440.185	185
FP/17468	1440.240	240

Filter papers, ashless, grade No.42, slow flow 2.5 $\mu m$ Supplied in boxes of 100

Filter papers, ashles	ss, grade No.44,
slow/medium flow	3µm
Supplied in boxes of	100

Cat. No.	Code	Dia, mm
FP/17654	1442.055	55
FP/17656	1442.070	70
FP/17658	1442.090	90
FP/17660	1442.110	110
FP/17662	1442.125	125
FP/17664	1442.150	150
FP/17666	1442.185	185
FP/17668	1442.240	240

Cat. No.	Code	Dia, mm	
FP/17760	1444.110	110	
FP/17762	1444.125	125	
FP/17764	1444.150	150	
FP/17766	1444.185	185	



#### Filtration, clippings

GE ashless cellulose clippings enhance filtration speed by coagulating precipitates or suspensions to form a thick retentive prefilter layer on top of normal filter paper.



Cat. No.	Code	Туре	Box, g
FP/17184	1703.050	Ashless clippings	500

Notes		



Grade	Typical Thickness (µm)	Basis Weight (g/m²)	Typical Ash Content**	Flow Rate/ Aspect	Nominal Particle Retention in Liquid* (µm)
50	115	97	0.02%	Slow	2.7
52	175	101	0.02%	Medium	7
54	185	92	0.02%	Very fast	22
**Ash content is determined by ignition of the cellulose filter at 900°C in air					
*Particle r	etention rating a	t 98% efficienc	у		

Filter papers, hardened, grade No.50, slow flow 2.7µm

Filter papers, hardened, grade No.54, very fast flow 22µm Supplied in boxes of 100

Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17704	1450.055	55
FP/17708	1450.090	90
FP/17710	1450.110	110
FP/17712	1450.125	125
FP/17714	1450.150	150
FP/17716	1450.185	185
FP/17718	1450.240	240

Cat. No.	Code	Dia, mm
FP/17904	1454.055	55
FP/17906	1454.070	70
FP/17908	1454.090	90
FP/17910	1454.110	110
FP/17912	1454.125	125
FP/17914	1454.150	150
FP/17916	1454.185	185
FP/17918	1454.240	240

Filter papers, hardened, grade No.52, medium flow  $7\mu m$ Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17814	1452.150	150

#### GE Hardened Ashless quantitative filter papers



Grade	Typical Thickness (µm)	Basis Weight (g/m²)	Typical Ash Content**	Flow Rate/ Aspect	Nominal Particle Retention in Liquid* (µm)
540	160	88	0.01%	Medium	8
541	155	82	0.01%	Fast	22
542	150	93	0.01%	Slow	2.7
**Ash cor	ntent is determine	ed by ignition o	of the cellulose filter	at 900°C in air	
*Particle r	etention rating a	t 98% efficienc	V		

Filter papers, hardened ashless, grade No.540, Filter papers, hardened ashless, grade No.541, medium flow 8µm

Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17158	1540.090	90
FP/17160	1540.110	110
FP/17162	1540.125	125
FP/17164	1540.150	150
FP/17166	1540.185	185

Filter papers, hardened ashless, grade No.542, slow flow 2.7µm Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17356	1542.070	70
FP/17358	1542.090	90
FP/17360	1542.110	110
FP/17362	1542.125	125
FP/17364	1542.150	150
FP/17366	1542.185	185
FP/17368	1542.240	240

fast flow 22µm Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/17256	1541.070	70
FP/17258	1541.090	90
FP/17260	1541.110	110
FP/17262	1541.125	125
FP/17264	1541.150	150
FP/17266	1541.185	185
FP/17268	1541.240	240



#### GE Glass microfibre filter papers



Grade	Typical Thickness (µm)	Basis Weight (g/m²)	Nominal Particle Retention in Liquid* (µm)	Air Flow Rate
GF/A	260	53	1.6	4.3 s/100 ml/in <sup>2</sup>
GF/B	675	143	1	12 s/100 ml/in <sup>2</sup>
GF/C	260	53	1.2	6.7 s/100 ml/in <sup>2</sup>
GF/D	675	121	2.7	2.2 s/100 ml/in <sup>2</sup>
GF/F	420	75	0.7	19 s/100 ml/in <sup>2</sup>
*Particle re	etention rating at 98% e	efficiency.		

#### Filter papers, glass microfibre, grade GF/A 1.6 $\mu m$ Grade GF/B 1.0 $\mu m$

Offers fine particle retention and high flow rate, as well as good loading capacity. Used for high efficiency general purpose laboratory filtration. Supplied in boxes of 100

Cat. No.	Code	Dia, mm
FP/12022	1820.021	21
FP/12024	1820.025	25
FP/12026	1820.037	37
FP/12028	1820.047	47
FP/12004	1820.055	55
FP/12005	1820.060	60
FP/12006	1820.070	70
FP/12008	1820.090	90
FP/12010	1820.110	110
FP/12012	1820.125	125
FP/12014	1820.150	150

Three times thicker than GF/A with higher wet strength and significantly increased loading capacity.

Cat. No.	Code	Dia, mm	Pack
FP/12124	1821.025	25	100
FP/12126	1821.037	37	100
FP/12128	1821.047	47	100
FP/12104	1821.055	55	100
FP/12106	1821.070	70	100
FP/12108	1821.090	90	25
FP/12110	1821.110	110	25
FP/12112	1821.125	125	25
FP/12114	1821.150	150	25

#### Grade GF/D 2.7µm

Considerably faster in flow rate and overall filtration speed than cellulose filter papers of similar particle retention.

Cat. No.	Code	Dia, mm	Pack
FP/12324	1823.025	25	100
FP/12328	1823.047	47	100
FP/12306	1823.070	70	100
FP/12308	1823.090	90	25
FP/12310	1823.110	110	25
FP/12312	1823.125	125	25
FP/12314	1823.150	150	25



FP/12408, FP/1228, FP/12128 & FP/12024

Grade GF/C 1.2µm

Slightly more retentive than GF/A. Combines fine particle retention with good flow rate. Supplied in boxes of 100

Cat. No.	Code	Dia, mm	
FP/12222	1822.021	21	
FP/12224	1822.025	25	
FP/12228	1822.047	47	
FP/12204	1822.055	55	
FP/12206	1822.070	70	
FP/12208	1822.090	90	
FP/12210	1822.110	110	
FP/12212	1822.125	125	
FP/12214	1822 150	1.50	

#### Grade GF/F 0.7µm

High efficiency filter with a very rapid flow rate and an extremely high loading capacity.

Cat. No.	Code	Dia, mm	Pack
FP/12424	1825.025	25	100
FP/12428	1825.047	47	100
FP/12404	1825.055	55	100
FP/12406	1825.070	70	100
FP/12408	1825.090	90	25
FP/12410	1825.110	110	25
FP/12412	1825.125	125	25
FP/12414	1825.150	150	25

#### Filter paper, Phase separation

A high grade filter paper that has been impregnated with a stabilised silicone that renders it hydrophobic, retaining the aqueous phase and passing the solvent phase through. The cut-off is automatic and complete; this product can be used to replace a traditional separating funnel. Supplied in boxes of 100.



Cat. No.	Code	Dia, mm	
FP/14006	2200-070	70	
FP/14008	2200-090	90	
FP/14010	2200-110	110	
FP/14012	2200-125	125	
FP/14014	2200-150	150	
FP/14016	2200-185	185	
FP/14018	2200-240	240	

# Filters, membrane

#### White plain filters

Recommended for the majority of routine applications, this membrane is manufactured under strictly controlled conditions. The user will benefit from the performance improvements which are now available in GE membrane filters, including very narrow pore size distribution and low levels of extractables.

#### Technical Specifications - Cellulose Nitrate Membranes

Thickness 105 to 140  $\mu$ m Burst strength > 2 psi

Weight 3.6 to 5.5 mg/cm2

Maximum service temperature 80°C
Porosity 66 to 84%
Steam autoclavable Yes
Hydrophilic Yes

Cat. No.	Description	Pk Qty
FM/27100	Cellulose nitrate circles, plain, 0.2 µm, 47 mm	100
FM/27106	Cellulose nitrate circles, plain, 0.2 µm, 50 mm	100
FM/27107	Cellulose nitrate circles, plain, 0.45 µm, 47 mm	100
FM/27116	Cellulose nitrate circles, plain, sterile, 0.45 µm, 47 mm	100
FM/27118	Cellulose nitrate circles, plain, 0.45 µm, 50 mm	100
FM/27124	Cellulose nitrate circles, plain, 0.8 µm, 47 mm	100



FM/271

#### Mixed Cellulose Ester Membranes

This membrane is particularly effective in applications requiring higher flow rates and larger volume filtration including clarification or sterilization of aqueous solutions, particulate analysis and removal, air monitoring and microbial analysis.



Technical Specifications - Mixed Cellulose Ester Membranes				
Burst strength	> 10 psi			
Weight	4.3 to 5.0 mg/cm2			
Maximum service temperature	130°C			
Porosity	74 to 77%			
Steam autoclavable	Yes			
Solvent resistancy	Medium			
Protein binding	Medium			

Cat. No.	Description	Pk Qty
Plain		
FM/27004	Mixed cellulose ester circles (ME 24), 0.2 µm, 47 mm	100
FM/27006	Mixed cellulose ester circles (ME 24), sterile, 0.2 µm, 47 mm	100
FM/27008	Mixed cellulose ester circles (ME 24), 0.2 μm, 50 mm	100
FM/27010	Mixed cellulose ester circles (ME 24), sterile, 0.2 µm, 50 mm	100
FM/27026	Mixed cellulose ester circles (ME 25), 0.45 μm, 47 mm	100
FM/27028	Mixed cellulose ester circles (ME 25), sterile, 0.45 μm, 47 mm	100
FM/27030	Mixed cellulose ester circles (ME 25), 0.45 μm, 50 mm	100
FM/27032	Mixed cellulose ester circles (ME 25), sterile, 0.45 μm, 50 mm	100
FM/27056	Mixed cellulose ester circles (ME 27), 0.8 µm, 47 mm	100
Gridded		
FM/27080	Mixed cellulose ester circles (ME 24), white/black grid 3.1 mm,	
	sterile 0.2 µm, 47 mm	100
FM/27084	Mixed cellulose ester circles (ME 25), white/black grid 3.1 mm,	
	sterile, 0.45 µm, 47 mm	100
FM/27086	Mixed cellulose ester circles (ME 25), white/black grid 5 mm,	
	0.45 μm, 47 mm	100
FM/27090	Mixed cellulose ester circles (WME), black/white grid 3.1 mm,	
	sterile, 0.45 µm, 47 mm	100



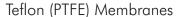
FM/27028



FM/267



FM/267



One of the major applications for the PTFE membrane is the clarification of corrosives, solvents and aggressive fluids. This includes the important requirement in HPLC analysis for sample filtration where any solid particles can cause permanent damage to the column. The 0.5 µm pore size is normally used. Air and gas sterilization make use of the hydrophobic characteristics of PTFE membranes and their ability to stop aqueous aerosols. Usual pore sizes are 0.2 µm and 0.5 µm. Sterile venting of vacuum manifolds, fermentation vessels, and sterile filtrate tanks and containers utilize PTFE 0.2 µm membranes.

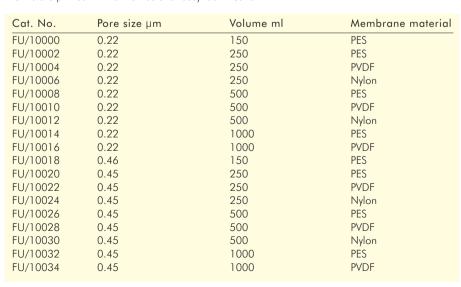
Technical Specif Membrane	Thickness (µm)	Flow rate $\Delta p = 0.9 \text{ bar}$ (s/100 ml)	Air flow rate $\Delta p = 3 \text{ mbar}$ (bar)‡	Bubble point (°C)	Max. Temp.
(TE 35) 0.2μm	240	24*	70	1.29	100
(TE 36) 0.45µm	220	12*	60	0.89	100
(TE 38) 5.0µm	265	2.2*	3.5	0.19	100
* Measured with ethanol					
‡ Measured using	‡ Measured using 2-propanol				

Cat. No.	Description	Pk Qty
FM/26698	PTFE membrane circles, (PTFE), 0.2µm, 25mm	100
FM/26700	PTFE membrane circles, (PTFE), 0.2µm, 47mm	100
FM/26706	PTFE membrane circles, (PTFE), 0.5µm, 47mm	100
FM/26704	PTFE membrane circles, (TE 35), 0.2µm, 47 mm	50
FM/26714	PTFE membrane circles, (TE 36), 0.45µm, 47 mm	50
FM/26716	PTFE membrane circles, (TE 36), 0.45µm, 50 mm	50
FM/26734	PTFE membrane circles, (TE 38), 5µm, 47 mm	50

#### Vacuum Membrane filter units

These filters are ideal for separation, purification, and sterilization of biological samples. Membrane material includes, PVDF, PES, and Nylon. (SCFA are available on request) Wide bottle opening for easy access and pouring.

- Engraved graduations ensure accuracy
- Large knurls on reservoir cap for easy turning
- Hose connector fits multiple hose diameters
- Gamma irradiated and certified non-pyrogenic
- Easy-to peel open packaging; receiver bottle cap is individually wrapped
- Units are printed with lot numbers for easy identification





FU/100

#### Filters, membrane, gridded

sartorius

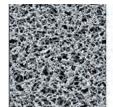
Sterile, individually packed filters have long become standard for routine microbiological quality control because of the user benefits they offer.

All membranes are made of cellulose nitrate, a material which assures effective retention with high flow rates and optimum colony growth. The printed grid with a size of 3.1 x 3.1 mm makes the counting easier, especially for higher bacteria counts and for microcolonies, but does not influence the growth. The various filter colours allow the best contrast to the colonies. Supplied individually packed to avoid the possibility of contamination of remaining filters in opened packs and to conform with GLP, having filter identification and lot number printed on each individual envelope.

Type 114, white with black grid, 47 mm diameter Used mainly for bacteriological research

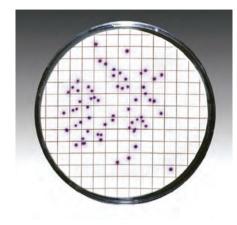
Cat. No.	Code	Pore size	Pk Qty
FM/63002	11403-047ACN	1.20µm	100
FM/63004	11404-047ACN	0.80µm	100
FM/63006	11405-047ACN	0.65µm	100
FM/63008	11406-047ACN	0.45µm	100
FM/63010	11407-047ACN	0.20µm	100
FM/63012	11403-047ACR	1.20µm	1000
FM/63014	11404-047ACR	0.80µm	1000
FM/63018	11406-047ACR	0.45µm	1000

Full range of Sartorius products available on request





FM/630



FM/630



Cellulose



Polyethersulfone





Surfectant free cellulose acetate

#### Filter units, ready to use

#### Nalgene filter units, receivers and bottle top filters

Nalgene pre sterilised disposable filter units and bottle top filters are colour coded for ease of identification. Each product has the lot number, catalogue number, membrane type, pore size and expiry date printed on it. Every lot is Nalgene certified with each case containing documentation that the product is sterile, non-pyrogenic, non-cytotoxic and has passed strict performance integrity tests.

Cellulose nitrate membranes, colour coded green, are recommended for general filtering of buffers

Nylon membranes, colour coded red, are for special applications. No wetting agents, the lowest in extractables and excellent alcohol resistance.

Polyethersulfone (PES) membranes, colour coded blue, have low protein binding, low extractables, no external wetting agents, and fast flow. This range is recommended for tissue culture media filtration.

Surfactant free cellulose acetate (SFCA) membranes, colour coded yellow, are a universal tissue culture membrane. Much cleaner than standard cellulose acetate. They feature fast flow, low protein binding and no wetting agent.



FM/361

#### Filter units, cellulose nitrate membrane, screw closure NALGENE

In polystyrene housing with polystyrene receiver connected by 1-1/2 turn screw closure. All sizes have a side-arm with a cellulosic vent plug and quick-disconnect tubing adapter. All membranes are white, the 0.45µm pore products have a green grid and the 0.8µm have a black grid. Colour coded green. Supplied sterile in cases of 12 units.

Cat. No.	Code	Unit capacity	Receiver capacity	Membrane diameter	Grid colour		
Pore size 0.2µm							
FM/36102	125-0020	150 ml	150 ml	50mm	Plain (no grid)		
FM/36104	126-0020	250 ml	250 ml	50mm	Plain (no grid)		
FM/36106	450-0020	500 ml	500 ml	75mm	Plain (no grid)		
FM/36108*	127-0020	500 ml	1000 ml	75mm	Plain (no grid)		
Pore size 0.45µ	ım						
FM/36112	125-0045	150 ml	150 ml	50mm	Green		
FM/36114	126-0045	250 ml	250 ml	50mm	Green		
FM/36116	450-0045	500 ml	500 ml	75mm	Green		
FM/36118*	127-0045	500 ml	1000 ml	75mm	Green		
Pore size 0.8µm	า						
FM/36122	125-0080	150 ml	150 ml	50mm	Black		
FM/36124	126-0080	250 ml	250 ml	50mm	Black		
FM/36126	450-0080	500 ml	500 ml	75mm	Black		
FM/36128*	127-0080	500 ml	1000 ml	75mm	Black		

<sup>\*</sup> Recommended for filtering aqueous solutions such as buffers. Depending on particle load throughput may not equal 1000ml. Each case includes 12 glass fibre prefilters.

FU/36506

#### Filter units, nylon membrane, screw closure

NALGENE'

NALGENE'

In polystyrene housing with polystyrene receiver connected by 1-1/2 turn screw closure. All sizes have a side-arm with a cellulosic vent plug and quick-disconnect tubing adapter. Colour coded red. Supplied sterile in cases of 12 units.

Cat. No.	Code	Unit capacity	Receiver capacity	Membrane diameter
Pore size 0.2µm				
FU/36502	150-0020	150 ml	150 ml	50mm
FU/36504	153-0020	250 ml	250 ml	50mm
FU/36506	151-4020	500 ml	500 ml	75mm
FU/36508*	154-0020	500 ml	1000 ml	75mm
Pore size 0.45µr	m			
FU/36512	150-0045	150 ml	150 ml	50mm
FU/36514	153-0045	250 ml	250 ml	50mm
FU/36516	151-4045	500 ml	500 ml	75mm
FU/36518*	154-0045	500 ml	1000 ml	75mm

<sup>\*</sup> Depending on particle load throughput may not equal 1000ml. Each case includes 12 glass fibre prefilters.

#### Filter units, SFCA, Media-Plus

#### NALGENE'

These 90mm diameter (57.2mm usable filter area) SFCA membrane filter units allow easy vacuum filtration of up to 1 litre of medium with 20% serum. Large membrane surface area and low protein binding provide excellent flow rates and throughput. Upper and receiver 1000ml. In polystyrene housing with polystyrene receiver connected by  $1^{1}/_{2}$  turn screw closure. Side-arm features a cellulosic vent plug and quick-disconnect tubing adapter.

Colour coded yellow. Supplied sterile in cases of 12 units.

Cat. No.	Code	Pore size, µm
FU/36308	161-0020	0.2
FU/36318	161-0045	0.45



FU/36308

#### Filter units, SFCA, serum

#### **NALGENE**

These 90mm diameter (57.2mm usable filter area) SFCA membrane filter units are designed for the filtration of large volumes (over 200ml) of whole serum. They provide excellent flow rates and throughput when filtering up to 500ml of whole foetal bovine serum. Upper and receiver 500ml. In polystyrene housing with polystyrene receiver connected by  $1^{1}/_{2}$  turn screw closure. Side-arm features a cellulosic vent plug and quick disconnect tubing adapter. Colour coded yellow. Supplied sterile in cases of 12 units.

Cat. No.	Code	Pore size, µm
FU/36408	162-0020	0.2
FU/36418	162-0045	0.45

# Filters, bottle top, SFCA

#### NALGENE'

Tissue culture filters with 50, 75 or 90mm membranes. Securely screw onto media bottles with 33 or 45mm neck size. Allow direct filtration into sterile glass media bottles\*. Moulded-in graduations. Sidearm features a quick-disconnect tubing adapter.

Colour coded yellow. Supplied sterile in cases of 12 units.

Cat. No.	Code	Capacity, ml	Pore size, µm	Membrane dia, mm
For 33mm nec	k bottles			
FB/36302	290-3320	150	0.2	50
FB/36312	290-3345	150	0.45	50
FB/36304	291-3320	500	0.2	75
FB/36314	291-3345	500	0.45	75
FB/36316	292-3320	1000	0.2	90
For 45mm nec	k bottles			
FB/36402	290-4520	150	0.2	50
FB/36412	290-4545	150	0.45	50
FB/36404	291-4520	500	0.2	75
FB/36414	291-4545	500	0.45	75
FB/36416	292-4520	1000	0.2	90
*Caution: Use	only sterile bottle desi	gned for use with vac	cuum.	
Always use safe	ty shield during vacu	um procedures.		



FU/364



FB/363

#### Filter units, PES membrane, screw closure

#### **NALGENE**

Ideal for biological and pharmaceutical sterilisation requirements. Graduations on both uppers and receivers. The side-arm has a cellulosic vent plug and quick-disconnect tubing adapter. In polystyrene housing connected to polystyrene receiver by leakproof threaded closure.

Colour coded blue. Supplied sterile in cases of 12 units.

Cat. No.	Code	Upper/Receiver, capacity	Membrane diameter
Pore size 0.45µm			
FM/36212	165-0045	150 ml	50mm
FM/36214	168-0045	250 ml	50mm
FM/36216	166-0045	500 ml	75mm
FM/36217	169-0045	500 ml	90mm
FM/36218	167-0045	1000 ml	90mm



FM/362



FB/361

#### Filters, bottle top, PES

NALGENE'

Bottle top filters with 50, 75 or 90mm membranes. Securely screw onto media bottles with 33 or 45mm neck size. Allow direct filtration into sterile glass media bottles\*. Moulded-in graduations. Side-arm features a quick-disconnect tubing adapter. Colour coded blue. Supplied sterile in cases of 12 units.

Cat. No.	Code	Capacity, ml	Membrane dia, mm	Pore size, µm
For 33mm neck k	oottles			
FB/36112	296-3345	150	50	0.45
FB/36114	295-3345	500	75	0.45
For 45mm neck b	oottles			
FB/36212	296-4545	150	50	0.45
FB/36214	295-4545	500	75	0.45
	y sterile bottle designe		m.	
Always use safety	shield during vacuum	procedures.		

#### Filter units, analytical, CN membrane

NALGENE'

Designed for ease of use this filter unit consists of a polypropylene upper and polystyrene lower with a white cellulose nitrate filter. Upper twists off easily for improved retrieval of the 47mm membrane. Wider base is stable on the bench. Non-silicone gasket reduces risk of contamination. Excellent for sterility testing, water quality or environmental testing. Supplied in sterile case of 12 units, cases of 72 are also available, please enquire.

Cat. No.	Code	Capacity, ml	Grid	Pore size, µm
FM/33002	130-4020	150	None	0.2
FM/33004	130-4045	150	Grey	0.45



FM/3300

#### Filter funnel, analytical test, CN membrane

**NALGENE** 

Disposable, sterile filter funnels consisting of a polypropylene upper, high impact polystyrene collar and 47mm cellulose nitrate membrane. Designed for microbiological analysis testing. The grey membrane turns black when wet making it easier to detect and count growing colonies. Upper separates easily from lower for easy access to the membrane. Supplied sterile in cases of 50 with six funnel adapters in each case. Funnel adapter allows use with No. 8 stoppers.

Cat. No.	Code	Capacity, ml	Membrane	Pore size, µm	Pk Qty
FU/36132	145-0020	100	Plain	0.2	50
FU/36134	145-0045	100	Gridded	0.45	50
FU/36136	145-2020	250	Plain	0.2	50
FU/36138	145-2045	250	Gridded	0.45	50
FU/36140	147-0045	100	Grey, gridded	0.45	50
Accessories					
FU/36142	DS0396	Filter stopper			3
FU/36144	DS0397	Filter funnel a	dapter		25



FU/361

#### Reusable Filterware

**NALGENE** 

Filter holder, autoclavable, polysulfone with graduated receiver, fitted with 2 side arms which accept 6 to 8mm i.d. vacuum tubing and also accepts syringe filters. The tubing adapter can be stuffed with cotton for sterile venting during autoclaving.

Technical Specifications	300-4000	300-4050	300-4100
Upper chamber capacity, ml	250	500	500
Receiver capacity, ml	250	500	1000
Diameter of receiver, mm	83	117	114
Height including ports, mm	180	230	293
Width including side arms, mm	110	134	134

Cat. No.	Code	Description
FU/36232	300-4000	Filter holder and receiver 250 / 250ml
FU/36234	300-4050	Filter holder and receiver 500 / 500ml
FU/36240	300-4100	Filter holder and receiver 500 / 1000ml



FU/362 reuseable filters

# Filters, syringe

#### Puradisc Syringe Filters

Puradisc™ syringe filters combine premium quality and economy. They are ideal for the quick, efficient filtration of samples up to 100 ml volume. Produced from pigment-free polypropylene or polycarbonate with standard female luer-lock inlet and male luer-lock outlet connections.

Options on request: a sterile, medical-grade blister pack for critical applications and a special tube tip outlet that allows the sample to be accurately dispensed into a micro-vial, eliminating air lock. Glass pre-filters are also available

#### Features and benefits:

- Pigment-free polypropylene (polycarbonate for Puradisc 30 and Aqua 30)
- Standard inlet and outlet luer connectors
- Choice of filter sizes (4 mm, 13 mm or 30 mm) to minimize sample loss
- Sterile option for critical applications
- Wide range of membranes
- Autoclavable at 121°C (Maximum 131°C)

Technical Specific	Technical Specifications				
	Puradisc 4	Puradisc 13	Puradisc 25	Puradisc 30/Aqua 30	
Housing	Polypropylene	Polypropylene	Polypropylene	Polycarbonate	
Filtration area	$0.2 \text{ cm}^2$	$1.3 \text{ cm}^2$	$4.2 \text{ cm}^2$	$5.7 \text{ cm}^2$	
Maximum pressure	5.2 bar (75 psi)	5.2 bar (75 psi)	5.2 bar (75 psi)	6.9 bar (100 psi)	
Volume 'Hold Up'	< 10 µl	<25 µl	< 100 µl	<50 μl	
full housing with					
air purge					
Dimensions	10.1 x 23.5mm	16.3 x 19.8mm	22.9 x 28.4mm	26 x 34 mm	
Weight	0.55 g	0.95 g	2.7 g	4.7 g	
Volume throughput	up to 2 ml	up to 10 ml	up to 100 ml	up to 100 ml	

Cat. No.	Description	Pk Qty
Puradisc filter	s, non sterile	
FS/22972	Puradisc 4 Syringe Filter, 0.45µm, PVDF	100
FS/22974	Puradisc 4 Syringe Filter, 0.2µm, PTFE	100
FS/22980	Puradisc 13 Syringe Filter, 0.2µm, PTFE	100
FS/22982	Puradisc 13 Syringe Filter, 0.45µm, PTFE	100
FS/22986	Puradisc 25 Syringe Filter, 0.2µm, PVDF	50
FS/22988	Puradisc 25 Syringe Filter, 0.45µm, PVDF	50
FS/22990	Puradisc 25 Syringe Filter, 0.2µm, nylon	50
FS/22992	Puradisc 25 Syringe Filter, 0.45µm, nylon	50
FS/22998	Puradisc 25 Syringe Filter, 0.2µm, PTFE	50
FS/23000	Puradisc 25 Syringe Filter, 0.45µm, PTFE	50
FS/23032	Puradisc 30 Syringe Filter, cellulose acetate, 0.45µm	50
FS/23018	Puradisc Aqua 30 Syringe Filter, cellulose acetate, 0.45µm	50
Puradisc filter	s, sterile	
FS/22976	Puradisc 13 Syringe Filter, sterile, 0.2µm, polyethersulfone	50
FS/22978	Puradisc 13 Syringe Filter, sterile, 0.45µm, polyethersulfone	50
FS/22984	Puradisc 13 Syringe Filter, sterile 0.2µm, nylon	50
FS/22994	Puradisc 25 Syringe filter, 0.2µm, PES	50
FS/22996	Puradisc 25 Syringe filter, 0.45µm, PES	50
FS/23002	Puradisc 30 Syringe filter, cellulose acetate, 0.2µm	50
FS/23008	Puradisc 30 Syringe filter, cellulose acetate, 0.45µm	50



FS/229



FS/229

#### Filtration units, syringe, Minisart®



Syringe filter holders for rapid small volume sterilization. Ready-to-use units, which offer high flow rates at low inlet pressures, make a correspondingly rapid sterile filtration possible. Fitted on a standard syringe, they enable a less hand-tiring sterilization of up to 100 ml of liquid. A Minisart fitted on a standard dosing syringe makes up a very convenient system for simultaneous dosing and sterilization.

The combination of a large filtration area and an optimised geometry of the filter support, which are responsible for the high flow rates, also ensure high total throughputs.



FS/630

Technical Specifications			
Adsorption	Values determined for the cellulose acetate membrane, 0.8–3 μg/cm2 with RSA, 8–12 μg/cm2 with gamma globulin.		
Bubble point	With water, minimum value 3.4 bar (340 kPa, 49.5 psi) manual measurement. Values determined by Sartocheck can be lower by 0.1–0.2		
Colour coding	bar. Blue		
Endotoxins	Endotoxin-output below the detection limit of the tests (0.06 EU/ml)		
Filter diameter	26 mm		
Filter area	5.3 cm2		
Flow rate	Typical values for water at $p = 1$ bar (100 kPa, 14.5 psi) 60 ml/min		
Hold-up volume	0.1 ml for standard Minisarts, 0.23 ml for Minisart plus		
Application limits	Max. recommended operational pressure: 4.5 bar (450 kPa, 65 psi)		
Housing	Burst pressure 6 bar (600 kPa, 87 psi) and higher. Max. temperature, 50°C		
Materials	Cellulose acetate membrane filters, glass fibre prefilters (only for Minisart plus), MBS polymerisate.		

Cat. No.	Code	Description	Pk Qty
FS/63002	16534K	Minisart, 0.2µm, sterile with male luer lock outlet,	
		individual wrap	50
FS/63004	17597K	Minisart, 0.2µm, sterile with male luer slip outlet	
		single wrap	50
FS/63006	17597Q	Minisart, 0.2µm, non sterile with male luer slip outlet	
		bulk wrap	500
FS/63008	17823K	Minisart PLUS, 0.2µm with glass fibre pre-filter,	
		sterile with luer lock outlet, single wrap	50
FS/63010	17823Q	Minisart PLUS, 0.2µm with glass fibre pre-filter,	
10,00010	170200	non sterile with luer lock outlet bulk wrap	500
		non sieme will lock ooner bolk widp	300



FH/15808

# Filtration hardware

#### Filtration system, 47mm, PYREX

**PYREX**®

Comprises four components, funnel 300ml capacity, support base with sintered disc and vacuum connection, metal retaining clip, 1000ml conical flask suitable for use under vacuum.

- All glass filtration system for use with 47mm diameter membranes
- Borosilicate glass sintered disc to support membrane
- Fully autoclavable
- Ideal for microbiology

Cat. No.	Description
FH/15808	Filtration system complete
Components	
FH/15810	Funnel 300ml capacity
FH/15812	Support base with sintered disc and vacuum connection for 9mm bore tubing
FH/15814	1000ml conical flask suitable for use under vacuum
FH/15816	Metal retaining clip

#### Vacuum type glass holders

Produced from borosilicate glass and available with a choice of support screen. Suitable for aqueous and organic solvent filtration. The funnel seal ensures that the sample does not bypass the membrane and that particulates are retained on the surface of the membrane.

- Chemically resistant to most aqueous and organic solutions
- Acid and caustic solution resistant
- Autoclavable and can be sterilized in dry heat to 180°C
- Can be used up to 200°C

Cat. No.	Description
FH/16002	Membrane holder, glass support, 47mm, 300ml volume
FH/16004	Membrane holder, stainless steel support, 47mm, 300ml volume
FH/16006	Glass frit filter, hose coupling connection, Erlenmeyer flask 1000ml
FH/16008	Sieve filter, hose coupling connection, Erlenmeyer flask 1000ml



FH/160

#### Filter funnel units for glass microfibre filters

Borosilicate glass 3-piece filter funnel with acrylic support plate. Sizes represent the size of filter.



Cat. No.	Code	Description, mm	
FP/13002	1950.002	25	
FP/13004	1950.004	47	
FP/13007	1950.007	70	
FP/13009	1950.009	90	
FP/13012	1950.012	125	



FP/130

#### 3 and 6 branch manifold systems

sartorius For routine colony and particle counting. The manifolds are available with 100ml or 500ml capacity funnels. The three or six separate filtration holders allow timesaving when mass examinations of 100 ml volume samples have to be carried out. The stainless steel taps on the manifold ports allow the

vacuum for each holder to be turned on and off individually. The stainless steel filter support allows a homogenous distribution of the residues on the membrane filter surface. Funnel and filter support can be disinfected by flaming.

Technical Specifica	tions			
Compatibility:	Chemical resistance as for stainless steel and silicone			
Filtration area:	$12.5 \text{ cm}^2$			
Flow rate:	Typical values for water at 90% vacuum, 600 ml/min with 0.45 µm, 200 ml/min with 0.2µm filter pore size			
Parts and materials:	Stainless steel manifold, funnel, lid, frits, Silicone flat gasket, Silicone lid seal, cap and hose connector			
Membrane filter				
Diameter:	50 mm (or 47 mm; but for regular use of this diameter, the frits supplied can be replaced by frits for 47 mm filter)			
Max. pressure:	Only vacuum			
Sterilization:	By autoclaving (121°C or 134°C), by dry heat (180°C), with hot water or by flaming.			

Cat. No.	Code	Description
FH/64002	16824	3-Branch Manifold System with 3 x 100ml funnels
FH/64004	16828	3-Branch Manifold System with 3 x 500ml funnels
FH/64006	16831	6-Branch Manifold System with 6 x 500ml funnels
FH/64008	16832	6-Branch Manifold System with 6 x 100ml funnels
FH/64010	6980103	Frit for 47mm filter



FH/640



FH/64006



FP/25102

#### Flame photometers

#### Flame photometer



The Jenway Model PFP7 is a low temperature, single channel flame photometer, designed for the routine determinations of Sodium (Na), Potassium (K), Lithium (Li), Barium (Ba) and Calcium (Ca) supplied with 5 filters.

Both instruments are fitted with automatic flame failure detection for user safety, making them ideal for use in clinical, industrial and educational applications.

The clinical Model PFP7/C is designed for routine determinations of sodium (Na), Potassium (K) and Lithium (Li) supplied with 3 filters.

- Electronic flame failure detection
- Fine and coarse sensitivity controls
- Operates on Propane, Butane, Natural gas or L.P.G. supplies with suitable regulator
- Recorder output
- Economically priced
- Easily maintained

Technical Specifications	PFP7	PFP7/C	
Ranges:	0-199.9ppm	120-160mmol/l Na (linearised) 0-10.0mmol/l K	
Limits of detection:	Na ≤0.2ppm	Na ≤ 0.2ppm	
	K ≤0.2ppm	K ≤ 0.2ppm	
	Li ≤0.25ppm	Li ≤ 0.25ppm	
	Ca ≤15ppm		
	Ba ≤30ppm		
Common specifications			
Reproducibility:	1% Coefficient of variation for 20 consecutive samples using 10ppm Na set to read 50		
Linearity:	Better than 2% when concentration of 3ppm Na and K and 5ppm Li are set to read 100		
Specificity:	Interference from Na, K and Li equal in concentration to test element will be < 0.5%		
Recorder o/p:	Nominal 1.00V for a re	eading of 100.0	
Services:			
Electrical:	90-125V or 190-250V	′ @ 50/60Hz	
Air:	Moisture and oil free 6 litre/minute ~ 1kg/cm² (14psi)		
Fuel:	Propane, Butane, Natu	ral Gas or L.P.G.	
Size:	420 x 360 x 300mm		
Weight:	8kg		

This equipment will only operate with the correct type of air compressor and gas regulator, as specified.

Cat. No. Description	Cat. No. Description
Cat. No. Description  FP/25102 Flame photometer model PFP7 FP/25104 Flame photometer model PFP7/C  Optional accessories FP/25006 Air compressor (220V 50Hz) FP/25008 Air compressor (110V 60Hz) FP/25018 Butane regulator FP/25020 Propane regulator FP/25022 Natural gas regulator FP/25024 Water separator FP/25026 Water separator large FP/25028 Dust cover FP/25030 Cleaning solution (1 litre) FP/25031 Minor spares kit FP/25034 Major spares kit	Cat. No. Description           Reagents – Industrial standards           FP/21014         1000ppm K (500ml)           FP/21016         1000ppm Li (500ml)           FP/21018         3000ppm Ba (500ml)           FP/21020         1000ppm Na (500ml)           FP/21022         1000ppm Ca (500ml)           Reagents – Clinical standards         FP/21002           FP/21004         1.00mmol/l Li (500ml)           FP/21004         100mmol/l Na/K (500ml)           FP/21008         120mmol/l Na 2mmol/l K (500ml)           FP/21010         160mmol/l Na 8mmol/l K (500ml)           FP/21012         160mmol/l Na 80mmol/l K (500ml)



FP/35002

#### Model 360 Single Channel Budget Flame Photometer



Five element (Na, K, Li, Ca, Ba) Single channel Flame Photometer with auto flame optimisation technology. Supplied with built in gas regulator for specified supply.

#### Model 410 Single Channel Flame Photometer

Directly measures Alkali and Alkaline Earth metals Sodium (Na), Potassium (K) and Calcium (Ca) by means of a low temperature flame using propane, butane or Natural gas.

Additional filters for Caesium (Cs), Rubidium (Rb), Strontium (Sr) and Lithium (Li) are available.

Available in three formats:

Classic – Fitted with Na, K and Ca filters

Industrial – Fitted with Na, K and Ca filters and a digital interface/linearisation module Clinical – Fitted with Na, K and Li filters and a digital interface/linearisation module

The Classic model may be upgraded by the addition of the digital interface (Fitted as standard to Industrial and Clinical models) allowing connection to a serial printer or computer for result collection.

#### 410 BlueNotes

An optional software package that can also improve throughput, enhance precision and extend the utility in all of the Model 410 Flame Photometers.

#### Model 420 Dual Channel Flame Photometer

Developed to improve the productivity and analytical performance of the laboratory when measuring Sodium and Potassium. In dual mode both Sodium and Potassium results are obtained simultaneously halving the measuring time. Supplied with BlueNotes 420 software package.

#### Model 425 Dual Channel Flame Photometer

Based on Model 420 with an additional detector and filter for Calcium determination. It also offers the 301 mode feature which allows connection to a number of the more popular continuous flow systems. Supplied with BlueNotes 420 software package.

#### 420 BlueNotes

This software not only enables the instruments to perform sample analyses outside the linear response range but also facilitates measurement of all elements simultaneously.

\*\*Both the Model 420 and the Model 425 Flame Photometers have an RS232 output for printer or computer connection and are compatible with the Model 860 Autosampler for unattended sample analysis.

This equipment will only operate with the correct type of air compressor and gas regulator, as specified.

• The Model 851 compressor, is purpose built for use with these flame photometers. A primary regulator at the gas source is required, (select from Butane, Propane, a mixture of the two, or Natural gas). The secondary regulator is built-in to the Flame Photometer.

Propane, Butane or LPG from a cylinder source are the preferred fuels. Natural gas may only be used with the appropriate Model 360 or with the Model 410 if a Natural Gas Regulator kit, FP/35022, is purchased and fitted.

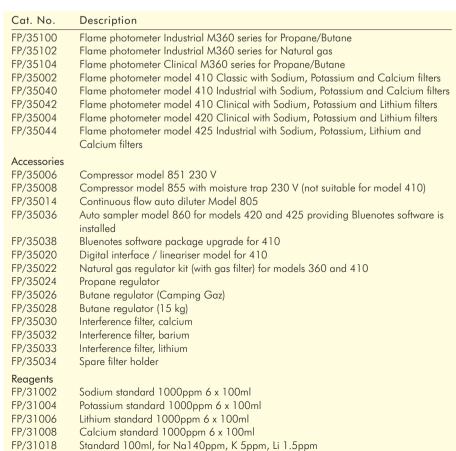
#### Model 805 Diluter

Compatible with all models, designed for the 200:1 ratio used for diluting Na and K solutions from clinical samples, it can also be used for a 50:1 ratio for clinical Lithium samples.

#### Model 860 Autosampler

With 40 sample capacity; separate positions for blank and calibrant; designed for use with all Sherwood Flame Photometers\* (except the Model 360). Works with 410 and 420 software packages, with or without the 805 diluter.

\* The Model 410 Flame Photometers require a Digital Interface and 410 Software to run with the M860 Autosampler.





FP/35004



FP/35008



FP/35014



FP/35036



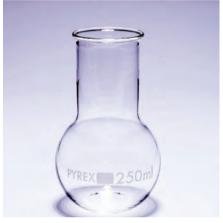
FB/120

# Flasks

#### Flasks, boiling, flat bottom, narrow neck



Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FB/12056	1070/12D	250	30	10
FB/12066	1070/18D	500	30	10
FB/12076	1070/24D	1000	36	10
FB/12080	1070/28D	2000	45	10
FB/12086	1070/32D	4000	45	1
FB/12089	1070/36D	6000	57	1
FB/12090	1070/38D	10000	57	1

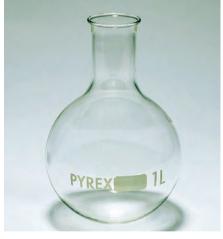


FB/122

#### Flasks, boiling, flat bottom, wide neck

#### **PYREX**®

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FB/12256	1080/08D	250	47	10
FB/12266	1080/10D	500	47	10
FB/12276	1080/12D	1000	47	10

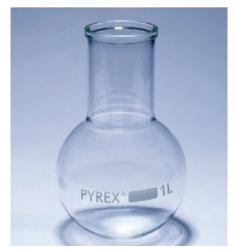


FB/123

## Flasks, boiling, round bottom, narrow neck

#### **PYREX**®

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FB/12346	1100/04M	100	18	10
FB/12356	1100/12D	250	30	10
FB/12366	1100/18D	500	30	10
FB/12376	1100/24D	1000	36	10
FB/12380	1100/28D	2000	45	10



FB/121

## Flasks, boiling, round bottom, wide neck

#### **PYREX**®

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FB/12156	1120/08D	250	46	10
FB/12166	1120/14D	500	46	10
FB/12180	1120/22D	2000	70	10

#### Flasks, conical, narrow neck (Erlenmeyer)

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FC/12040	1130/02M	50	18	10
FC/12046	1130/06D	100	18	10
FC/12050	1130/10D	150	18	10
FC/12056	1130/14D	250	30	10
FC/12058	1130/16D	300	34	10
FC/12066	1130/20D	500	30	10
FC/12076	1130/26D	1000	36	10
FC/12080	1130/30D	2000	45	10
FC/12084	1130/32D	3000	46	2
FC/12088	1130/36D	5000	46	1



FC/120

#### Flasks, conical, narrow neck, borosilicate (Erlenmeyer)

Cat. No.	Capacity,ml	Neck I.D.,mm	Pk Qty
FC/62034	25	22	10
FC/62040	50	22	10
FC/62046	100	22	10
FC/62056	250	34	10
FC/62066	500	34	10
FC/62076	1000	42	1



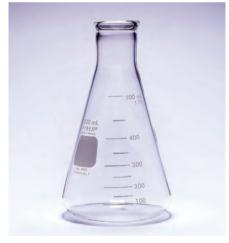
FC/62066

#### Flasks, conical, narrow neck, heavy duty

**PYREX**®

Designed for longer life and increased user safety. Pyrex heavy duty flasks have reinforced rims to reduce chipping and breaking.

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FC/12228	4980-10	10	10	12
FC/12234	4980-25	25	13	12
FC/12240	4980-50	50	14	12
FC/12248	4980-125	125	23	12
FC/12256	4980-250	250	27	12
FC/12266	4980-500	500	31	6
FC/12276	4980-1L	1000	37	6
FC/12280	4980-2L	2000	43	1
FC/12286	4980-4L	4000	43	1
FC/12289	4980-61	6000	43	1



FC/122

#### Flasks, conical, wide neck (Erlenmeyer)

#### **PYREX**®

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FC/12340	1140/02M	50	30	10
FC/12346	1140/04D	100	30	10
FC/12356	1140/08D	250	46	10
FC/12366	1140/10D	500	46	10
FC/12376	1140/14D	1000	46	10
FC/12380	1140/18D	2000	66	10



FC/123



FC/62166

#### Flasks, conical, wide neck, borosilicate (Erlenmeyer)

Cat. No.	Capacity,ml	Neck I.D.,mm	Pk Qty
FC/62140	50	34	10
FC/62146	100	34	10
FC/62156	250	50	10
FC/62166	500	50	10
FC/62176	1000	50	10
FC/62180	2000	72	6



FC/124

#### Flasks, conical, wide neck, heavy duty

**PYREX**®

Reinforced rims for extra strength and resistance to impact.

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FC/12448	5100-125	125	27	12
FC/12456	5100-250	250	33	12
FC/12466	5100-500	500	43	6
FC/12476	5100-1L	1000	48	6
FC/12480	5100-2L	2000	58	each



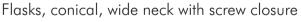
FC/126

#### Flasks, conical, screwcap

**PYREX**®

Ideal for storage of culture specimens and media. Phenolic screwcap with PTFE faced sealing disc. Flask and cap are autoclavable up to 121°C.

Cat. No.	Code	Capacity,ml	Cap size	Pk Qty
FC/12604	1137/13M	25	22	10
FC/12606	1137/02M	50	22	10
FC/12608	1137/03D	100	30	10
FC/12610	1137/06M	250	42	10
FC/12612	1137/08D	500	42	10
FC/12614	1137/10M	1000	42	each





Polypropylene, or crystal clear PMP with PP screw cap. NS stoppers can also be used (not included). Flask and cap can be autoclaved at 121°C.

Cat. No.	Code	Capacity,ml	Graduation intervals,ml	Neck size	Thread size
Polypropylen	Polypropylene, translucent, blue graduations				
FC/16280	FDE542	50	10	34/35	GL40
FC/16282	FDE544	100	20	34/35	GL40
FC/16284	FDE546	250	50	45/40	GL52
FC/16286	FDE548	500	100	45/40	GL52
FC/16288	FDE550	1000	200	45/40	GL52
PMP, crystal c	lear, red graduc	tions			
FC/16870	FDE442	50	10	34/35	GL40
FC/16872	FDE444	100	20	34/35	GL40
FC/16874	FDE446	250	50	45/40	GL52
FC/16876	FDE448	500	100	45/40	GL52
FC/16878	FDE450	1000	200	45/40	GL52



FC/162

PYREX®

Side arm set at  $75^\circ$  to vertical axis. For use with thermometers calibrated for 76mm immersion. For petroleum products to ASTM E133. Also complies with IP 123.

Cat. No.	Code	Capacity,ml	Pk Qty
FD/12104	1290/04M	125	5

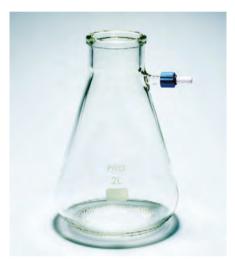


FD/121

#### Flasks, Filter (Buchner), heavy wall, screwthread connector **PYREX**®

Heavy wall flasks for vacuum filtration. Side arm features a PP screwthread connector for easy and safe fitting of 9mm bore vacuum tubing TU/76108: Complies with ISO 6556.

Cat. No.	Code	Capacity,ml	Neck I.D.,mm	Pk Qty
FF/12022	1170/02SC	100	24	10
FF/12024	1170/04SC	250	35	10
FF/12026	1170/06SC	500	35	10
FF/12028	1170/08SC	1000	45	5
FF/12030	1170/10SC	2000	60	5
FF/12032	1170/14SC	5000*	68	5
Accessories				
FF/16202	PP screwthread	connector	10	
*Supplementar	ry to ISO range			



FF/1202

#### Flask adaptors, sponge rubber

Designed to adapt any size funnel or crucible to any size filter flasks.

Cat. No.	Pk Qty	
FF/96302	5	



FF/96302

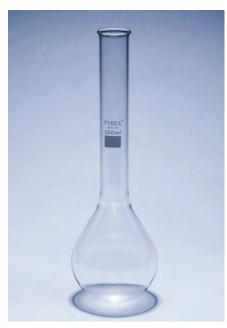
#### Buchner rings

Profiled natural compound rubber rings (60 shore) for use with Buchner funnels, flasks, glass crucibles and gooch crucibles. The wide flange and large surface contact ensures an excellent vacuum tight seal whilst the rings are easy to remove and offer excellent support to even the largest funnels.

Description	Pk Qty
Buchner Ring No 0 - Flask Neck 24 mm	Each
Buchner Ring No 1 - Flask Neck 35 mm	Each
Buchner Ring No 2 - Flask Neck 45 mm	Each
Buchner Ring No 3 - Flask Neck 60 mm	Each
Buchner Ring No 4 - Flask Neck 68 mm	Each
Set Of Four Buchner Rings (size 1, 2, 3, and 4)	Pk4
	Buchner Ring No 0 - Flask Neck 24 mm Buchner Ring No 1 - Flask Neck 35 mm Buchner Ring No 2 - Flask Neck 45 mm Buchner Ring No 3 - Flask Neck 60 mm Buchner Ring No 4 - Flask Neck 68 mm



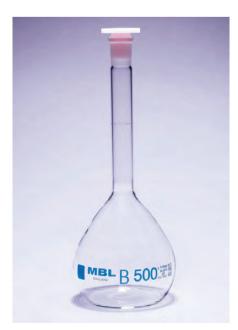
FB/9200



FK/120



FV/52066



FV/120

#### Flasks, Kjeldahl

Suitable for the determination of Nitrogen etc.

Cat. No.	Code	Capacity,ml	Pk Qty
FK/12046	1200/04M	100	10
FK/12066	1200/12D	500	10
FK/12074	1200/16M	800	10

**PYREX**®

#### Flasks, volumetric, Class B with stopper

Cat. No.	Capacity, ml
FV/52018	5
FV/52028	10
FV/52034	25
FV/52040	50
FV/52046	100
FV/52054	200
FV/52056	250
FV/52066	500
FV/52076	1000
FV/52080	2000
FV/52088	5000

#### Flasks, volumetric, Class B



Cat. No. Code Capacity,ml Stopper size Tolerance ±ml Pk Qty FV/12018 FRD022P 10/19 0.05 5 5 5 5 5 5 2 2 2 FV/12028 FRD024P 10 10/19 0.05 10/19 0.08 FV/12032 FRD025P 20 FV/12034 FRD026P 25 10/19 0.08 12/21 FV/12040 FRD028P 50 0.12 FV/12046 14/23 FRD030P 100 0.2 FV/12054 FRD032P 200 14/23 0.3 FV/12056 FRD034P 250 14/23 0.3 14/23 24/29 FV/12066 FRD036P 500 0.5 FV/12076 FRD038P 1000 0.8 FV/12080 FRD040P 29/32 1.2 2000 each FV/12088 FRD042P 5000 34/35 2.4 each

# Flasks, volumetric, Class A ISO1042, DIN12664

**MBL**<sup>®</sup>

Borosilicate glass with polyethylene stopper. Blue enamel inscriptions. Each flask is laser etched with an individual serial number, batch code and date of manufacture. Batch certificate available to download online.

Cat. No.	Code	Capacity,ml	Stopper size	Tolerance ±ml	Pk Qty
FV/12118	FRD164	5	10/19	0.02	5
FV/12128	FRD166	10	10/19	0.02	5
FV/12132	FRD167	20	10/19	0.04	5
FV/12134	FRD168	25	10/19	0.04	5
FV/12140	FRD170	50	12/21	0.06	5
FV/12146	FRD172	100	14/23	0.1	5
FV/12154	FRD174	200	14/23	0.15	5
FV/12156	FRD176	250	14/23	0.15	2
FV/12166	FRD178	500	19/26	0.25	2
FV/12176	FRD180	1000	24/29	0.4	2
FV/12180	FRD182	2000	29/32	0.6	each
FV/12188	FRD184	5000	34/35	1.2	each

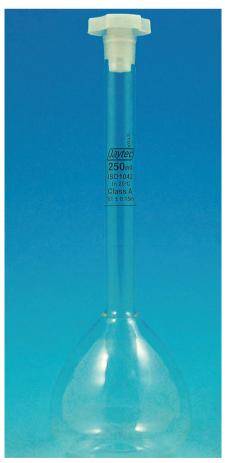


FV/12166

#### Flasks, Volumetric, Class A

Borosilicate glass with polypropylene stopper.

Cat. No.	Capacity,ml	Stopper size	Tolerance ±ml	Pk Qty
FV/52118	5	10/13	0.025	5
FV/52128	10	10/13	0.025	5
FV/52132	20	10/13	0.04	5
FV/52134	25	10/13	0.04	5
FV/52140	50	10/13	0.06	5
FV/52146	100	12/14	0.1	5
FV/52154	200	14/15	0.15	5
FV/52156	250	14/15	0.15	5
FV/52166	500	19/17	0.25	2
FV/52176	1000	24/20	0.4	2
FV/52180	2000	24/20	0.6	each
FV/52188	5000	34/35	1.2	each



FV/52156



Flasks, Volumetric, Class A, clear glass

(volac)

Clear Borosilicate glass with white markings and interchangeable polypropylene stopper. To BS1792 (Without certificate).

Cat. No.	Code	Capacity,ml	Pk Qty
FV/32018	RB258/A/5	5	5
FV/32028	RB258/B/5	10	5
FV/32032	RB258/D/5	20	5
FV/32034	RB258/E/5	25	5
FV/32040	RB258/F/5	50	5
FV/32046	RB258/G/5	100	5
FV/32054	RB258/H/5	200	5
FV/32056	RB258/I/5	250	5
FV/32066	RB258/J/2	500	2
FV/32076	RB258/K/2	1000	2
FV/32080	RB258/L/S	2000	each

FV/32066



FV/32156

#### Flasks, Volumetric, Class A, amber glass



Amber Borosilicate glass with white markings and interchangeable polypropylene stopper. To BS1792 (Without certificate).

Cat. No.	Code	Capacity,ml	Pk Qty
FV/32118	RB258/AM/A/5	5	5
FV/32128	RB258/AM/B/5	10	5
FV/32132	RB258/AM/D/5	20	5
FV/32134	RB258/AM/E/5	25	5
FV/32140	RB258/AM/F/5	50	5
FV/32146	RB258/AM/G/5	100	5
FV/32154	RB258/AM/H/2	200	2
FV/32156	RB258/AM/I/2	250	2
FV/32166	RB258/AM/J/2	500	2
FV/32176	RB258/AM/K/2	1000	2
FV/32180	RB258AM//L/S	2000	each



FV/32218

#### Flasks, volumetric, small volume, class A



Trapezoidal clear borosilicate glass with white markings and interchangeable polypropylene stopper.

Cat. No.	Code	Capacity,ml	Pk Qty
FV/32210	RB257/A/5	1	5
FV/32212	RB257/B/5	2	5
FV/32214	RB257/C/5	3	5
FV/32216	RB257/D/5	4	5
FV/32218	RB257/E/6	5	5

Trapezoidal Amber borosilicate glass with white markings and interchangeable polypropylene stopper.

Cat. No.	Code	Capacity,ml	Pk Qty
FV/32310	RB257/AM/A/5	1	5
FV/32312	RB257/AM/B/5	2	5
FV/32314	RB257/AM/C/5	3	5
FV/32316	RB257/AM/D/5	4	5
FV/32318	RB257/AM/E/6	5	5

#### Flasks, volumetric, Class A, with certificate

(volac)

Borosilicate glass with white markings and interchangeable polypropylene stopper. To  $\mathsf{BS1792}$ 

Cat. No.	Code	Capacity,ml	Pk Qty
FV/32418	RB258/WAC/A/5	5	5
FV/32428	RB258/WAC/B/5	10	5
FV/32434	RB258/WAC/E/5	25	5
FV/32440	RB258/WAC/F/5	50	5
FV/32446	RB258/WAC/G/5	100	5
FV/32454	RB258/WAC/H/2	200	2
FV/32456	RB258/WAC/I/2	250	2
FV/32466	RB258/WAC/J/2	500	2
FV/32476	RB258/WAC/K/2	1000	2
FV/32480	RB258/WAC/L/S	2000	each



FV/32434

#### Flasks, volumetric, Class B, plastic

All sizes with PE stopper. Exposure to temperatures above 60°C may affect accuracy.



Cat. No.	Code	Capacity,ml	Neck size
Polypropylene (Tr	ranslucent)		
FV/16234	FDF012N	25	10/19
FV/16240	FDF018N	50	14/23
FV/16246	FDF024N	100	14/23
FV/16256	FDF030N	250	19/26
FV/16266	FDF036N	500	19/26
PMP (TPX) (Transp	parent)		
FV/16834	FDF112N	25	10/19
FV/16840	FDF118N	50	14/23
FV/16846	FDF124N	100	14/23
FV/16856	FDF130N	250	19/26
FV/16866	FDF136N	500	19/26



FVI162

# Flow indicators

#### Flow indicator, paddle wheel

Made from Styrene-acrylonitrate for liquid flows down to 5ml/sec. Wheel rotation speed is proportional to flow rate. Maximum recommended flow rate up to 95ml/sec. Max 2 bar pressure. Not to be used with corrosive fluids or over  $85^{\circ}C$ . Can be used with gases. Connector o.d. 6-11mm

Cat. No.	Code	Dim.(LxWxH) mm
FI/46002	539	90 x 15 x 40



FI/46002

# Foil, Aluminium

#### Aluminium foil

Cat. No.	Description
AF/94006	Large roll, 450mm x 75m



AF/94006

# **PYREX**®









# Freeze dryers

#### Freeze dryers, Lablyo range

The Lablyo range has been designed for a wide range of freeze drying applications in the laboratory.

#### Mini Lablyo

This is the smallest bench top freeze dryer in this range. Having an ice capacity of 3kg, it also represents excellent value. Taking up minimal bench space, the Mini Lablyo is ideal for all common freeze drying applications and is also useful as a cold trap for single or multiple units. The temperature is shown on a digital display and the top flange accommodates all accessories from the range.

#### Lablyo

This is a simple to use, bench top freeze drier with new touch screen controls. Data logging and display of the temperature and vacuum is shown on a real time graph. Data is downloadable via a USB port. The 20cm diameter x 35cm deep ice condenser has a 5kg ice capacity, (3kg ice collection in 24 hours). The Lablyo incorporates an electric defrost facility and the top flange accommodates all accessories from the range

#### Lablyo Plus

This unique bench top freeze dryer has all the features of the Lablyo with touch screen controls and also incorporates a built-in temperature controllable work chamber. Four floating temperature probes allow the load temperatures to be monitored. The Lablyo Plus has a 5kg ice capacity, (3kg ice collection per 24 hours).

#### LabLyo Ultra

This floor standing freeze drier has new touch screen controls. Data logging and display of the temperature and vacuum is shown on real time graph. Data is downloadable via a USB port. The 27cm diameter x 50cm deep ice condenser chamber has a 10kg ice capacity (6kg ice collection in 24 hours). The condenser temperature is  $-55^{\circ}$ C and a mobile temperature probe for product sampling is included.

Model	Mini Lablyo	Lablyo	Lablyo Plus	Lablyo Ultra
Code	FIT/LYO/46/1	FIT/LYO/49/1	FIT/LYO/53/1	FIT/LYO/56/
Compressor	0.5HP	0.66HP	0.66HP	0.5HP
Ice Capacity	3kg	5kg	5kg	10kg
Heat Extraction Rate				
(-40°C)	80W	170W	220W	350W
Minimum Temp. (°C)	-55	-55	-55	-55
Chamber Dimensions				
Dia.xDepth (mm)	200x130	200x250	200x220	270x500
Overall Dimensions				
HxWxD (mm)	420x565x560	500x585x630	500x900x630	930x465x62

Cat. No.	Code	Description
FD/85002	FIT/LYO/46/1	Mini Lablyo freeze dryer
FD/85004	FIT/LYO/49/1	Lablyo freeze dryer
FD/85006	FIT/LYO/53/1	Lablyo Plus freeze dryer
FD/85008	FIT/LYO/56/1	Lablyo Ultra freeze dryer
Accessories		
FD/85010	FIT/LYO/01/0	Acrylic drying chamber, 300 x 400mm (od x h)
FD/85012	FIT/LYO/03/0	Anodized aluminium 6-shelf unit, 250mm dia. For acrylic chamber
FD/85014	FIT/LYO/6/0	8-port flask manifold lid
FD/85048	FIT/LYO/43/0	8x3/4 inch quick seal valves (sold singularly, 8 required to make a set and the unit operational)
FD/85016	FIT/LYO/09/0	Cold trap lid with hose for solvent recovery or vacuum pump protection
FD/85018	FIT/LYO/12/0	Drying chamber plain lid, 310mm dia x 20mm thickness
FD/85026	FIT/LYO/13/0	8-port column manifold
FD/85028	FIT/LYO/16/0	16-port column manifold
FD/85030	FIT/LYO/19/0	6 temperature-controlled shelves with controller
FD/85032	FIT/LYO/22/0	Stoppering shelf arrangement
FD/85034	FIT/LYO/25/0	48-port ampoule manifold and Acrylic lid with fitting and clamp
FD/85042	FIT/LYO/37/0	1 m vacuum hose and clamp to fit Lyotrap, plus KF25 hose for
		vacuum pump
FD/85044	FIT/LYO/40/0	L-section rubber gaskets for drying chamber, (Pack of 2)
FD/85046	FIT/LYO/59/0	Vacuum pump with oil mist filter



FD/85002



FD/85006



FD/85026



FC/80002



FC/80006

#### Fume cupboards

#### Fume cupboards, ductless

A range of particulate containment and filtration cabinets, offering total practicality and suitability for a variety of applications. With large capacity deep fill carbon filters fitted; the cabinets can be used for a wide range of chemical containment applications such as solvent, ammonia, sulphur, acid, ether fumes and many more. When HEPA (High Efficiency Particulate Air) or ULPA (Ultra Low Particulate Air) filters are fitted, particulates down to  $0.12\mu m$  in size can be contained making the cabinets ideal for use with balances, asbestos or most other particulate applications.

All cabinets can be fitted with carbon and /or particulate filters and offer unparalleled green credentials. With power ratings of just 80 Watts and noise levels at 52 dB(A), it makes them some of the most economical and quiet cabinets available. Supplied in 3 widths 550mm, 650mm and 900mm, and high working apertures, makes them extremely easy and comfortable to use and work with. There is easy access to the working area during normal operation, in addition, the hinged front panel can be fully opened to allow total access for installation of apparatus or equipment. Every model has an animated colour LCD display which shows that the airflow is working within safe and calibrated parameters. If the airflow drops, the display changes and an audible alarm will sound to alert the user to any maintenance requirements. For critical chemical applications, an optional carbon filter saturation alarm can be factory fitted to indicate to the operator when the filter needs replacing. Other options such as a stand, services and a removable deep lipped spillage tray are available and listed separately.

The cabinets have been manufactured, designed and tested to ensure compliance with BS7989:2001 from epoxy powder coated Zintec mild steel to give years of uninterrupted service. For extremely aggressive applications such as working with acids, cabinets wholly manufactured from chemically resistant polypropylene are available, prices quoted on request. These cabinets have the same functionality, features and performance as the steel versions, just with added chemical compatibility.

- Choice of three standard sizes 550mm, 650mm & 900mm wide
- Large capacity Carbon filters
- Low energy fan, 80W power consumption
- Easy change pre-filters for gross particulate
- Animated colour LCD display
- Low airflow alarm with audible and visual warnings
- Optional filter saturation alarm
- Internal lighting for maximum illumination of the working area
- Double side glazing for natural light and comfortable working
- · Aerofoil for smooth airflow into cabinet
- Optional removable deep lipped spillage tray
- Fixed large sash opening to ensure optimal containment
- Cable entry port
- · Hinged front for occasional access to the working area
- Custom versions available

# Carbon Filter Table

Туре	Purpose
AC	General organic compounds (i.e. elemental iodine, solvents odours etc)
ACID	Acidic compounds and general organics
ACR	Alkali compounds and general organics
AMM	Ammonia and Amine containing compounds and general organics
ETHER	Ether compounds and general organics
FORM	Aldehydes and general organics
SUL	Sulphur compounds and general organics
MCH*	Special blend of up to 4 of the above Carbon types
SCHOOLS	Tri-layered filter for schools and general organics
HEPA**	99.997% effective @ 0.3 $\mu$ m for particulate containment

- \* MCH filters contain a mix of types (not HEPA) which must be specified (Max: 4 types)
- \*\* HEPA filters are also available as an outlet filter in conjunction with a main Carbon or HEPA filteradds 70mm to overall height.

Technical Specifications	Circulaire 550	Circulaire 650	Circulaire 900
External dimensions (WxDxH)	550x600x1121mm	650x600x1121mm	900x600x1121mm
Internal dimensions (WxDxH)	535x595x758mm	635x595x758mm	885x595x758mm
Working aperture (WxH)	490x300mm	590x300mm	750x250mm
Face velocity	>0.5m/sec		
Airflow	290m³/hr	340m³/hr	360m³/hr
Filter weight	12Kg	14Kg	18Kg
Pre-Filter		Filtrate	
Internal lighting	18 \	Watt Fluorescent	
Fan	Centrifugal,	brushless and sparkless	
Noise level		<52db(A)	
Electrical supply	2	230V-80Watts	
Construction	Head: Epoxy p	owder coated Zintec Ste	eel*
	Base: Epoxy powo	der coated Zintec Steel fi	rame*
	with 6mm clear	Acrylic front and side po	inels
	*Available manufactu	red from white chemical	ly resistant
	Polypro	pylene as an option	

<sup>\*\*</sup>A main filter must be ordered to make these units operational.

Cat. No.	Model	Description
FC/80002	C550	Fume cupboard, ductless, 550mm wide, supplied without filters
FC/80004	C650	Fume cupboard, ductless, 650mm wide, supplied without filters
FC/80006	C900	Fume cupboard, ductless, 900mm wide, supplied without filters

#### Main/pre-filters and options:

Carbon Filters				
Туре	Purpose	Circulaire C550	Circulaire C650	Circulaire C900
AC	Solvents	FC/80050	FC/80070	FC/80090
ACID	Mineral acids	FC/80052	FC/80072	FC/80092
ACR	Alkali	FC/80054	FC/80074	FC/80094
AMM	Ammonia	FC/80056	FC/80076	FC/80096
ETHER	Diethyl Ether	FC/80058	FC/80078	FC/80098
FORM	Aldehydes	FC/80060	FC/80080	FC/80100
SUL	Sulphurs	FC/80062	FC/80082	FC/80102
MCH*	Custom	FC/80064	FC/80084	FC/80104
SCHOOLS	Educational	FC/80066	FC/80086	FC/80106
HEPA**	Powder/Dust	FC/80068	FC/80088	FC/80108
Replacement pre-filters, pack				
of 10	Pre-filter	FC/80120	FC/80122	FC/80124

#### Additional optional features:

Model	Circulaire C550	Circulaire C650	Circulaire C900
Stainless steel spillage tray	FC/80130	FC/80140	FC/80150
GRP Spillage tray	FC/80132	FC/80142	FC/80152
Polypropylene spillage tray	FC/80134	FC/80144	FC/80154
Base stand (Spillage tray must			
also be purchased)	FC/80136	FC/80146	FC/80156
Water services (incorporated			
into cabinet)	FC/80160	FC/80160	FC/80160
Gas services (incorporated			
into cabinet)	FC/80162	FC/80162	FC/80162
Double electrical socket (Mounted			
on side or base stand	FC/80164	FC/80164	FC/80164
Options available with base stand	:		
Remote operated water services			
(Drip cup moulded into			
work surface)	FC/80170	FC/80170	FC/80170
Remote operated Gas services	FC/80172	FC/80172	FC/80172
·			

Please note, some features have to be factory fitted and cannot be fitted later



FC/80004



FF/121

#### **Funnels**

#### Funnels, filter, short stem

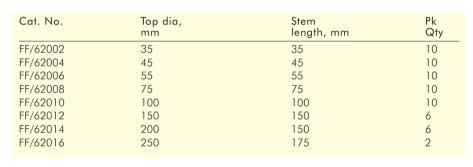
**PYREX**®

With 60° bowl angle for precise fitting of filter paper. (All dimensions mm).

Cat. No.	Code	Top dia, mm	Stem dia, mm	Stem length, mm	Overall ht, mm	Pk Qty
FF/12102	*2140/01M	35	8	35	65	10
FF/12104	2140/02M	45	8	45	84	10
FF/12106	2140/03M	70	8	55	103	10
FF/12108	2140/06M	80	8	80	135	10
FF/12110	2140/10M	105	10	100	175	10
FF/12112	2140/11M	125	12	125	220	1
FF/12114	2140/12M	150	16	150	270	1
FF/12116	2140/14M	200	24	175	345	1
* Suitable fo	* Suitable for semi micro techniques.					

#### Funnels, filter, borosilicate glass

With 60° bowl angle for precise fitting of filter paper.



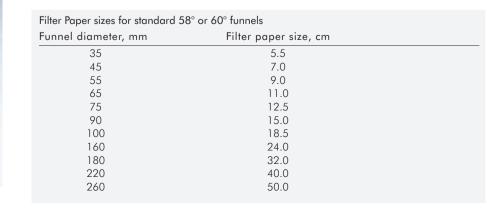


#### Funnels, filter, long stem

**PYREX**®

Similar to Pyrex 2140 series but with stem approximately 150mm long and 8mm OD.

Cat. No.	Code	Top dia, mm	Overall ht, mm	Pk Qty
FF/12206	2145/03M	70	205	10
FF/12208	2145/06M	80	215	10
FF/12210	2145/10M	105	237	10





FF/122

#### Funnels, filter, ribbed, long stem

**PYREX®** 

With interior "ribs" to increase the filtration rate. Stem approximately 150mm long and  $8 \text{mm} \; \text{OD}$ 

Cat. No.	Code	Dia.,mm	Pk Qty
FF/12306	2150/03M	65	10
FF/12308	2150/06M	80	10
FF/12310	2150/10M	110	10



FF/123

#### Funnel, powder, borosilicate glass

**PYREX**®

With short wide stem for smooth flow.

Cat. No.	Code	Top dia., mm	Stem OD x length, mm	Pk Qty
FF/12408	2130/02M	80	18 x 25	10



FF/12408

#### Funnels, general purpose, conical, HDPE

Tough, robust, general purpose funnels suitable for a wide range of liquids. Upstand on rim to reduce possible overflow. Ribbed on outside to eliminate back pressure.

Cat. No.	Top dia., mm	Pk Qty	
FF/46102	80	5	
FF/46104	100	5	
FF/46106	120	5	
FF/46108	140	5	
FF/46110	180	5	
FF/46112	260	5	
FF/46114	420	5	



FF/461

#### Funnels, filter, PP

Body of funnel is exact  $60^{\circ}$  angle; with internal and external ribs.

Cat. No.	Code	Dia., mm	Stem, mm	Pk Qty
FF/46202	145	25	38	20
FF/46204	146	35	38	20
FF/46206	147	45	45	20
FF/46208	148	65	64	20
FF/46210	150	80	69	10
FF/46212	152	100	84	10
FF/46214	153	120	86	10
FF/46216	155	150	114	5
FF/46218	156	180	142	5



FF/4620



FF/4622

#### Funnels, long stem, PP

The  $60^{\circ}$  angled sides are provided with ribs for fast filtration. Stem Dia. 8mm.

Cat. No.	Code	Dia., mm	Stem, mm	Pk Qty
FF/46222	162	65	150	5
FF/46224	164	78.5	143	5
FF/46226	165	103.5	145	5



FF/162

#### Funnels, powder, PP

Lightweight with parallel stem to minimise "bridging" of powder. The two largest sizes have vertical sided tops.

Cat. No.	Code	Dia., mm	Stem, OD, mm	Pk Qty
FF/16226	FWC204	80	22	5
FF/16228	FWC206	100	26	5
FF/16230	FWC208	120	30	5
FF/16232	FWC210	150	36	5
FF/16234	FWC212	290	35	each

Azlon



FB/680

#### Funnels, Buchner, porcelain

Sold individually. All dimensions in mm.

Cat. No.	Paper dia, mm	Dia, mm	Dia. of holes	Funnel depth, mm	Stem length, mm
FB/68002	45	48	1	24	43
FB/68004	55	62	1	30	64
FB/68006	70	77	1	35	64
FB/68008	90	97	1.5	40	71
FB/68010	110	116	1.5	49	83
FB/68012	125	130	2	52	85
FB/68014	150	156	2	59	96
FB/68016	185	192	2	74	117
FB/68018	240	248	2	90	117
FB/68020	320	334	2	120	133



FB/462

#### Funnels, Buchner, PP

Robust, lightweight and resistant to corrosion and heat (max 120°C). Two piece construction. Top and bottom can be separated for easy and total cleaning. Autoclavable. Excellent chemical resistance. All dimensions in mm.

Cat. No.	Code	Filter dia, mm	Diaphragm hole dia, mm	Vol, ml
FB/46202	437	42.5	1.2	40
FB/46204	438	55	1.1	70
FB/46206	439	70	2	180
FB/46208	441	90	2.5	390
FB/46210	442	110	2.5	810
FB/46212	443	150	2.75	2100
FB/46214	445	240	3	6000

# Funnels, dropping, open top, cylindrical, glass stopcock

Cat. No.	Capacity, ml
FD/52002	25
FD/52003	50
FD/52004	100



FD/52003

# Funnels, dropping, stoppered, cylindrical, glass stopcock

Cat. No.	Capacity, ml
Ungraduated	
FD/12202	50
FD/12204	100
FD/12206	250
FD/12208	500
FD/12210	1000
, ,	



FD/12210

#### Funnels, dropping, stoppered, cylindrical, PTFE stopcock, ungraduated

Cat. No.	Capacity, ml
FD/12302	50
FD/12304	100
FD/12306	250
FD/12308	500
FD/12310	1000



FD/12314



FD/12224



FD/52204



FS/12020



FS/46802

#### Funnels, dropping, glass stopper, graduated

- Complies with ISO 4800 type 4
- Manufactured from Pyrex borosilicate glass
- With double graduated scale showing approximate volume contained/dispensed
- Graduations in white enamel
- With interchangeable glass key
- Supplied with glass stopper

Cat. No.	Code	Description
FD/12222	3590/02	100ml, graduated from 10ml in 2ml increments. 19/26 Stopper
FD/12224	3590/04	250ml, graduated from 25ml in 5ml increments. 24/29 Stopper
FD/12226	3590/06	500ml, graduated from 50ml in 10ml increments. 24/29 Stopper
FD/12228	3590/08	1000ml, graduated from 100ml in 20ml increments. 29/32 Stopper

# Funnels, separating, borosilicate glass, stoppered, conical, glass stopcock

Cat. No.	Capacity, ml
FD/52202	50
FD/52204	100
FD/52206	250
FD/52208	500
FD/52210	1000

# Funnels, separating, borosilicate glass, stoppered, conical, PTFE stopcock

Cat. No.	Capacity, ml
FD/52302	50
FD/52304	100
FD/52306	250
FD/52308	500
FD/52310	1000

**PYREX®** 

# Separating funnel, pear-shaped, Borosilicate glass, stoppered with interchangeable PTFE stopcock and key. Complies with ISO 4800, type 2

Cat. No.	Code	Capacity	Stopcock bore	Stopper size
FS/12020	2180/02M	50ml	2.0mm	19/26
FS/12022	2180/04M	100ml	2.0mm	19/26
FS/12024	2180/06M	250ml	2.5mm	24/29
FS/12026	2180/08M	500ml	4.0mm	24/29
FS/12028	2180/10M	1000ml	4.0mm	29/32
FS/12030	2180/12M	2000ml	6.0mm	29/32
FS/12032	2180/14M	5000ml*	6.0mm	34/35

<sup>\* 5000</sup>ml size is supplementary to the ISO range

#### Funnels, separating, graduated, PMP

Crystal clear funnel with permanent graduations moulded into body. Needle control for precise control of flow (important for end point). No wetting. Top unscrews and valve can be detached for thorough cleaning. Autoclavable. Excellent chemical resistance. Complete with stopper. Capacity 500 ml. Graduated in 2ml to 20ml, in 5ml to 50ml and in 25ml to 500ml.

Cat. No.	Code	Stopper
FS/46802	978	29/32

# **Furnaces**

# Furnaces, ELF

The ELF range of furnaces is bench-mounted with a maximum temperature of  $1100^{\circ}$ C, with chamber capacities of 6, 14 or 23 litres.

The low thermal mass insulated heating chamber, with semi-embedded free radiating elements, located in two sidewalls, offers exceptional performance in achieving maximum temperature quickly and efficiently. A hard ceramic hearth is fitted as standard, which offers protection from spillage and is simply and easily replaced in this event.

The drop down door can be used as a shelf when loading/unloading. A ceramic chimney is fitted for ventilation of the chamber, but it is not suitable for fume extraction. If large volumes of fumes are to be generated by an ashing process, then a dedicated ashing furnace should be considered. Ashing furnaces are also available from Carbolite please see below.

Technical Specifications			
Volume	6 litres	14 litres	23 litres
Max. temperature	1100°C	1100°C	1100°C
Heat up time to 100°C			
below max temp,	35 minutes	40 minutes	29 minutes
with empty chamber			
Dimensions, WxDxH (mm)			
Internal:	180 x 210 x 165	220 x 300 x 210	255 x 400 x 235
External:	410 x 410 x 580	450 x 520 x 630	505 x 660 x 715
Power supply	220-240V 50/60 Hz	220-240V 50/60 Hz	220-240V 50Hz
	10 Amps	12.5 Amps	23 Amps
Max. power rating	2000 W	2600 W	5000 W
Weight	24 kg	31 kg	56kg

Cat. No.	Code	Description	
FU/35002	ELF1106-230SN	6 litre ELF furnace	
FU/35004	ELF1114-230SN	14 litre ELF furnace	
FU/35006	ELF1123-VOLTS	23 litre ELF furnace	



FU/35002

# Furnaces, AAF ashing models

## CARBOLITE

CARBOLITE

The AAF range of ashing furnaces is ideal for ashing materials such as food, plastics, coal and other hydrocarbons, in which large volumes of fumes are generated.

Smoke and fumes are removed by a constant airflow (of between 4-5 volume changes per minute) created by convection between the air inlet and the tall chimney, however it is not too high to disturb samples in crucibles, or chill them, as the incoming air is preheated.

The element and insulation design preheat the airflow to ensure consistent uniformity throughout the chamber and the elements are protected from chemical and mechanical damage by a high quality hardwearing lining.

The GSM model has a glazed silica lining and is able to withstand chemical attack and has less dusty surfaces.

Prices include the PID digital controller (type 301). Multi-segment programmers are available as an option.

ns			
3 litres	7 litres	18 litres	8 litres
1100°C	1100°C	1100°C	1100°C
80 mins	110 mins	60 mins	90 mins
Dimensions, WxDxH (mm)			
150x250x85	170x455x90	196x400x235	175x345x120
370x485x580	430x740x650	505x675x705	505x725x705
220-240V	220-240V	220-240V	220-240V
50Hz 10 Amps	50Hz 18 Amps	50Hz 32 Amps	50Hz 14 Amps
2000W	3900W	7000W	3000W
22 kg	63 kg	70 kg	59 kg
	3 litres 1100°C 80 mins m) 150x250x85 370x485x580 220-240V 50Hz 10 Amps 2000W	3 litres 7 litres 1100°C 1100°C 80 mins 110 mins m) 150x250x85 170x455x90 370x485x580 430x740x650 220-240V 220-240V 50Hz 10 Amps 50Hz 18 Amps 2000W 3900W	3 litres 7 litres 18 litres 1100°C 1100°C 1100°C 1100°C 60 mins 60 min

Cat. No.	Code	Description
FU/35102	AAF1103-230SN	3 litre AAF furnace
FU/35104	AAF1107-230SN	7 litre AAF furnace
FU/35106	AAF1118-VOLTS	18 litre AAF furnace
FU/35108	GSM1108-230SN	8 litre AAF furnace with silica lining



FU/35108



Optional 8 segment programmer



FU/35204

# Furnaces, CWF models



The CWF range of furnaces are bench-mounted with maximum temperatures of 1100°C, 1200°C or 1300°C with chamber capacities of 5, 13 or 23 litres, ideal for heat treatment applications. Heating modules are situated on each side of the chamber and house a free radiating element, which offers 50% faster performance in comparison with traditional embedded element designs. Hardwearing materials are integral to the door surround and hearth providing excellent resistance to everyday wear and tear, whilst secondary low thermal mass insulation ensures maximum thermal efficiency. Safe operation is ensured by a double skin construction providing natural air convection for low outer case temperatures. Power to the elements is isolated as soon as the door is opened. Prices include the PID digital controller (type 301). Multi-segment programmers are available as an option.

Technical Specifications			
Volume	5 litre	13 litre	23 litre
Dimensions, WxDxH (mm)			
Internal:	140 x 250 x 135	200 x 325 x 200	240 x 400 x 235
External:	375 x 485 x 585	435 x 610 x 655	505 x 675 x 705
Power supply	220-240V 50 Hz	220-240V 50 Hz	220-240V 50 Hz
	11Amps	14Amps	32Amps
Maximum power	2400W	3100W	7000W
Weight	36 kg	55 kg	74 kg
Heat up time to 100°C below	max temp, with emp	ty chamber	
1100°C model:	30 minutes	55 minutes	40 minutes
1200°C model:	35 minutes	65 minutes	65 minutes
1300°C model:	40 minutes	80 minutes	55 minutes

Cat. No.	Code	Description
FU/35202	CWF1105-230SN	5 litre 1100°C CWF furnace
FU/35204	CWF1113-230SN	13 litre 1100°C CWF furnace
FU/35206	CWF1123-VOLTS	23 litre 1100°C CWF furnace
FU/35208	CWF1205-230SN	5 litre 1200°C CWF furnace
FU/35210	CWF1213-230SN	13 litre 1200°C CWF furnace
FU/35212	CWF1223-VOLTS	23 litre 1200°C CWF furnace
FU/35214	CWF1305-230SN	5 litre 1300°C CWF furnace
FU/35216	CWF1313-230SN	13 litre 1300°C CWF furnace
FU/35218	CWF1323-VOLTS	23 litre 1300°C CWF furnace

Notes	

The RHF range of furnaces are capable of maximum temperatures of 1400°C, 1500°C or 1600°C with chamber capacities of 3, 8 or 15 litres, ideal for heat treatment applications, often associated with technical ceramics.

This range of higher temperature laboratory furnaces feature silicon carbide heating elements located on either side of the chamber and hard wearing refractory brick around the door and hearth, which provides rapid heating and good resistance to abrasion. Safe operation is ensured by a double skin construction providing natural air convection for low outer case temperatures. Power to the elements is isolated as soon as the door is opened.

Prices include the PID digital controller (type 301). Multi-segment programmers are available as an option.

Technical Specifications			
Volume	3 litre	8 litre	15 litre
Dimensions, WxDxH (mm)			
Internal:	120 x 200 x 120	170 x 270 x 170	220 x 305 x 220
External:	435 x 610 x 655	505 x 675 x 705	690 x 780 x 810
Maximum power	4500W	8000W	10000W
Weight	53 kg	88 kg	151 kg
Heat up time to 100°C below max temp, with empty chamber			
1400°C model:	33 minutes	22 minutes	35 minutes
1500°C model:	45 minutes	40 minutes	45 minutes
1600°C model:	55 minutes	60 minutes	58 minutes

Cat. No.	Code	Description
FU/35302	RHF1403-VOLTS	3 litre 1400°C RHF furnace
FU/35304	RHF1408-VOLTS	8 litre 1400°C RHF furnace
FU/35306	RHF1415-400TN	15 litre 1400°C RHF furnace
FU/35308	RHF1503-VOLTS	3 litre 1500°C RHF furnace
FU/35310	RHF1508-400TN	8 litre 1500°C RHF furnace
FU/35312	RHF1515-400TN	15 litre 1500°C RHF furnace
FU/35314	RHF1603-VOLTS	3 litre 1600°C RHF furnace
FU/35316	RHF1608-400TN	8 litre 1600°C RHF furnace
FU/35318	RHF1615-400TN	15 litre 1600°C RHF furnace



FU/35308

# Furnaces, tube

CARBOLITE

With a maximum operating temperature of 1200°C, tube furnaces can accept worktubes with a diameter from 19.5 – 150mm. The range includes seven heated lengths from 300mm to 1200mm in both horizontal and vertical versions, with either single-zone or threezone control. Heat symetrically surrounds a sample in a tube furnace and it therefore is heated very uniformly, which can be advantageous. An additional work tube can be fitted which, when fitted with special seals, can

be used to contain a non-oxidising gas atmosphere, such as an inert gas or vacuum. The horizontal versions are mounted on a base unit, whilst there are vertical models which are

The horizontal versions are mounted on a base unit, whilst there are vertical models which are supplied with a separate control box. Three-zone and split tube versions are also available.

Please enquire for more specific details of the tube furnace range.



CTF/1200



# Furniture, laboratory service fittings

# Distilled water fitting

Bench mounted distilled water fitting, white epoxy finish / grey, fixed serrated nozzle

Cat. No.	Description
FW/63602	Fixed Swan Neck "Dead Leg" Fitting

# Natural gas fittings

Bench mounted natural gas taps, spring loaded keys, white epoxy finish

Cat. No.	Description
FG/63702	Gas Tap Single Bench Cock
FG/63704	Gas Tap 2 Way Bench Cock At 90 Deg
FG/63706	Gas Tap 2 Way Bench Cock At 180 Deg
FG/63708	Gas Tap 4 Way Bench Cock At 90 Deg



FG/63802

# Needle valves

Bench mounted needle valves, white epoxy finish, serrated nozzle

Cat. No.	Description
FG/63802	Single Outlet Needle Valves*
FG/63804	Double Outlet 90° Oppo. Needle Valves*
FG/63806	Double Outlet 180° Oppo. Needle Valves*
FG/63808	4 Way Outlet Needle Valves*
*Specify Service	

Note: Valves for Oxygen, Acetylene and Nitrous Oxide must be ordered specifically for these services to ensure that lubricants, 'o' rings and copper content are compatible with the service being controlled. It is dangerous to interchange handwheels.



FW/63404

# Water fittings

Bench mounted water taps, white epoxy finish

Cat. No.	Description
FW/63402	Swan Neck Tap, Swivel Or Lock
FW/63404	Swan Neck Tap, Swivel Or Lock
FW/63406	Swan Neck Tap, Swivel Or Lock
FW/63408	Swan Neck Tap, Swivel Or Lock
FW/63410	Single Flow Water Mixer
FW/63412	Single Flow Water Mixer, Lever Action
FW/63414	Divided Flow Water Mixer
FW/63416	Divided Flow Water Mixer, Lever Action
FW/63604	Fixed Swan Neck "Recirculation" Fitting

For more details on the full range of water fittings, please contact the sales office.

# Gas cylinder accessories

# Gas cylinder single-stage pressure regulators

The Tech-master single-stage regulator leads the industry in performance and safety. 300 bar rated and designed to fully meet the requirements of BS EN ISO 2503. The Tech-master single-stage regulators provide reliable service and prolonged service life. A wide range of outlet pressures are available with 0-4 bar and 0-10 bar available for all high pressure gases and 1.3 bar for acetylene.

Cat. No.	Code	Description
GR/93030	RAN01004	Propane 0-4 bar, plugged regulator, BS341 No.4 Inlet, base cylinder entry 3/8BSP male outlet
GR/93032	RAN01015	Acetylene 0-1.3 bar, 2 gauge, BS341 No.4 Inlet, base cylinder entry 3/8BSP male outlet
GR/93034	RAN01018	CO <sup>2</sup> 0-40 l/min, 2 gauge, BS341 No.8 Inlet, side cylinder entry, 3/8BSP male outlet



GR/93030

# Gas cylinder multi-stage pressure regulators

The Tech-master multi-stage cylinder regulator provides the ultimate answer to industrial gas pressure requirements. Capable of working on cylinder pressures up to 300 bar, these regulators provide extra safety and precision control to the user. The two stage reduction of cylinder pressure within the multi-stage regulator combines extra safety with precise control over the complete pressure range. The regulators are produced under the Gas-Arc quality management system BS EN ISO 9001 and the design and construction have been tailored to meet in full the requirements of EN ISO 2503.

Cat. No.	Code	Description
GR/93036	RAN03159	Fuel Gas*, 0-10 bar, 2 gauge, BS341 No.4 Inlet, base entry, 3/8BSP male outlet
GR/93038	RAN03025	Oxygen 0-10 bar, 2 gauge, BS341 No.3 Inlet, base entry, 3/8BSP male outlet
GR/93040	RAN03026	Acetylene 0-1.3 bar, 2 gauge, BS341 No.4 Inlet, base entry, 3/8BSP male outlet
GR/93042	RAN03154	inert gas** 0-10 bar base entry, BS341 No.3 inlet, 3/8BSP male outlet

<sup>\*</sup>Fuel gases – Hydrogen, Methane, Ethane or Fuel Mixes



GR/93038

# Flashback arrestors

The model GA-D-97 flashback arrestor is designed to offer complete protection, for both operator and equipment, combined with high flow performance, compact design and suitability for connection in pipeline and manifold installations. Designed and manufactured to fully comply with EN 730-1, the GA-D-97 flashback arrestor provides complete protection for all oxygen and fuel gas equipment requirements.

Cat. No.	Code	Description
GR/93044	FBA07048	Fuel gas, maximum 5 bar, 3/8 BSP left-hand connections
GR/93046	FBA07051	Oxygen, maximum 10 bar, 3/8 BSP right-hand connections

# Cylinder spanner/key

Cat. No.	Code	Description
GR/93048	BAC09087	Cylinder combination spanner, 5/8 BSP, 3/8 BSP and cylinder key



GR/93044

<sup>\*</sup>Inert gases – Nitrogen, Air, Argon, Helium and Inert Mixes



GH/93002

# Gas cylinder supports, bench mounted

Designed to support gas cylinders up to 300 mm diameter. Heavy-duty alloy casting secured to benches up to 70 mm thick with two plated steel tommy screws. Two countersunk holes are provided to accept wood screws for permanent fixing, complete with fire resistant belt and buckle.

Cat. No.	Code	Description
GH/93002	3603	Bench mounted cylinder holder



GH/93004

# Gas cylinder supports, wall mounted

Comprised of a curved nylon coated steel bracket with a plated chain to hold cylinder firmly in position. For use with cylinders up to 230 mm diameter.

Cat. No.	Code	Description
GH/93004	9501	Wall mounted cylinder holder



GT/14002

# **Gas Cylinder Trolleys**

# Gas cylinder trolley, single

Designed to carry cylinders safely and to act as a stand to store the cylinder. The trolleys have 200mm steel centre wheels with rubber tyres. The larger trolley is designed to carry the larger LPG cylinders.

Cat. No.	Code	Height, mm	Width, mm	Depth, mm	Max Cylinder Diameter,mm
GT/14002	CYH100	1040	460	220	250
GT/14004	CYH101	1040	610	390	390



GT/14008

# Gas cylinder trolley, twin

Designed to move and store cylinders safely and with ease. The trolley has 355mm steel centre with rubber tyres.

Cat. No.	Code	Height, mm	Width, mm	Max Cylinder Diameter,mm
GT/14008	CYH201	1040	800	265/240

# Gel documentation systems

## Ultra-compact systems

These stand-alone inexpensive and simple to use systems include a digital camera with CCD sensor and latest image processor. The units have a large 8" TFT colour liquid crystal screen which can capture a variety of clear colour images from Agarose and other fluorescent gels, colorimetric gels, auto radiography film and blotting membranes.

Fitted with an Ethidium Bromide filter and safety switch to turn off the UV transilluminator when the door is opened. This also activates the internal light for convenient gel manipulation.

- Large 8" TFT viewing screen
- Lightweight compact hood, east access door and built-in inner light
- Integral micro-switch for UV transilluminator and internal light functions
- Includes flash card, reader and Ethidium Bromide filter
- Stand-alone, can be used without a computer

Cat. No.	Code	Description
GD/70020	CSL-MDOCBASIC1D	Gel documentation basic system with lift-off dark room
		hood and camera only

With 21 x 21cm UV transilluminator and TotalLab analysis software

Cat. No.	Code	Transilluminator wavelength
GD/70022	CSL-MDOCUV3121D	312nm
GD/70024	CSL-MDOCUV2541D	254nm
GD/70026	CSL-MDOCUV3651D	365nm
GD/70028	CSL-MDOCUV254/3121D	254/312nm
GD/70030	CSL-MDOCUV254/3651D	254/365nm
GD/70032	CSL-MDOCUV312/3651D	312/365nm

These units do not need a computer to make them operational



GD/70020



GD/70028

# High performance systems

These systems provide many of the features found in higher priced systems and present a simple but sophisticated imaging solution. Fitted with a high resolution 5 mega pixel CMOS sensor and slide-out UV transilluminator and optional blue Epi-illumination module and white table. This makes this system ideal for imaging most fluorescent and colorimetric gels.

The pre-focussed camera requires little or no manual adjustment, a front filter and spring loaded cover facilitates safe and convenient gel inspection.

Please note, these units require a PC or laptop with USB cable to make them operational

- Pre-focussed 5MP camera with auto exposure
- 6mm lens with f1.2 aperture and manual adjustment
- Interchangeable filter, 620nm ethidium bromide as standard
- 520, 560 and 580nm filter options for runSAFE, SYBR stain and other fluorescent applications
- Internal white LED to assist gel positioning and focusing
- Slide-out 312nm transilluminator
- Large 21 x 26cm imaging area

Cat. 1	No.	Code	Description
GD/7	0000	OMNIDOC	Gel documentation system with 620nm (EtBr) emission filter and 312nm UV transilluminator
GD/7	0002	OMNIDOCSAFE	Gel documentation system, plus blue LED Epi-illumination module and 520, 560, 580 filters
GD/7	0006	OMNIDOCPROSAFE	Gel documentation system, plus blue LED Epi-illumination module and 520, 560, 580 filters plus white light table

With 21 x 26cm UV transilluminator and TotalLab analysis software



GD/70000



GD/70002

GD/455

GD/45484

# Transilluminators — UVIvue

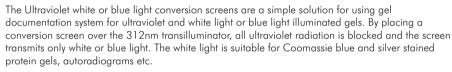


UVIvue transilluminators are available in two unit sizes, standard (STS, 470 x 330mm footprint) and mini (BTS, BXT, 340 x 260mm footprint). Models with two intensity options of 100% and 70%, to prevent damage to precious DNA samples are available (BXT). There is also a dual UV/white light model with side by side 20 x 20cm UV and white light filters, for use where bench space is limited. All models feature high quality construction with highly polished aluminium reflectors for maximum output, stainless steel filter surrounds, long life filters and an adjustable UV-blocking safety shield. Replacement tubes and filters are available for all models.

Cat. No.	Code	Unit	Filter	Tubes	Wavelength (nm)
GD/45472	BXTF20M	Mini	20x20cm	6x8W dual intensity	312nm
GD/45474	BXTF20S	Mini	20x20cm	6x8W dual intensity	254nm
GD/45476	BXTF20L	Mini	20x20cm	6x8W dual intensity	365nm
GD/45478	BXTF26M	Mini	21x26cm	6x8W dual intensity	312nm
GD/45480	BTS20MS	Mini	20x20cm	6x8W/5x8W	312/254nm
GD/45482	BTS20LM	Mini	20x20cm	6x8W/5x8W	365/312nm
GD/45484	BTS20LS	Mini	20x20cm	6x8W/5x8W	365/254nm

Cat. No.	Code	Description
GD/45490	2461 2606 1	Transilluminator BTS-26.LM 6x8W Dual UV 365/312nm
GD/45492	2431 2007 1	Transilluminator Non UV Blue light LED technology, recommended for use with DNA and RDNA gels

# UV to white or blue light



Cat. No.	Model	Description
GD/45502	FC-26.WL	UV/White light conversion screen, 21 x 26cm active area
GD/45504	FC-26.BL	UV/Blue light conversion screen, 21 x 26cm active area

# UV Crosslinkers - UVIlink range



Fully microprocessor controlled units specially designed to give the best possible results when binding nucleic acids to membranes. The correct ultraviolet dosage can be set using the membrane switch keypad in either energy units (Joules) or time (seconds). There are nine possible presets for energy exposure and nine presets for time exposure as well as manual user selection.

- Programmable microprocessor control
- UV energy monitored automatically
- Compact footprint with large interior
- Observation window UV blocking
  Membrane keypad operation
- Clear LED display
- Safety interlocked

		•		
Tech	nnıcal	Spe	ecitic	ations

UV source 5x8W, either in 254, 312 or 365nm Interchangeable wavelengths
Maximum time exposure: 999.9 minutes
Maximum energy exposure: 7wo measurement ranges: 0 - 99.99J (Joule)
Controls 9 presets or manual controls for both energy and/or time exposure.
Internal dimensions, mm 145 x 260 x 330 (hxwxd)
External dimensions, mm 305 x 350 x 360 (hxwxd)

Cat. No.	Code	Description
GD/45690	CL 5081.G	Crosslinker, short range (254nm)
GD/45692	CL 508M	Crosslinker, mid range (312nm)
GD/45694	CL 508.BL	Crosslinker, long range (365nm)

# Haemacytometers

# Haemacytometer sets, to BS748

Complete set with counting chamber, cover glasses and one each red and white cell pipettes with tubing and mouthpiece in fitted plastic case. The metallized (bright-line) versions reduce glare and provide greater contrast between lines and background.

Cat. No.	Description
Improved Neubauer ruling,	cell depth 0.1mm
HA/13002	Single cell, standard
HA/13004	Single cell, metallized
HA/13006	Double cell, standard
HA/13008	Double cell, metallized
Modied Fuchs-Rosenthal ru	0.
HA/13010	Double cell, metallized
Thoma ruling, cell depth 0.	mm
HA/13012	Double cell, metallized
HA/13014	Single cell, standard
Neubauer ruling	
HA/13016	Single cell, standard
HA/13018	Single cell, metallized
HA/13020	Double cell, standard
HA/13022	Double cell, metallized
Burker ruling	
HA/13024	Single cell, metallized
HA/13026	Double cell, metallized

## Specialist counting chambers

Cat. No.	Description
HA/13028	Helber Bacteria 1 cell Thoma
HA/13030	Bacteria evaluation chamber
HA/13032	Malassez
HA/13034	Nageotte 2 cell
HA/13036	Spare cover glasses for Nageotte cell
HA/13038	Fertility Semen counting
HA/13044	Sedgewick rafter counting chamber, plastic, includes 1 x cover glass
HA/13046	Sedgewick rafter counting chamber, glass, includes 1 x cover glass
HA/13052	Sedgewick Rafter counting chamber without grid, including cover glass
HA/13048	Cover glasses for Sedgewick rafter counting chamber, sold singly



HA/130

# Haemacytometers spares and accessories

# Cover glass

Cat. No.	Description	Pk Qty
HA/13122	For single or double chamber sets. 22 x 25mm	10

# Counting chambers

Cat. No.	Description	Pk Qty
Improved Neu	bauer ruling, 0.1mm cell depth	
HA/13124	Single cell, standard	1
HA/13126	Single cell, metallized	1
HA/13128	Double cell, standard	1
HA/13130	Double cell, metallized	1
Modified Fuch HA/13132	s-Rosenthal ruling, 0.2mm cell depth Double cell, metallized	1
Thoma ruling, HA/13134	0.1mm cell depth  Double cell, metallized	1
Parasitology ch HA/13136 HA/13146	namber, Improved McMaster worm egg 10mm square with 10 equal vertical columns Hawkesley version	1



HA/1312



HA/13138

# Pipettes, blood dilution

Cat. No.	Description	Pk Qty
HA/13138	Graduated 1ml red cell	1
HA/13140	Graduated 1ml white cell	1

Tubing and mouthpiece for the above pipettes

Cat. No.	Description	Pk Qty
HA/13142	Red cell	10
HA/13144	White cell	10



## Cat. No.

Cavity slides

Cat. No.	Description	Pk Qty
HA/13040	Microscope cavity slides, single cell	50
HA/13042	Microscope cavity slides, double cell	50

# Haemoglobinometers, Sahli

Cat. No.	Description
HA/13050	Sahli Haemoglobinometer, complete set

Notes	

# **Heating mantles**

# Heating mantles



The EM series ElectroMantle® is designed to be the work horse for your heating applications. Designed with simplicity, ease of use and exibility in mind, the EM series can perform many heating tasks in the busy laboratory. Built in energy regulator with indicator lamps for power and heater operation. All mantles have support rod clamps designed in as an integral feature. All mantles incorporate a grounded earth screen and double fuses for added safety. Larger capacity products have multiple heating element enabling a more even and accurate transfer of heat.

- Cool-to-the-touch design.
- Element temperature 450°C
- Built-in energy regulator
- Replaceable insulated heater cartridge
- Indicator lamps for power and heater operation
- A chemically resistant plastic outer casing
- A grounded earth screen and double fuses for added safety

For 220-240V 50/60Hz single phase supplies

Cat. No.	Code	Capacity, ml	Rating, W	
HM/25140	EM0050/CE	50	60	
HM/25146	EM0100/CE	100	60	
HM/25156	EM0250/CE	250	150	
HM/25166	EM0500/CE	500	200	
HM/25176	EM1000/CE	1000	300	
HM/25180	EM2000/CE	2000	500	
HM/25184	EM3000/CE	3000	500	
HM/25188	EM5000/CE	5000	800	



Suitable for Electrothermal EM models. For 220-240V 50/60Hz single phase supplies.

Cat. No.	Code	Mantle capacity, ml
HM/25240	RE0050	50
HM/25246	RE0100	100
HM/25256	RE0250	250
HM/25266	RE0500	500
HM/25276	RE1000	1000
HM/25280	RE2000	2000
HM/25284	RE3000	3000
HM/25288	RE5000	5000

# Heating mantles, stirrer EMA



The EMA stirring Electromantle shares all the standard features of the EM series but has the added functionality of magnetic stirring. The solid state stirring circuitry is built into the base of the main housing and provides powerful stirring over a range of capacities and viscosities.

- Bi-directional stirring speeds up to 520rpm
- Stir bar "auto-recapture" function
- Cool-to-the-touch design
- Element temperature 450°C
- Built-in energy regulator
- Indicator lamps for power and heater operation

## For 220-240V 50/60Hz single phase supplies.

Cat. No.	Code	Capacity, ml	Rating, W	
HM/25540	EMA0050/CE	50	80	
HM/25546	EMA0100/CE	100	80	
HM/25556	EMA0250/CE	250	170	
HM/25566	EMA0500/CE	500	220	
HM/25576	EMA1000/CE	1000	320	
HM/25580	EMA2000/CE	2000	520	

# Replacement heating elements

Cat. No.	For mantle, ml
HM/25640	50
HM/25646	100
HM/25656	250
HM/25666	500
HM/25676	1000
HM/25680	2000



HM/251



HM/255

HM/253

# Heating mantles, multimantles, EMV series

Electrothermal The EMV and EMX Electromantle® share the standard features of the

EM series but have the added functionality of a bottom opening which allows  $60^{\circ}$  funnels of various sizes to be heated.

- Cool-to-the-touch design.
- Element temperature 450°C
- Built-in energy regulator
- Replaceable insulated heater cartridge
- Indicator lamps for power and heater operation

# For 220-240V 50/60Hz single phase supplies

Cat. No.	Code	To fit flasks, ml	Dia., mm
HM/25302	EMV0050/CE	10-50	50
HM/25304	EMV0250/CE	100-250	75
HM/25306	EMV1000/CE	500-1000	100
HM/25308	EMV5000/CE	2000-5000	200

# Replacement heating elements

Cat. No.	Code	For mantle, ml	
HM/25312	REMV0050	HM/25302	
HM/25314	REMV0250	HM/25804	
HM/25316	REMV1000	HM/25806	
HM/25318	REMV5000	HM/25308	

HM/254

# Heating mantles, spillproof, EMX

For 220-240V 50/60Hz single phase supplies

Cat. No.	Code	Capacity, ml
HM/25402	EMX1000/SCE	50/1000
HM/25404	EMX5000/SCE	500/5000

Electrothermal

# Replacement heating elements

Cat. No.	Code	Capacity, ml
HM/25412	REMX1000	50/1000
HM/25414	REMX5000	500/5000



ST/94010

# Fixings

Cat. No.	Description
ST/94404	Support rod, aluminium 600x12.5mm
ST/44216	Bosshead alloy with offset jaws and nickel plated brass tommy screws
ST/94010	Clamp, aluminium alloy, 3 sprong, cork lined, 2 to 90mm

Notes	

# Histology

# Paraffin Section Mounting Bath



The Parafn Section Mounting Bath allows for comfortable and easy manipulation of sections. PTFE black interior and stove enamelled white aluminium exterior is virtually maintenance free and extremely easy to clean. Nominal temperature 70°C with 2 litres water achieved within 120 minutes. Bath capacity 2.25L.

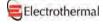
- Temperature control as opposed to arbitrary power control
- Improved temperature accuracy, stability  $\pm 0.5^{\circ}$ C
- Heat up rates 45°C typically achieved within 40 minutes with 2.25L of water
- Overheating prevention control

Cat. No.	Code	Description
HS/20016	MH8517	Paraffin section mounting bath 230V 50/60Hz
HS/20018	AZ9241	Lid for paraffin section mounting bath MH8517



HS/20016

# Paraffin Wax Dispenser



Electrothermal Paraffin Wax Dispenser with digital temperature control which provides accurate temperature control of the molten wax, and is coupled with an ultra-fast heating system for rapid melting of pelletised wax. A non-drip lever tap with three settings (off, on-demand pull dispense and continuous flow) delivers the wax on-demand. The inner tank has a filter screen (0.5 mm mesh) fitted to prevent coarse particles from blocking the delivery tap.

The digital control panel allows the set temperature to be controlled using the up and down arrows. The dispenser is able to rapidly melt large quantities of pelletised wax. When set at  $65^{\circ}$ C the instrument will take  $\sim$ 90 minutes to fully melt 5 kg of pelletised wax, with quantities of molten wax available for use in 30 minutes. The equipment is protected by a miniature circuit breaker and a temperature cut out which operates at  $120^{\circ}$ C if an over-temperature condition occurs.

- 7.5 litre capacity
- Ambient to 70°C operating temperature range
- Anti-microbial coating (Ag+) to inhibit growth of bacteria
- Safety features include over-temperature cut-out at 120°C
- Heated tap to prevent blockages
- Non-drip lever tap
- Maximises bench top space through slimline design

Cat. No.	Model	Description
HS/20020	MH8524	Paraffin wax dispenser, 7.5 litre capacity



HS/20020

# Slide Dry Bench



Aids the preparation of microscope slides at the specimen mounting stage. Accepts up to 50 slides.

- Slides can be arranged on the bench in a number of ways across drying bars, angled from bars, flat without bars
- Pilot lights indicate clear for "Power On" and amber for "Heater On"
- Built-in energy regulator controls temperature up to 100°C

Cat. No.	Model	Description
HS/20014	MH6616	Microscope slide drying bench 230V 50/60Hz



HS/20014

# Microtome, rotary retracting

The Bright 5040 series of rotary retracting, self-lubricating microtomes feature a heavy cast alloy base and cutting arm. The lateral motion is controlled and allows no slop or chatter. The design of the pawl and ratchet wheel and head-advance ensures absolute calibration for section thickness accuracy and repeatability. Suitable for a range of routine operations including hard specimens such as undecalcified bone and acrylic resins as well as routine wax sections.

- Specimen feed indicator
- Fitted knife guard and locking hand-wheel
- Cover and debris shields to protect mechanism
- Debris tray with holder for brushes and forceps
- \*Available with a number of accessories including a freezing stage, standard knife with holder and motor drive, please enquire.

Cat. No.	Code	Description
HS/90050	5040-03	Rotary retracting microtome with specimen orientation and fine screw adjustment. Supplied with pack of 10 guick release feather
		blades and holder, knife cleaning brush, set of Allen keys, low
		temperature oil, debris tray and operation manual
HS/90052	50241	Feather blades, spare, pack of 50





HS/90050



HM/4200

# Homogenizers

# Homogenizers, tissue grinders

Tissue grinders are used for the controlled reduction of particle size and homogenisation of a variety of substances, especially biological material. Size reduction / homogenisation are brought about by the shearing forces generated by the movement of a rotating plunger in a precision bore glass vessel. Determining factors include clearance between the plunger head and glass vessel, which on these Homogenisers is 0.15-0.25mm. The speed of the rotation and the viscosity of the medium also play a major role.

\*Volumes stated are working volumes with the plunger head in place.

### Glass vessels

Volume, ml	Working dia, mm	Height, mm
2	8	120
5	12	135
10	15	150
15	19	155
30	25	175
50	32	195
	2 5 10 15 30	2 8 5 12 10 15 15 19 30 25

Plunger heads manufactured from pure PTFE with a stainless steel, 6.5mm diameter shaft. Serrated plunger heads should be used on tough materials such as tumours. Excessive heat generated by friction should be avoided to prevent the possibility of binding.

## Plain PTFE plunger heads

Cat. No.	For use with glass vessel ml	Height mm
HM/46702	2	230
HM/46704	5	235
HM/46706	10	270
HM/46708	15	270
HM/46710	30	270
HM/46712	50	270

## Serrated PTFE plunger heads

Cat. No.	For use with glass vessel ml	Height mm
HM/46722	2	230
HM/46724	5	235
HM/46726	10	270
HM/46728	15	270
HM/46730	30	270
HM/46732	50	270



HM/467



# **Hotplates**

# Hotplate, general purpose



Stylish and economical general purpose hotplate designed with safety as well as performance in mind. The compact shape takes up less bench space and makes storage easier. The hotplate has microprocessor control and an innovative LED based true °C temperature setting system rather than simply a 1 to 10 arbitrary scale. The unit can also be used in conjunction with the SCT1 digital contact thermometer to accurately control sample temperature rather than plate temperature. The "Hot" warning light will ash whenever the plate temperature is above 50°C even when the hotplate is turned off and unplugged from the mains.

Model UC150 has a glass ceramic top which has excellent chemical resistance. The surface is easy to clean and allows high plate temperatures for faster heating.

Model US150 has a robust aluminium/silicon alloy top plate for excellent heat transmission.

The top plate has a thin ceramic coating for added chemical resistance.

Both models have an integral tting for a retort rod and the bottom is shaped to allow a retort base to slide underneath the unit if required so saving further bench space.

- Choice of top plate:
  - Robust coated aluminium
  - Chemically resistant ceramic
- Flashing "Hot" warning light, mains independent
- Accurate temperature control with LED setting scale
- Compact space saving design

US150
ramic Coated Aluminium/Silicon
0 150 x 150
150 x 150
700
325
8 x 122 172 x 248 x 120
2.2
Hz 230V, 50Hz
15

Cat. No. Code Description	
HP/14802 UC150 Hotplate, ceramic plate	
HP/14804 US150 Hotplate, coated aluminium plate	
SH/15644 SCT1 Digital contact thermometer	
ST/14002 SR1 Retort rod, 600mm x 12mm diamete	r



HP/14802



HP/14804

# Hotplate, infra red, ceramic top



Using a very efcient infra red heater of just 900W power this hotplate will boil 1 litre of water over 30% faster than a conventional ceramic hotplate of 1200W. Ideal for heating large volumes of liquid.

- Very efficient heating saving time and energy
- Chemically resistant ceramic top
- "Hot" warning light for user safety

Technical Specifications	
Plate dimensions, mm	300 x 300
Heated area, mm	140 diameter
Heater power, W	900
Overall dimensions, (w x d x h)	300 x 365 x 105
Net weight, kg	4
Electricity supply	230V, 50-60Hz, 900W

Cat. No.	Code	Description	
HP/15008	CR300	Hotplate, infrared	



HP/15008



HP/15202

HP/15206

# Hotplates, large, ceramic or metal top



Hotplate temperature controlled by easy to use dial. Fitted with a "Hot" warning light, which will flash whenever the plate temperature is above 50°C and will operate even when the hotplate is turned off and connected to the mains.

Models CB300 and CB500 have glass ceramic tops which have excellent chemical resistance and allow much higher plate temperature.

Model SB300 and SB500 have robust aluminium/silicon alloy top plates which give even plate temperature and will withstand the knocks of everyday use.

- Choice of top plate material
- Large square plate area ideal for heating one large vessel or several smaller ones

Technical Specificat	ions			
	CB300	CB500	SB300	SB500
Plate material	Glass ceramic	Glass ceramic	Al/Si alloy	Al/Si alloy
Plate dimensions, mm	300 x 300	300 x 500	300 x 300	300 x 500
Heated area, mm	200 x 200	250 x 450	300 x 300	300 x 500
Heater power, W	1200	2250	600	1500
Max. Plate temp.	450°C	375°C	300°C	300°C
Overall dimensions				
(wxdxh), mm	300x365x105	520x360x130	300x365x105	520x360x130
Net weight, kg	6	12	6	12
Electricity supply	230V, 50-60Hz	230V, 50-60Hz	230V, 50-60Hz	230V, 50-60Hz

Cat. No.	Model	Description
HP/15202	CB300	Hotplate, ceramic top, 300 x 300
HP/15204	CB500	Hotplate, ceramic top, 300 x 500
HP/15206	SB300	Hotplate, metal top, 300 x 300
HP/15208	SB500	Hotplate, metal top, 300 x 500



HP/15302

# Hotplates, large, digital



Metal top plate gives very even plate temperature and uniform heating conditions. Hotplates with microprocessor control for accurate monitoring of the plate temperature. Large capacity to accommodate multiple vessels or microscope slides.

- Digital setting and control of plate temperature
- Accurate temperature control by microprocessor
- Easy to use controls

## Technical Specifications

	SD300	SD500
Plate dimensions, mm	300 x 300	300 x 500
Heater power, W	600	1500
Display resolution, °C	1	1
Max. plate temp., °C	300	300
Overall dimensions, (w x d x h), mm	320 x 365 x 105	520 x 360 x 130
Net weight, kg	6	12
Electricity supply	230V, 50-60Hz	230V, 50-60Hz

Cat. No.	Model	Description
HP/15302	SD300	Hotplate, digital, 300 x 300mm
HP/15304	SD500	Hotplate, digital, 300 x 500mm

# **Hybridisation**

# Hybridisation Incubators, Hybridiser HB-1D & Hybrigene HB-3D



The Techne Hybridiser HB-1D and Hybrigene range of hybridisation ovens accept a variety of multiple tube types and maintain uniform hybridisation of the membrane with the minimum volume of liquid.

## Hybridiser HB-1D

- Adjustable rotation speed.
- High capacity; up to 24 mini tubes or 6 unique large tubes.
- Unique double glazed glass door; quiet and safe, providing durable protection.

# Hybrigene HB-3D

- Versatile quality at an affordable price offering excellent temperature accuracy and uniformity.
- The Hybrigene is Techne's compact, stackable alternative to the hybridiser HB-1D for when quality is important and throughput is not a priority.
- Stack up to 3 hybridisers, saving on valuable laboratory space.
- Holds up to 16 mini and 4 large glass tubes.

## Both models offer

- Tube formats which allow sizes to be mixed and matched within an instrument.
- The ability to accommodate tubes and other accessories at the same time.
- Low probe volume; volumes as low as 5ml can be used and recovered
- Unique "slot-in" tubes with tube rotation speed of 0 to 20 rpm.
- Tube holders which each hold up to 16 x 15ml or 8 x 50ml tubes
- Radioactive safe; designed to minimise risk to the user
- Adjustable speed rocking platform; (5-20/15-60opm).
- Static shelf for use when heating without movement is required
- Drip tray which is removable for easy cleaning
- Specially designed end-caps (lids) through which probe can be both added and recovered.
- Membrane separation facility.
- Accurate temperature; in tube temperature stabilities of better than  $\pm 0.1^{\circ}\text{C}$

Technical Specifications		
Model	Hybrigene	Hybridiser
Max glass tube capacity	16	24
Maximum Temperature	80°C	100°C
Minimum Temperature	10°C above ambient	10°C above ambient
Adjustable rotation speed	0, 5 to 20 rpm	0, 5 to 20 rpm
Adjustable rocking platform	5-20 or 15-60opm	5-20 or 15-60opm
Stability in chamber	<1.0°C	<1.0°C
Stability in tubes	<±0.1°C	<±0.1°C
Uniformity in chamber	<±1.5°C	<±1.5°C
Uniformity in tube	<±0.5°C	<±1.0°C
Temp. set point resolution	0.1°C	0.1°C
Absolute accuracy	<±0.3°C	<±0.3°C
Net weight	15kg	20kg
Size (mm) D x W x H, mm	355x383x432	285x385x555

Cat. No.	Code	Description
HY/65002	HB-1D	Hybridiser
HY/65004	HB- 3D	Hybrigene



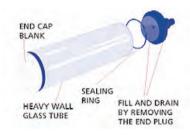
HY/65002



HY/65004



HY/65012



HY/65026



HY/65036



HY/65054

# Hybridisation tubes/carriers and accessories for Hybridiser HB-1D & Hybrigene HB-3D

## Adjustable speed rocking platform

Fits on the base of the unit still allowing hybridisation tubes to be placed above. Enables membranes to be processed using a wave motion. Available in fast or slow speeds, which range from 5 to 60 oscillations per minute.

## Static shelf

Up to 2 (Hybrigene) or 3 (Hybridiser HB-1D) static stainless steel mesh shelves can be placed into the tube locators allowing the unit to be used as a simple non-motion incubator. Each shelf holds up to 4 kg.

## Membrane separators

Strong, re-usable porous membranes for placing between blots. Ensure even hybridisation when processing multiple hybridisation membranes in one tube. Available as packs of 5 (20x20 cm).

## Hybridisation glass tube holder

Useful storage facility for tubes during membrane loading or when not in use. Carries up to 3 large and 3 small tubes.

- Glass hybridisation tubes reduces volumes, simplifies washing, improves signals
- 3 sizes available: small, mini, and unique large tubes
- Durable: thick borosilicate glass
- Easy pour: non drip, safe and convenient
- Sealing Ring: "O" ring sealed end caps allow no leakage
- Broken thread on screw cap: easy opening with no vacuum problems
- Tube Assemblies: Adaptors to hold multiple small glass tubes to increase capacity

Cat. No.	Code	Description	Total capacity
Hybridiser HB-1	D		_
HY/65026	FHB12	Large glass tube	6
HY/65028	FHB11	Large tube, no cap	6
HY/65030	FHB32	Small glass tube	6
HY/65012	FHB41	Mini glass tube assembly	
HY/65034	FHB43	Tube carrier	6 x 4
HY/65036	F15ML1TH	15ml tube holder	6 x 16
HY/65038	F50ML1TH	50ml tube holder	4 x 8
HY/65056	FHB1/PLAT	Rocking platform 0-60 opm	1
HY/65050	FHBSH1	Static shelf, stainless steel mesh	1
Hybrigene HB-3	D		
HY/65006	FHB16	Large glass tube with push-on end caps, 80 x 240mm	4
HY/65010	FHB36	Small glass tube with screw-on end caps, tube has	
		no end plugs, 44 x 240mm	4
HY/65012	FHB41	Mini glass tube assembly with screw-on end cap, requires carrier FHB61	
HY/65014	FHB61	Tube carrier for mini glass tubes FHB41	4 x 4
HY/65022	F15ML4TH	Carrier with clips to hold 16 x 15ml tubes	
,		(approx diameter 16.5mm)	4 x 16
HY/65024	F50ML4TH	Carrier with clips to hold 8 x 50ml tubes	
		(approx diameter 29.0mm)	4 x 8
HY/65058	FHB4/PLAT	Rocking platform 0-60 OPM	1
HY/65048	FHB4/SHI	Static shelf, Stainless Steel mesh	1
Common to bot	h		
HY/65052	 FMEM2020	Separation membranes pack of 5	
HY/65054	FHTRACK	Hybridisation glass tube holder	
,		,	

# **Hydrometers**

We have listed several popular hydrometer ranges; other models are available, please ask for details

# Hydrometers, Baume

For medium surface tension liquids. Adjusted for use at 15.6°C, 250mm long.

Cat. No.	Code	Range
HY/35052	10/203/0	0 - 10
HY/35054	10/200/0	0 - 30
HY/35056	10/201/0	0 - 50
HY/35058	10/202/0	0 - 70
H1/33036	10/202/0	0 - 70

# Hydrometers, density, series S50, BS718:1991

Range Span 0.050g/ml, Length = 190mm, divisioned in 0.002 g/ml, adjusted at 20°C.

Cat. No.	Code	Range (g/ml)
For low surface	e tension	
HY/35106	10/300/0	0.60 to 0.65
HY/35108	10/301/0	0.65 to 0.70
HY/35110	10/302/0	0.70 to 0.75
HY/35112	10/303/0	0.75 to 0.80
HY/35114	10/304/0	0.80 to 0.85
HY/35116	10/305/0	0.85 to 0.90
HY/35118	10/306/0	0.90 to 0.95
HY/35120	10/307/0	0.95 to 1.00
For medium su	urface tension	
HY/35122	10/308/0	1.00 to 1.05
HY/35124	10/309/0	1.05 to 1.10
HY/35126	10/310/0	1.10 to 1.15
HY/35128	10/311/0	1.15 to 1.20
HY/35130	10/312/0	1.20 to 1.25
HY/35132	10/313/0	1.25 to 1.30
HY/35134	10/314/0	1.30 to 1.35
HY/35136	10/315/0	1.35 to 1.40
HY/35138	10/316/0	1.40 to 1.45
HY/35140	10/317/0	1.45 to 1.50

# Hydrometers, density, series M50, BS718:1991

Range Span 0.050g/ml, length = 270mm, divisioned in 0.001 g/ml, adjusted at 20°C.

nsion 10/330/0 10/331/0 10/332/0 10/333/0 10/334/0 10/335/0	0.60 to 0.65 0.65 to 0.70 0.70 to 0.75 0.75 to 0.80 0.80 to 0.85
10/331/0 10/332/0 10/333/0 10/334/0	0.65 to 0.70 0.70 to 0.75 0.75 to 0.80
10/332/0 10/333/0 10/334/0	0.70 to 0.75 0.75 to 0.80
10/333/0 10/334/0	0.75 to 0.80
10/334/0	
-, , -	0.80 to 0.85
10/335/0	
10/000/0	0.85 to 0.90
10/336/0	0.90 to 0.95
10/337/0	0.95 to 1.00
ce tension	
10/338/0	1.00 to 1.05
10/339/0	1.05 to 1.10
10/340/0	1.10 to 1.15
10/341/0	1.15 to 1.20
10/342/0	1.20 to 1.25
10/343/0	1.25 to 1.30
10/344/0	1.30 to 1.35
10/345/0	1.35 to 1.40
10/346/0	1.40 to 1.45
10/010/0	1.45 to 1.50
	10/339/0 10/340/0 10/341/0 10/342/0 10/343/0 10/344/0





Hydrometers



Density hydrometer

# Hydrometers, density, sub-series, M50 SP BS718:1991

This sub-series has a greater accuracy than the standard M50 Series and is only available over a limited range of density. This sub-series is commonly used in the Petroleum industry and corresponds to IP 160.

Range Span 0.050g/ml, length = 270mm, divisioned in 0.001 g/ml, adjusted at 15°C. For low surface tension.

Cat. No.	Code	Range (g/ml)
HY/35006	10/450/0	0.60 to 0.65
HY/35008	10/451/0	0.65 to 0.70
HY/35010	10/452/0	0.70 to 0.75
HY/35012	10/453/0	0.75 to 0.80
HY/35014	10/454/0	0.80 to 0.85
HY/35016	10/455/0	0.85 to 0.90
HY/35018	10/456/0	0.90 to 0.95
HY/35020	10/457/0	0.95 to 1.00
HY/35022	10/458/0	1.00 to 1.05
HY/35024	10/459/0	1.05 to 1.10



# Hydrometers, density, series M100, BS718:1991

Range Span 0.100g/ml, length = 250mm, divisioned in 0.002 g/ml, adjusted at  $20^{\circ}C$ .

Cat. No.	Code	Range (g/ml)	
For low surface	e tension		
HY/35302	10/400/0	0.60 to 0.70	
HY/35304	10/401/0	0.70 to 0.80	
HY/35306	10/402/0	0.80 to 0.90	
HY/35308	10/403/0	0.90 to 1.00	
For medium surface tension			
HY/35310	10/404/0	1.00 to 1.10	
HY/35312	10/405/0	1.10 to 1.20	
HY/35314	10/406/0	1.20 to 1.30	
HY/35316	10/407/0	1.30 to 1.40	
HY/35318	10/408/0	1.40 to 1.50	
HY/35320	10/409/0	1.50 to 1.60	

# Hydrometers, rangefinders

Suitable for less accurate readings and to help select the appropriate hydrometer for subsequent accurate determinations.

Cat. No.	Code	Range (g/ml)
HY/35702	10/530/0	0.70 - 1.00 x 0.005
HY/35704	10/531/0	1.00 - 1.50 x 0.005
HY/35706	10/532/0	1.50 - 2.00 x 0.005
HY/35708	10/550/0	0.70 - 2.00 x 0.010



# Hydrometers, Twaddle

Available in two lengths with single degree subdivisions. Adjusted for use at  $15.6^{\circ}$ C. For medium surface tension liquids.

Cat. No.	Twaddle No.	Code	Range
Length 160mm			
HY/35602	No1	10/101/0	0 - 24
HY/35604	No2	10/102/0	24 - 48
HY/35606	No3	10/103/0	48 - 74
HY/35608	No4	10/104/0	74 - 102
HY/35610	No5	10/105/0	102 - 138
HY/35612	No6	10/106/0	138 - 170
Length 300mm			
HY/35622	No1	10/151/0	0 - 24
HY/35624	No2	10/152/0	24 - 48
HY/35626	No3	10/153/0	48 - 74
HY/35628	No4	10/154/0	74 - 102
HY/35630	No5	10/155/0	102 - 138
		·	



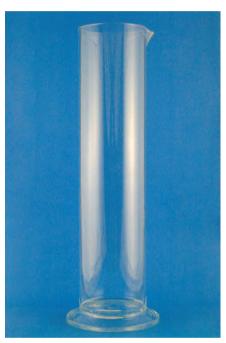
# Hydrometers, wide range, 200° range divided in 0.002° SG

Cat. No.	Code	Range	Surface Tension
HY/35402	10/500/0	0.600 - 0.800	Low
HY/35404	10/501/0	0.800 - 1.000	Low
HY/35406	10/502/0	1.000 - 1.200	Low
HY/35408	10/503/0	1.200 - 1.400	Low
HY/35410	10/504/0	1.400 - 1.600	Medium
HY/35412	10/505/0	1.600 - 1.800	Medium
HY/35414	10/506/0	1.800 - 2.000	Medium

# Hydrometer jars, glass

Ungraduated with spout.

Cat. No.	Size, mm	Approx capacity,ml
HJ/52002	200 x 38 dia.	165
HJ/52004	200 x 50 dia.	300
HJ/52006	250 x 50 dia.	375
HJ/52008	300 x 50 dia.	450



HJ/5200

# **Hygrometers**

# Thermo-Hygrometer, memory

Desktop thermo-hygrometer featuring a large, easy to read display, minimum and maximum reading for both temperature and humidity are in an internal memory. Readings can be obtained and reset with the push of a button.

The unit can be mounted on a vertical flat surface by means of a key-way on the back, alternatively, it can be placed on a desk, benchtop or shelf by using the flip-out stand.

Technical Specifications	
Humidity range	30 to 90%RH
Temperature range	-10 to 50°C
Resolution	1%RH, 0.1°C
Accuracy	±5%RH (50-80%RH)
	$\pm$ 8%RH (others)
	±1°C (0 to 40°C)
	$\pm 2$ °C (others)
Power	1 x 1.5V AA Alkaline battery (ALR-6)
Dimensions	100 x 20 x 135mm
Weight	143g

Cat. No.	Description
HU/97204	Thermo-hygrometer, -10 -50°C, 30-90%RH



HU/97204



# Thermo-Hygrometer, Precision

Compact, easy-to-use, robust instrument for fast, accurate and repeatable measurements of absolute and relative humidity, air temperature, dew point & wet bulb temperatures. Suitable for monitoring controlled environments, storage and other critical areas.

- -30°C to 100°C x 0.1°C, 0 to 100%RH x 0.1%
- Displays temperature in °C or °F
- Displays humidity as %RH, absolute as grams per cubic metre(g/m³), or grams per cubic foot(g/ft³)
- Wet Bulb & Dew Point measurements
- Simultaneous display of humidity and temperature readings
- 56mm LCD display with backlight
- Data Hold freezes displayed measurements
- Min/Max memory for both temperature and humidity
- Impact-resistant ABS case with rubber moulded grip and tripod mount bush
- Supplied with carry case & battery

Cat. No.	Model	Description
HU/97208	HT-8892	Thermohygrometer



HY/35002

# Hygrometer, Masons, hanging

A wet and dry bulb hygrometer with a large water reservoir. Comes with wet and dry bulb tables.

Cat. No.	Description
HY/35002	Hygrometer, range -5/50°C
HY/35004	Spare wicks, pack of 12



HY/35150

# Hygrometer, Whirling

Compact Whirling hygrometer (psychrometer) with shorter tubes and incorporating a slide-rule type calculator to determine the %RH. The body of the instrument slides away into the handle providing complete protection when not in use. Range -5 to  $+50^{\circ}$ C

Cat. No.	Description	
HY/35150 HY/35152	Compact Whirling hygrometer, spirit filled, -5 to +50°C Spare thermometer for whirling hygrometer	

# Ice Production

Services required:

Correctly rated power socket



3/4" threaded tap on mains water supply.

These machines require a 1.5 inch vented drain away which is lower than the base of the machine. Without this, the machine will not function correctly. If the drain away is higher than the base of the unit, a pump, XP189, should be ordered.

It is recommended that a water filter is used with these units.

- Zero ozone depletion potential refrigerants
- Manufactured from 304 grade stainless steel
- Production rates of 22 to 200kg per 24 hours
- Standard voltage 230V 50Hz, single phase
- High volume modular units are also available details on request

# Ice machines, ice flakers

Scotsman self-contained flake-ice maker, 304 Grade Stainless steel, produces small, irregular flakes with an even melt rate.

Cat. No.	Model	External dimensions (including legs) HxWxD (mm)	Maximum output (kg/24 hours)	Storage capacity (kg)
IM/35002	AF80	933 x 535 x 626	70	25
IM/35004	AF103	1126 x 592 x 622	105	30
IM/35006	AF124	915 x 950 x 605	120	40
IM/35008	AF156	1126 x 950 x 605	150	60
IM/35010	AF206	1126 x 950 x 605	200	60



IM/35002

# Ice machines, ice cubes



Scotsman self-contained ice cube maker, air-cooled, grade 304 stainless steel, standard medium cube, with electronic controls. Cubers produce very hard crystal clear thimble shape ice.

Cat. No.	Model	Maximum output in 24 hours (kg)	Dimensions (mm)	Storage capacity (kg)
IM/35120	AC47	25	390 x 600 x 643	9
IM/35122	AC57	33	390 x 600 x 828	12.5
IM/35124	AC87	45	530 x 600 x 920	19
IM/35126	AC107	53	530 x 600 x 970	23
IM/35128	AC127	75	680 x 600 x 1050	39
IM/35130	AC177	84	680 x 600 x 1120	48
IM/35134	AC227	150	1078 x 715 x 1126	70

Cat. No.	Code	Description
IM/35140	XP189	Pump for Scotsman ice flake and cube makers
IM/35150	AP3S	Water filter to fit Scotsman AF80, AF103, AC46 and AC56
IM/35152	HF20-S	Water filter to fit Scotsman AF124, AC86, AC106, AC126 and AC176
IM/35154	HF40-S	Water filter to fit Scotsman AF156, AF206 and AC226



IM/35120

## Ice buckets

Ice buckets and pans, lightweight but durable, made of high density expanded polystyrene. The thick walls provide stability, rigidity and strength. Suitable for use with a variety of cooling mediums, such as wet ice, dry ice and slurry.

The 3 pans and 2 buckets available in the range have excellent insulating properties to help keep temperature sensitive samples safely chilled, but will not leave condensation the benchtop. Supplied with tight fitting lids to minimise evaporation loss and maximise cooling.

Cat. No.	Description
CR/10500	Bucket, ice, 2.5 litre, Black, 10 7/8 x 12 1/8 x 4 1/2 inches
CR/10502	Bucket, ice, 5 litre, Blue, 10 7/8 x 12 1/8 x 6 3/4 inches
CR/10504	Pan, ice 1 litre, Black, 5 3/4 x 5 3/4 x 3 1/2 inches
CR/10506	Pan, ice 4 litre, Blue, 12 x 9 x 5 inches
CR/10508	Pan, ice 7.5 litre, Green, 14 5/8 x 12 1/8 x 4 7/8 inches



CR/10500



IN/65234



Prime digital

# **Incubators**

## Incubators, Mini digital range



The GENLAB Digital range of Mini Incubators offers highly efficient, reliable, cost effective units to suit most biological analysis, research and general laboratory applications. The units are fitted with a microprocessor control system with dual display of set point and actual temperature and provide excellent temperature control. The units can be built up to meet individual requirements.

- Digital controller
- 8 sizes 30 to 200 litres
- Temperature range: ambient + 5°C to +70°C without fan, ambient +8°C to +70°C if fan fitted

The exterior is constructed from sheet steel finished in an easy clean powder coated paint whilst the interior chamber is made from mild steel coated with aluminium (CLAD). A stainless steel chamber is

Fitted with fixed shelf runners and removable chrome plated wire grid shelves. The incubators have a solid steel door as standard, however, there are a number of options available: an integral viewing window can be fitted; double door comprising of a steel outer with an inner glass door; viewing panel; 0 to 99 hour processing timer and fan circulation. This adds approximately 13cm to the height of the unit and is fitted to the 200 litre version as standard.

Heated by Incoloy sheathed elements, positioned below the chamber floor for natural convection units and fitted around the fan on the back wall of the chamber for mechanical convection units. The control system comprises of a Microprocessor Digital Controller with dual display of set point and actual temperature and overheat thermostat. They also include main switch with indicator and heat and overheat indicators.

Cat. No.	Model	Capacity, Litres	Int. dims, cm HxWxD	Ext. dims, cm HxWxD	No of shelves	No of runners
IN/65230	MINI/30/DIG	30	24 x 36 x 35	56x 50 x 49	2	2
IN/65232	MINI/40/DIG	40	32 x 36 x 35	64 x 50 x 49	2	3
IN/65234	MINI/50/DIG	50	33 x 49 x 33	65 x 63x 47	2	3
IN/65236	MINI/75/DIG	75	33 x 49 x 45	65 x 63 x 60	2	3
IN/65238	MINI/100/DIG	100	45 x 49 x 45	77 x 63 x 60	3	4
IN/65240	MINI/125/DIG	125	55 x 49 x 45	87 x 63 x 60	3	5
IN/65242	MINI/150DIG	150	55 x 49 x 53	87 x 63 x 68	3	5
IN/65244	MINI/200/DIG	200	75 x 49 x 53	87 x 63 x 80 **	4	7
,	MINI/200/DIG			87 x 63 x 80 **	•	7

<sup>\*</sup> Please note, the fan circulated option adds approximately 13cm to the external height

# Incubators, Prime digital range



The GENLAB Prime Incubators offer a range of fully functional, highly efficient and programmable units to suit most biological analysis, research and general laboratory applications. All units have stainless steel interior and fan circulation with excellent accuracy and performance.

- 7 sizes 30 to 200 litres
- Temperature range ambient +5 °C to 70°C
- Fluctuation +/- 0.15°C @ 37°C

The exterior is constructed from sheet steel finished in an easy clean powder coated paint, whilst the interior chamber is made from polished stainless steel. The units are fitted with fixed shelf runners and removable chrome plated wire grid shelves.

The incubators have a solid steel outer door with a viewing window, or with a glass inner door as an option.

The units are heated by Incoloy sheathed elements positioned around the fan fitted at the back of the chamber. The control system comprises of a PID Microprocessor Controller with Dual displays of set point and actual temperature. These are auto-tuned for each individual unit to optimise the heat up, overshoot and control of the temperature.

The controller has a 0-99 hour process timer that can be selected for a fixed time period at a required set point, plus an 8 segment program with 4 ramp and 4 dwell facility.

Cat. No.	Model	Capacity, Litres	Int. dims, cm H x W x D	Ext. dims, cm H x W x D	No of shelves	No of runners
IN/65250	PRI/30	30	24 x 36 x 35	56 x 50 x 62	2	2
IN/65252	PRI/50	50	33 x 49 x 33	65 x 63 x 59	2	3
IN/65254	PRI/75	75	33 x 49 x 45	65 x 63 x 72	2	3
IN/65256	PRI/100	100	45 x 49 x 45	77 x 63 x 72	3	4
IN/65258	PRI/125	125	55 x 49 x 45	87 x 63 x 72	3	5
IN/65260	PRI/150	150	55 x 49 x 53	87 x 63 x 80	3	5
IN/65262	PRI/200	200	75 x 49 x 53	107 x 63 x 80	4	7

<sup>\*\*</sup> These dimensions include fan

# Incubators, economy

A range of economically priced incubators with high specification. Temperature range, ambient  $+5^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ .

- Stainless steel interior and exterior
- Forced or natural air circulation
- Automatic fan shut down at program end
- LCD display
- Microprocessor control
- Temperature sensor fail alarm
- Power failure control system
- RS 232 interface

Technical Specifications	CLN15	CLN/W32	CLN/W53	CLN/W115
Volume, litres	15	32	56	112
Internal dimensions,				
(hxwxd), mm	240 x 320 x 180	320 x 400 x 240	395 x 395 x 360	540 x 460 x 450
Overall dimensions,				
(hxwxd), mm	520 x 440 x 350	600 x 520 x 435	700 x 590 x 560	845 x 650 x 650
Weight (kg)	27	35	50	65
Temperature fluctuation				
at +37°C	±0.5	±0.5	±0.2	±0.2
Over-temperature				
protection		Thermal fus	е	
Voltage		230V, 50H	Z	
Power (W)	300	400	400	400
Shelves fitted / max	1/2	1/3	2/5	2/7

Cat. No.	Model	Description
IN/90002	CLN 15	Incubator, stainless steel, 15L natural convection
IN/90004	CLN 32	Incubator, stainless steel, 32L natural convection
IN/90006	CLN 53	Incubator, stainless steel, 53L natural convection
IN/90008	CLN 115	Incubator, stainless steel, 112L natural convection
IN/90022	CLW 32	Incubator, stainless steel, 32L fan circulation
IN/90024	CLW 53	Incubator, stainless steel, 53L fan circulation
IN/90026	CLW 115	Incubator, stainless steel, 112L fan circulation



IN/900 series

# Incubators, microbiological



Constructed of galvanised sheet steel and powder coated throughout to afford maximum protection against corrosion. Stainless steel interior. Very tight door closure with 2-point door latch. Microprocessor control.

- ullet Electronically controlled APT.line  $^{\mathrm{TM}}$  preheating chamber technology
- Temperature range of 5°C above ambient to 100°C
- DS controller with integrated timer 0 to 99 hours
- Digital temperature setting with 0.1°C accuracy
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual alarm
- Adjustable ventilation by means of rear exhaust duct, 50mm diameter with ventilation flap and front ventilation slide
- Inner glass door
- APT-COM™ DataControlSystem software
   2 chrome plated shelves included

Technical Specification	s
Model	BD 23
Capacity, litres	20
Temperature range	ambient +5 to 100°C
Temp variation @ 37°C	≤ ±0.5°C
Internal wxdxh (mm)	222x277x330
External wxdxh (mm)	435x520x495
Shelves supplied (max.)	2 (3)
Electrical supply	230V (± 10%), 50/60Hz
Power consumption (W)	200

Cat. No.	Model	Description
IN/51002	BD 23	Incubator with natural convection 20L



IN/51002



IN/51120



Binder Avantgarde.Line natural / forced convection incubators



Reproducible incubation conditions are crucial when working with microorganisms. The BD natural convection series is specially designed for gentle incubation of organisms, as well as conditioning of heat-sensitive media. Not only does the state-of-the-art design of this new generation of incubators ensure convenient operation, its exceptional efficiency and absolutely perfect temperature accuracy thanks to the very latest APT.line™ technology, also give it real appeal.

The BF forced air convection series is suitable for demanding incubation tasks, particularly for full loads and large batch throughputs. The latest APT.line™ technology provides completely homogeneous temperature distribution. With enhanced timer functions, the adjustable fan, temperature and forced convection conditions are all easily controlled.

- Temperature distribution perfect and precise
- Disinfection routine at 100 °C
- Simple door opening
- Spatial and temporal temperature accuracy, APT.line<sup>™</sup> technology
- Controller with LCD alphanumeric display
- Electromechanical control of the exhaust air flap
- Excellent energy efficiency
- Tempered safety glass inner door
- 2 chrome-plated racks (shelves)
- Stackable up to 115L
- Class 3.1 integrated independent temperature safety device (DIN 12880) with visual alarm
- USB port for recording data

Technical Specificat	ions Natural	convection models (no	fan)
Model No.	BD 56	BD 115	BD260
Capacity:	57 Litres	112 Litres	253 Litres
Temperature range:	Ambient +5°C to +100°C	Ambient $+5^{\circ}$ C to $+100^{\circ}$ C	Ambient +5°C to +100°C
Fluctuation at 37°C	± 0.2°C(K)	± 0.1°C(K)	± 0.2°C(K)
Dimensions (HxWxD) (External)	625 x 560 x 565mm	735 x 710 x 605mm	965 x 810 x 760mm

	Natural	convection models (no	fan)
Model No.	BF 56	BF 115	BF 260
Capacity:	59 Litres	114 Litres	257 Litres
Temperature range:	Ambient +7°C to +100°C	Ambient +5°C to +100°C	Ambient +7°C to +100°C
Fluctuation at 37°C	± 0.1°C(K)	± 0.1°C(K)	± 0.1°C(K)
Dimensions (HxWxD)	625 x 560 x 565mm	735 x 710 x 605mm	965 x 810 x 760mm
(External)			

Cat. No.	Code	Description
IN/51120	BD56	Incubator, Avantegarde.Line series, natural convection, capacity 57 litres
IN/51122	BD115	Incubator, Avantegarde.Line series, natural convection, capacity 112 litres
IN/51124	BD260	Incubator, Avantegarde.Line series, natural convection, capacity 253 litres
IN/51130	BF56	Incubator, Avantegarde.Line series, fan circulated, capacity 59 litres
IN/51132	BF115	Incubator, Avantegarde.Line series, fan circulated, capacity 114 litres
IN/51134	BF260	Incubator, Avantegarde.Line series, fan circulated, capacity 257 litres

Notes			Ì

# Incubators, LEEC Classic range



Ideal for routine microbiology work and incubating samples.

Fully sealed chambers manufactured from polished stainless steel with rounded corners for easy cleaning. The outer cabinet is manufactured from stainless steel, and has a tough powder coat painted finish. This gives the Classic incubator exceptional corrosion resistance.

An inner glass viewing door closes positively onto a silicone gasket and allows a clear view of the chamber contents without disturbing the internal atmosphere. The outer door has a magnetic gasket providing a good seal. A rear access port allows temperature monitoring probes to be inserted safely into the chamber.

New profiled resistive wire heating elements and high performance insulation ensure optimum temperature control. All models have gentle fan assisted air circulation. This ensures even temperature distribution throughout the chamber. Fast temperature recovery keeps heat loss to a minimum after door opening.

The latest in microprocessor temperature controller technology gives excellent temperature stability to within 0.1°C. Fuzzy Logic and Auto Tune features allow the controller to adapt to each chamber size, optimising their performance and accuracy. The controller is simple to use, with target and actual temperatures being displayed in real time on a two-colour digital display.

Over and under temperature alarm thresholds can be programmed into the controller. An independent safety cut out disconnects the heating elements should an over temperature condition occur. The controller can be password protected preventing any unauthorised adjustments to the Set Point and alarm thresholds.

Technical Specifications	C100	C157	C330
Capacity (litres)	100	157	330
External dimensions	582 x 684 x 620	790 x 684 x 620	1417 x 684 x 620
(H x W x D), mm			
Internal dimensions	365 x 550 x 500	573 x 550 x 500	1200 x 550 x 500
(H x W x D), mm			
No. of shelves included	2	4	6
Power Rating (Watts)	240 (maximum)	280 (maximum)	440 (maximum)
Weight (kg)	54	70	107
Temperature Range	At least 5°C a	bove ambient to +60°	C
Temperature Control	Typically	± 0.1°C @ 37°C	
Temperature Variation	Typically bette	r than ± 0.2°C @ 37°C	C
Temperature Recovery (approx)	2 minutes	3 minutes	4 minutes
Electrical requirements	220-240\	/ AC, 50Hz or 60Hz	

Cat. No.	Model	Description
IN/55300	C100	Incubator 100L, digital, stainless steel interior, fan circulation
IN/55302	C157	Incubator 157L, digital, stainless steel interior, fan circulation
IN/55304	C330	Incubator 330L, digital, stainless steel interior, fan circulation



IN/55300



IN/55304

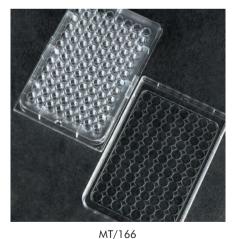


IN/55302



IN/15002





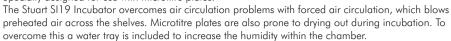
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MT/966

# Incubator, microtitre plates, SI19

Specially designed for use with microtitre plates.



Pstuart

Sterilin

The bright LED display indicates temperature and the encoder control allows rapid and accurate temperature setting. An integral over-temperature protection system automatically tracks the set temperature and controls the heater in the event of a fault. Error codes are displayed if a fault has occurred or if the set temperature has been interrupted.

An acrylic upwards opening door provides excellent access to the interior. The stainless steel chamber features 4 shelves each accommodating 6 plates (or 12 stacked in 2 layers). Shelves are captive and slide out for easy loading.

- Compact unit
- Ideal for microtitre plates and Petri dishes
- Laminar flow air circulation
- Digital setting and display of temperature
- Convenient upward opening door
- Stainless steel interior

Nominal capacity 20 litres

Temperature range Ambient  $+ 8^{\circ}\text{C}$  to  $80^{\circ}\text{C}$ 

 $\begin{array}{ll} \text{Temperature fluctuation (at 37°C)} & \pm 0.5^{\circ}\text{C} \\ \text{Temperature variation} & \pm 0.5^{\circ}\text{C} \\ \text{Display type} & \text{LED} \\ \text{Display resolution} & 0.1^{\circ}\text{C} \\ \end{array}$ 

 $\begin{array}{ll} \text{Internal dimensions (w x d x h)} & 250 \text{ x } 230 \text{ x } 200 \text{mm} \\ \text{Overall dimensions (w x d x h)} & 380 \text{ x } 380 \text{ x } 435 \text{mm} \\ \end{array}$ 

Net weight 24kg

Electrical supply 230V, 50Hz, 280W

Cat. No.	Code	Description
IN/15002	SI19	Incubator, microtitre plate

# Microtitre plates

Sterilin rigid, clear multiwell plates are manufactured out of premium grade virgin polystyrene and offer excellent optical clarity. Black and White rigid, flat bottom, microtitres are also available for fluorescence and bioluminescence work. U wells hold 415µl, V wells hold 334µl and the flat based well holds 406µl in volume. The separately available lid is furnished with condensation rings. All Sterilin multiwells are now CE marked in accordance with the in-vitro diagnostic directive (98/79/EC).

Cat. No.	Code	Description	Sterility	Inner Pk	Pk Qty
MT/16602	611U96	96 well plate, U bottom	NS	5	50
MT/16604	611V96	96 well plate, V bottom	NS	5	50
MT/16606	611F96	96 well plate, Flat bottom	NS	5	50
MT/16608	612U96	96 well plate, U bottom	IRR	1	50
MT/16610	612V96	96 well plate, V bottom	IRR	1	50
MT/16612	612F96	96 well plate, Flat bottom	IRR	1	50
MT/16614	642000	Lid for microtitre plate	IRR	1	50
MT/16616	611F96BK	Black 96 well plate	NS	5	50
MT/16618	611F96WT	White 96 well plate	NS	5	50

# Microtitre plates

Polystyrene non sterile 96 well microtitre plates.

Cat. No.	Description	Pk Qty
MT/96602	U Well Microtitre plate	100
MT/96604	V Well Microtitre plate	100
MT/96606	F Well Microtitre plate	100
MT/96614	Lid for Microtitre plates	100

# Incubator, CO2 cell culture

LEEC

A new advanced range of user-friendly designed and technologically advanced CO2 Incubators, to meet the needs of demanding cell culturing environments.

Fan-less design: Zero vibration helps avoid edge effects, less cell desiccation making this unit ideal for cultivation in multi-well plates, requiring low maintenance and signicantly less risk of contamination

Sterilisation: 200°C dry-heat sterilisation option. Independent testing at the UK Health Protection Agency, shows complete deactivation of all test spores and bacteria.

Ease of use: The PID controller is designed to be as user-friendly as possible, allowing the user to quickly navigate to the required menus via icon symbols.

Easy to clean: 316 Stainless Steel electro-polished drawn seamless inner chamber.

Monitoring: On board text and graphical data logging of temperature, CO2 and O2 (if fitted), with a minimum of 72 hours graphical data logging and 100 text event logs, all conveniently saved as delimited files for easy viewing in MS Excel®.

High Capacity: At 190 litre capacity the biggest internal chamber with the smallest associated external dimensions.

Sensors: A drift-free CO2 infrared sensor, features auto-zeroing and auto start-up procedures, saving valuable downtime and offers more security for samples inside the chamber.

# Culture Safe CO2 Key Features:

- World's first 200°C sterilisation
- Ethernet Connection
- Continuous download to SD card
- New touch-screen PID control system with on-board text & graphic data logging
- 316 Stainless Steel electro-polished drawn chamber
- Easily-Removable Racking and Shelves
- No internal fan
- Drift-free CO2 sensor
- 190 Litre Capacity
- Anti-microbial biocide paint
- High energy efficiency

Available factory fitted options (must be ordered with incubator)

- 1 -19% Oxygen control (available on the T190S only)
- Stainless steel inner door with 8 viewing ports
- %RH display
- Ethernet communication port
- 1-20mA retransmit

Temperature management		
Range	5°C above ambient to +60°C	
Control	0.1°C	
Stability	± 0.1°C @ 37°C	
Uniformity	± 0.25°C @ 37°C	
CO2 Gas management		
Range	0% to 20%	
Control	± 0.1%	
Stability	± 0.2%	
Uniformity	± 0.2%	
CO2 Sensor	IR	
CO2 inlet pressure	min 5 psi max 10 psi, min 0.3 bar max 0.7 bar	
Dimensions		
Internal (WxHxD), mm	632 x 686 x 440	
External (WxHxD), mm	765 x 862 x 734	
Humidity		
RH (@37°C +5%)	90%	
Electrical		
Voltage	230V 50/60Hz	
Power	380W	

Cat. No.	Model	Description
IN/55220	Touch T190	190 litre Culture Safe touch screen model
IN/55224	Touch T190S	190 litre Culture Safe touch screen model, 200°C sterilisation
IN/55226	PRV	Single stage CO2 cylinder pressure reducing valve with gauges
IN/55228	PRV2	Two stage CO2 cylinder pressure reducing valve with gauges
IN/55230	PRVN	Two stage N2 cylinder pressure reducing valve with gauges
IN/55232	RO6	In-line CO2 reducing valve with pressure gauge (2 to 30 psi.)
IN/55234	PNEU	Automatic changeover unit for 2 cylinders (CO2 or N2
IN/55236	REPTUB	Replacement Tygon tubing (priced at per meter)



IN/5522



IN/5522



IN/5522



Touch screen



IN/85004

# Cooled incubators, Lovibond

Lovibond

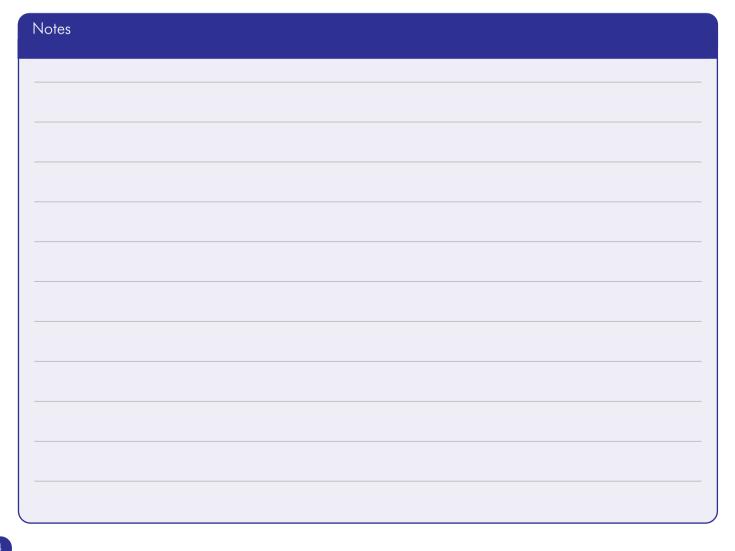
The Lovibond® TC range of Incubators are designed for incubation from 2 to 40  $^{\circ}$  C and are suitable for use throughout the environmental industry.

Convenient internal power sockets allow stirring units or other electrical equipment to be used without opening the door and compromising the temperature. The digital temperature control unit is adjustable to 0.1  $^{\circ}$  C and has a backlit display for ease of use.

Suitable applications include BOD measurement (for which the TC135S is particularly suited); microbial research; food and beverage industries; contract laboratories; Universities and research centres.

Technical Specifica	tions					
Model	TC135S	TC140G	TC175S	TC255S	TC256G	TC445S
Metal racks	3	3	3	4	4	4
Electrical sockets	4	4	5	7	7	9
Bottom and grid	1	1	1	1	1	1
Design	Fully i	nsulated cabi	inet with univ	versal temper	ature control	unit
Operation	Sp	lash-proofed	keypad, 2 b	uttons with ta	ctile feedback	<
Control range		+ 2 °C to + 40 °C, steps of 0.1 °C				
Climate class		+ 10 °C to + 32 °C				
Temperature tolerance	lerance $\pm$ 1°C specified for a stirred 500 ml water sample. For BOD (T=20 °C $\pm$ 0,5°C)					
Display	Backlit LED display					
Resolution	0.1 °C					
Fan	Axial, output 320 m³/h					
Cooling/Heating	Integrated powerful cooling and heating					
Power supply	220 - 240 V / 50 Hz					
Internal Sockets	CEE 7/5; Type E with hinged lid; 230 V / 16 A; $2p + E$ , IP 44					
Coolant			R13	4a		
Conformity			CI	E		

Cat. No.	Code	Description
IN/85000	TC135S	Lovibond cooled incubator, 135 litre standard door
IN/85002	TC140G	Lovibond cooled incubator, 140 litre glass door
IN/85004	TC175S	Lovibond cooled incubator, 175 litre standard door
IN/85006	TC255S	Lovibond cooled incubator, 255 litre standard door
IN/85008	TC256G	Lovibond cooled incubator, 255 litre glass door
IN/85010	TC445S	Lovibond cooled incubator, 445 litre standard door



# Incubator with orbital shaker, SI500 and SI600



Combined bench model shaker and incubator comes in 2 standard models plus a 115 litre refrigerated model, all are ideal for cell culturing procedures, especially suspension culture applications. The microprocessor controlled orbital shaking motion is adjustable between 30 to 300rpm is set via the digital LED control panel and has a gentle start action. As an added feature, the 1 second to 9 day digital timer, once counted down, sounds an audible alarm, however, the incubator continues to run to preserve the integrity of the sample under test.

For operator convenience, the door and both sides of the incubator have smoked acrylic windows installed for ease of sample visibility.

Temperature settings are set via a bright LED display encoder control that ensures that adjustments between ambient  $+5^{\circ}$ C and  $60^{\circ}$ C can be made quickly. A uniform temperature is ensured by means of forced air circulation.

The retractable shaking platform, which is locked in place during normal operation, has a versatile clamping system which accommodates flasks of varying capacities. Its pull out action enables easy access to samples at the back of the incubator.

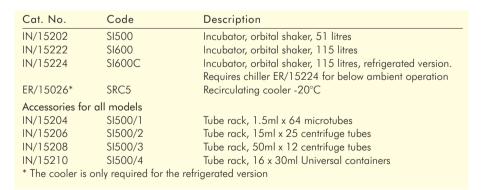
A USB connection is fitted for temperature monitoring. The incubator can be run for extended periods of time, i.e. over weekends.

Stainless steel accessory racks are available which allow samples to be tilted up to 30° and are easily coupled and de-coupled thanks to the Magnalock system.

Typically, the platform in the model SI500, which accepts flasks up to 1 litre capacity, will accommodate the following Erlenmeyer flasks:  $12 \times 250$  ml, or  $9 \times 500$  ml or  $6 \times 1000$ ml. The platform in models SI600 and SI600C which accepts flasks up to 2000ml capacity will accommodate the following Erlenmeyer flasks:  $6 \times 2000$ ml,  $8 \times 1000$ ml or  $15 \times 500$ ml.

- Combined incubator shaker
- Digital display for temperature and speed
- Integrated timer
- Unique retractable platform for easy loading and unloading
- Angle adjustable accessory tube racks, with patent pending Magnalock coupling system available
- Coms enabled for external temperature measurement
- With BioCote antimicrobial protection

Technical Specifications	SI500	\$1600	SI600C
Capacity	51 Litres	115 Litres	115 Litres
Temperature range	Ambient +5°C to 60°C	Ambient $+5^{\circ}\text{C}$ to $60^{\circ}\text{C}$	-15°C to 60°C*
Temperature display resolution	0.1°C	0.1°C	0.1°C
Temperature precision	±0.5°C	±0.5°C	±0.5°C
Temperature fluctuation	±0.5°C	±0.5°C	±0.5°C
Temperature variation	<0.5°C	<0.5°C	±0.5°C
Speed range	30 to 300 rpm	30 to 300 rpm	30 to 300 rpm
Orbit diameter	16mm	16mm	16mm
Platform size	335 x 335mm	526 x 390mm	520 x 390mm
Internal dimensions (WxDxH)	422 x 408 x 297mm	623 x 465 x 395mm	625 x 455 x 380mm
Maximum vessel height	250mm	300mm	320mm
Maximum load	10kg	10kg	10kg
Overall dimensions (WxDxH)	450x474x522mm	675x542x642mm	675x562(592*)x640mm
Nett weight	30kg	55kg	60kg
Heater power	250W	400W	400W
Electrical supply	230V, 50Hz, 300W	230V, 50Hz, 450W	230V, 50Hz, 450W
*592mm depth with cooling co	nnectors attached		





IN/15202



IN/15202



IN/15204, IN/15206 & IN/15208

# Incubator with Microtitre Plate Shaker, model SI505



The SI505 has been designed specically to combine a bench top laboratory incubator with the specific mixing action required for microtitre plates.

Shaking is ideal for mixing microtitre plates, combining a high speed action between 250 and 1250rpm with a tight orbit of 1.5mm. This enables even the smallest of vessels to adequately mix, be it well plates or microtubes. The SI505 has independent control of speed and temperature to avoid accidental temperature adjustment. Speed is microprocessor controlled and set via the digital LED control panel. The unit also incorporates a versatile timer, which can be set from 1 second to 9 days. Once the timer has run down, an alarm will sound and the shaking action will cease. For safety reasons the incubator will continue to run.

The temperature of the incubator can be set via the digital LED control panel, between ambient temperature  $+7^{\circ}\text{C}$  and  $60^{\circ}\text{C}$ . Careful control of the air distribution within the incubator ensures temperature uniformity throughout the sample chamber. To minimize sample evaporation the SI505 is supplied with stainless steel water trays. These are strategically placed within the unit to maintain a humidity of up to 80%, thus dramatically reducing sample evaporation over a 24 hour period. The SI505 stainless steel platform is retractable, this allows easier access to samples at the back of the incubator. During operation the platform is securely locked in place, but can be easily released when required. The platform will comfortably and securely accommodate up to four microtitre plates on the non slip mat. Or sample tube racks are available which will accommodate all common tube sizes. The SI505 also features a USB connection which allows the incubator to be connected to a PC for long term monitoring of the incubator temperature, overnight or weekends for example.



- Combined Incubator shaker
- Optimised performance to minimize sample evaporation
- Digital display for temperature and speed
- Integrated timer
- Retractable platform for easy loading and unloading



IN/15050

Technical Specifications	
Temperature range	Ambient + 7°C to 60°C
Samples	4 x Microtitre plate or 2 x microtube racks
Temperature display resolution	0.1°C
Temperature fluctuation	$\pm$ 0.5°C at 37°C
Temperature variation	<0.6°C at 37°C
Temperature precision	$\pm$ 0.5°C at 37°C
Speed range	250 to 1250rpm
Speed control	Digital set in 10rpm increments
Timer	min/sec, hour/min, days/hours
Orbit diameter, mm	1.5
Platform size, mm	220 x 220
Relative humidity	~80% (using water trays)
Internal dimensions, mm (WxDxH)	307 x 300 x 190
Maximum load, kg	1
Overall dimensions, mm (WxDxH)	361 x 405 x 430
Net weight, kg	22.5
Electrical supply	230V, 50Hz, 250W

Cat. No.	Code	Description
IN/15050	SI505	Microtitre plate shaker incubator
SH/15004	SSM5/1	Tube holder for 1.5ml tubes
SH/15006	SSM5/2	Tube holder for 0.5ml tubes
SH/15008	SSM5/3	Tube holder for 0.2ml tubes

Notes			

# Indicator Papers

# Indicator paper, dispenser type

Supplied in 6mm x 5m reels with colour coded comparison chart printed on the dispenser.



Cat. No.	Code	Description
IP/17002	2600-100A	Full range pH 1.0 -14.0
IP/17004	2600-101A	Narrow range pH 0.5 - 5.5
IP/17006	2600-102A	Narrow range pH 4.0 - 7.0
IP/17008	2600-103A	Narrow range pH 6.0 - 8.0
IP/17010	2600-104A	Narrow range pH 8.0 -10.0
IP/17012	2600-201A	Litmus blue
IP/17014	2600-202A	Litmus red
IP/17016	2602-500A	Potassium lodide



IP/170

# Indicator papers

Supplied in boxes containing 10 books, each book contains 20 leaves.

Cat. No.	Description
IP/97002	Wide range universal pH 1-14
IP/97004	Wide range universal pH 1-11
IP/97006	Narrow range pH 1.0-3.5
IP/97008	Narrow range pH 3.6-5.1
IP/97010	Narrow range pH 5.2-6.7
IP/97012	Narrow range pH 6.8-8.3
IP/97014	Narrow range pH 8.4-10.0
IP/97016	Litmus red
IP/97018	Litmus blue
IP/97020	Litmus neutral
IP/97022	Cobalt chloride
IP/97024	Lead acetate
IP/97026	Starch
IP/97028	Starch/lodide
IP/97030	Turmeric (20 strips)



IP/97006

# Indicator test strips, pH

Made from non bleed test paper mounted on plastic wand. Includes comparison chart giving readings as detailed below. Supplied in packs of 100 strips.

Cat. No.	Range	Chart readings
IP/97102	0 to 1.5	pH 0, 0.3, 0.5, 0.8, 1.0 & 1.5
IP/97104	0 to 2.5	pH 0, 0.5, 1.0, 1.5, 2.0 & 2.5
IP/97108	5 to 9	pH 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, & 9.0
IP/97130	6.5 to 10.0	pH 6.5, 6.8, 7.1, 7.4, 7.7, 7.9, 8.1, 8.3, 8.5, 8.7, 9.0, 9.5, 10.0
IP/97132	11.0 to 13.0	pH 11.0, 11.5, 11.8, 12.1, 12.3, 12.5, 12.8, 13.0
IP/97116	0 to 14	pH 0,1,2,3,4,5,6,7,8,9,10,11,12,13 & 14

# Indicator papers, J-QUANT chlorine test strips

Complete with comparison chart giving readings as detailed below. Supplied in packs of 100 strips.

Cat. No.	Test paper	Chart readings
IP/97140	Chlorine	0, 0.5, 1, 3, 5, 10, 20 (ppm)
IP/97122	Chlorine	0, 25, 50, 100 and 300 mg/L (ppm)

# HQUANT® HQUANT® Water Chlorine 300 Hardness 500 Test Strips S 500 mg/L (ppm) To pop Water And Remarkable 2014 This Paper A

IP/97122 IP/97202

# Indicator papers, J-QUANT water hardness strips

Used to monitor water quality in laundry operations as well as home and laboratory use. Includes comparison chart giving readings as detailed below. Supplied in packs of 100 strips.

Cat. No.	Chart readings
IP/97202	0, 5, 125, 250 and 500 mg/L (ppm).

# Indicator papers, J-QUANT general purpose strips

Used in many industrial as well as laboratory applications. Includes comparison chart giving readings as detailed below. Supplied in packs of 100 strips.

		· · · · · · · · · · · · · · · · · · ·
IP/97302 Sulphite test 10-500mg/L 10, 50, 100, 250 & 500mg/L (ppm)	302 Sulphite test 10	10-500mg/L 10, 50, 100, 250 & 500mg/L (ppm)
IP/97304 Nitrite test 0-25mg/L 0,0.5, 1, 5,10 & 25mg/L (ppm)	304 Nitrite test 0-	0-25mg/L 0,0.5, 1, 5,10 & 25mg/L (ppm)
IP/97306 Nitrate test 0-500mg/L 0,10,25,50,100, 250 & 500mg/L	306 Nitrate test 0-	0-500mg/L 0,10,25,50,100, 250 & 500mg/L
IP/97310 Peroxide test 1-100mg/L 0, 1, 3, 10, 30 & 100mg/L (ppm)	310 Peroxide test 1-	1-100mg/L 0, 1, 3, 10, 30 & 100mg/L (ppm)



IP/97310



JK/9400

# Jacks

# Jacks, laboratory

Cat. No.	Size, mm	Max height, mm	Max operating load
JK/94002	100 x 100	140	10kg
JK/94003	150 x 150	275	25kg
JK/94004	200 x 200	275	25kg



JA/365

# Jars

# Jars, straight-side, polycarbonate

**NALGENE** 

Azlon

These high impact resistant, non toxic jars are excellent for cold room and refrigerated use. With white polypropylene screw closure. Autoclavable. Supplied in packs of 4.

Cat. No.	Code	Capacity, ml
Clear		
JA/36522	2116-0015	15
JA/36524	2116-0030	30
JA/36526	2116-0060	60
JA/36528	2116-0125	125
JA/36530	2116-0250	250
JA/36532	2116-0500	500
JA/36534	2116-1000	1000



JA/362

# Jars, straight side, polypropylene

Translucent autoclavable jars with white polypropylene screw cap. Excellent chemical resistance.

Cat. No.	Code	Capacity, ml	Pk Qty
JA/36202	2118-0001	30	12
JA/36204	2118-0002	60	12
JA/36206	2118-0004	125	12
JA/36208	2118-0008	250	6
JA/36210	2118-0016	500	6
JA/36212	2118-0032	1000	6



CO/1620

# Jars, screw cap, polypropylene



- Excellent chemical resistance.
- Ideal for storage of samples, powders, animal feeds etc.
- Imprinted with S.P.I. recycling codes.

Cat. No.	Code	Capacity, ml	O.D. x height, mm	Pk Qty
CO/16202	JWP0030P	30	43 x 43	72
CO/16204	JWP0060P	60	53 x 47	48
CO/16206	JWP0125P	125	70 x 60	36
CO/16208	JWP0250P	250	89 x 66	36
CO/16210	JWP0500P	500	89 x 97	24
CO/16212	JWP0950P	950	120 x 100	24
CO/16214	JWP1200P	1200	120 x 132	24

# Jugs

# Jugs, moulded graduations, high clarity PP

- Ergonomically designed jugs
- Integral thumb grip on handle allows easy carrying even when full and heavy.
- Made from tough durable polypropylene
- Autoclavable at 121°C.
- Clear moulded graduations
- Full size range for all requirements

Cat. No.	Code	Capacity, ml	Sub divisions, ml	Nominal dimensions (h x rim diam.), mm	Pk Qty
JU/16740	JPM0050P	50	10	60 x 50	5
JU/16746	JPM0100P	100	20	72 x 61	5
JU/16756	JPM0250P	250	50	100 x 90	1
JU/16766	JPM0500P	500	50	120 x 102	1
JU/16776	JPM1000P	1000	100	180 x 122	1
JU/16780	JPM2000P	2000	100	189 x 151	1
JU/16784	JPM3000P	3000	200	215 x 172	1
JU/16788	JPM5000P	5000	500	253 x 199	1



JU/167

# Jugs, moulded graduations, short form, PP

Autoclavable, highly translucent especially when filled with liquids. Permanently moulded in graduations. Excellent chemical resistance. Non drip spout. Thumb grip on handle.

Cat. No.	Code	Capacity, ml	Graduations, ml
JU/46266	1156	500	25
JU/46276	1157	1000	50
JU/46280	1158	2000	50
JU/46284	1159	3000	100
JU/46288	1160	5000	250



JU/462

# Jugs, printed graduations, high clarity PP

- Printed jugs in high clarity polypropylene
- High clarity PP is autoclavable at 121°C
- Ergonomic handle means comfortable safe handling of all sizes.
- Sharp blue graduations are easy to read and are indelible.
- Precise non-drip pouring spouts reduce splashing.
- Complete size range for all requirements

Cat. No.	Code	Capacity, ml	Sub divisions, ml	Nominal dimensions (h x rim diam.), mm	Pk Qty
JU/16240	JPB0050P	50	10	60 x 50	5
JU/16246	JPB0100P	100	20	72 x 61	5
JU/16256	JPB0250P	250	50	90 x 100	1
JU/16266	JPB0500P	500	50	120 x 102	1
JU/16276	JPB1000P	1000	100	150 x 122	1
JU/16280	JPB2000P	2000	100	187 x 151	1
JU/16284	JPB3000P	3000	200	215 x 172	1
JU/16288	JPB5000P	5000	500	253 x 199	1



Azlon

JU/162

# Jugs, stainless steel, graduated, tapered with spout

Cat. No.	Capacity, ml	
JU/94066	500	
JU/94076	1000	
JU/94080	2000	



JU/940

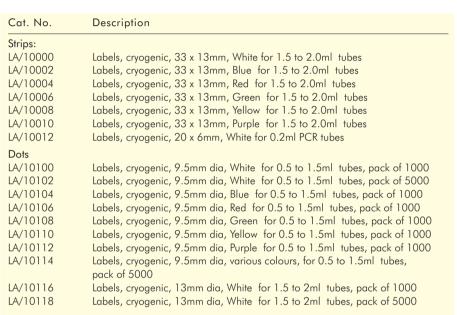
# Labels

# Cryogenic labels, strips and dots

Cryogenic labels, made from chemically inert polyester with a unique adhesive formulated to adhere to laboratory glass and plastic ware. The labels will withstand conventional freezing (-80°C) and can also be used for most cryogenic storage applications (vapour phase nitrogen storage at -196°C). No need for separate labelling solutions for your cryo-preservation units and your ultra-low freezers, they can also be used in incubators.

The labels do not require self-lamination to be effective, and will fit most storage systems without the label sticking or being torn off. A variety of colours and sizes are available to suit most requirements. Available as standard or for use with laser printers

- Suitable for use on Microcentrifuge tubes, cryovials, racks, boxes and microtiter plates
- No need to self-laminate
- Thinner labels mean they will fit most storage systems
- Bold colours for easy identification of samples
- Guaranteed not to come unstuck under normal use



## Suitable for use with laser printers:

Cat. No.	Description
Strips:	
LA/10200	Labels, cryogenic, 25 x 13mm, white for 0.5ml tubes
LA/10202	Labels, cryogenic, 33 x 13mm, white for 1.5ml to 2ml tubes
LA/10204	Labels, cryogenic, 33 x 13mm, assorted colours, for 1.5ml to 2ml tubes
LA/10206	Labels, cryogenic, 67 x 25mm, white, for racks and boxes
LA/10208	Labels, cryogenic, 38 x 6mm, white, for 96/384 plates
LA/10210	Labels, cryogenic, 38 x 6mm, assorted colours for 96/384 plates
Dots:	
LA/10212	Labels, cryogenic, 9.5mm dia. white for 0.5 to 1.5ml tubes
LA/10214	Labels, cryogenic, 13mm dia. white for 1.5 to 2.0ml tubes
LA/10216	Labels, cryogenic, 19mm dia., white for 15 to 50ml tubes

# Label dispenser, Acrylic

Dispenser, manufactured from durable acrylic which is easy to clean. Accommodates up to 6 rolls of cryogenic dots or strip labels. The 4 rubber feet hold the dispenser in place when used on countertops. It can also be wall mounted (screws not included).

Cat. No.	Description
LA/10030	Dispenser, acrylic holds up to 6 packs of cryogenic labels and dots



LA/10000



LA/10030

# Labelling

# Tape, labelling, cryogenic to -80°C

Laboratory tape, for labelling and easy identification of samples. Available in 4 sizes and 6 different colours. The paper based surface is suitable for all types of marker - fibre tips, ball point and gel pens. Ideal for use on most smooth plastic, glass and metal surfaces and can withstand temperatures down to -80°C.

Cat. No.	Description
LA/10302	Tape, 12m x 12.7mm, cryogenic, White, core size 2.7cm
LA/10304	Tape, 12m x 12.7mm, cryogenic, Red, core size 2.7cm
LA/10306	Tape, 12m x 12.7mm, cryogenic, Blue, core size 2.7cm
LA/10308	Tape, 12m x 12.7mm, cryogenic, Green, core size 2.7cm
LA/10310	Tape, 12m x 12.7mm, cryogenic, Yellow, core size 2.7cm
LA/10312	Tape, 12m x 12.7mm, cryogenic, Orange, core size 2.7cm
LA/10314	Tape, 12m x 19mm, cryogenic, White, core size 2.7cm
LA/10316	Tape, 12m x 19mm, cryogenic, Red, core size 2.7cm
LA/10318	Tape, 12m x 19mm, cryogenic, Blue, core size 2.7cm
LA/10320	Tape, 12m x 19mm, cryogenic, Green, core size 2.7cm
LA/10322	Tape, 12m x 19mm, cryogenic, Yellow, core size 2.7cm
LA/10324	Tape, 12m x 19mm, cryogenic, Orange, core size 2.7cm
LA/10326	Tape, 55m x 12.7mm, cryogenic, White, core size 7.7cm
LA/10328	Tape, 55m x 12.7mm, cryogenic, Red, core size 7.7cm
LA/10330	Tape, 55m x 12.7mm, cryogenic, Blue, core size 7.7cm
LA/10332	Tape, 55m x 12.7mm, cryogenic, Green, core size 7.7cm
LA/10334	Tape, 55m x 12.7mm, cryogenic, Yellow, core size 7.7cm
LA/10336	Tape, 55m x 12.7mm, cryogenic, Orange, core size 7.7cm
LA/10338	Tape, 55m x 19mm, cryogenic, White, core size 7.7cm
LA/10340	Tape, 55m x 19mm, cryogenic, Red, core size 7.7cm
LA/10342	Tape, 55m x 19mm, cryogenic, Blue, core size 7.7cm
LA/10344	Tape, 55m x 19mm, cryogenic, Green, core size 7.7cm
LA/10346	Tape, 55m x 19mm, cryogenic, Yellow, core size 7.7cm
LA/10348	Tape, 55m x 19mm, cryogenic, Orange, core size 7.7cm



LA/10316



LA/10346



LA/10360 and LA/10362

# Dispensers for labelling tape reels

Tape dispensers for labelling tape, available in 2 sizes, small for reels with 2.7cm core and a large version for tapes with a 7.7cm core. Both units are of solid metal construction and feature suction cups on the bottom of the unit to securely hold the dispenser to the benchtop. Both dispensers feature 4 positions that are easy to load and remove the tape reels and provide access to high volumes of tape from one handy location.

Cat. No.	Description
LA/10360	Dispenser, tape, small, 4 place, for tapes with 2.7mm core
LA/10362	Dispenser, tape, large, 4 place, for tapes with 7.7mm core

Notes	



LA/70020



LA/70022

# Laminar Flow Cabinets

#### Laminar flow cabinets Circulaire®

Monmouth Circulaire vertical and horizontal Laminar flow cabinets fully conforming to BS EN 14644 offer clean air to ISO Class 4 (FED class 10) To ensure compliance, the cabinets use British Manufactured, easily changeable, H15 ULPA particulate filters for the very best in product protection. The VLF-T and HLF-T range of cabinets are fitted with the latest digital fans to ensure low noise operation and low energy consumption. Energy efficiency is improved further with the use of internal LED lighting and PIR movement sensors to shut off all non-essential components when the cabinet senses a period of inactivity. Manufactured from Zintec powder coated mild steel, with clear glazed sides for maximum visibility. A Stainless Steel work surface, featuring a rolled edge for operator comfort, is included with the HLF models and available as an option for the VLF. Dimmable LED lighting is included. As an option UV lighting can be fitted with a removable and interlocked safety screen for sterilisation of the work area. All are fitted with the new Visionaire® 4.3 inch (11cm) full colour touch screen control system that allows control and monitoring and offers some of the following functions in its design:

- Automatic ECO mode, switches off lighting and electronic display after a period of operator inactivity\*
- Airflow Monitoring with actual airflow readings in m³/sec or cubic ft/min
- Electronic monitoring of pressure drop across filter face (in pascals)
- Automatic airflow compensation maintains air speeds at the correct predetermined level
- Audible\* and highly visual alarms should levels exceed specified limits
- · Lighting brightness adjustment
- · Easily identified warning and maintenance messages
- Fan running indicator
- Cabinet hours run time indicator
- Service interval monitoring
- Cabinet information screen with: date of commissioning, date of last & next service, filter fitment dates, cabinet serial number and filter part numbers.
- PIN number access to Engineer & Supervisor settings
- Optional UV light with electronically interlocked night door for ultimate operator safety\*\*
- Programmable UV light system including delayed operation and UV times with timer\*\* countdown
- UV light hours run indicator\*\*
- Double electrical socket on VLF models, available as an option on HLF models.
- Hinged front panel fitted as standard on VLF models

All units comply to BS EN 14644 and are CE marked.

\*Can be deactivated if preferred

\*\*Factory Fitted Option

Vertical models: External dimensions	VLFT1000	VLFT1200	VLFT1500	VLFT1800
(wxdxh) mm Internal dimensions	1000x745x1265	1200x745x1265	1500x745x1235	1800x745x1265
(wxdxh) mm* Air cleanliness Typical airflow speed ULPA filters	980x650x725	>0.4m/s	1480x650x725 (FED class 10) down-flow	1780x650x725
Airflow/ Filter		em with digital airfle	ow and filter pressu	
monitoring		v alarm and high p		
Typical noise level	Circa 51db(A)	Circa 52db(A)	Circa 54db(A) 80	Circa 54db(A) 90
Power (Watts)	00	70	00	90
Horizontal models: External dimensions	HLFT1000	HLFT1200	HLFT1500	HLFT1800
(wxdxh) mm Internal dimensions	1000x725x1165	1200x725x1165	1500x725x1165	1800x725x1165
(wxdxh) mm Air cleanliness Typical airflow speed	980x530x720		1480x530x720 4 (Class 10) down-flow	1780x530x720
ULPA filters			t at 0.12 microns	
Airflow/ Filter Visionaire® system with digital airflow and filter pressure drop reading, monitoring low airflow alarm and high pressure audible visual alarms				
Typical noise level	Circa 50db(A)	Circa 52db(A)	Circa 54db(A)	Circa 54db(A)
Power (Watts)	65	70	80	90

Cat. No.	Code	Description
LA/70000	VLFT1000	Laminar flow cabinet, Vertical, 1000mm wide
LA/70002	VLFT1200	Laminar flow cabinet, Vertical, 1200mm wide
LA/70004	VLFT1500	Laminar flow cabinet, Vertical, 1500mm wide
LA/70006	VLFT1800	Laminar flow cabinet, Vertical, 1800mm wide
LA/70020	HLFT900	Laminar flow cabinet, Horizontal, 1000mm wide
LA/70022	HLFT1200	Laminar flow cabinet, Horizontal, 1200mm wide
LA/70024	HLFT1500	Laminar flow cabinet, Horizontal, 1500mm wide
LA/70026	HLFT1800	Laminar flow cabinet, Horizontal, 1800mm wide

\* The internal height is reduced by 25mm when the work surface is fitted.

Replacement filters:
All models require 1 main filter. Models VLFT1800, HLT1500 and HLFT1800 require 2 prefilters, all other models require one prefilter only.

#### Filters:

Cat. No.	Code	Description
LA/70060	K-PF0022	Pre-filter, replacement for laminar flow cabinets
LA/70062	K-HF0135	Filter, main UPLA, replacement for model VLFT1000
LA/70064	K-HF0136	Filter, main UPLA, replacement for model VLFT1200
LA/70066	K-HF0137	Filter, main UPLA, replacement for model VLFT1500
LA/70068	K-HF0138	Filter, main UPLA, replacement for model VLFT1800
LA/70070	K-HF0140	Filter, main UPLA, replacement for model HLFT1000
LA/70072	K-HF0141	Filter, main UPLA, replacement for model HLFT1200
LA/70074	K-HF0142	Filter, main UPLA, replacement for model HLFT1500
LA/70076	K-HF0143	Filter, main UPLA, replacement for model HLFT1800

#### Additional options:

Cat. No.	Code	Description
LA/70080	K-VLF1000ST	Base stand for model VLFT1000 (A Stainless Steel work
		surface must also be purchased)
LA/70082	K-VLF1200ST	Base stand for model VLFT1200 (A Stainless Steel work
		surface must also be purchased)
LA/70084	K-VLF1500ST	Base stand for model VLFT1500 (A Stainless Steel work
		surface must also be purchased)
LA/70086	K-VLF1800ST	Base stand for model VLFT1800 (A Stainless Steel work
		surface must also be purchased)
LA/70090	K-HLF1000ST	Base stand for model HLFT1000
LA/70092	K-HLF1200ST	Base stand for model HLFT1200
LA/70094	K-HLF1500ST	Base stand for model HLFT1500
LA/70096	K-HLF1800ST	Base stand for model HLFT1800
LA/70100	K-VLF1000WS	Work surface, Stainless steel for model VLFT1000
LA/70102	K-VLF1200WS	Work surface, Stainless steel for model VLFT1200
LA/70104	K-VLF1500WS	Work surface, Stainless steel for model VLFT1500
LA/70106	K-VLF1800WS	Work surface, Stainless steel for model VLFT1800
LA/70110	K-VLF1000UV	UV light, night door and stainless steel work surface for model VLFT1000
LA/70112	K-VLF1200UV	UV light, night door and stainless steel work surface for model VLFT1200
LA/70114	K-VLF1500UV	UV light, night door and stainless steel work surface for model VLFT1500
LA/70116	K-VLF1800UV	UV light, night door and stainless steel work surface for model VLFT1800
LA/70120	K-CDES	Electrical socket, double for models HLFT1000, HLFT1200, HLFT1500, HLFT1800
LA/70122	K-HLF1000UV	UV light and night door for model HLFT1000
LA/70124	K-HLF1200UV	UV light and night door for model HLFT1200
LA/70126	K-HLF1500UV	UV light and night door for model HLFT1500
LA/70128	K-HLF1800UV	UV light and night door for model HLFT1800
		•





LA/70050

#### Economy bench mounted Vertical Laminar flow cabinet

The model VLF650E is the ideal solution for when a vertical laminar flow cabinet is required and only a small bench space is available. The head section is manufactured from epoxy powder coated Zintec mild steel and fitted with a recessed fluorescent strip light to illuminate the working area.

In addition, the base section is manufactured from epoxy powder coated Zintec steel. The 5mm clear acrylic panels ensure maximum visibility of the working area.

The comprehensive filtration system provides better than Class 100 (ISO 5) working environment. Air is initially pulled through an easy to change, high quality EU4 pre-filter to remove gross particulate. The air is then passed through the fan system before being pushed through a HEPA filter which removes 99.997% of all particles >0.3 microns in size.

An optional 316- grade stainless steel work surface is available.

Technical Specifications	
External dimensions (wxdxh) mm	669x408x1103
Internal dimensions (wxdxh) mm	607x346x762
Basic weight	32Kg
Pre-filter	98% efficient at 0.5microns (Grade EU4)
HEPA filter	Rated at 99.997% efficient at 0.3 micron particulates.
	Filter seals under negative pressure to prevent leaks into
	the cabinet
Laminar airflow	0.35m/s High performance low noise fans
Electrical requirement	230V / 50HZ AC - 400w
Internal lighting	Overhead fluorescent for maximum work surface
	illumination (>800lux)
Noise level	<55db(A)

Cat. No.	Code	Description		
LA/70050	VLF650E	Laminar flow cabinet, Economy model Vertical, 669mm wide		
Options and acc	essories			
LA/70060	K-PF0022	Pre-filter, replacement for laminar flow cabinets		
LA/70052	K-HF0099	HEPA Filter, replacement for VLF650E		
LA/70054	K-VLF650EST	Base stand for VLF650E		
LA/70056	K-VLF650EWS	Work surface, Stainless steel for VLF650E		

Notes		

# Lamps

#### Lamp, even illumination

A lamp which is suitable for a variety of applications. The 11W tube spreads an even light across the work surface. The head-joint construction makes the head fully adjustable in every direction and position. Supplied with table base, table clamp and tube

Cat. No.	Description
LA/93102	Even illumination lamp
LA/93104	Spare 11W PL tube



LA/93102

# Lamps, UV, UVIlite range

A wide range of ultraviolet lamps. There are filtered lamps in three wavelengths for use in fluorescent techniques and unfiltered lamps in both long and short (germicidal) wavelengths. All incorporate an extruded anodised aluminium housing and a specially designed unique profile has been developed for the hand held lamps. The operator friendly shape permits lamps to be held easily with gloved hands.

Applications include:

- Short wavelength (254nm)-fluorescence techniques, fluorochemistry, mineralogy, photopolymerisation, mutation studies, toxicology.
- Mid wavelength (312nm)-electrophoresis gel viewing.
- Long wavelength (365nm)-TLC plate viewing, fluorochemistry, food inspection, quality control, titration, pesticide analysis, mineralogy.

#### Filtered lamps

These highly efficient, well designed lamps are produced in two wavelengths: 254 and 365nm and dual wavelength combinations.

Cat. No.	Code	Filter(mm)	Tubes	Wavelength, (nm)
LU/43008	LF 106L	50x150	1x6W	365
LU/43010	LF 106S	50x150	1x6W	254
LU/43014	LF 206LS	50x150	1x6W/1x6W	365/254



#### Unfiltered, 254nm, germicidal lamps

Widely used in medical and scientific research laboratories as well as in electronics and food and beverage industries. Areas that must be kept free from bacterial contamination may be irradiated with UVItec germicidal lamps provided safeguards are in place to protect operators.

Cat. No.	Code	Tubes	Intensity, (mW/cm²)	
LU/43102	LI 206G	2x6W	1400 (15cm)	
LU/43104	LI 208G	2x8W	1800 (15cm)	
LU/43106	LI 215G	2x15W	76 (1 m)	
LU/43108	LI 230G	2x30W	152 (1m)	
LU/43110	LI 240G	2x40W	157 (1m)	
LU/43112	LI 340G	3x40W	219 (1m)	



LU/431

# Unfiltered, 365nm, long wavelength lamps

Long wavelength lamps with BL tubes: BL are actinic ultraviolet type and include a white light component in the output. Applications for the BL lamps include: polymer curing, adhesive curing, dermatology, pharmacology, photoresist exposure.

Cat. No.	Code	Tubes	Intensity, (mW/cm²)
LU/43202	LI 206BL	2x6W BL	1215 (15cm)
LU/43206	LI 240BL	2x40W BL	302 (1 m)

For ultraviolet safety ware please see the Safety section.



# LU/4322



LM/91308



LM/91310

#### Chroma viewing cabinets

The CV 415 cabinet is a professional unit for effective viewing with power intensity unequalled in this field.

- Incorporates 4 x 15Watt UV tubes plus one 40Watt white light bulb
- Easy control switch operation for each wavelength
- Versatile: simply change the tubes when a new wavelength is required
- Removable base panel enabling positioning above a standard transilluminator
- · Viewing port with UV absorbing filter

Cat. No.	Code	Description
LU/43220	CV 415MS	Viewing cabinet with 2 x 15 Watt 312nm, 2 x 15 Watt 254nm tubes plus 1 x 40 watt white light bulb
LU/43222	CV 415LS	Viewing cabinet with 2 x 15 Watt 365nm, 2 x 15 Watt 254nm tubes plus 1 x 40 watt white light bulb

Economy viewer CV 006 is a compact light weight, versatile and efficient solution to laboratory inspection of fluorescent samples.

- Can hold one or two UVIlite, 6W UV lamps
- Choose from 254, 312 or 365nm wavelength
- · Strong, lightweight design with black curtain
- Viewing port with UV absorbing filter

Cat. No.	Code	Description
LU/43230	CV 006	Mini viewing cabinet, takes either a single or two x 6 Watt, UVIlite filtered lamps

#### **UV** lamp stands

Cat. No.	Code	Description
LU/43240	LS-08	Light stand suitable for LI and LF lamps, 4, 6 or 8Watt
LU/43242	LS-15	Light stand suitable for LI and LF lamps, 15Watt

Please note: 20, 30 and 40 W lamps are supplied with built-in wall-bracket

# Light meters

#### Light Lux and Foot-Candles meter

With wide measuring range up to 400,000 Lux, large LCD display, 40-segment analogue bargraph, relative mode and user-selectable measuring units. Ideal for environmental monitoring, health and safety checks, and industrial applications

- Measures both Lux and Foot Candles (FC), user selectable
- Manual range selection of 5 ranges (Lux), 4 (FC)
- · Fully cosine corrected
- Sensor connected to the instrument by fixed 1.5 metre coiled cable
- Measuring rate of 1.5 times per second
- 43mm LCD display with backlight, 42 segment bar graph and function indicators
- Data Hold freezes measured values
- Max/Min Memory
- Relative reading from user set value
- Auto Power Off after 30 minutes
- Impact-resistant ABS case with protective rubber boot
- Supplied with carry pouch, rubber boot & protective lens cap

Cat. No.	Description
LM/91308	Light Meter Model LX-1308

#### Light meter, USB data logging

This data logging light meter has a USB interface with a wide measuring range of up to 400,000 Lux. It has a logging capacity of 16,000 readings and is an ideal light meter for environmental monitoring, health and safety checks, and industrial applications. The USB interface allows the user to connect the light meter to a PC or laptop for useful data analysis.

- Measures Lux or Foot Candles (FC) over 4 ranges
- Sensor connected by 1 metre cable
- 58mm LCD display with 41 segment bar graph and function indicators
- Data Hold, Peak Hold & Min/Max Memory
- Memory stores 99 readings which can be displayed on the instrument
- Relative reading from user set value
- Auto Power Off after 15 min
- Data Logger records over 16,000 readings with sampling rates and time set up by user
- USB interface
- Supplied with hard carry case, software & USB cable & protective lens cap

Cat. No.	Description
LM/91310	Light Meter Model LX-8809A

# Loops, needles and spreaders

#### Loops and needles, disposable, Sterile

High impact polystyrene loops and needles, 22.7cm long, smooth and flexible to provide uniform and smooth streaking without damaging the gel surface.

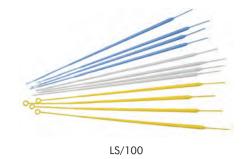
Needles are straight and suitable for removal of specimens of single colonies.

Disposable inoculating loops and needles do not need flaming; this eliminates the risk of infection due to aerosol formation of pathogenic substances, also cross-contamination, due to improper sterilization.

Usable under hoods without danger, colour-coded for ease of size identification. Gamma irradiated and packed sterile in safe, tamper proof, zip-seal resealable bags.

A certificate of calibration is supplied with each case.

Cat. No.	Description
Loops	
LS/10020	Loop, inoculating, disposable, 1µl, blue, 40 packs of 25 per case
LS/10022	Loop, inoculating, disposable, 1µl, blue, 10 packs of 100 per case
LS/10024	Loop, inoculating, disposable, 1µl, blue, individually wrapped, 250 per case
LS/10026	Loop, inoculating, disposable, 10µl, yellow, 40 packs of 25 per case
LS/10028	Loop, inoculating, disposable, 10µl, yellow, 10 packs of 100 per case
LS/10030	Loop, inoculating, disposable, 10µl, yellow, individually wrapped, 250 per case
Needles	
LS/10032	Needle, inoculating, disposable, white, 40 packs of 25 per case
LS/10034	Needle, inoculating, disposable, white, 10 packs of 100 per case
LS/10036	Needle, inoculating, disposable, white, individually wrapped, 250 per case



#### Loops, disposable

A high precision moulding process produces consistent volumes.

Mould cavities are highly polished to produce super smooth mouldings. Gamma irradiated.

Cat. No.	Description	Inner Pack	Pk qty
LS/91002	1 µl Loop, sterile, clear, rigid	20	1000
LS/91004	1 µl Loop, sterile, yellow, soft	20	1000
LS/91006	5 µl Loop, sterile, red, soft	20	1000
LS/91008	10 μl Loop, sterile, green, rigid	20	1000
LS/91010	10 μl Loop, sterile, blue, soft	20	1000



LS/910

#### Loops, needles and handles

Reusable needles and loops with fitted handle

Loops and needles are used to select, inoculate or transfer microbiological samples, made of high quality twisted nichrome wire and attached to a light-weight aluminium handle which is insulated to protect the hand during use. The loops have been designed to slide along agar surfaces without cutting or tearing. Loops, needles and handles cool rapidly after sterilization, the loops are offered calibrated (1 $\mu$ l & 10 $\mu$ l) or non-calibrated in small, medium or large, colour coded for easy identification.

Calibrated loops are supplied with calibration certificates based on ASM/APHA Evans Blue Dye test protocols.

Needles are offered straight or angled with colour coded handle

Cat. No.	Description
Loops	
LS/10100	Loop, 2.3mm dia, non-calibrated, with handle, reusable
LS/10102	Loop, 3mm dia, non-calibrated, with handle, reusable
LS/10104	Loop, 3.6mm dia, non-calibrated, with handle, reusable
LS/10110	Loop, 1µl, calibrated, with white handle, reusable
LS/10112	Loop, 10µl, calibrated, with clear handle, reusable
Needles	
LS/10120	Needle, 6 Straight, white handle
LS/10122	Needle, 6 Angled, blue handle
LS/10124	Needle, 3 Straight 25Gauge, no handle
LS/10126	Needle, 10.75 Micro, clear handle



Non-calibrated loops, made from high quality twisted nichrome wire, are available in 3 sizes, and the calibrated loops are available in 2 sizes.

Cat. No.	Description
LS/10140	Loop, 2.3mm i.d, non-calibrated, without handle, reusable
LS/10142	Loop, 3mm i.d, non-calibrated, without handle, reusable
LS/10144	Loop, 3.6mm i.d, non-calibrated, without handle, reusable
LS/10146	Loop, $1\mu$ l, calibrated, without handle, reusable
LS/10148	Loop, 10μl, calibrated, without handle, reusable



LS/101



DI/441

#### Needle holder, aluminium with screw chuck

Cat. No.	Overall length, mm	Pk Qty
DI/44128	150	2
DI/44130	175	2
DI/44124	200	2



LS/10250

#### Cell spreader, disposable

Disposable cell spreaders are designed with an L-shape that allows application on the entire petri dish or plate surface. Smooth spreading surface with slight upward return reduces the risk of damaging agar sample. Manufactured from polypropylene, and pre-sterilized to eliminate the need for flaming or autoclaving. Packaged in a case of 500 in bags of 10 or a case of 100, packed individually in peel back pouches.

Cat. No.	Description	
LS/10250	Cell spreader, sterile in bags of 10	
LS/10252	Cell spreader, sterile individually wrapped	



LS/91030

#### Spreader, Stainless steel

Stainless steel spreader, reusable, flame and autoclave sterilisable.

Cat. No.	Description	
LS/91030	Spreader, stainless steel, bar dimensions 203mm long, 33mm wide, rod diameter 4mm	



#### Cell scrapers

Sterile cell scrapers are designed to harvest cells from a variety of flasks, dishes and plates. Featuring a pivoting blade that can be turned horizontal or vertical depending on application. The swivel blade design allows the user to access the entire cell culture surface, including difficult to reach corners.

- ABS handle with ribbed grips prevent slippage during use
- Thermo Plastic Elastomer (TPE) blade prevents cell damage
- Available in two sizes
- Supplied individually wrapped in paper plastic blister packs
- Sterilized by Gamma irradiation

Cat. No.	Description		
TC/10000	Cell scraper, sterile, blade 20mm, handle 25cm, pack of 100		
TC/10002	Cell scraper, sterile, blade 30mm, handle 39cm, pack of 100		

# Loop steriliser

The Nova Microcinerator is designed to sterilise metal inoculating loops and needles without using an open flame; aerosolization of microorganisms. The emitted infrared heat is contained inside a ceramic tube, which protects the operator from dangerous gases, flames and splatter. After reaching its optimum sterilization temperature 815°C (1500°F) loops and needles are sterilized within 5-7 seconds.

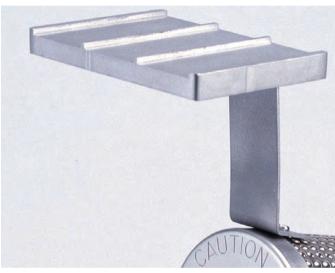
The heating element is protected by a perforated stainless steel cowl. Unlike other models with fixed burner assemblies; the Nova can be adjusted to five different positions in  $8^{\circ}$  increments (- $8^{\circ}$  -  $+32^{\circ}$ ). The ergonomic design reduces hand fatigue by allowing the user to access the burner from multiple positions.

Two accessories are available for the incinerator:

- Slide dryer: Using the heat already generated by your incinerator, slides, sputum, exudates and other thick mucus fluids can be dried with no morphological distortions. It also works for dissolving epithelium using the KOH mycology technique.
- Loop rest: Protects your loop handles form overheating and/or melting. It will accommodate most
  makes of loops and attaches easily to the incinerator.

Cat. No.	Description	
LS/10000	Micro loop incinerator, Nova, 815°C with adjustable tilt	
LS/10002	Heating element, spare for the Nova incinerator	
LS/10004	Slide drying attachment	
LS/10006	Rest for micro loops	







LS/10004 LS/10006

Notes	
	-
	-



MA/93112

# Magnifiers

# Magnifier, folding

A polished metal finish folding pocket magnifier with 2 glass lenses. One 26mm dia x8 magnification lens and one 14mm dia x15 magnification lens.

Cat. No.	Description
MA/93112	Folding magnifier



MA/9310

#### Magnifiers, hand

Glass lens in brass nickel coated frame with black handle.

Cat. No.	Lens dia., mm	magnification
MA/93102	50	2.6
MA/93104	63	2.6
MA/93106	75	2
MA/93108	90	2



ML/93512

# Magnifying lamp, fluorescent

Designed for inspection work, ultra-slim magnifying lamp. Optimum flexibility with  $17.5 \, \text{cm}$  diameter precision glass lens x 1.75 and strong  $28 \, \text{W}$  energy saving tube ( $150 \, \text{W}$  equiv.).

- Ergonomic and professional high quality inspection lamp
- Flicker-free electronic ballast
- Quick lens swap system

Cat. No.	Description		
ML/93512	Magnifying lamp illuminated		
ML/93514	Table base		
ML/93516	Floor stand with wheels		
ML/93518	Spare tube 28W		
ML/93520	Wall bracket		



ML/93514





ML/93518

# **Melting Point Apparatus**

# Melting Point Apparatus, digital, SMP10 and SMP20

The SMP10 and SMP20 have been designed with safety and ease of operation in mind making it ideal for use in education. The SMP10 displays temperature to 1 degree resolution while the more advanced SMP20 has a 0.1 degree resolution as well as a variable ramp rate and hold key so that the exact melt temperature can be recorded.

Two samples can be tested simultaneously. They are viewed via a magnifying lens with clear observation aided by built in illumination. Extendible back feet allow the unit to be operated at the optimum viewing angle. Full access to the block aids cleaning. The simple to follow instructions are printed directly on the instrument in most European languages for ease of use.

To operate simply select a plateau temperature via the digital display and press "start". The unit quickly heats up and remains at the selected plateau temperature until the user is ready to start the test. Insert the sample tubes and press "start". The unit then heats at a fixed rate of 2°C per minute for the SMP10 and at a user selected rate of between 1 and 10°C per minute for the SMP20. When the sample is seen to melt, note the temperature on the display. Press "stop" to end heating and cool the block.

- Digital selection & display of temperature
- Choice of accuracy, 1 or 0.1 degree resolution
- Easy to operate with plateau facility
- Ideal for educational use
- Supplied with calibration certificate

Technical Specifications		
	SMP10	SMP20
Number of samples	2	
Temperature range	Ambient to 300	)°C
Temperature accuracy	± 1.0°C at 20°C	± 2.5°C at 300°C
Display	Three digit LED	Four digit LED
Display resolution	1°C	0.1°C
Display hold facility	No	Yes
Ramp rates	20°C per minute to plateau,	20°C per minute to plateau,
	2°C per minute to melt	variable between 1 and 10°C
		per minute to melt
Dimensions (w x d x h)	160 x 220 x 170	)mm
Net weight	1.8 Kg	
Electrical supply	230V, 50Hz, 75	5W

Cat. No.	Model	Description
MP/15202	SMP10	Melting point apparatus, 1°C resolution, with pack of 100 melting point tubes, closed one end
MP/15204	SMP20	Melting point apparatus, 0.1°C resolution, with pack of 100 melting point tubes, closed one end
Accessory/Spa	re	
MP/15302	SMP10/1	Glass melting point tubes, closed one end, pack of 100



MP/15202



MP/15204

#### Melting Point Apparatus, advanced, SMP30

-Pstuart The SMP30 can take three samples simultaneously within the optimised heating block. To allow maximum flexibility a plateau facility is included with variable ramp rate between 0.5 and 10°C in 0.1°C increments. The tubes are illuminated with bright white LED's to give the clearest view of the samples during the melt. The block has been designed for easy access for cleaning. To

allow the most comfortable viewing angle the SMP30 features a two stage head adjustment. The SMP30 features a heads up display (patent pending), this unique feature displays a floating image of the block temperature, visible through the eyepiece, in front of the tubes.

An accessory printer is available separately to produce a written record of the melt.

- Maximum temperature 400°C
- Heads up display
- Integrated cooling 350°C to 50°C in 10 minutes
- Large easy to read user friendly interface

For technical specification and ordering information, see next page.



MP/15102

# Melting Point Apparatus, advanced, SMP30 continued



#### Technical Specifications

No of samples 3

Temperature range Ambient to 400°C

Temperature resolution 0.1°C
Display 40 x 4 LCD

Ramp rates 0.5-10°C in 0.1°C increments

Memory 8 results per tube

Date/time display Yes
Cool down time 350-50°C ~10 mins
Heat up time 50-350°C ~ 6 mins

Electrical supply 120V / 230V, 50-60Hz, Language variants English, German, French, Italian

Temperature units °C, °I

Cat. No.	Code	Description
MP/15102	SMP30	Melting point apparatus, complete with pack of 100 melting point tubes, closed at both ends.
MP/15302	SMP10/1	Glass melting point tubes, closed at one end, pack of 100
MP/15304	SMP2/1	Glass melting point tubes, closed at both ends, pack of 100
MP/15106	SMP30/1	Accessory printer with power supply

#### Automatic Melting Point Apparatus, SMP50



The Stuart SMP50 Automatic melting point apparatus incorporates the latest digital camera technology to produce a high resolution video of the sample melt. This allows the intelligent melt algorithm to identify the smallest of changes within the sample, accurately and reliably determining the melting point of up to three samples simultaneously.

The custom designed user interface is based on an established Android platform and produces intuitive setup and navigation features. All operation is via the 7" high definition colour touchscreen which, once programmed, users can leave the SMP50 to complete the melt analysis independently. As an alternative, the melt can also be observed on the screen live or post-melt. During the post melt review, additional measurement tags can be added if required, such as meniscus point or the automatically obtained result can be overwritten.

A generous 8GB on board storage is included, which should comfortably hold approximately 300 melts files including videos. Results can also be transferred via USB stick on on to a PC for a more permanent long term record. In addition to this, there is also an accessory printer available for direct printing of results for immediate use directly from the unit. All video files include a temperature stamp, so whatever device they are viewed on, confirmed yield can be automatically obtained.

The unit also incorporates a storage drawer that can be used to hold melting point tubes and also contains a cutter that can be used to accurately, and cleanly, cut sample tubes in half if required. All units are supplied with a calibration certificate showing the individual serial number, manufactured to conform to Pharmacopeia and GLP.



MP/1530

#### **Technical Specifications** Number of samples 3 Simultaneously Ambient to 400°C Temperature range Temperature resolution 0.1°C 7inch HD colour Display Ramp rates 0.1 - 20°C in 0.1°C increments PT1000 Platinum resistance Temperature sensor 8GB (approx. 300 results with video) Cool down time 350 - 50°C ~12 minutes ~6 minutes Heat up time 5 - 350°C Closed loop PID Oven control Data transfer USB Flash drive Sample level 2 - 3mm in 50mm or 100mm length capillaries 120V 230V, 50 - 60Hz Electrical supply Temperature units °C or °F 164 x 360 x 300mm Size $(h \times w \times d)$ Nett weight 4.6Kg English, French Languages



MP/15404

Cat. No.	Code	Description
MP/15404	SMP50	Melting point apparatus, complete with pack of 100 melting point
		tubes
SP/25104	SMP50/Printer	Printer, accessory
MP/15302	SMP10/1	Glass melting point tubes, closed at one end, pack of 100
MP/15304	SMP2/1	Glass melting point tubes, closed at both ends, pack of 100

#### Melting Point Apparatus

- Adjustable extension arm
- Rotating viewing head
- Adjustable object lens
- Integral LED light and 8 x wide angle viewing magnifier.
- Digital microprocessor with 0.1°C resolution
- Audible temperature stabilization alert.
- Push-button controls.
- Aluminium heating block
- Temperature range of ambient to 400°C.
- Models IA9200 has RS232 interface

#### Model IA9100

- Records four discrete temperatures by simply pushing the "go-to" button.
- Unit comes with one fixed temperature ramp rate (1°C/min).
- Fast Ramp Rate of 10°C/min. feature can be used if the melt temperature is unknown. This fast ramp feature can help to find an approximate measurement of melt temperature.
- Temperature data can be temporarily stored and recalled on the LCD display.

#### Model IA9200

- Records up to four discrete temperatures by simply pushing the "go-to" button.
- Programmable ramp rates from 0.2 to 10.0°C/min. in 0.1°C increments.
- Can store up to 1000 batches of data, which can be later recalled and viewed on the LCD display or can be printed. Date and time can be recorded or printed using the real time clock function.

p rate
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Supplied with pack of 100 tubes, power supply and cable.

Cat. No.	Code	Description
Accessories		
MP/25108	AZ9001	Cold finger
MP/25118	AT4042	Capillary tubes 1.5mm,10 packs of 100 tubes
MP/25120	AT4043	Capillary tubes 2.0mm,10 packs of 100 tubes
MP/25122	PR2000/S	Printer for model IA9200
MP/25124	AT4044	Paper roll for printer

#### Melting point tubes

Outside diameter 1.8/2.0mm, wall thickness 0.28/0.32mm. Soda glass packed in tubular cartons of 100.

Cat. No.	Description	Pk Qty
MP/42002	100mm long, open ends	1000
MP/42004	100mm long, sealed one end	1000



Electrothermal

MP/2510



MP/42002

# Micrometer and Caliper gauges

#### Micrometer Gauge

Available in both digital and non-digital versions.

Cat. No.	Description
MG/90010	Micrometer, external range 0 - 25mm x 0.01mm (±0.002mm)
MG/90012	Micrometer, pro, digital, external range 0 - 25mm x 0.001mm

# Caliper, Vernier

With roller adjustment and optional digital LCD display.

Cat. No.	Description
MG/90002	Caliper gauge, Vernier, 125mm x 0.1mm
MG/90004	Caliper gauge, digital, 150mm x 0.1mm, supplied in vinyl pouch



MG/92002



MG/92004



MR/16020



MR/16020 open



MR/16020 right



MR/16020

# Microplate reader

#### Microplate Reader, Labtech LT-4500

Microplate reader, high performance visible absorbance.

The LT-4500 compact absorbance reader has been born out of 20 years experience with microplates using innovative LED technology to produce an absorbance reader and software package to fit into all laboratory environments.

The new LT-com software package, provides flexible qualitative and quantitative analysis capabilities, and has been designed from the outset to allow compliance with key regulatory requirements.

- Compact design 34.7 x 18.9 cm footprint saves valuable bench space
- Easy setup Plug and play USB interface allows easy setup in minutes
- Fast and accurate results 8 channel (+1 reference) optical system ensures fast read time with accurate and reproducible results
- Proven reliability Tested reliability of >100,000 plates
- Filters Four standard filters with space for up to 4 optional filters that are user installable without the need for tools
- Shaking Linear shaking with four modes
- LT-com data analysis software supplied as standard

#### LED technology

- Long maintenance free service life
- No warm up time or waiting
- 50% lower energy consumption than traditional readers
- No cooling fans or vents, therefore no dust drawn onto optics reducing light transmission

#### Key software features

- Designed to meet the 98/79/EC IVD-D directive and the FDA 21 CFR part 11 regulation for data integrity
- Electronic signatures, records and multilevel user account management for use in clinical or regulated environments
- Choice of nine languages (English, Japanese, Chinese, French, German, Italian, Portuguese, Russian and Spanish)
- Full qualitative and quantitative analysis functionality including all major curve fits
- Fully flexible data exporting options including Excel®, ASCII and ASTM
- Comprehensive QC features including plate to plate QC
- Comprehensive kinetic data reduction capability
- Supplied on USB flash drive for easy installation on netbooks, laptops or desktop computers

#### **Technical Specifications**

Light source LED, self-calibrating Silicon photodiodes Detectors Measurement channels 8 + 1 reference Wavelength range 400 - 750nm Wavelength selection Filter (8 filter positions) 405, 450, 492 and 620nm Supplied filters Plate formats 96 well (including strip microplates) 0 - 4 OD Measurement range Resolution 0.0001 OD

Accuracy at 450/492nm

 $\begin{array}{lll} \text{0.000 - 2000 OD} & & < (0.5\% + 0.010 \text{ OD}) \text{ typical} \\ \text{2.000 - 3.000 OD} & & < (1.0\% + 0.010 \text{ OD}) \text{ typical} \end{array}$ 

Precision/Reproducibility at 450/492nm

 $\begin{array}{lll} \text{0.000 - 2000 OD} & & < (0.5\% + 0.005 \text{ OD}) \text{ typical} \\ \text{2.000 - 3.000 OD} & & < (1.0\% + 0.005 \text{ OD}) \text{ typical} \end{array}$ 

Linearity

0.000 - 2000 OD <1.0% 2.000 - 3.000 OD <1.5% Computer interface USB 1.1/2.0

Dimensions (cm)  $13.4(h) \times 34.7(w) \times 18.9(d)$ 

Weight <3kg

Power supply external 100 - 240V AC, 50/60Hz (auto sensing)

Cat. No.	Code	Description
MR/16020	LT-4500	Absorbance plate reader with LT-com analysis and PC software

# Microplate washer

#### Microplate Washer Labtech LT-3500

Microplate washer, fully automatic with flexible programming, 100 user defined wash protocols, and automated switching between 3 wash and 1 rinse bottles.

- Fully automated washing improves intra and inter-plate reproducibility and minimises the number of failed experiments
- Fully flexible programming with up to 100 user-defined wash protocols and 10 plate types allowed
- Wash parameters to be optimised for all assays
- Plate shaking and bottom washing features for increased wash stringency
- Integrated valve system allows fully automated switching between up to 3 wash buffers for assay flexibility
- Washes all standard flat, round and v-bottom 96 well plates
- Monitoring of liquid levels prevents spillage of potentially hazardous waste and alerts users when wash buffers run out
- Dedicated rinse bottle and automated rinse cycle minimise blockages

Description



Dimensions L x W x H (mm)	450 x 390 x 190 (excluding bottles)
Net Weight	13Kg
Residual Volume	$< 1\mu$ l
Wash Volume	10 – 3,000 μl
Wash Cycles	Up to 99
Soak Time	0 - 24 hours
Shake Time	0 - 24 hours
Plate Types	96 well flat, round and v-bottom
Bottle Capacity	2 L
Supplied Bottles	3 x wash and 1 x rinse
Memory	100 user-defined wash protocols, 10 plate types
Display	5 LCD
Power Supply	AC 220V $\pm$ 10%, 50 $-$ 60 Hz

Labtech Microplate Strip Washer with 8 and 12 way manifolds

# Microtitre plates

Code

LT-3500

#### Microtitre plates

Cat. No.

MR/16030



Sterilin rigid, clear multiwell plates are manufactured out of premium grade virgin polystyrene and offer excellent optical clarity. Black and white rigid, flat bottom, microtitres are also available for fluorescence and bioluminescence work. U wells hold 415µl, V wells hold 334µl and the flat based product holds 406µl in volume. The separately available lid is furnished with condensation rings. All Sterilin multiwells are now CE marked in accordance with the in-vitro diagnostic directive (98/79/EC). A specially designed 25µl dropping pipette made of cellulose acetate and polyethylene, in sterile or non-sterile form is also available.

Cat. No.	Code	Description	Sterility	Inner Pk	Pk Qty
MT/16602	611U96	96 well plate, U bottom	NS	5	50
MT/16604	611V96	96 well plate, V bottom	NS	5	50
MT/16606	611F96	96 well plate, Flat bottom	NS	5	50
MT/16608	612U96	96 well plate, U bottom	IRR	1	50
MT/16610	612V96	96 well plate, V bottom	IRR	1	50
MT/16612	612F96	96 well plate, Flat bottom	IRR	1	50
MT/16614	642000	Lid for microtitre plate	IRR	1	50
MT/16616	611F96BK	Black 96 well plate	NS	5	50
MT/16618	611F96WT	White 96 well plate	NS	5	50



MT/166

Polystyrene non sterile microtitre plates in cases of 100

Cat. No.	Description	Pk Qty
MT/96602	U Well Microtitre plate	100
MT/96604	V Well Microtitre plate	100
MT/96606	F Well Microtitre plate	100
MT/96614	Lid for Microtitre plates	100



MT/966



MS/25000



MS/25006



MS/56106

# Microscopes

#### Microscopes, transmitted light



KERN OBS range is a solid and simple collection of school microscopes, which are easy to use due to their intuitive control elements.

- OBE range is a fully equipped all-round compound microscope for school, training and laboratories, ideal for haematology/sediment investigation etc.
- OBL is a professional series with an infinity optical unit & transmitted illumination for more demanding users & laboratory applications.
- OBN series stands out because of its unbeatable and consistently high quality and its ergonomic design. These models have a Koehler illumination unit, protective dust cover and eye cups included as standard. C-mount adapter is required to connect a camera.
- OSF is an extremely practical stereo microscope which is easy to use & has a built-in handle for
  portability. The eyepieces are fixed into the lens barrel, to stop them getting damaged or lost.
   Samples illuminated with reflected and transmitted lighting.
- OZL series are stereo zoom microscopes, that are robust with integrated LCD reflected and transmitted light for more demanding applications.
- Additional illumination is an optional extra.

Cat. No.	Code	Description
MS/25000	OBS 104	Microscope, binocular with 10x HWF eyepieces
MS/25018	OBE 112	Microscope, binocular, compound, WF10x eyepieces, 4x, 10x,
N. (0. F. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	ODI 105	40x 100x objectives
MS/25002	OBL 125	Microscope, binocular, compound, 10x20mm eyepieces, 4x, 10x, 40x 100x objectives
MS/25004	OBL 145	Microscope, binocular, phase contrast, WF10x, 20mmØ eyepieces, 4x, 10x, 40x, 100x objectives
MS/25006	OBL 155	Microscope, trinocular, phase contrast, WF10x, 20mmØ
MS/25008	OBN 135	eyepieces, 4x, 10x, 40x, 100x objectives Microscope, trinocular, Koehler illumination, WF10x, 20mmØ eyepieces, 4x, 10x, 20x, 40x, 100x objectives
MS/25010	OBN 147	Microscope, Fluorescence, trinocular*, WF10x 20mmØ, INF plan 4x, 10x, 20x, 40x, 100x objectives
MS/25012	OSF 438	Microscope, Stereo, binocular WF10 x 20mmØ, 1x, 2x, 3x objectives
MS/25014	OZL 463	Microscope, Stereo zoom, binocular Greenough HWF10 x 20mmØ, 0.7, 4.5x objectives
MS/25016	OZL 464	Microscope, Stereo zoom, trinocular Greenough HWF10 x 20mmØ, 0.7, 4.5x objectives
Accessories:		
MS/25500	OSB-A6102	Illuminator, ring, 4.5W LED, approximately 7600K
MS/25502	OZB-A4515	Illuminator, dual fibre optic 6W LED, 5600 - 6300K
MS/25504	ODC 822	Camera* 1.3MP CMOS,1/3", USB 2.0 colour for trinocular microscopes
MS/25506	ODC 824	Camera* 3.1MP CMOS,1/2", USB 2.0 colour for trinocular microscopes
MS/25508	ODC 825	Camera* 5.1MP CMOS,1/255", USB 2.0 colour for trinocular microscopes
MS/25510	ODC874	Camera*, eyepiece, for binocular microscopes, 3MP CMOS 1/2.7" USB 2.0 colour
MS/25512	OBB-A1515	Adapter, C-Mount 0.5x with adjustable focus for MS/25006
MS/25514	OBB-A1136	Adapter, C-Mount 0.57x with adjustable focus for MS/25008 and MS/25010
MS/25516	OZB-A4811	Adapter, C-Mount 0.5x with adjustable focus for MS/25016

<sup>\*</sup>Cameras ODC 822, ODC 824 and ODC 825 can be used with trinocular microscopes using an adapter; the ODC 874 camera replaces one of the eyepieces and does not require an adapter.

# Educational microscopes



The Micro Blue entry level microscope is designed with education in mind, easy to use and student friendly. They are high quality and will withstand extensive use and rough handling. Supplied with a fixed lens condenser and a plain stage and 35mm achromatic objectives, the built-in rechargeable batteries enable cordless operation.

The Bio Blue series of educational microscopes feature the finest optical components providing clear, bright and crisp high-resolution images at every magnification. Supplied with DIN WF 10x/18 objectives, the image stays perfectly in focus and centred when changing magnification. With the exception of model BB.4200, which comes with a plain stage, the X-Y mechanical stage supplied with the other models provides  $2\mu$ m precision positioning of the specimen.

The BioBlue Lab series of microscopes are suitable for use in education as well as in the laboratory environment. The  $150 \times 140$ mm stage with integrated rack less X-Y mechanical stage allowing a  $75 \times 30$ mm travel provides smooth translation and precise positioning of the specimen. This feature is particularly appreciated in most demanding cytology and histopathology applications. Available in both binocular and trinocular versions featuring either plan or IOS objectives, all models feature Neo LED lighting.

Cat. No.	Code	Description
MS/56000	MB.1001	Microscope, MicroBlue monocular, 10x/18 eyepiece, 4/10/40x spring objectives
MS/56050	BB.4200	Microscope, BioBlue, monocular, 10x/18 eyepiece with pointer, 4 place nosepiece, semi-plan objectives 4/10/40x spring LED
MS/56052	BB.4220	Microscope, BioBlue, monocular, 10x/18 eyepiece with pointer, 4 place nosepiece, semi-plan objectives 4/10/40x spring, mechanical stage LED
MS/56054	BB.4240	Microscope, BioBlue, monocular, 10x/18 eyepiece with pointer, 4 place nosepiece, semi-plan objectives 4/10/40x spring/60x, mechanical stage LED
MS/56056	BB.4250	Microscope, BioBlue, monocular, 10x/18 eyepiece with pointer, 4 place nosepiece, semi-plan objectives 4/10/40x spring/100x, mechanical stage LED
MS/56058	BB.4260	Microscope, BioBlue, binocular, 10x/18 eyepieces, 4 place nosepiece, semi-plan objectives 4/10/40x spring/100x spring, mechanical stage NeoLED
MS/56060	BB.4263	Microscope, BioBlue, binocular, 10x/18 eyepieces, 4 place nosepiece, semi-plan objectives 4/10/40x spring/60x spring, mechanical stage NeoLED
MS/56062	BB.4243	Microscope, BioBlue, trinocular, 10x/18 eyepieces, 4 place nosepiece, semi-plan objectives 4/10/40x spring/60x spring, mechanical stage NeoLED
MS/56064	BB.4253	Microscope, BioBlue, trinocular, 10x/18 eyepieces, 4 place nosepiece, semi-plan objectives 4/10/40x spring/100x spring, mechanical stage NeoLED
MS/56100	BB1152-PL	Microscope, BioBlue Lab, binocular, 10x/20 eyepieces, 4 place nosepiece, plan objectives 4/10/40x spring/100x spring, mechanical stage NeoLED
MS/56102	BB1153-PL	Microscope, BioBlue Lab, trinocular, 10x/20 eyepieces, 4 place nosepiece, plan objectives 4/10/40x spring/100x spring, mechanical stage NeoLED
MS/56104	BB.1152-PLi	Microscope, BioBlue Lab, binocular, 10x/20 eyepieces, 4 place nosepiece, plan infinity IOS objectives 4/10/40x spring/100x spring, mechanical stage, NeoLED
MS/56106	BB1153-PLi	Microscope, BioBlue Lab, trinocular, 10x/20 eyepieces, 4 place nosepiece, plan infinity IOS objectives 4/10/40x spring/100x spring, mechanical stage, NeoLED



MS/56060

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MS/55000



MS/55050

#### Microscopes, educational



Optika educational microscopes for routine applications, with or without rechargeable Lithium battery for portable use

- Dye-cast frame, with high stability and comfort, for transmitted light observation.
- Mechanical stage, adjustable condenser with iris diaphragm
- X-LED<sup>1</sup> Illumination with intensity control
- Unique 60x or 100x N-plan objectives available on the RPL versions
- 100x N-plan objective can be used with water or oil
- Industry leading 10 year warranty on optical and mechanical parts

Technical Specifications					
B-155 B-155RPL B-159					
WF 10x/18 WF 10x/18 WF 10x/18					
4x 10x 40x 100x(Oil or water)					
N Y N					
N Y N					

Cat. No.	Code	Description
MS/55000	B-153	Monocular microscope, 600x, double layer stage
MS/55002	B-153R-PL	Monocular microscope 600x, rechargeable Lithium battery
MS/55004	B-155	Monocular microscope, 1000x, double layer stage
MS/55006	B-155R-PL	Monocular microscope 1000x, rechargeable Lithium battery
MS/55008	B-159	Binocular microscope, 1000x, double layer stage
MS/55010	4083.WiFi	Camera, WiFi, 2MP with USB2 socket, gives 5MP when used
		with a PC

N.B. A range of additional eyepieces and objectives are available, please enquire.

#### Microscopes, Optika B-290 Series Routine



The B-290 series microscopes from Optika, incorporate all the experience they have gathered in the field of light microscopy, adapted specifically for routine laboratory brightfield applications. These microscopes are suitable for routine microscopy and have an ergonomic design for comfortable long-term use.

All the main controls are located close to each other which enables operation with minimal movements.

Optical system: The optical system has been developed for demanding users, it consists of high quality components which guarantee a high image contrast and an excellent optical resolution. The optical components have been designed and treated with special techniques to prevent formation of fungi and moulds.

Stand: The stand has a modern and ergonomic design which makes the microscope easy to carry thanks to the large opening behind the revolving nosepiece. This enables the stand to be used as a safe handle. The opening allows the user to clearly see the objectives and the samples.

Mechanics: The moving parts are made by means of computerised, numerically controlled machine tools which has the effect of reducing manufacturing tolerances and increasing the reliability of the

- Widefield eyepieces 10x/20mm
- Quadruple reversed nosepiece
- E-Plan Achromatic objectives, 4x/0.10, 10x/0.25, 40x/0.65 and 100x/1.25
- Double layer stage 150 x 133mm with X-Y moving range 75 x 50mm by belt drive system

instrument. All materials and production processes are to ISO 9001:2008 quality standard.

- Coaxial coarse and fine focusing
- X-LED<sup>3</sup> lighting system with adjustable intensity
- Sliding 1.25N.A Abbe type condenser with adjustable height and iris diaphragm
- For use on 100-240Vac, 50-60Hz external power adapter with 6Vdc output
- Available with binocular or trinocular, 360° rotating head inclined at 30°

Cat. No.	Code	Description
MS/55050	B-292	Binocular routine microscope, B-290 Series
MS/55052	B-293	Trinocular routine microscope, B-290 Series
MS/55054	M-160	Eyepiece WF10x/20mm
MS/55056	M-161	Eyepiece WF15x
MS/55058	M-162	Eyepiece WF20x
MS/55060	M-163	Micrometer eyepiece WF10x/20mm
MS/55062	M-005	Micrometric slide, 76 x 26mm, range 1mm, divisions 0.01mm
MS/55064	M-164	Objective 4x/0.10 E-PLAN
MS/55066	M-165	Objective 10x/0.25 E-PLAN
MS/55068	M-166	Objective 20x/0.40 E-PLAN
MS/55070	M-167	Objective 40x/0.65 E-PLAN
MS/55072	M-168	Objective 60x/0.80E-PLAN
MS/55074	M-169	Objective 100x/1.25 E-PLAN (Oil)
MS/55076	M-174	Polarizing set (filters only)
MS/55078	M-175	Rotating table for polarizing set
MS/55080	M-069	Solar battery pack
MS/55082	M-173	Photo adapter for reflex camera with APS-C sensor
MS/55084	M-114	CCD camera adapter 0.37x

# Microscopes, Stereo ST-50 LED

This stereo microscope has wide applications in science and industry. Large objects, twigs, rocks, leaves, flowers, gems, industrial parts etc., can easily be accommodated under the flex arm. The advantage of ST-50 LED is the flex arm contains the LED illumination which provides high intensity white light to all positions over the object.

- Binocular head inclined 45° frontally
- WF10x/20mm (paired)
- Fixed objective 2x
- Incident LED illumination with flex arm

Cat. No.	Code	Description
MS/55202	ST-50LED	Stereo microscope
Accessories		
MS/55212	ST-001	Eyepieces WF 5x 22mm (pair)
MS/55214	ST-003	Eyepieces WF 15x 15mm (pair)
MS/55216	ST-004	Eyepieces WF 20x 13mm (pair)
MS/55218	ST-005	Micrometric eyepiece WF10x
MS/55220	ST-025	Objective 1x
MS/55222	ST-026	Objective 3.5x
MS/55224	ST-010	Dust cover



# Microscopes, Stereo Zoom SZM Series

OPTIKA

The Stereozoom series are specifically designed for laboratory and industrial applications.

Their optical and mechanical qualities place them at the top of this category. The various accessories provide an ample choice of possible configurations. By combining eyepieces and objectives, a total magnification of 180x can be achieved.

- Binocular or trinocular head inclined 45° rotating 360°
- EWF10x/20mm (paired)
- Zoom objective 0,7x....4,5x
- Continuous magnification from 7x....45x
- Coarse & fine focusing control
- Overhanging stand
- 2 Models with LED lighting

Cat. No.	Code	Description
MS/55302	SZM-1	Stereo zoom binocular microscope
MS/55304	SZM-2	Stereo zoom trinocular microscope
MS/55306	SZM-LED 1	Stereo zoom binocular microscope with LED lighting
MS/55308	SZM-LED 2	Stereo zoom trinocular microscope with LED lighting
Accessories		
MS/55312	ST-082	Eyepieces WF 15x (pair)
MS/55314	ST-083	Eyepieces WF 20x (pair)
MS/55316	ST-084	Micrometric eyepiece WF10x/20mm
MS/55318	ST-085	Additional lens 0,5x
MS/55320	ST-091	Additional lens 0,75x
MS/55322	ST-086	Additional lens 1,5x
MS/55324	ST-089	Additional lens 2x
MS/55326	M-173	Reflex camera adapter
MS/55328	ST-090.1	CCD camera adapter
MS/55330	ST-033	Dust cover



MS/55302

Notes ————————————————————————————————————	



MS/55460





MS/55602

#### Microscopes, Research, B510

OPTIKA B-510 Series represents the ideal, ultra-modern, advanced routine microscope for efficient analysis in transmitted light applications

- Bright field microscopes are ideal for fixed, stained specimens or having high natural absorption of visible light, supplied with a high-efficiency LED bright field illuminator.
- Phase contrast is a particular technique applied to transparent, non-stainable samples like cultures of living cells, microorganisms, lithographic patterns, latex dispersions, fibres, asbestos and subcellular particles. It reveals many cellular structures that are not visible with a simple bright field microscope
- · Dark field illumination is suitable for unstained samples causing them to appear brightly lit against an almost purely black background. Supplied with a high-efficiency LED bright field illuminator, built in condenser and a special 100x oil iris objective, ideal for fresh blood analysis.

Cat. No.	Code	Description
MS/55460	B-510BF	Microscope, trinocular, brightfield 1000x IOS
MS/55462	B-510PH	Microscope, trinocular, phase contrast
MS/55464	B-510DK	Microscope, trinocular, dark field

# **Inverted Microscope**

#### Microscope, Trinocular Inverted, XDS-3LT



Trinocular head inverted microscope equipped with full series of objectives that covers most applications. The head implements an extremely innovative design, that permits adjustments to compensate for operator height. Every control is easy to reach and each component has been designed with ease of use in mind. The focusing and specimen translation controls are designed to allow the user to rest wrists on the table. The light intensity regulation is placed very close to the focusing knobs.

- Trinocular head inclined 45°
- EWF10x/22mm (paired)
- Quintuple nosepiece
- Long Working distance objectives
- Infinity Optical system
- Plan achromatic PH10x, PH20x, PH40x
- Large stage of 250 x 230 mm.
- · Coaxial macro and micro controls
- Long working distance condenser, numerical aperture 0.30WD72mm.
- 6V/30W halogen lamp pre-centred with adjustable intensity

Cat. No.	Code	Description
MS/55502	XDS-3LT	Inverted trinocular microscope
Accessories		
MS/55512	M-785	40x LWD IOS plan achr. Phase contrast objective
MS/55514	M-788	Phototube adapter for SLR camera
MS/55516	M-789	CCD camera adapter
MS/55518	M-781	Micrometer eyepiece EWF10x/22mm
MS/55520	M-786	60x LWD IOS plan achromatic objective
MS/55028	M-005	26 x 76mm micrometric slide. Range 1mm, div. 0,01mm
MS/55522	M-621	6V 30 halogen bulb, spare
MS/55524	M-036	Dust cover

# Polarising Microscope

#### Microscope, polarising, Optika B-510POL, Trinocular



Polarised light microscopy provides all the benefits of bright field microscopy and offers a wealth of information which simply is not available with any other optical microscopy technique. Examples are refractive indices, birefringence, retardation, extinction angle and pleochroism. It is best known for its geological applications, primarily for the study of minerals in thin rock sections, but it can also be used to study many other materials.

Optika polarising microscopes offer a complete system for your laboratory analysis, including polariser and analyser filter, Bertrand lens for conoscopic observation, compensator plates and highprecision rotatable stages. The X-LED3 illumination system provides a high-intensity light source which delivers bright and clear images.

T 1 . 1	C .L. '.	
Technical	Specification	าร

Head	Irinocular 30° inclined, 360°
Eyepieces	Plan wide field, PL 10x/22
Bertrand lens	Swing-out type, centrable (for Conoscopy/Orthoscopy)
Nosepiece	Quadruple, reversed, with centering system for each objective

W-Plan IOS POL 4x,10x, 20x and 40x Objectives

Focusing system Coaxial coarse and fine

145mm diameter,  $360^{\circ}$  rotating, lockable and centrable with stop knob Stage Condenser N.A. 0.2/0.9, swing-out, with centering system and 360° rotating polariser Illumination X-LED<sup>3</sup> (3.6W) manual brightness control

Cat. No.	Model	Description
MS/55602	B-510POL	Polarising microscope with Trinocular head

# **Epi-Fluorescence Microscope**

# Microscope, Optika B-510FL, Trinocular, epi-fluorescence



Fluorescence microscopes are widely used to perform a variety of laboratory tests and observations involving the study of tissue samples to detect particular proteins or to evaluate cultured cells as well as those in suspension. In addition to this, fluorescence microscopy is invaluable in the study of DNA sequences as these particles are extremely small and hard to detect. Obtaining spatial data concerning tissue or cell genetics is achieved by the use of immunofluorescence, as is the observation of parasites and bacteria.

#### **Technical Specifications**

Head Trinocular, 30° inclined, splitting ratio eyepieces/photo tube: 0% - 100% /

50% - 50% / 100% - 0%

Eyepieces Plan wide field, PL 10x/22 with dioptic adjustment on left eyepiece

Nosepiece Quintuple reversed

Objectives W-Plan IOS F 4x,10x, 20x and 40x

Focusing system Coaxial coarse and fine

Stage Rack less, 233 x 147mm, movement range 78 x 54mm

Condenser N.A. 0.2/0.9 swing-out with centering system

Incident light and

diaphragms High-pressure mercury lamp (100W)

Transmitted light and diaphragms

X-LED<sup>3</sup> (3.6W) manual brightness control

Cat. No.	Model	Description
MS/55622	B-510FL	Epi-fluorescence Trinocular microscope



MS/55622

# Metallurgical Microscope

## Microscope, Optika B-510METR



Metallurgical microscopy offers high magnification with reflected and transmitted light to aid in examining the microscopic mechanisms that affect the behaviour of metals, their composites and alloys. Not only can the instrument be used for measuring grain size, surface inclusions and defects, it can also be used for the detection and monitoring of fatigue, corrosion, creep, stress ruptures, fractures, cracks and crack propagation, to name but a few. These microscopes are not limited to the metallurgical laboratories, they can also be found in the ceramic industry and even in the field of forensics.

#### **Technical Specifications**

Head Trinocular, 30° inclined, splitting ratio eyepieces/photo tube: 50% - 50% Eyepieces Plan wide field, PL 10x/22 with dioptric adjustment on left eyepiece

Nosepiece Quintuple reversed

Objectives W-Plan IOS MET 4x,10x, 20x and 50x

Focusing system Coaxial coarse and fine

Stage Rack less, 233 x 147mm, movement range 78 x 54mm

Incident light

and diaphragms High-efficiency X-LED<sup>8</sup> (8 W, comparable to a 100 W halogen bulb),

manual brightness control

Accessories included Polarizer and rotating analyser filters

Cat. No.	Model	Description
MS/55632	B-510METR	Metallurgical upright Trinocular microscope



MS/55632

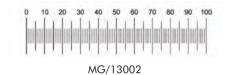
# Microscopy

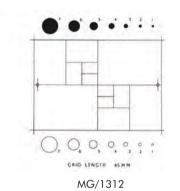
#### Eyepiece graticules (reticles)

Horizontal & vertical scales. Used for measuring lengths of specimen or distances between points on a variety of different shaped objects.

All the graticules detailed have a surface chrome image.

Cat. No.	Code	Diameter	
NE1, Horizonta	l micrometer scale	e, 10mm long with 0.1mm subdivisions	
MG/13002	01B19201	19mm	
MG/13004	01B21201	21mm	
NE2, Vertical m	icrometer, 10mm	long, with 0.1mm subdivisions	
MG/13006	01B19202	19mm	
MG/13008	01B21202	21mm	
NE17, Crossed	micrometer scale	s, 10mm long, with 0.1mm subdivisions	
MG/13010	01B19212	19mm	
MG/13012	01B21212	21mm	
Eyepiece scales			
Indexed grid, 1	0mm x 10mm, 1n	nm pitch	
MG/13014	01B19221	19mm	
MG/13016	01B21221	21mm	





#### Eyepiece graticules, particle sizing, globes and circles

In this graticule the circle areas double progressively, hence the diameters alter by Root 2, so that the size classes can form a continuation of the standard series of sieves for particle sizing. Each particle is assigned to a size class defined by two adjacent circles which represent the size limits of that class. Thus the distribution of size is obtained in terms of the diameter of circles having the same projected area as the particles. This method will cover particles in the range 150 micron to 0.38 micron. The size distributions with respect to their number and weight are determined separately. Final results are calculated as cumulative percents.

Surface chrome image. Graticule – NG10 British Standard (BS3625/BS3260).

Cat. No.	Code	Diameter
MG/13122	01B19252	19mm
MG/13124	01B21252	21mm



MG/13232

#### Graticule calibration standards

Micrometer scales for calibration of eyepiece graticules.

The glass discs are mounted in stainless steel slides with engraved serial numbers. Each slide is supplied in a polished wooden presentation and storage box to distinguish it as a traceable standard of high value.

Cat. No.	Code	Pattern and scale
MG/13232	05A01040	PS1 - 10mm in 0.1mm divisions.
MG/13234	05A01042	PS8 - 1mm in 0.01mm divisions.
MG/13236	05A01043	PS12 - 0.1mm in 0.002mm divisions



Lens cleaning tissues

Supplied either in packs of 25 wallets, each wallet contains 25 sheets of  $10 \times 15$ cm lens cleaning tissues; or in boxes of 100 sheets of  $20 \times 30$ cm lens cleaning tissues.



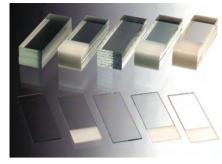
Cat. No.	Size, cm	Pk Qty	
MS/17002	10 x 15	25 x 25	
MS/17004	20 x 30	1 x 100	

# Microscope slides

#### Microscope slides

Microscope slides with ground edges 90°, approx. 76 x 26mm.

Cat. No.	Description	Inner pack	Pk Qty
Thickness appro	ox. 1mm (0.95 -1.05mm)		
MS/22002	Plain	50	1000
MS/22004	Twin frosted 20mm		
	(at one end, both sides)	50	1000



MS/2200

# Microscope Slides, Economy

- Pre-cleaned
- Ground and polished edges
- Packed in boxes of 50 and cellophane wrapped

Cat. No.	Description
MS/90010	Microscope slides, plain, ground edge, 45° corner
MS/90012	Microscope slides, twin frosted, ground edge, 45° corner



MS/9001

#### Microscope cover glasses

Made of pure white hydrolytic class 1 glass with high chemical resistance, ready for use. All our microscope cover glasses are suitable for use on automatic coverslippers.

Cat. No.	Size	Pk Qty	
Thickness No. 0 (0.085 -	0.115 mm)		
MS/22202	18x18mm	1000	
MS/22208	24x24mm	1000	
MS/22210	24x40mm	1000	
Thickness No. 1 (0.13 - 0	.16 mm)		
MS/22302	12x12mm	1000	
MS/22304	15x15mm	1000	
MS/22310	20x20mm	1000	
MS/22312	22x22mm	1000	
MS/22314	24x24mm	1000	
MS/22316	24x32mm	1000	
MS/22318	24x40mm	1000	
MS/22320	24x50mm	1000	
MS/22402	10mm Ø	1000	
MS/22404	12mm Ø	1000	
MS/22406	13mm Ø	1000	
MS/22412	16mm Ø	1000	
Thickness No. 1.5 (0.16 -	0.19 mm)		
MS/22502	18x18mm	1000	
MS/22504	20x20mm	1000	
MS/22506	22x22mm	1000	
MS/22510	22x32mm	1000	
MS/22512	22x40mm	1000	
MS/22518	24x32mm	1000	
MS/22520	24x40mm	1000	



MS/22

# Cavity slides

Each slide is  $75 \times 25 \times 1.25$  mm thick with ground edges, the polished round depressions are 15 mm diameter and approximately 1 mm deep. Supplied in a pack of 50.

Cat. No.	Description
HA/13040	Microscope cavity slides, single cell
HA/13042	Microscope cavity slides, double cell



MS/99002

# Microscope slide storage and handling

#### Microscope slide box, wooden

Wooden box with hinged lid.

Cat. No.	Description
MS/99002	Box for 50 slides
MS/99004	Box for 100 slides



MS/9600

#### Microscope slide box, plastic

Designed for easy handling of  $75 \times 25$ mm slides. The 25 place slide boxes are two-piece and stack securely on top of each other. The 100 place slide boxes have clearly numbered slots which correspond to the index card in the lid. Secured by a rust resistant clasp these hinged boxes also stack securely on top of each other.

Cat. No.	No. places	Dimensions (wxdxh), mm
MS/96002	25	90 x 140 x 35
MS/96004	100	210 x 167 x 35

#### Microscope slide folder

Made from strong card with hinged flaps and numbered positions. Compartments are recessed to protect slides when the cover is closed Holds 20 slides  $76 \times 26 \text{mm}$ 

Cat. No.	Description
MS/09680	Microscope slide folder

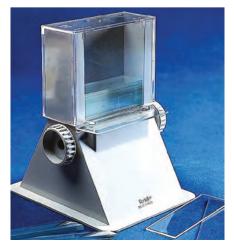


MS/96006

#### Microscope slide trays, cardboard

Cardboard microscope slide trays to hold 30 standard 75x25mm. The horizontal recessed compartments, which are thumb cut for easy removal of slides, protect specimens when the cover is closed. Pack of 40 trays.

Cat. No.	Description
MS/96006	Cardboard microscope slide tray to hold 30 standard slides, Black



MS/43002

#### Microscope slide dispenser

For finger print free dispensing of 76x26mm microscope slides. Up to 60 slides can be put in the magazine. Each slide is dispensed by rotating the knurled knob on either side of the moulded base.

Cat. No.	Code	Dimensions (wxdxh), mm
MS/43002	540	100 x 120 x 140

Kartell

#### Microscope slide mailer, PE

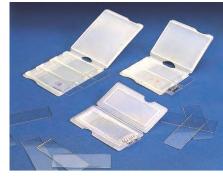
**Kartell** 

Strong protection of 76 x 26mm microscope slides during transportation.

Each slide has its own compartment with support bars at 55mm centres to protect subject matter from being scuffed.

Particularly useful for cytologic and geological specimens. Sold singly.

Cat. No.	Code	No. slides	Dim.(wxdxh), mm
MS/46104	923	1	100 x 50 x 5
MS/46106	925	2	84 x 71 x 5
MS/46108	924	3	84 x 100 x 5



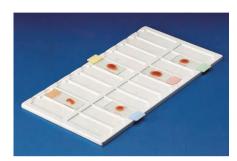
MS/4610

# Microscope slide tray

Kartell

Moulded in white PVC for easy identification of different stains on the slides. Ideal work station for 76x26mm slides.

Cat. No.	Code	No. slides
MS/46510	672	20
MS/46512	673	40



MS/46510

#### Forceps, stainless steel

With spatulate ends for manipulating microscope slides and cover glasses.

Cat. No.	Description	Pk Qty
MS/49670	Microscope slide forceps, spatulate ends	10



MS/49670

# Microscope slides, staining accessories

#### Microscope slide staining block

Clear polished glass block with 6mm deep cavity and flat glass cover.

Cat. No.	Description	
MS/92002	Staining block, 40x40x15mm(WxDxH)	



MS/92002

#### Microscope slide staining jar, Coplin

Designed to hold 10 standard 76 x 26mm slides back to back vertically. Supplied complete with lid.

Cat. No.	Description
MS/92104	Staining jar Coplin, glass



MS/92104



MS/16202

#### Microscope slide staining jar

Robust polypropylene jars, can hold up to 10 standard 76 x 26mm slides back to back

Can also be used as a mailing container. Supplied complete with lid.

Cat. No.	Code	Description
MS/16202	SWM012	Staining jar, square pattern

# Microscope slide staining trough

Glass trough with loose flat lid 85 x 105 x 75mm high. Accepts one glass accessory tray which has 10 inner grooves to accept 2 slides 76 x 26mm horizontally back to back. Must be ordered separately, capacity 20 slides.

Cat. No.	Description	
MS/92116 MS/92118	Staining trough Accessory tray	



MS/92116

#### Microscope slide staining trough, Hellendahl

Glass trough with loose flat lid. Internally grooved to accept 16 slides 76 x 26mm vertically back to back.

Cat. No.	Description	
MS/92204	Staining trough	



MS/92204

#### Microscope slide staining trough, Schiefferdecker

Glass trough with loose flanged lid. Internally grooved to accept  $10 \text{ slides } 76 \times 26 \text{mm}$  horizontally back to back, capacity 20 slides.

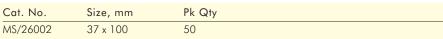
Cat. No.	Description	
MS/92206	Staining trough	



MS/26002

#### Blotting/drying sheets

Blocks of 50 sheets of absorbent paper  $37 \times 100 \text{mm}$  strips for the removal of excess liquids, e.g. from microscopic specimens.





Azlon

# Mills, basic analytical, model A11



Batch mill for 2 different grinding procedures:

Mills

Impact grinding of hard, brittle or nonelastic grinding materials with high-grade stainless steel beater. This beater can be used for a Mohs hardness up to 6 (incl. with delivery). Cutting grinding for pulverizing soft, fibrous materials with a cutting blade (not incl. with delivery).

- Moist and gluey materials can be pulverized by adding water
- Grinding chamber made of Tefcel (PTFE, glass fibre-reinforced) with stainless steel inlet (1.4571), useful volume 80 ml (incl. with delivery), for embrittlement of grinding materials with liquid nitrogen in the grinding chamber
- Optionally, a 250 ml grinding chamber is available.

Technical Specifications	
Motor rating input / output	160 / 100 W
Speed	28,000 rpm (fixed)
Useable volume	80 ml
Overload protection	Yes
Circumferential speed max.	53 m/s
Feed grain size max.	10 mm
Dimensions (W x D x H)	85 x 85 x 240mm
Weight	1.5 kg
Permissible ambient temperature	5 - 40 °C
Permissible humidity	80 %

Cat. No.	Code	Description
MI/75002	A11	Analytical mill, basic
Accessories		
MI/75004	A11.4	Optional 250ml grinding container
MI/75006	A11.1	Spare beater, SS
MI/75008	A11.2	Cutting blade, SS
MI/75010	A11.3	Beater SS, Mohs hardness up to 9 made from Tungsten Carbide
MI/75012	A11.5	80ml grinding chamber



MI/75002



MI/75004

#### Mill, universal, model M20



Batch mill suitable for dry grinding of hard and brittle substances.

- Double-walled grinding chamber can be cooled with water through two hose adapters
- Removable grinding chamber, easy to clean
- Two grinding chambers can be alternately operated using one drive
- M 21 blade incl. with delivery

Motor rating input / output	440 / 225 W	
Speed	20,000 rpm (fixed)	
Circumferential speed max.	72 m/s	
Useable volume	250 ml	
Material grinding chamber	stainless steel (1.4301)	
Material beater/cutter	stainless steel (1.4034)	
Max. granularity of task	6 - 7 mm	
Duty cycle ON / OFF (with cooling)	7 min / 10 min	
Weight	6.6 kg	
Dimensions (W x D x H)	170 x 170 x 350mm	
Permissible ambient temperature	5 - 40 °C	
Permissible humidity	80 %	

Cat. No.	Code	Description
MI/75102	M20	Universal mill
Accessories MI/75104 MI/75106 MI/75108 MI/75110	M 21 M 22 M 23 M 20.1	Spare cutter, hardness 5 Hard metal cutter, Tungsten Carbide, hardness 9 Star-shaped cutter Grinding chamber



MI/75102



MI/75110

# Microfine grinder drive, MF 10 basic

Continuously operating universal grinder.
• Powerful drive

- Easy to clean working surface made of stainless steel
  Two different grinding heads can be attached to the drive
- Heads are easily changeable
- Grinding heads not incl. with delivery

Cat. No.	Code	Description
MI/75202	MF10	Microfine grinder drive
Accessories MI/75204 MI/75206	MF 10.1 MF 10.2	Cutting grinding head Impact grinding head

#### MI/75202 with MI/75206



MI/7521

#### Sieves for MF 10 basic

Interchangeable sieves for insertion into the grinding heads ensure max. particle size filtering.

Cat. No.	Code	Description
MI/75212	MF 0.25	Sieve with 0.25mm holes
MI/75214	MF 0.5	Sieve with 0.50mm holes
MI/75216	MF 1.0	Sieve with 1.00mm holes
MI/75218	MF 2.0	Sieve with 2.00mm holes
MI/75220	MF 3.0	Sieve with 3.00mm holes

Notes

# Mixers, Homogenisers

#### Homogeniser, handheld, SHM1



The Stuart® SHM1 is a powerful, variable speed, homogeniser. The high-speed, high torque motor makes the unit ideal for most homogenising applications. It's lightweight making it comfortable to use and most samples can be processed within thirty seconds.

Accommodates a selection of stainless steel dispersing tools for larger and tougher samples or a disposable polycarbonate tool. The disposable tool is suitable for hard tissues and ideal where cross contamination is of concern. If necessary, disposable tools can be easily dismantled and autoclaved for re-use, up to seven times.

- Ergonomic design
- Variable motor speed 5,000 to 35,000rpm
- Processing range from 0.03ml-100ml
- Can be used with stainless steel or disposable polycarbonate dispersing tools

with a tool kit for dismantling the rotor stator generator probes for easy cleaning.

#### Homogeniser, laboratory, SHM3



With an 850 watt motor, the Stuart SHM3 is not only powerful but provides maximum versatility being able to process virtually any sample, from tissue homogenisation, cell disruption, emulsions, suspensions to protein extraction. A selection of stainless steel probes for larger samples can be accommodated. In addition, reusable polycarbonate disposable probes can be used which are suitable for hard tissues and ideal where cross contamination is of concern. If necessary, disposable probes can be easily dismantled and autoclaved up to seven times. Supplied

- Digital controller ensuring accurate speed selection
- Timer including 30 second countdown timer
- Soft start ensures smooth processing without splashing
- Can be handheld or stand mounted
- Variable motor speed 5,000 to 25,000rpm
- Processing range from 200µl 2L
- Powerful 850 watt motor

Technical Specifications				
Model	SHM1	SHM3		
Motor	125 watt	850 watt		
Speed control, rpm	5,000 to 35,000	5,000 to 25,000		
Processing range	0.03ml to 100ml	200µl to 2L		
Sound level	<72db	<72db		
Net weight, Kg	0.5	1.6		
Dimensions, mm (h x Ø)	160 x 55	216 x 70		
Electrical supply	220-240V, 50Hz	220-240V, 50Hz		
IP rating	30	30		

Cat. No.	Code	Description
MD/12010	SHM1/UK	Homogeniser, handheld
MD/12022	SHM3/UK	Homogeniser, laboratory

# Dispersing tools and accessories

Stainless steel dispersing tools are available in a variety of sizes. All are precision engineered and suitable for autoclaving. The 5mm size has a flat end, all other sizes have a saw tooth end and are capable of processing hard or frozen tissue.

The disposable tool is specifically designed for use with the Stuart homogenisers. They are manufactured from robust polycarbonate and can either be disposed of after each sample or autoclaved for re-use, up to seven times.

Please note; it is necessary to use adaptor SHM/ADAPT, available separately, to use the disposable tool SHM/DISP in either model.

Technical Specifications					
Tool	SHM/5	SHM/7	SHM/10	SHM/20	SHM/DISP
Size	5mm	7mm	10mm	20mm	7mm
Туре	Flat head	Saw tooth	Saw tooth	Saw tooth	Saw tooth
Length	75mm	115mm	115mm	195mm	110mm
Processing	0.03ml - 5ml	0.25ml - 30ml	l 1.5ml - 100ml	50ml - 2L	0.25 - 30ml

Cat. No.	Code	Description
MD/12030	SHM/5	Dispersing tool, stainless steel, 5mm
MD/12032	SHM/7	Dispersing tool, stainless steel, 7mm
MD/12034	SHM/10	Dispersing tool, stainless steel,10mm
MD/12036	SHM/20	Dispersing tool, stainless steel, 20mm
MD/12038	SHM/DISP	Dispersing tool, disposable, pack of 25
MD/12040	SHM/ADAPT	Adaptor for disposable tools
MD/12042	SHM/STAND	Stand suitable for either SHM1 or SHM2



MD/12010



MD/12022



MD/120







MD/75312







MD/75322



MD/75326

#### T 10 basic ULTRA-TURRAX®



A small dispersing instrument for volumes from 0.5 - 100 ml (H<sub>2</sub>O). It offers a wide speed range from 8000 - 30,000 rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications.

- Quick-connect coupling for changing dispersing elements easily
- Ideal for manual operation due to its light weight and ergonomic design
- Extremely mobile due to direct line power (no transformer required)
- Stainless steel dispersing elements can be cleaned quickly and easily as they can be dismounted without tools
- Plastic disposable dispersing elements are available in two sizes, particularly suitable for PCR analysis
- High performance drive ensures immense speed stability
- Quiet operation

#### Please order dispersing tools separately.

Cat. No.	Code	Description
MD/75310	3737000	T 10 basic homogeniser, without dispersing tools
Accessories MD/75312	\$10N-5G	Dispersing tool, SS, working volume 0.5-10mL, 92mm length x 5mm dia., rotor dia. 3.8mm, min./max.
MD/75314	\$10N-8G	immersion depth 20/75mm Dispersing tool, SS, working volume 1-50mL, 115mm length x 8mm dia., rotor dia. 6.1mm, min./max. immersion depth 20/95mm
MD/75316	\$10N-10G	Dispersing tool, SS, working volume 1-100mL, 115mm length x 10mm dia., rotor dia. 7.6mm, min./max. immersion depth 20/100mm
MD/75318	\$10D-7G-KS-65	Dispersing tool, plastic, working volume 1-20mL, 65mm length x 7mm dia., rotor dia. 4.8mm, min./max. immersion depth 20/45mm, pack of 24
MD/75320	\$10D-7G-KS-110	Dispersing tool, plastic, working volume 1-40mL, 110mm length x 7mm dia., rotor dia. 4.8mm, min./max. immersion depth 20/90mm, pack of 24
MD/75328	\$10N-8G-\$T	Saw tooth dispersing tool for fibrous samples, stainless steel, working volume 1-50ml, 115mm length x 8mm dia, rotor dia 6.1 mm, min/max immersion depth 20/95mm
MD/75330	\$10N-10G-ST	Saw tooth dispersing tool for fibrous samples, stainless steel, working volume 1-100ml, 115mm length x 10mm dia, rotor dia 10mm, min/max immersion depth 20/100mm
MD/75322	R200	Clamp
MD/75324 MD/75326	H44 R104	Boss head clamp Stand

# T25 digital ULTRA-TURRAX®



A high-performance dispersing instrument for volumes from 1 - 2000 ml ( $H_2O$ ) with digital speed display. It offers a wide speed range from 500 - 25,000 rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements adds versatility. Applications ranges from homogenizing waste water samples, use in laboratory reactors, dispersion tasks under vacuum / pressure and sample preparation in medical diagnostics.

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Plastic disposable dispersing elements are available in two sizes
- Error code display
- Quiet operation

Please order dispersing tools separately.

Cat. No.	Code	Description
MD/75250	3561000	T 25 digital homogeniser
Accessories MD/75104	\$25N-8G	Dispersing tool, SS, working volume 1 to 50mL, 108mm length x 8mm dia., rotor dia. 6.1mm, min./max. immersion depth 27/85mm
MD/75106	S25N-10G	Dispersing tool, SS, working volume 1 to 100mL, 105mm length x 10mm dia., rotor dia. 7.5mm, min./max. immersion depth 22/85mm
MD/75108	S25N-18G	Dispersing tool, SS, working volume 10 to 1,500mL, 194mm length x 18mm dia., rotor dia. 12.7mm, min./max. immersion depth 40/165mm
MD/75110	S25N-25G	Dispersing tool, SS, working volume 50 to 2,000mL, 194mm length x 25mm dia., rotor dia. 17mm, min./max. immersion depth 40/165mm
MD/75252	\$25D-10G-KS	Dispersing tool, plastic, autoclavable, working volume 10 to 100mL, 150mm length x 10mm dia., rotor dia. 6.75mm, min./max. immersion depth 15/85mm. Pack of 12
MD/75254	S25D-14G-KS	Dispersing tool, plastic, autoclavable, working volume 10 to 500mL, 150mm length x 14mm dia., rotor dia. 9.5mm, min./max. immersion depth 15/85mm. Pack of 12.
MD/75262	S25N-8G-ST	Saw tooth dispersing tool for fibrous samples, stainless steel, working volume 1-50ml, 108mm length x 8mm dia, rotor dia 6.1mm min/max immersion depth 27/85mm
MD/75264	S25N-10-ST	Saw tooth dispersing tool for fibrous samples, stainless steel, working volume 1-100ml, 105mm length x 10mm dia, rotor dia 7.5mm min/max immersion depth 22/85mm
MD/75266	\$25N-18-ST	Saw tooth dispersing tool for fibrous samples, stainless steel, working volume 10-1500ml, 194mm length x 18mm dia, rotor dia 12.7mm min/max immersion depth 40/165mm
MD/75268	\$25N-25-ST	Saw tooth dispersing tool for fibrous samples, stainless steel, working volume 50-2000ml, 194mm length x 25mm dia, rotor dia 17mm min/max immersion depth 40/165mm
MD/75256 MD/75258 MD/75260	R1825 R182 RH3	Plate stand, 200mm x 316mm x 560mm (w x d x h) Boss head clamp Strap clamp









MD/75254



MB/45802

# MB/45804



MB/45402



MB/46

# Mixers / dispersers

#### Stomacher® 80 Biomaster

The sample processor for the microbiologist, biochemist and cell biologist.

The proven performance of the Stomacher® 80 Biomaster in producing consistent high quality results in a fast and efficient way is well documented. It is in regular use worldwide for the processing of a variety of specimens from sputum, tissue (including lung) and the extraction of chemical and drug residues in biopsy and food samples for analysis.

Used predominantly in clinical, veterinary and life science laboratories, it is quick and clean to operate, requiring no sterilisation between samples. The unique blending action provides a safe, hygienic and convenient method for the preparation of samples eliminating the risk of cross contamination and aerosol production.

The Stomacher® 80 Biomaster is operated by microprocessor controls. It has 3 preset processing speeds and 3 time settings with an additional continuous cycle.

The Stomacher® 80 Biomaster is designed to take up less space in the working environment allowing it to fit inside a safety cabinet thus helping to reduce the risk of exposing personnel to infectious or hazardous materials. Samples are retained in the Stomacher® 80 Biomaster bags, these can be heat sealed to remove any further possibility of aerosol release.

The Stomacher® 80 Biomaster has a hygienic and durable plastic paint finish to the door, handle and bag clamp.

Accessories include a 10 place bag rack for holding samples on the bench, minimising risk of spillage and cross contamination, Stomacher® 80 disposable bags (supplied in packs of 2000 contained in sachets of 50) these are highly durable extruded from high grade polythene and are guaranteed against bursting. Stomacher® 80 Biomaster bags are irradiated sterile.

Cat. No.	Code	Description	Pk Qty
MB/45802	0080/000/UK	Stomacher® 80 Biomaster	
Accessories			
MB/45804	BA6090	Stomacher® 80 Bag rack 10 place	10
MB/46402	BA6040	Stomacher® 80 Biomaster bags standard	2000

# Stomacher® model 400

The Stomacher® 400 Circulator is the Worlds leading laboratory blender. When food safety and quality matter the Stomacher can be relied on to safeguard your reputation.

The unique paddle action extracts more organisms into suspension from a variety of food types than any other blending process. The sample and diluent are retained in an irradiated sterile Stomacher® bag and there is no direct contact between the blender mechanism and the sample. The Stomacher® 400 Circulator is not only the most effective of its type it is also the quietest and the most reliable.

- Improved organism recovery
- One touch user programmable time and speed
- "Hands-free" auto-run feature
- Count down of processing time
- Improved reliability and hygienic design

Stomacher® produces homogenisation by a combination of crushing and stirring. Both of these are required to maximise organism recovery.

Curved paddles, an island baffle inside the door chamber and round bottomed Stomacher® bags mould the bag contents into a tubular ring. In operation the paddles not only crush the sample but they also circulate the suspended debris and diluent. This produces additional processing effects.

- The diluent and sample are extruded under pressure past the island buffer
- A vigorous stirring action of the bag contents from top to bottom
- Enhanced shearing forces

Stomacher® 400 has a touch control panel with LCD which is angled towards the operator. Timer and paddle speed are programmable with a combination of the three paddle speeds and infinitely variable time from 1 second to 99 minutes 59 seconds.

Stomacher® 400 circulator bags carry the same guarantee of durability and sterility as the classic bag range. Only genuine Stomacher® Bags carry the Seward quality mark.

Cat. No.	Code	Description	Pk Qty
MB/45402	0400/001/UK	Stomacher® 400 circulator	
Accessories			
MB/46412	BA6141ARV	Stomacher® 400 circulator bags standard	1000
MB/46418	BA6141/STR	Filter bag	200
MB/46416	BA6141/CLR	Closure bag	250
MB/45404	BA6091	Stomacher 400 bag rack single place	each
MB/45406	BA6096	Stomacher 400 bag rack 10 place	10
MB/45408	BA6095	Stomacher 400 bag opener single place	each

#### Homogeniser bags and straws

Designed for use with Seward Stomacher® lab blenders

- Manufactured from food grade polythene
- Manufactured from a minimum 65um film thickness
- Irradiated sterile at 25-50kGy
- QC tested on Stomacher machines
- The only bags Seward Limited guarantees to produce a consistent result with your Stomacher® machine.
- The only bags supported in their performance across the range by over 1000 scientific papers and methods published by food research and industry alone

Cat. No.	Code	Description	Dimensions	Pk Qty
MB/46322	BA6051	Straws	177mm	2000
Stomacher 80 B	iomaster		152 x 101mm	
MB/46402	BA6040	Standard bags		2000
Stomacher 400	Circulator		177 x 304 mm	
MB/46412	BA6141 ARV	Standard bags		1000
MB/46414	BA6141/5	Standard bags (5's)		500
MB/46416	BA6141/CLR	Closure bags		250
MB/46418	BA6141/STR	Filter bag		200
Stomacher 3500	)		380 x 508 mm	
MB/46420	BA6042	Standard bags		250



MB/46



MB/46416

#### BaaMixer® 400

BagMixer®: the world reference in blenders using sterile bags.

20 years of commitment to food microbiology has made Interscience the world leader in this field for products giving maximum efficiency and safety in microbiology analysis.

This complete and safe range allows the extraction of bacteria from every type of solid sample without risk of alteration or cross-contamination.

- Safe, sterile, no contact between sample and blender
- No cross-contamination
- Excellent cell recovery rate (blending does not destroy bacteria)
- Sterile autofiltration

To extract bacteria from a solid sample, just place the sample and liquid in a sterile BagFilter® and then slide the bag into the BagMixer®. Blend for 30 to 60 seconds (for most samples).

The juice containing the filtered extract may be pipetted and analysed without any risk of alteration or cross contamination. BagMixer® is ready for another sample in a new sterile bag.

The BagMixer® 400 P has a stainless steel body & blending chamber that makes cleaning easy, it has adjustable paddles (patented) and is silent. It also has a plain door and fixed speed setting. The BagMixer® 400 W has a glass viewing window and fixed speed.

Technical Specifications	
Timer	30 - 210 seconds or continuous
Fast Blending	15 to 30 seconds efficient
Strokes	8 strokes per second
Dimensions	400 x 270 x 260 mm
Weight	16.5 kg
Power	110 V / 220 V
Capacity	50 - 400 ml

Cat. No.	Code	Description
MB/85002	021 230	BagMixer® 400 P without window
MB/85004	022 230	BagMixer® 400 W with window



MB/85002



MB/85004



MB/85108

# The same of the sa

MX/15326



MX/15328



MX/15330

# Homogeniser bags

#### BagLight® Plain Blender Bag, Sterile

BagLight® is a plain bag used for products not requiring filtration. Made from PolySilk®, it is remarkably resistant and can be deep-frozen.

Cat. No.	Code	Description	Dimensions	Pk Qty
MB/85108	132 025	BagLight® 400	180 x 290mm	500
MB/85110	133 025	BagLight® 3500	380 x 510mm	250

#### BagFilter® Side Filter Bag, Sterile

BagFilter® has a non-woven filter and is recommended for the analysis of raw and cooked meat, fish, vegetables, fruit etc. It has excellent mechanical resistance. After blending, the fibres are retained in one of the compartments leaving the filtered solution easily accessible for pipetting. Each case contains 20 sterile packs of 25.

Cat. No.	Code	Description	Dimensions	Pk Qty
MB/85112	111 425	BagFilter® 400	190 x 300mm	500
MB/85114	252 019	Bagtips straws		1000

# Mixers / rollers

#### Mixers, roller, rocking action



These roller mixers provide a gentle, but highly efficient, rocking and rolling action. There are four models available, two analogue models with either 6 or 9 rollers, with a fixed speed of 33 rpm. Or two more advanced digital models with either 6 or 9 rollers, with digitally controlled speed between 5 and 60 rpm and programmable timer.

Recommended for mixing blood samples, viscous substances and liquid-solid suspensions where minimum aeration is required. Units can be used in incubators up to  $60^{\circ}$ C and humidity up to 80%, or in cold rooms down to  $4^{\circ}$ C.

- Rocking and rolling action for complete mixing
- Choice of analogue fixed speed or digital variable speed model
- Six or nine roller design with footprint
- Designed for continuous quiet operation
- With BioCote® antimicrobial protection

#### **Technical Specifications** Analogue Digital Number of rollers 6 (SRT6D) 6 (SRT6) 9 (SRT9) 9 (SRT9D) Speed 33rpm 5 to 60rpm Amplitude 16<sub>mm</sub> 16<sub>mm</sub> Maximum load 5kg 5kg Controls Digital Analogue Timer No Yes 340x30mm 340x30mm Roller size (I x d) 565x240x110mm (SRT6D) Overall dimensions 565x240x110mm (SRT6) $(w \times d \times h)$ 565x360x110mm (SRT9) 565x360x110mm (SRT9D) Net weight 5.1kg (SRT6) 5.1kg (SRT6D) 6.9kg (SRT9) 6.9kg (SRT9D) Electrical Supply 230V, 50Hz, 50W 230V, 50Hz, 50W

Cat. No.	Code	Description
MX/15324	SRT6	Roller mixer, 6 rollers, analogue control, fixed speed
MX/15326	SRT6D	Roller mixer, 6 rollers, digital control, variable speed
MX/15328	SRT9	Roller mixer, 9 rollers, analogue control, fixed speed
MX/15330	SRT9D	Roller mixer, 9 rollers, digital control, variable speed

# Mixers / rotators

# Mixers, rotator type, model SB2 and SB3



These rotators can be used in incubators up to  $60^{\circ}\text{C}$  and in cold rooms down to  $4^{\circ}\text{C}$ . The angle of rotation is fully adjustable, from horizontal for minimal mixing to vertical for full end-

over-end mixing. An integral tray catches any spillage from the rotating tubes.

A choice of six tube holders is available to fulfill most applications. Holder must be ordered

The SB2 gives gentle but effective mixing, ideal for keeping biological samples in suspension e.g. blood. The rotator has a constant speed of 20rpm.

The SB3 is ideal for aerating cultures, keeping biological samples in suspension and for general mixing applications. A digital timer and speed display, allow procedures to be accurately repeated for optimal results.

- Fully adjustable mixing angle
- Choice of constant speed or variable speed models
- Choice of tube holders to hold a number of different sized tubes
- Spillage tray

Technical Specifications	5	
	SB2	SB3
Speed range	Fixed – 20rpm	2 to 40rpm
Speed control	~	Digital
Timer	~	1 to 999 minutes
Dimensions (w x d x h)	200 x 270 x 230mm	200 x 270 x 230mm
Net weight	3.2kg	3.2kg
Electrical supply	230V, 50Hz, 50W	230V, 50Hz, 50W

Cat. No.	Code	Description
MX/15224	SB2	Rotator, fixed speed without holder
MX/15226	SB3	Rotator, variable speed, timer without holder

#### Tube holders

Cat. No.	Code	Tube type	Tube dia, (mm)	No. of tubes
End-over-end	action			
MX/15228	SB3/1	Micro tube	10 to 11.5	40
MX/15230	SB3/2	Test/blood tube	9 to 20	20
MX/15232	SB3/3	50ml centrifuge	25 to 35	12
Rolling action				
MX/15234	SB3/4	Culture tube	12	63
MX/15236	SB3/5	Culture tube	16	63
MX/15238	SB3/6	Culture tube	26	30

# Mixers / vortex

#### Vortex mixer, variable Speed Mini, - SA6

Variable speed mini vortex mixer, robust die cast construction featuring a sophisticated inbuilt counterbalance system and suction cup feet for stability. The powerful brushless DC motor provides quick and effective mixing operated by a simple push button control. The variable mixing speed ensures suitable speed is achieved to suit most applications.

- Variable speed up to 4500rpm
- Compact size
- Push switch operation

Technical Specifications	
Speed range	2500 to 4500rpm
Touch mode	Yes
Orbit diameter	4.5mm
Tube diameter	Up to 30mm
Dimensions (w x d x h)	100 x 100 x 67mm
Net weight	0.55kg
IP Rating	IP43
Electrical Supply	100-240V, 50/60H <sub>2</sub> , 15W

C	Cat. No.	Code	Description
N	MX/15020	SA6	Vortex, mini, variable speed



MX/15224 with holder



MX/15226 with holder



MX/15020



MX/15004

# Vortambs Angos

MX/10000



MX/1000



MX/15006

#### Vortex mixer, fixed speed, SA7

For rapid mixing of samples contained in test-tubes, small flasks and bottles. Starts automatically when the rubber cup is depressed and stops once vessel is removed. Heavy die-cast body gives stability during use.



- Compact size
- Push switch operation
- Low budget price

Toc	hnica	l Sn	acific	ations

Speed Fixed 2500rpm
Orbit diameter 4.2mm

Dimensions (w x d x h) 78 x 135 x 215mm

Net weight 3.2kg

Electrical supply 90 – 240V, 50 / 60Hz, 20W

Cat. No.	Code	Description
MX/15004	SA7	Vortex mixer, fixed speed

#### Compact mini vortex mixer

Mini vortex mixer, compact and powerful to mix tubes quickly and easily, simple to operate. The sample tube is placed on the colour coded gasket, and by applying gentle pressure, the unit starts mixing. The design of the gasket allows centrifuge tubes up to 30mm in diameter to be mixed with very little effort, this also includes 50ml conical tubes.

The unit is supplied with a red gasket as standard, however, blue, green and purple coloured gaskets are available separately. This compact unit measures 95mm x 85mm, weighs just 550g, has an orbital mixing diameter of 4.5mm and a maximum speed of 3000 rpm. The ambient temperature range of these units is 5 to 40°C.

Cat. No.	Description
MX/10000	Mixer, vortex, capacity 50ml, speed 3000 rpm
MX/10002	Gasket, red
MX/10004	Gasket, blue
MX/10006	Gasket, green
MX/10008	Gasket, purple

#### Mixers, vortex, variable speed SA8



Mixing speed can be selected from 200rpm for very gentle mixing to 2500rpm for vigorous agitation. Choose between 'touch' mode or continuous operation simply by pressing a button on the facia. Robust die-cast body avoids unnecessary movement during use. The ergonomic low profile design makes everyday vortexing comfortable for the user.

Integral retort rod fixing allows vessels to be secured above the vortex action for long-term mixing.

- Variable speed control between 200 and 2500rpm
- Intermittent or continuous mode
- Stable low profile body
- Robust die-cast construction

The SA8 can mix a variety of other vessels when used in conjunction with the SA8/1 accessory pack which contains:

- 1 x plastic cradle for standard microtitre plate
- 1 x circular foam insert for beakers and flasks (up to 500ml capacity)
- 1 x rectangular foam insert (holds 8 x 0.2ml, 8 x 0.5ml and 16 x 1.5ml microcentrifuge tubes)
- 1 x solid rectangular foam insert (blank for custom holes)

Technical Specifications		
Speed range	200 to 2500rpm	
Orbit diameter	4.2mm	
Touch mode	Yes	
Continuous mode	Yes	
Dimensions (w x d x h)	135 x 215 x 78mm	
Not weight	2 21/2	

1 to Worgin	0.2kg
Electrical supply	90 – 240V, 50 / 60Hz, 20W

Cat. No.	Code	Description
MX/15006	SA8	Vortex mixer, variable speed
MX/15008	SR2	Retort rod, 300mm x 12.5mm diameter
MX/15010	SA8/1	Accessory pack (for use with SA8 only)

Please note: The microtitre plate holder SA8/1 should not be used at speeds above 800rpm

# Mortars and pestles

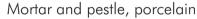
# Mortars and pestles, glass

Dimension is the nominal outside diameter of the mortar.

Cat. No.	Diameter
MP/92108	75mm
MP/92110	100mm
MP/92112	150mm

# Mortar and pestle, Agate

Cat. No.	Diameter O.D	Capacity	
MP/98144	50mm	10ml	
MP/98148	70mm	25ml	
MP/98152	95mm	45ml	



With unglazed grinding surfaces and glazed external surfaces. Dimension is the nominal outside diameter of the mortar.

Cat. No.	Capacity, ml	Diameter, mm	
MP/98126	30	70	
MP/98128	75	91	
MP/98130	150	113	
MP/98132	220	125	
MP/98134	325	144	
MP/98136	1135	215	

# Mortar and pestle, porcelain

Unglazed. Dimension is the nominal outside diameter of the mortar. Spare pestles available.

Cat. No.	Diameter, mm
MP/98120	115
MP/98122	135
MP/98124	150

## Pestle Mixer, motorised

Pestle Mixer, lightweight battery powered for use with disposable pestles, mixers and micro tubes. Cell tissue and pellets are completely homogenized within seconds by means of a high speed vortexing action. Greatly reduces hand fatigue, comes complete with 2 "AA" batteries and Pestle/Mixer adapter.

## Pestles & Tubes

Designed to homogenize cells and plant tissue or to re-suspend protein and DNA pellets. Individually wrapped to guarantee purity, DNase/RNase and pyrogen free. The grooved grip handle is easy to turn and does not slip even when wearing gloves. Autoclavable, pestle length 7.5cm.

Cat. No.	Description
MP/10000	Pestle mixer, motorised, battery operated, for micro tubes
MP/10002	Adapter, rubber, replacement, for connecting pestle to mixer
MP/10004	Pestle, micro, 0.5ml
MP/10006	Pestle, micro, 1.5ml
MP/10008	Microtube, 1.5ml
MP/10010	Microtube, 0.5ml
MP/10012	Microtube and pestle together in one sleeve, 1.5ml
MP/10014	Microtube and pestle together in one sleeve, 0.5ml
BA/93006	Battery, AA, spare for Pestle Mixer, 2 required



MP/92108



MP/9814



MP/98130



MP/9812



MP/10000

OV/65142



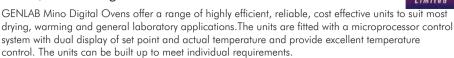
OV/6516



OV/6516

### **Ovens**

## Oven, Mino range



- 8 sizes 30 to 200 litres
- Temperature range 40 to 250°C
- Fluctuation  $\pm 0.5$ °C

The exterior is constructed from sheet steel finished in an easy clean powder coated paint and the interior chamber is made from mild steel coated with aluminium. A stainless steel chamber available as one of the options. All units come fitted with fixed shelf runners and removable chrome plated wire grid shelves.

Heating is provided by Incoloy sheathed elements positioned below the chamber floor for natural convection units and fitted around the fan on the back wall of the chamber for mechanical convection units. The 200 litre units have fan circulation as standard.

The control system comprises of a Microprocessor Digital Controller with dual display of set point and actual temperature and overheat thermostat. They also include main switch with indicator and heat and overheat indicators.

All units have aluminium coated mild steel interiors with a digital controller as standard. Available options are Stainless steel interior, fan circulation for models up to 150 litre capacity (Fitted as standard to the 200 litre model) and 0 to 99 hour process timer.

Cat. No.	Model	Capacity litres	Int. Dims cm HxWxD	Ext. Dims cm HxWxD *	No. of shelves	No. of runners
OV/65140	MINO/30/DIG	30	24 x 36 x 35	56 x 50 x 49	2	2
OV/65142	MINO/40/DIG	40	32 x 36 x 35	64 x 50 x 49	2	3
OV/65144	MINO/50/DIG	50	33 x 49 x 33	65 x 63 x 47	2	3
OV/65146	MINO/75/DIG	75	33 x 49 x 45	65 x 63 x 60	2	3
OV/65148	MINO/100/DIG	100	45 x 49 x 45	77 x 63 x 60	3	4
OV/65150	MINO/125/DIG	125	55 x 49 x 45	87 x 63 x 60	3	5
OV/65152	MINO/150/DIG	150	55 x 49 x 53	87 x 63 x 68	3	5
OV/65154	MINO/200/DIG/F	200	75 x 49 x 53	107 x 63 x 80 **	4	7
DI					to the second of	

<sup>\*</sup> Please note, the fan circulated option adds approximately 13cm to the external height

# Oven, Prime Range

The GENLAB Prime Ovens offers a range of fully functional, highly efficient and programmable units to suit the majority of drying, warming and general laboratory applications. All units have stainless steel interior and fan circulation with excellent accuracy and performance.

- 7 sizes 30 to 200 litres
- $\bullet$  Temperature range 40°C to 250°C
- Fluctuation ± 0.25°C (40 to 300°C is available as an option)

The exterior is constructed from sheet steel finished in an easy clean powder coated paint and all units come fitted with fixed shelf runners and removable chrome plated wire grid shelves.

Heating is provided by Incoloy sheathed elements positioned around the fan fitted at the back of the chamber.

The controller has a 0-99 hour process timer that can be selected for a fixed time period at a required set point plus an 8 segment program with 4 ramp and 4 dwell facility.

Cat. No.	Model	Capacity litres	Int. Dims cm HxWxD	Ext. Dims cm HxWxD	No. of shelves	No. of runners
OV/65160	PRO/30	30	24 x 36 x 35	56 x 50 x 62	2	2
OV/65162	PRO/50	50	33 x 49 x 33	65 x 63 x 59	2	3
OV/65164	PRO/75	75	33 x 49 x 45	65 x 63 x 72	2	3
OV/65166	PRO/100	100	45 x 49 x 45	77 x 63 x 72	3	4
OV/65168	PRO/125	125	55 x 49 x 45	87 x 63 x 72	3	5
OV/65170	PRO/150	150	55 x 49 x 53	87 x 63 x 80	3	5
OV/65172	PRO/200	200	75 x 49 x 53	107 x 63 x 80	4	7

<sup>\*\*</sup> These dimensions include fan

# Oven, large capacity, multi-purpose

The GENLAB Large Capacity Multipurpose Ovens offer a unique range of highly efficient, reliable and accurate units suitable for much larger applications in drying, curing, general laboratory and industrial uses.

- Capacities 250 to 1250 Litres
- 8 sizes vertical style
- 9 sizes horizontal style
- The vertical model is fitted with a single door, the horizontal style has twin doors
- Temperature range: 50°C to 250°C

The exterior is constructed from sheet steel finished in an easy clean powder coated paint and the interior chamber is made from mild steel coated with aluminium. A stainless steel chamber available as one of the options. All units come fitted with fixed shelf runners and removable chrome plated wire grid shelves.

Heated by Incoloy sheathed elements positioned in the side fan duct for all units except the 9H and 12H which have a rear fan

All units have as standard a PID Microprocessor controller, with dual displays of set point and actual temperature that are auto-tuned to each individual unit to optimise the heat up, overshoot and control of temperature.

The controller has a 0-99 hour process timer that can be selected for a fixed time period at a required set point plus an 8 segment program with 4 ramp and 4 dwell facility.



OV/65236

#### Horizontal

Cat. No.	Model	Capacity litres	Int. Dims cm HxWxD	Ext. Dims cm HxWxD	No. of shelves	No. of runners
OV/65220	LCO/9H/D IG	250	54 x 92 x 44	94 x 109 x 5 7	3	4
OV/65222	LCO/12H/D IG	350	54 x 92 x 64	94 x 109 x 7 7	3	4
OV/65224	LCO/15H/D IG	425	76 x 92 x 64	97 x 135 x 8 1	4	5
OV/65226	LCO/18H/D IG	500	91 x 92 x 64	112 x 135 x 81	5	7
OV/65228	LCO/22H/D IG	650	91 x 92 x 77	127 x 157 x 95	5	7
OV/65230	LCO/27H/D IG	750	106 x 92 x 77	142 x 157 x 95	5	8
OV/65232	LCO/30H/D IG	850	122 x 92 x 77	158 x 157 x 95	5	9
OV/65234	LCO/35H/D IG	1000	142 x 92 x 77	178 x 157 x 95	5	11
OV/65236	LCO/42H/D IG	1250	142 x122 x 74	178 x 187 x 92	5	11

#### Vertical

C	Cat. No.	Model	Capacity litres	Int. Dims cm HxWxD	Ext. Dims cm HxWxD	No. of shelves	No. of runners
	DV/65240	LCO/9V/DIG	250	91 x 51 x 52	117 x 94 x 69	5	7
	DV/65242	LCO/12V/DIG	350	91 x 61 x 62	117 x 104 x 79	5	7
	DV/65244	LCO/15V/DIG	425	91 x 61 x 77	117 x 104 x 94	5	7
	DV/65246	LCO/18V/DIG	500	114 x 61 x 77	140 x 104 x 94	5	9
	DV/65248	LCO/22V/DIG	650	114 x 77 x 77	150 x 142 x 95	5	9
	DV/65250	LCO/27V/DIG	750	128 x 77 x 77	164 x 142 x 95	5	10
	DV/65252	LCO/30V/DIG	850	142 x 77 x 77	178 x 142 x 95	5	11
	DV/65254	LCO/35V/DIG	1000	142 x 77 x 92	178 x142 x 110	5	11



Notes	



OV/901 series



Ovens, economy

A range of economically priced ovens with high specification.

- Stainless steel interior
- Epoxy powder coated or all stainless steel exterior
  Forced or natural air circulation
- Automatic fan shut down at program end
  LCD display

- Microprocessor controlTemperature sensor fail alarm
- Power failure control system
- RS 232 interface

Technical Specifications	SL 15	SL 32	SL 53	SL 115
Temperature range	ambient +5°C to	+250°C	ambient +5°C	to +300°C
Volume, litres	15	32	56	112
Internal dimensions,				
(hxwxd) mm	240x320x180	320x400x240	395x 95x360	540x460x450
Overall dimensions,				
(hxwxd) mm	520x44 x350	600x520x435	700x590x560	845x650x650
Weight (kg)	27	35	50	65
Temperature fluctuation				
at +105°C	$\pm 0.7$	$\pm 0.4$	$\pm 0.3$	±0.5
Over-temperature				
protection	thermal fuse to D	IN 12880	2.0 class to I	DIN 12880
Voltage	230V, 50	Hz	230V,	50Hz
Power (W)	600	1100	1600	2400
Shelves fitted / max	1/2	1/5	2/5	2/7

Cat. No.	Code	Description
OV/90002	SL 15	Oven, powder coated finish, 15L natural convection
OV/90004	SL 32	Oven, powder coated finish, 32L natural convection
OV/90006	SL 53	Oven, powder coated finish, 56L natural convection
OV/90008	SL 115	Oven, powder coated finish, 112L natural convection
OV/90022	SL 32	Oven, powder coated finish, 32L fan circulation
OV/90024	SL 53	Oven, powder coated finish, 56L fan circulation
OV/90026	SL 115	Oven, powder coated finish, 112L fan circulation
OV/90102	SL 15	Oven, stainless steel, 15L natural convection
OV/90104	SL 32	Oven, stainless steel, 32L natural convection
OV/90106	SL 53	Oven, stainless steel, 56L natural convection
OV/90108	SL 115	Oven, stainless steel, 112L natural convection
OV/90122	SL 32	Oven, stainless steel, 32L fan circulation
OV/90124	SL 53	Oven, stainless steel, 56L fan circulation
OV/90126	SL 115	Oven, stainless steel, 112L fan circulation

Further options and accessories are available – please ask for details.

Notes

# Ovens, laboratory



BINDER

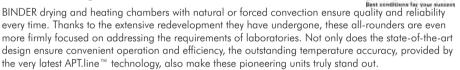
Constructed of galvanised sheet steel and powder coated throughout to afford maximum protection against corrosion with stainless steel interior. Very tight door closure with 2-point door latch. Microprocessor control. Two versions are available, the ED series with natural convection or the FD series with fan circulation.

- ullet Electronically controlled APT.line  $^{ iny iny}$  preheating chamber assuring temperature accuracy and reproducible results
- $\bullet$  Temperature range from  $5^{\circ}\text{C}$  above ambient temperature to  $300^{\circ}\text{C}$
- Digital temperature setting with an accuracy of one degree
- DS control with integrated timer 0 to 99 hrs
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- Adjustable ventilation by means of front ventilation flap slide and rear exhaust  $\varnothing$  50mm
- 2 chrome-plated shelves included

Technical Specifications	
Model	ED/FD 23
Capacity, litres	23
Temperature range	ambient +5 to 300°C
Temperature fluctuation	±0.3°C
Temperature variation at 70°C	$\pm 1.5$ °C Temperature variation at 70°C (with fan)
Shelves supplied (max.)	2 (3)
Max. load per shelf (kg)	12
Internal W×D×H (mm)	222×277×330
External W×D×H (mm)	435×520×495
Electrical supply	230V (± 10%), 50/60Hz
Power consumption (W)	800

Cat. No.	Code	Model	Description
OV/51002	9010-0190	ED 23	Drying Oven with natural convection 23L
OV/51102	9010-0194	FD 23	Drying Oven with fan circulation 23L

# Binder Avantgarde.Line ovens



- Temperature distribution perfect and precise
- Accurate drying chambers
- Controller with LCD display
- Electromechanical control of the exhaust air flap
- 2 chrome-plated racks
- Class 2 integrated independent adjustable temperature safety device (DIN 12880) with visual alarm USB port
- Simple data recording via the USB connector

#### Natural convection models

Technical Specificat	Technical Specifications		
Model No.	ED 56	ED 115	ED 260
Capacity	57 Litres	114 Litres	255 Litres
External dimensions			
excluding fittings			
and connections			
(HxWxD)	560 x 625 x 565mm	710 x 735 x 605mm	815 x 965 x 760mm
Temperature range	Ambient +15°C to 300°C	Ambient +8°C to 300°C	Ambient +8°C to 300°C

#### Forced air convection models (with fan)

Technical Specificati	ions		
Model No.	FD 56	FD 115	FD 260
Capacity	60 Litres	116 Litres	257 Litres
External dimensions			
excluding fittings			
and connections			
(HxWxD)	560 x 625 x 565mm	710 x 735 x 605mm	810 x 965 x 760mm
Temperature range	Ambient +15°C to 300°C	Ambient $+15^{\circ}\text{C}$ to $300^{\circ}\text{C}$	Ambient +15°C to 300°C

Cat. No.	Code	Description
OV/51120	ED 56	Drying oven Avantgarge.Line range with natural convection 56L
OV/51122	ED 115	Drying oven Avantgarge.Line range with natural convection 116L
OV/51124	ED 260	Drying oven Avantgarge.Line range with natural convection 260L
OV/51130	FD 56	Drying oven Avantgarge.Line range with fan circulation 56L
OV/51132	FD 115	Drying oven Avantgarge.Line range with fan circulation 116L
OV/51134	FD 260	Drying oven Avantgarge.Line range with fan circulation 260L



OV/51002



OV/51120

# Ovens, Apex and Peak Series



The Carbolite Apex and Peak range of ovens are bench-mounted and offer the choice of a maximum temperature of either 250, or 300°C depending from which range it is selected. Whilst the Apex offers a maximum chamber capacity of 120 litres, the Peak offers a 200 litre capacity oven. These ovens provide a combination of excellent performance and reliability, digital PID controllers are fitted as standard to both ranges. All aspects of design, from construction materials to heating

fitted as standard to both ranges. All aspects of design, from construction materials to heating elements have been optimised to ensure economical operation and rapid performance at reasonable prices. To fulfil customer's requirements, the Apex ovens are available with or without fan, while the higher temperature Peak range are all fan circulated.

- Polished Stainless steel lining
- Adjustable airflow vent
- Temperatures up to 300°C depending on model selected
- Chamber capacities from 30 to 200 litres
- Additional options available for the Peak models only

Options available at additional cost: -

- Multi segment programmer
- Cable port entry
- Viewing window in door
- Interior light
- Stoving & curing option for processes involving ammable vapours
- Exhaust fan
- Variable speed exhaust & internal fan (PF models only)
- Sealed inner chamber for use with inert gases
- Flow meter & needle valve

Please specify any required options at time of ordering

Technical Specifications	Apex Ovens		
Fan assisted air circulation m	nodels		
	AX030	AX060	AX120
Temperature range		40°C ~ 250°C	
Volume (litres)	28	66	128
Heat up time (to 300°C)	23 mins	25 mins	26 mins
Dimensions, w x d x h (mm)			
Internal	295 x 300 x 320	395 x 400 x 420	495 x 500 x 520
External	440 x 590 x 465	540 x 690 x 565	640 x 790 x 665
No of shelves	2	2	2
Power supply		220-240V 50Hz	
Maximum power	1000W	1500W	2000W
Weight	24 kg	37 kg	55 kg

Cat. No.	Code	Description
OV/35130	AX030-230SN	Oven 28 litre
OV/35160	AX060-230SN	Oven 66 litre
OV/35120	AX120-230SN	Oven 128 litre



# Ovens, Apex and Peak Series (continued)

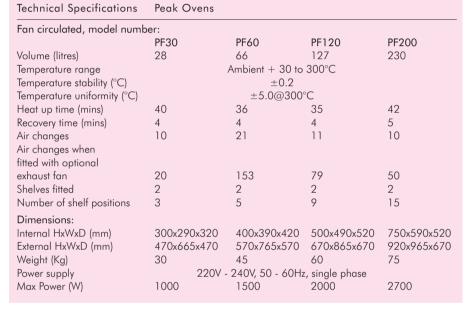
Technical Specifications	Peak Ovens			
Natural circulation, models				
	PN30	PN60	PN120	PN200
Volume (litres)	27	57	115	215
Temperature range		Ambient + 30 to	300°C	
Temperature stability (°C)		±0.5		
Temperature uniformity (°C)		±7.0@300	°C	
Heat up time (mins)	52	52	52	58
Recovery time (mins)	8.5	8.5	8.5	10
Shelves fitted	2	2	2	2
Number of shelf positions	3	5	9	15
Dimensions:				
Internal HxWxD (mm)	255x330x320	350x392x420	450x492x520	700x592x520
External HxWxD (mm)	470x665x470	570x765x570	670x865x670	920x965x670
Weight (Kg)	30	45	60	75
Power supply	220V -	240V, 50 - 60Hz	, single phase	
Max Power (W)	750	1000	1500	2250

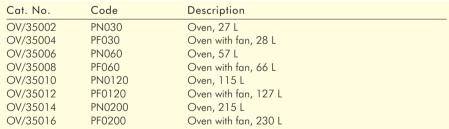


OV/35004



OV/35012







OV/35016

Notes ————————————————————————————————————	



OV/25028



OV/25065 control panel

# Oven, vacuum, Jeiotech

An ideal oven for general drying, curing, conditioning, desiccating, annealing, moisture testing, vacuum embedding, out-gassing solids and liquids, plating, ageing tests, and electronic process control. It has been designed to operate with reduced pressures and/or inert atmosphere and is thus equipped with separate vacuum and gas ports, each with its own 3-way valve. A microprocessor PID-A controller offers accurate temperature and reproducibility.

Touch-sensitive membrane keypad with digital display allows easy setting of the temperature. Double-wall construction and fully insulated chamber maximize energy efficency allowing the oven's exterior to remain cool to touch. Silicon gasket and positive vice action door latch ensure a tight seal at all vacuum levels. The heat-tempered full view window permits continuous monitoring inside. Anodized aluminium heat conductors transmit heat to two removable shelves. Temperature sensor on the aluminium shelves senses exact sample temperature. Over temperature limit switch prevents over heating. A safety cover, consisting of a polycarbonate shield and perforated cover, can be fitted to the door as an optional extra.

To ensure optimum performance of the vacuum oven a cold trap bath should be used.

Technical Specification	ns		
Model	OV-11	OV-12	
Volume capacity	28 L	66 L	
Temperature Range	Ambient	+ 5°C-250°C	
Accuracy		C @ 100°C	
Uniformity		C @ 100°C	
Heat up time to 100°C	Аррі	ox. 70min	
Controller	· · · · · · · · · · · · · · · · · · ·	D - Auto tuning	
Sensor		PT100	
Internal	Stainle	ss steel, 3.0t	
External	•	t power casting	
Shelves	Anodized alu	minium plate, 3.0t	
Insulation		ic wool (50t)	
Door gasket	Model heat resistant silicone rubber		
Window		Tempered safety glass, 15t	
Timer		me wait off time	
	•	min. Minimum 6 min)	
Vacuum range		@760mm Hg	
Heating method		side jacket	
Safety device		fe) – control system, Class 11	
Electrical requirements	<del></del>	0V 60Hz	
Power consumption	5A	5.8A	
Internal dimensions,	200 205 200	400 405 400	
W x D x H	302 x 305 x 302mm	402 x 405 x 402mm	
External dimensions, W x D x H	680 x 453 x 495mm	780 x 557 x 595mm	
W X D X U	00U X 403 X 490mm	70U X 337 X 393mm	

Cat. No.	Code	Description
OV/25028	OV-11	Vacuum oven 28litre
OV/25065	OV-12	Vacuum oven 66litre
Accessories		
OV/25102	135018	Silicone door gasket for OV/25028
OV/25104	13502S	Silicone door gasket for OV/25065
OV/25106	13601	Safety cover with PC sheet for OV/25028
OV/25108	13602	Safety cover with PC sheet for OV/25065
OV/25110	AAH62012K	Cold trap bath CTB-10
OV/25200	MED-141C	Vacuum pump, 36L/min for use with ovens OV-11 and OV-12



Viton door gasket



Safety cover



OV/25028 with door open

# Pencils and pens

# Pencils, Chinagraph

Cat. No.	Colour	Pk Qty
PC/93002	Black	12
PC/93006	Red	12
PC/93008	Yellow	12
PC/93010	White	12



1 C/ 73002

# Pens, Pentel, fibre tip, giant markers

Cat. No.	Colour	Pk Qty
PC/93202	Black	12
PC/93204	Blue	12
PC/93206	Green	12
PC/93208	Red	12



PC/93202

# Pens, marker

Permanent marker pens which mark on most hard to mark surfaces. Fine tip giving a line width of 1 mm. Long lasting and durable.

Cat. No.	Colour	Pk Qty
PC/93312	Black	12
PC/93314	Red	12
PC/93316	Blue	12
PC/93318	Assorted colours	12



PC/93318

# Pens, marker, cryoware

# NALGENE

For marking cardboard and polycarbonate. Ink will not fade at ultra-low temperature. Smudge proof. Pack contains one each red, green, blue and black ultra fine point pens.

Cat. No.	Code	Pk Qty
CR/33052	6313-0010	4



CR/33052



PD/120

# Petri dishes

# Petri dishes, borosilicate glass Pyrex®



Cat. No.	Code	Size, mm	Pk Qty	
PD/12002	1480/02D	60 x 20	10	
PD/12004	1480/06D	80 x 20	10	
PD/12006	1480/08D	100 x 20	10	
PD/12008	1480/10D	120 x 20	10	
PD/12010	1480/12D	150 x 30	10	



PD/62102

# Petri dishes, resistance glass

Cat. No.	Size, mm	Pk Qty
PD/62102	90 x 15	20



PD/16602

# Petri dishes, polystyrene, disposable



Produced under sterile aseptic conditions. The 90mm dishes comply with BS611 Part 2 and are CE marked in compliance with the new in-vitro diagnostic directive (98/79/EC). Wine rack packaging of the 90mm and 140mm petri dishes reduces the risk of transit damage and facilitates easy handling.

Cat. No.	Code	Description	Vents	Inner Pk	Pk Qty
PD/16602	101R20	90mm petri dish	Single	20	500
PD/16604	101VR20	90mm petri dish	Triple	20	500
PD/16606	101RT/C	90mm petri dish	None	20	500
PD/16608	121V	30mm petri dish	Triple	10	800
PD/16610	122	50mm petri dish standard	Single	10	700
PD/16612	124	50mm petri dish deep	Single	20	500
PD/16614	123	60mm petri dish	Single	10	540
PD/16616	501V	140mm petri dish	Triple	10	80
PD/16618	109	100mm square petri dish	None	4	120
PD/16622	101VBLUE	90mm blue petri dish	Triple	20	500
PD/16626	502V	90mm 2 compartment petri dish	Triple	20	500
PD/16630	103	100mm 25 compartment petri dish	*	4	120
PD/16632	504	55mm contact plate	Triple	20	300
*Lid turns thro	*Lid turns through 90° to allow venting or non-venting of the dish.				



PD/9660

# Petri dishes, polystyrene, disposable

Cat. No.	Description	Pk Qty
PD/96602	90mm petri dish single vent	700
PD/96604	90mm petri dish triple vent	700

# pH meters, portable

# pH tester, Checker, pocket



A low cost simple to use digital pH tester with on/off switch and trimmers for calibration. An ideal replacement for litmus paper and many times more accurate.

The Checker 1 has a probe small enough to fit into a test tube. Supplied with batteries and one-year guarantee (probe 6 months).

Technical Specifications	
Range/Resolution	0.00 to 14.00 pH x 0.1pH
Accuracy	±0.2 pH

Cat. No.	Code	Description
PH/35002	HI-98103	CHECKER1 Pocket pH meter
Accessories PH/35008	HI-77400P	Calibration kit comprising of 5 sachets each of pH7.01 and pH4.01
PH/35010 PH/35012 PH/35014	HI-7061L HI-70300L HI-1270	Probe cleaning solution 500ml Probe storage solution 500ml Replacement probe for Checker 1



# pH/temperature meters, Waterproof pocket



Two waterproof pocket testers with simultaneous display of pH & temperature on a dual level LCD screen. Packed with features normally found in a hand held meter the new design casing floats if dropped in water. Features also include:

- Replaceable pH electrode with a clogging resistant fibre junction.
- Auto calibration at 1 or 2 points with choice of 5 memorised buffers
- Auto temperature compensation
- Auto-off switch and battery check
- Hold facility

Supplied complete with batteries, electrode removal tool and instructions. Two versions available:

	HI-98127	HI-98128	
Range pH	-2 to	o 16pH	
C	0.0 to	60.0°C	
Resolution pH	0.1pH	0.01pH	
C	0	.1°C	
Accuracy pH	±0.1pH	±0.02pH	
C	±0.5°C	±0.5°C	
emperature compensation	Automatic		
Calibration	Automatic at 1 or 2 points		
	with two sets of memorised buffers		
	4.01/7.01/10.01 or 4.01/6.86/9.18		
Dimensions	163 x 40 x 26mm		
Veight	100g		



PH/3503



PH/91000

# pH meter 786, Economy waterproof

Suitable for a wide variety of applications from Agriculture to Water treatment. The impact resistant ABS case helps to protect the meter when being used in the field.

- Fast response, reliable accurate measurements
- Easy to read large LCD display 21 x 18mm
- IP 57 rated waterproof design
- 1 or 2 points manual calibration
- Automatic temperature compensation

Technical Specification	ns
Range	0.00 to 14.00 pH
Accuracy	$\pm 0.1 + 1$ digit
Resolution	0.01pH
Power	3V x 2 Lithium batteries CR2032
Dimensions	33.5 x 170mm
Weight	85g (with batteries)
_	

Cat. No.	Description
PH/91000	Economy waterproof pH meter

PH/35104

# pH/ORP/°C meters, Waterproof hand held



Two new IP67 waterproof pH meters with the latest probe technology and extended measuring range. Ideal for field or factory use, as the meters are tough and simple to use.

The HI-991001 reads both pH and temperature with one probe, and the HI-991002 has a combination probe to measure pH, temperature and also ORP.

Both meters have a simple two-button operation. Unit displays pH/ORP and temperature simultaneously on a large LCD screen, with a stability indicator. Calibration is automatic at one or two points with just one button. The user can select between two programmed buffer sets, and screen symbols guide the user through the procedure. When the meter is turned on a battery check advises in percentages the amount of power left. The meter will also retain calibration data during battery replacement. For demanding applications both meters use a stainless steel multi-parameter probe fitted with an amplifier to exclude interference.

Supplied complete with electrode, battery, wrist strap and buffer solutions in a hard carry case.

- Large LCD display with on-screen prompts
- Waterproof case
- Simple two button operation
- Step by step auto pH calibration
- Tough metal cased electrodes
- HI-991002N also measures ORP
- Combination probe

Battery life

- Auto shut-off after 8 minutes
- Supplied with probe and carry case

Technical Specificatio	ns		
	рН	ORP (HI-991002N only)	Temperature
Range	-2.00 to 16.00	±1999mV	-5 to 105.0°C
Resolution	0.01	1	0.1
Accuracy	±0.02	±2	±1
pH calibration Automatic 1 or 2 points			
4.01, 7.01, 10.01 or 6.86, 7.01, 9.18.			
Temp. Compensation	Automatic from -5 to	105°C	

1500 hours continuous use approx.

Cat. No.	Code	Description
PH/35102	HI-991001N	Waterproof pH/°C meter
PH/35104	HI-991002N	Waterproof pH/ORP/°C meter
Accessories		
PH/35106	HI-1296D	Replacement probe for HI-991001N
PH/35108	HI-1297D	Replacement probe for HI-991002N
PH/35110	HI-1292D	Probe for semi solids/direct soil testing
PH/35164	HI-7004L	500ml pH 4.01 buffer
PH/35166	HI-7006L	500ml pH 7.01 buffer
PH/35167	HI-7007L	500ml pH 10.01 buffer
PH/35010	HI-7061L	Probe cleaning solution 460ml
PH/35012	HI-70300L	Probe storage solution 460ml
CO/31138	HI-710023	Orange protective rubber boot



PH/35102

# pH/ORP meter, Portable



The Hanna 8424 portable splash-proof pH/ORP and temperature meter delivers fast and accurate pH readings, with a straightforward operation. Automatic push button calibration can be performed at one or two points, and the BNC fitting allows the use of a wide range of pH electrodes.

- Auto calibration
- Automatic Temperature Compensation
- Automatic buffer recognition
- Three standard buffer values
- Measures ORP with additional probe
- Calibrated tags on LCD
- Simple operation
- Auto shut-off
- Reads pH and temperature
- mV range for ORP measurement
- Splash-proof membrane keypad
- Low battery indicator
- HOLD function
- °C and °F measurements
- Supplied with pH electrode and temperature probe, buffer solution sachets pH 4.01, 7.01, electrode cleaning solution sachet, battery, protective case and instructions.

Range	рН	-2 to 16.00
	ORP	$\pm 699.9 \text{ mV}; \pm 1999 \text{ mV}$
	Temperature	-20.0 to 120.0°C / -4.0 to 248.0°F
Resolution	рН	0.1
	ORP	0.1 mV; 1 mV
	Temperature	0.1°C / 0.1°F
Accuracy	рН	±0.01 pH
	ORP	$\pm 0.2$ mV; $\pm 1$ mV
	Temperature	$\pm 0.4$ °C / $\pm 0.8$ °F
Calibration	рН	automatic, 1 or 2 point with 3 memorized buffer
		values (pH 4.01, 7.01, 10.01)
	Offset	±1 pH
	Slope	75 to 110%
Input impedance		10 <sup>12</sup> Ohm
Temperature comp	ensation	Automatic, -20 to $120^{\circ}\text{C}$ (-4 to $248^{\circ}\text{F}$ ) or manual,
		without probe
pH Electrode		PEI body pH electrode with BNC connector and 1m (3.3') cable (included)
Temperature probe	•	Stainless steel temperature probe with 1m cable (included)
Battery type		9V
Battery life		Approximately 150 hours of continuous use; auto off after 20 minutes of non-use or disabled (user-
		selectable)
Environment		0 to 50°C (32 to 122°F); RH max 100%
Dimensions		164 x 76 x 45 mm (6.5 x 3.0 x 1.8)
Weight		180 g (6.3 oz.)

Cat. No.	Code	Description
PH/35180	HI-8424	Portable pH/ORP meter with ATC and HOLD feature
Accessories		
PH/35208	HI-1230B	Replacement general purpose pH electrode
PH/35182	HI-1043B	TRIS pH electrode
PH/35210	HI-7662	Replacement temperature probe
PH/35164	HI-7004L	pH Buffer 4.01, 500ml
PH/35166	HI-7007L	pH Buffer 7.01, 500ml
PH/35167	HI-7010L	pH Buffer 10.01, 500ml
PH/35010	HI-7061L	Probe cleaning solution, 500ml
PH/35012	HI-70300L	Probe storage solution, 500ml
PH/35076	HI-3230B	ORP Electrode
PH/35184	HI-7022L	470mV ORP solution, 500ml



PH/35180



PH/35164



PH/35182

PH/35210



PH/35174



PH/3517

# pH/mV/C/ISE meters, Professional Waterproof



Both the HI-98190 and HI-98191 are IP67 rated waterproof meters designed for universal applications. Whilst the HI-98190 measures pH/ORP and temperature, the HI-98191 also includes ISE measurements.

Exchange out the pH probe for an ORP probe to obtain mV readings in the  $\pm 2000$  mV range. HI-98191 adds direct ion concentration readings for ISEs with a choice of units for calibration and display.

The HI-98190 features the HI-12963 titanium bodied pH/temperature electrode with a quick connect DIN connector to make attaching and removing the probe simple and easy. The HI-98191 is supplied with the HI-72911B titanium bodied pH/temperature electrode with BNC and RCA connectors. HI-98191 has 17 different standard ISE sensors pre-programmed in the meter. Selecting the appropriate sensor will automatically update the ion charge for slope calibration and can be calibrated up to five points with the choice of seven standards and five custom standards (choice of units). This meter allows an extensive choice of measurement units (ppm, ppt, g/L, ppb, µg/L, mg/mL, M, mol/L, mmol/L, % w/v, user) and has an expanded measuring range of 1.00 x 10<sup>-7</sup> to 9.99 x 10<sup>10</sup> concentration.

- Waterproof to IP67 (including probe sockets)
- Large dot matrix display with backlight
- On-screen calibration instructions
- Log on demand
- GLP and on screen help
- USB for data download (cable and software supplied)
- Customisable pH resolution from 0.1 to 0.001
- Up to 5 point pH calibration with standard and custom buffers
- Choice of measurement units for ISE (HI-98191 only)
- Up to 5 point ISE calibration (HI-98191 only)
- Auto-end feature
- Metal cased electrodes (pH) with in-built temperature sensor

Technical Specif	ications		
Parameter	Range	Resolution	Accuracy
рН	-2.00 to 16.00	0.1,0.01,0.001	+/-0.1; +/-0.002
Temperature	-20.0 to 120°C	0.1	+/-0.4
mV	+/- 2000	0.1	+/-0.2
ISE			
(HI-98191 only)	1.00E <sup>-7</sup> to 9.99E <sup>10</sup>	3 digits; 0.01, 0.1, 10 conc.	+/-0.5% of reading
	Parameter pH Temperature mV ISE	pH -2.00 to 16.00 Temperature -20.0 to 120°C mV +/- 2000 ISE	Parameter         Range         Resolution           pH         -2.00 to 16.00         0.1,0.01,0.001           Temperature         -20.0 to 120°C         0.1           mV         +/- 2000         0.1           ISE

Cat. No.	Description
PH/35172	Hanna HI-98190 Professional Waterproof pH/mV/°C meter supplied with pH
	electrode with built-in temperature sensor, buffer solutions, USB cable and
	software, beakers, batteries and carry case
PH/35174	Hanna HI-98191 Professional Waterproof pH/mV/°C/ISE meter supplied with
	pH electrode with built-in temperature sensor, buffer solutions, USB cable and
	software, beakers, batteries and carry case

Notes	

# pH meters, Mettler F2, FiveGo portable

Ideally suited for mobile applications in the laboratory, at-line, or outdoors, the new FiveGo portable pH meter provides high performance and measurements at the click of a button.

The robust and waterproof design makes the FiveGo instruments the perfect companion to get reliable measurement data even in harsh conditions.

Time is an ever more valuable asset, but thanks to the FiveGo's intuitive operation, robust design and extensive memory functions, you can maximize your time spent measuring instead of dealing with complex system and measurement setups.

Meters to measure dissolved oxygen or conductivity, are also available in the FiveGo range.

- Large display with simple menu, measurements can be made with just a few clicks.
- Ergonomically designed for either left or right handed use, with a foldable foot stand which provides
  optimal viewing while situated on a lab bench.
- Waterproof protection to IP67, with carry case.
- Optimally designed for mobile measurements in a wide range of workplaces, including Environment, Academia, Food and Beverage, Agriculture and Industry.

Technical Specifications	
Measuring range	0.00 to 14pH
	-1999 to +1999mV
	0°C to 100°C (32°F to 212°F)
Resolution	0.01pH
	1 mV
	0.1°C
Accuracy	$\pm 0.01 \text{ pH} / \pm 1 \text{ mV} / \pm 0.5^{\circ}\text{C}$
Automatic and manual	
end point recording	Yes
Acoustic end point signal	Yes
Visual end point signal	Yes
Temperature compensation	ATC and MTC
Calibration	3 points, 4 predefined buffer groups
Memory size	200 measurements, current calibration
Sensor inputs	BNC, Cinch, NTC 30 kΩ
IP Protection	IP67
Power supply	4 x AAA batteries
Operating hours	>200 hours
Display	3.1" segmented LCD
Housing	ABS
Dimensions	188 x 77 x 33mm
Weight	260g
3	3

Cat. No.	Description
PH/65110	pH meter FiveGo F2 without electrode, for applications that require a specific sensor not included in a kit
PH/65112	pH meter FiveGo F2 Standard kit, comprising of meter with LE438 IP67 sensor, for applications involving a wide range of aqueous samples
PH/65114	pH meter FiveGo F2 Food kit, comprising of meter with LE427 IP67 sensor and carrying case for applications involving solid samples such as meat, fruit and cheese
PH/65116	pH meter FiveGo F2 Field kit, comprising of meter with LE438 IP67 sensor and carrying case for applications



METTLER TOLEDO

PH/65112



PH/65114

Notes	



PH/6515

# pH, ORP meter, Seven2Go, portable

The simple, yet robust, easy to use design of the Seven2Go series of meters, makes them suitable for one-handed operation and ideal for use in the laboratory, in the field and at-line.

They are engineered to provide users with fast quality data, and being waterproof, make them a take anywhere meter.

METTLER

- Simple menu for straight out of the box operation
- T-Pad navigation control for fast and comfortable movement through menus
- ISM (Intelligent Sensor Management) ready, recognises sensors and stores their details
- Waterproof tested to IP67 and drop test resistance
- Automatic/Manual temperature capture
- Automatic buffer recognition
- All models come with operating instructions, quick guide, test report, declaration of conformity and batteries
- Both models are available in 5 variations.

Variation	Ideally suited for
S2 Meter	Depending on electrode that is used with the unit
S2 Standard	Wide range of samples including emulsions and suspensions
S2 Food kit	Solid and semi-solid samples like cheese and meat
S2 Light kit	Academic and educational purposes
S8 Meter	Depending on electrode that is used with the unit
S8 Standard	Wide range of samples including emulsions and suspensions
S8 Field kit	As above but especially suited for measurements on the go
S8 Biotech kit	Fast results in a wide range of samples including harsh chemicals
S8 Fluoride	Aqueous samples, tooth paste and mouth wash

Technical Specifications	Seven2Go pH/mV (S2)	Seven2GoPro pH/Ion (S8)
pH Range	2 to 20pH	2 to 20pH
pH Resolution	0.01/0.1	0.001/0.01/0.1
pH Accuracy (sensor input)	±0.01	±0.002
ORP/ Redox range	-19999 to 1999 mV	-2000 to 2000 mV
ORP/ Redox resolution	1	0.1/1
ORP/ Redox Accuracy		
(sensor input)	± 1	±0.1
Units	mV/ Rel. mV	mV/ Rel. mV
lon range		1.00E-09 to 9.99E+09
lon resolution		3 or 4 Digits (Auto range)
lon accuracy (sensor input)		±0.5%
Units		mg/L, mmol/L, mol/L, %, ppm, pX
Temperature range	-5 to +105°C	-5.0 to 130°C (ATC) C19/ -30 to
Tananantun malutian	0.1%	130°C (MTC) 0.1°C
Temperature resolution	0.1°C	0.1 C
Temperature accuracy	±0.5°C	±0.2°C if T= 0°C to 105°C
(sensor input)	±0.5 €	$\pm 0.5^{\circ}$ C if T < 0°C or T > 105°C
Connectors	DNIC (1010 3 ) / DCA (-:	
Connectors	BNC (1012 ? ) / RCA (cinch)	BNC (1012?) / RCA (cinch) / 2mm Banana
Dimensions	222 x 70 x 35mm	222 x 70 x 35mm
Weight	270g	290q
Power supply	4x 1.5 V AA or	4x 1.5 V AA or
1 Ower 30ppry	1.3 V NiMH acc.	1.3 V NiMH acc. or USB
Display	Segmented LCD	Graphic LCD
Display	Jeginemed LCD	Orapine LCD

Cat. No.	Code	Description
PH/65140	30207949	S2 Meter with electrode clip, no electrodes supplied
PH/65142	30207950	S2 Standard kit with InLab Expert Pro ISM-IP67 and buffer sachets for pH 4.01, 7.00. 9.21 and 10.00
PH/65146	30207952	S2 Food kit, as the field kit but with InLab solids Pro-IP67 instead of the Expert Pro ISM-IP67
PH/65148	30207953	S2 Light kit, as the standard kit but with InLab versatile Pro instead of InLab Expert Pro-ISM-IP67
PH/65150	30207874	S8 Meter, LabX* direct pH, USB cable, electrode clip, base accessory
PH/65152	30207875	S8 Standard kit with plus InLab Expert Pro-ISM-IP67 and buffer sachets for pH 4.01, 7.00, 9.21 and 10.00
PH/65154	30207877	S8 Field kit, as the standard kit plus bottles for calibration and uGO carry case
PH/65156	30207878	S8 Biotech kit, as the field kit but with InLab Routine Pro ISM (including cable) instead of InLab Expert Pro ISM-IP67
PH/65158	30207879	S8 Fluoride kit, as the standard kit but with perfect ION Fluoride instead of InLab Expert Pro-ISM-IP67

<sup>\*</sup>Mettler LabX direct pH is Mettler's data collection software for all portable and benchtop Seven series conductivity, dissolved oxygen and pH meters

Model 550 hand-held general purpose portable pH and temperature meter offering 2 point pH calibration and automatic buffer recognition. This model simultaneously displays both the temperature compensated pH readings and temperature. This small, lightweight meter has an LCD display encompassed in a splash proof housing.

- Simultaneously displays pH and temperature
- Automatic calibration
- Manual or Automatic Temperature Compensation (ATC)
- Auto shut off 10 minutes
- 5000 hours battery life
- 2 year warranty

This meter is supplied ready to use with an epoxy bodied electrode (924 001), a temperature probe (170 101) and buffers in a handy carry case.

Technical Specifications	
Model	550
Туре	pH and temperature
Waterproof	No (IP65)
pH Range	0 to 14
pH Resolution	0.01
pH Accuracy	± 0.05
ATC	0 to 60°C
Temperature Range	0 to 100°C
Temperature Resolution	0.1°C
Temperature Accuracy	± 0.5°C
No. of Calibration Points	2
Automatic Buffer Recognition	Yes
Auto Shut Off	10 mins
Operating Temperature	0 to 50°C
Battery Life (hours)	5000
pH Connector	BNC
Temperature Connector	3.5mm jack
Dimensions (I x w x d)	128 x 56 x 25mm
Weight	130g

Cat. No.	Code	Description
PH/25010	550 271	pH meter, model 550
PH/25710	924 001	Replacement electrode
PH/25720	170 101	Replacement ATC probe for model 550



PH/25010



PH/25720

Notes	

# pH meter, Jenway 570



Model 570 hand-held general purpose pH, mV and temperature meter. This model offers 2 point calibration and automatic buffer recognition. The unit simultaneously displays either temperature compensated pH readings or electrode potential and temperature. The large, easy to read LCD display, is housed in a robust, ergonomically designed case. An indicator of battery life is also permanently shown on the display with an automatic switch off facility to help conserve battery life. With an integrated rubber seal to ensure that the unit is completely waterproof.

- Simultaneously displays pH or mV and temperature
- Automatic calibration
- Manual or Automatic Temperature Compensation (ATC)
- Auto shut off 10 minutes
- 2500 hours battery life
- Waterproof housing

Weight

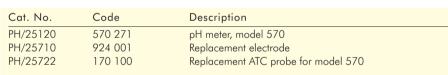
This meter is supplied ready to use with an epoxy bodied electrode (924 001), a temperature probe (170 100) and buffers supplied in a bespoke carry case.



PH/25120

#### **Technical Specifications**

Model pH, mV and temperature Type Waterproof Yes (IP66/67) pH Range - 2 to 16 pH Resolution 0.01 pH Accuracy  $\pm 0.02$ - 1000 to 1000mV mV Range mV Resolution 1mV mV Accuracy  $\pm 1 mV$ 0 to 100°C Temperature Range - 39.9 to 149.9°C Temperature Resolution 0.1°C  $\pm 0.4$ °C ( - 10 to 70°C) Temperature Accuracy No. of Calibration Points Automatic Buffer Recognition Yes Auto Shut Off 10 mins Operating Temperature 0 to 100°C Battery Life (hours) 2500 pH Connector **BNC** Temperature Connector Waterproof Lumberg screw-locking type Dimensions ( $l \times w \times d$ ) 141 x 71 x 32mm



230g





# Multi parameter pH/EC/TDS temperature pH meter, portable



The HI-9813-5 multi-parameter portable meter is specifically designed for various applications, especially agricultural, such as hydroponics, greenhouses, farming and nurseries. It features a large LCD display detailing the parameter being measured as well as calibration instructions. Calibration is fast using easy access knobs positioned on the front panel of the instrument.

A very simple to use instrument for measuring pH, mS/cm, ppm and temperature in  $^{\circ}C$  scale measurements. Supplied with a HI-1285 series pH/EC/TDS and temperature probe with fibre junction and gel electrolyte.

- Water resistant
- On-screen tutorial messages for calibration
- BEPS (Battery Error Prevention System) alerts the user in the event that low battery power could adversely affect readings
- Switch parameters at the touch of a button
- Automatic Temperature Compensation for pH and conductivity
- Simple calibration

PH/35460

HI-9813-5

- Battery % displayed on start-up
- Fast response multi-parameter probe

Technical Specifications	
pH	-
Range	0.0 to 14.0pH
Resolution	0.1pH
Accuracy (@ 20°C/68°F)	±0.1 pH
EC	
Range	0.00 to 4.00 mS/cm
Resolution	0.01 mS/cm
Accuracy (@ 20°C/68°F)	$\pm 2\%$ F.S. mS/cm
TDS	
Range	0 to 1999 ppm (mg/L)
Resolution	1 ppm (mg/L)
Accuracy (@ 20°C/68°F)	$\pm 2\%$ F.S. ppm
Temperature	
Range	0.0 to 60.0°C
Resolution	0.1°C
Accuracy (@ 20°C/68°F)	±0.5°C
TDS conversion factor	0.56 to 0.78
pH calibration	Manual 1 point
EC calibration	Manual 1 point
EC/TDS Temperature compensation	Automatic 0 to 50°C (32 to 122°F) with $\beta$ =2%/°C
Battery type	1 x 9V
Battery life	Approximately 150 hours continuous use
Environment	0 to 50°C (32 to 122°F), 100% RH
Dimensions	145 x 80 x 36mm
Weight	230g
Cat. No. Code	Description



PH/35460



PH/35460

Notes

Multi parameter meter, portable, pH/EC/TDS temperature



PH/65300



PH/65302

# pH/mV/ORP meters, Mettler FiveEasy Plus series

The FiveEasy Plus pH/mV/ORP meter, provides high performance and measurements at the click of a button. Compact in design, and featuring various data export opportunities, the FiveEasy series instruments are the perfect companion to get reliable measurement data, all at a reasonable price. Time is an ever more valuable asset, but thanks to the FiveEasy Plus's intuitive operation and extensive memory functions, you can maximize your time spent measuring instead of dealing with complex system and measurement setups.

A FiveEasy Conductivity meter is available to provide the complete laboratory package.

METTLER

- Available in 2 versions, 0 to 14pH and -2.00 to 16.00pH
- Large display with simple menu, measurements can be made with just a few clicks.
- The compact design means that it takes up minimal bench space. The sensor holder can be easily removed and stored on the side of the meter after use
- Data can be exported either directly to a printer or a PC for further processing using its RS232 or USB ports.
- Optimally designed for work on bench surfaces in a wide range of workplaces, including laboratories in academia.

Technical Specifications	FiveEasy Plus F20	FiveEasy Plus FP20	
Measuring range	0.00 to 14pH -2000 to 2000mV 0 to 100°C (32 to 212°F)	-2.00 to 16.00pH -2000 to 2000mV -5 to 105°C (23 to 221°F)	
Resolution	0.01pH 1mV	0.01/0.1pH 1mV	
Error limits	0.1°C ±0.01pH ± 1mV ±0.5°C	0.1°C ±0.01pH ± 1mV ±0.3°C	
Temperature compensation	ATC and A		
Automatic and manual	, a c and r	,,,,	
end point recording	Yes		
Acoustic end point signal	Yes		
Visual end point signal	Yes		
Calibration Max 3 points		Max 5 points	
	Linear	Linear/Segmented	
	4 predefined buffer groups	4 predefined buffer groups	
Memory size	Current calibration	200 measurements	
		Current calibration	
Sensor input	BNC, Cinch	BNC, Cinch	
RS232 interface	No	Yes	
USB interface	No	Yes	
Reference input	No	Yes	
Analog output	Yes	No	
Power supply	Input: 100 to 240V / 50-60Hz   Output: 12V DC		
Display	4.3" Segmented LCD		
Housing	ABS	70	
Dimensions	227 x 147 x 70mm		
Weight	0.63kg		

Cat. No.	Description
PH/65300	pH/mV/ORP meter FiveEasy Plus F20 without electrode, for applications that
	require a specific sensor not included in a kit
PH/65302	pH/mV/ORP meter FiveEasy Plus F20 Standard Kit with LE438 sensor for
	applications involving a wide range of general aqueous samples
PH/65304	pH/mV/ORP meter FiveEasy Plus FP20 without electrode, for applications that
	require a specific sensor not included in a kit
PH/65306	pH/mV/ORP meter FiveEasy Plus FP20 Standard Kit with LE410 sensor for
	applications involving a wide range of general aqueous samples
PH/65308	pH/mV/ORP meter FiveEasy Plus FP20 Bio Kit with LE410 sensor for
	applications that require fast results in aqueous samples such as acids, bases
	etc.
PH/65310	pH/mV/ORP meter FiveEasy Plus FP20 Micro Kit with LE422 sensor for
	applications involving small samples in vials and test tubes
PH/65312	pH/mV/ORP meter FiveEasy Plus FP20 TRIS Kit with LE420 sensor for
	applications involving demanding "dirty" samples such as emulsions, oil, waste water, TRIS etc.
PH/65314	Replacement sensor LE410, 3-in-1 glass with integrated temperature sensor
PH/65316	Replacement sensor LE422, Micro pH with gel electrolyte
PH/65280	
	Replacement sensor LE420, glass with movable PTFE sleeve diaphragm
PH/65282	Replacement plastic pH electrode LE438 with built in temperature sensor

## pH meter, HANNA Edge



Tablet style slim line pH meter with large LCD display. Black Edge meters have the ability to read Dissolved Oxygen, Conductivity and TDS with the purchase of additional probes.

The White Edge is for measuring pH only.

Capacitive touch keypad is easy to clean, and readings can be transferred to a PC without the need for additional software.

For complete flexibility of use, the Hanna Edge pH meter can be used hand-held, on a bench or wall mounted with the stand and wall mounting bracket provided.

- Two USB ports, one standard and one micro
- Large 5.5" LCD screen
- Clear full text display
- 3.5mm Jack electrode input
- Clark type polarographic probe with replacement membrane cap
- GLP data records date, time, calibration standards, altitude value and salinity value
- Altitude compensation -500 to 40000 meters
- Data logging: Manual log on demand

Manual log on stability

Interval logging

Cal-Check indicators:
 Probe condition

Response time Check buffer Clean electrode

- Sensor check indicators: Broken electrode, Clogged junction
- Calibration tag on screen identifies buffers used for current calibration
- Calibration expiration warning
- Supplied with pH electrode (HI-11310), 2 sachets each of pH buffers 4, 7 and 10, electrode cleaning solution and quality certificate

Cat. No.	Code	Description
PH/35128 PH/35130	HI-2002-02 HI-2020-02	Hanna WHITE Edge pH meter with pH probe HI-11310 Hanna BLACK Edge pH meter with pH probe HI-11310 (can also measure Conductivity/TDS and Dissolved Oxygen with purchase of additional probes)
Accessories CO/35140 DO/35052 PH/35136 PH/35138 PH/35140	HI-763100 HI-764080 HI-70007 HI-70010 HI-700640	Conductivity/TDS electrode with temperature sensor Dissolved Oxygen probe with temperature sensor Buffer sachet pH 7, pack of 25 Buffer sachet pH 10, pack of 25 Electrode cleaning solution, pack of 25



PH/35130



PH/35128



DO/35052



PH/35136



PH/35140



PH/25504



PH/25504

# pH Meter, Bench, Model 3510



A simple to use pH/mV/Temperature meter for use in laboratory applications. The meter supports 1, 2 or 3 point pH calibration on either manually entered pH buffer values or automatically temperature compensated buffers conforming to DIN 19 266, JIS Z 8802 and NIST. The instrument includes a 32 reading memory facility.

The model 3510 is supplied with glass combination pH electrode, ATC probe, electrode holder, 4, 7 and 10pH buffer sachets, shorting plug and power adapter.

- Easy to use, economic meter for routine laboratory use
- Simultaneous readout of pH and temperature
- pH readings to 3 decimal places
- 1, 2 or 3 point calibration
- Automatic temperature compensation
- Custom back-lit LCD
- 32 location memory
- Bi-directional RS232 link to printer or PC

#### **Technical Specifications** рΗ Range -2.000 - +19.999pH 0.001 / 0.01pH Resolution Accuracy ±0.003pH mV-1999.9 - +1999.9mV Range 0.1 / 1mV Resolution ±0.2mV Accuracy Input impedance $> 10^{12} \text{ ohms}$ **Temperature** Range -10 - +105°C / +14 - +221°F Resolution 0.1°C / 1°F $\pm 0.5^{\circ}\text{C}$ / $\pm 1^{\circ}\text{F}$ Accuracy ATC range $0 - 100^{\circ}C / +32 - +212^{\circ}F$ 0 - 100°C / +32 - +212°F Manual Temp. Comp. Range Power 9V a.c. ±10% @ 50/60Hz Dimensions (wxdxh), mm 210x250x55 Mass, gm 850

Notes			

# pH Meter, Bench, Model 3520

#Jenway\*

A fully specified laboratory pH/mV/Temperature meter that includes full support for Good Laboratory Practices (G.L.P.). The meter supports 1, 2 or 3 point pH calibration on either manually entered pH buffer values or automatically temperature compensated buffers conforming to DIN 19 266, JIS Z 8802 and NIST. Powerful data logging capabilities are included with the ability to store up to 500 readings either manually, at timed intervals or alarm events.

The model 3520 is supplied complete with glass combination pH electrode, ATC probe, electrode holder, 4, 7 and 10pH buffer sachets, shorting plug and power adapter.

- Ideal for quality control and GLP applications
- Back-lit graphics display
- 1, 2 or 3 point calibration
- Simultaneous display of pH and temperature
- Multi language operation
- 500 location memory
- Infra-red data link (IrDA)
- Real time clock

Mass, gm

• Bi-directional RS232 link to printer or PC



PH/25506

#### Technical Specifications

pH	
Range	-2.000 - +20.000pH
Resolution	0.001 / 0.01pH
Accuracy	±0.003pH
mV	
Range	-1999.9 - +1999.9mV
Resolution	0.1 / 1mV
Accuracy	$\pm 0.2$ mV
Input impedance	>10 <sup>12</sup> ohms
Temperature	
Range	-10 - +105°C / +14 - +221°F
Resolution	0.1°C / 1°F
Accuracy	$\pm 0.5$ °C / $\pm 1$ °F
ATC range	$0 - 100^{\circ}\text{C} / +32 - +212^{\circ}\text{F}$
Manual Temp. Comp. Range	$0 - 100^{\circ}\text{C} / +32 - +212^{\circ}\text{F}$
Alarm point	-2.000 -+19.999pH
Power 9V a.c.	±10% @ 50/60Hz
Dimensions (wxdxh), mm	210x250x55

Cat. No.	Code	Description
PH/25504	351 001	3510 pH meter complete
PH/25506	352 001	3520 pH meter complete
PH/25710	924 001	Spare epoxy combination pH electrode with BNC connector
PH/25712	924 005	Spare glass combination pH electrode with BNC connector
PH/25512	027 500	Spare ATC probe for 3510 and 3520 pH meters
PH/25514	903 300	Swing arm and electrode holder
PH/25518	037 701	IrDA/Serial Printer complete with serial connection lead, power cable and paper. (for 3510, 3520 and 3540 meters)
PH/25520	037 702	Paper roll, thermal
PH/25522	037 801	Interface cable kit
PH/25524	050 002	Dataway PC software, includes CD-ROM and interface cable

850



PH/25506



PH/25552

# pH/Conductivity Meter, Bench, Model 3540



The Model 3540 comes complete with pH combination electrode, ATC, Conductivity cell K=1 with ATC, swing arm and electrode holder, buffers, shorting plug and mains power lead.

#### Features Include:

- Simultaneous display of pH & Conductivity with two independent channels
- Built in data logger with auto save/print
- Additional modes for Resistivity, Salinity, TDS & mV
- Automatic or manual calibration options

Calibration of both the pH and conductivity channels is automatic, with the option to select 1, 2 or 3 calibration points for each. An option to calibrate the conductivity channel to a cell constant is also included for quick and simple conductivity measurements. The conductivity channel has a special ultrapure water function.

Other modes of operation include Resistivity, Salinity and TDS measurement. The pH channel can also display mV values to 0.1 mV resolution, enabling ORP/Redox measurements to be made. Built-in data logger stores up to 250 pH and conductivity readings from manual or auto-timed triggers, stability and alarm status. Logged results can either be sent to the internal memory or via the RS232 serial port to the optional printer. The comprehensive GLP functions include calibration reminders and status tracking, operator and sample ID management and a supervisor security code for all set-up options.

Technical Specifications	
pH Range / Resolution	-2.000 to 20.000pH / 0.001, 0.01, 0.1 selectable
mV Range	-1999.9  to  +1999.9 mV
Resolution / Accuracy	$0.1  \text{mV} / \pm 0.2  \text{mV}$
Cond Range / Resolution	Auto ranging from $0.01\mu S$ to $1.999S / 0.01\mu S$ to $1mS$
	(19.99S with x10 probe)
Reference Temperature	18, 20, 25°C
Temperature Coefficient	0 (off) to 4%/°C
Resolution / Accuracy	0.1°C (1°F) / ±0.5°C (±1°F)
MTC / ATC Ranges	0 to 100°C (32 to 212°F)
Memory	250 readings (pH with Conductivity)
Size & Weight	210 x 250 x 55mm 850g
_	

Cat. No.	Code	Description
PH/25552	354 001	3540 pH conductivity meter complete
PH/25712	924 005	Glass bodied pH combination electrode
CO/25274	027 013	Glass K=1 Conductivity cell with ATC
PH/25512	027 500	ATC probe
PH/25514	903 300	Swing arm and electrode holder
PH/25518	037 701	IrDA/Serial Printer complete with serial connection lead, power cable and paper. (for 3510, 3520 and 3540 meters)
PH/25520	037 702	Paper roll, thermal
PH/25522	037 801	Interface cable kit

Other pH and conductivity probes are available upon request.

Notes

# pH/Ion Meter, Bench, SevenCompact™

The SevenCompact™ pH/lon S220 is the perfect choice for a wide range of applications; it is much more than a pH meter and can also measure ORP and ion concentration in various units. Starting a measurement or calibration, toggling measurement modes or switching between the two different display layouts requires only a single key press. The S220 offers a wealth of security settings and possibilities including full GLP support. Data can be easily entered via the keypad or by connecting a barcode reader or external keyboard. Measurement and calibration data can be stored on the instrument, printed, exported to a USB stick or transferred to a PC with LabX direct software.

- Fast and accurate measurements for pH, ORP (redox) and Ion concentration
- User-friendly operation with clear, well arranged colour display
- Menu guidance in 12 languages
- GLP compliant

	Measuring range	Resolution	Accuracy
рН	-2.000 to 20.000	0.001 / 0.01 / 0.1	$\pm~0.002$
mV	-2000.0 to 2000.0	0.1 / 1	± 0.2
lon concentration	0.000 to 1000.0 % 0.000 to 10000.0 ppm 1.00E-9 - 9.99E+9 mg/L, mmol/L, mol/L -2.000 to 20.000 pX	± last significant digit	± 0.5%
Temperature MTC	-30.0 to 130.0°C	0.1°C	± 0.1°C
Temperature ATC	-5.0 to 130.0°C	0.1°C	± 0.1°C
Connectors	pH Sensor input Temperature sensor input Reference input Communication interfaces Stirrer connector	BNC (impendance $> 3 \times 10E + 12\Omega$ ) Cinch/RCA (NTC30 k $\Omega$ or Pt1000) 2mm Ref. RS232, USB-A, USA-B Mini-DIN	
Power requirements Size/weight	204 x 174 x 74mm, 890g		
Ambient conditions	Temperature Relative humidity	+5 to 40°C 5 to 80% (non-condensing)	

Cat. No.	Code	Description
PH/65180	S220-Basic	pH meter with electrode holder, protective cover, operating instructions, quick guide, declaration of conformity and origin, test certificate
PH/65182	S220-Kit	pH meter as above but also with InLab® Expert Pro-ISM, guide to pH measurements, and 2 buffer sachets for pH 4.01, 7.00, 9.21 and 10.00.
PH/65184	\$220-Bio	pH meter as above but with InLab® Routine Pro-ISM cable kit instead of InLab® Expert Pro-ISM
PH/65186	S220-U	pH meter as S220-kit but with InLab® Versatile Pro instead of InLab® Expert Pro-ISM
Accessories		
BA/41016	11124300	RS-P25 printer (with RS232 cable)
PH/65190	51302876	LabX direct PC software
PH/65192	30014096	Probe replacement InLab® Expert Pro-ISM
PH/65194	51344055	Probe replacement InLab® Routine Pro-ISM
PH/65196	51343031	Probe replacement InLab® Versatile Pro
PH/65198	51300164	Probe replacement ATC (NTC 30 $k\Omega$ )



METTLER TOLEDO

PH/65180



BA/41016



PH/65192



PH/65194



PH/65196

# pH and reference electrodes

# Electrodes, pH and reference

Each electrode is supplied with a 1 metre cable and BNC plug as standard. If an additional cable length or alternative plug is required, please specify when ordering.



## **Technical Specifications**

pH range 0-14
Temp Range 0-80°C
Stem (L x Diam.) 120x12mm
Combination No
Body Type Glass

Cat.	No.	Descri	ption

PH/55002 General purpose electrode

(Requires separate reference electrode)



#### **Technical Specifications**

pH range 0-14
Temp Range 0-80°C
Stem (L x Diam.) 150x6mm
Combination Yes
Body Type Glass
Junction type Frit ceramic

#### Cat. No. Description

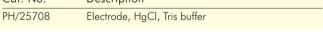
PH/55018 Electrode, AgCl, long reach



#### **Technical Specifications**

pH range 0-14
Temp Range 0-50°C
Stem (L x Diam.) 90x6mm
Combination Yes
Body Type Glass
Junction type Frit ceramic

Cat.	No.	Descrip	tion
cai.	140.	Descrip	1101





#### **Technical Specifications**

 pH range
 0-14

 Temp Range
 0-100°C

 Stem (L x Diam.)
 120x12mm

 Combination
 Yes

 Body Type
 Glass

Junction type Annular ceramic

Cat. No.	Description
PH/85012	Electrode, general purpose



#### Technical Specifications

pH range 0-14
Temp Range 0-80°C
Stem (L x Diam.) 120x12mm
Combination Yes
Body Type Glass
Junction Type Annular ceramic

Cat. No. Description

PH/55010 Electrode, Ag/Cl suitable for liquids



#### Technical Specifications

pH range 0-14
Temp Range 0-80°C
Stem (L x Diam.) 120x12mm
Combination Yes
Body Type Epoxy
Junction type Porous PTFE

Cat. No. Description

PH/55012 General purpose electrode



#### **Technical Specifications**

pH range 0-14
Temp Range 0-80°C
Stem (L x Diam.) 120x12mm
Combination Yes
Body Type Epoxy
Junction type Ceramic

Cat. No.	Description
PH/55022	Electrode, AgCl, integral temperature compensation

# Food electrodes

Application – pH of water, particularly cold, low conductivity waters of low ionic strength.



#### **Technical Specifications**

pH range 0-11
Temp Range 0-50°C
Stem (L x Diam.) 120x12mm
Combination Yes

Type Double junction Ag/AgCl

Wet materials Glass polymer

Cat. No.	Description	
PH/85040	Electrode, drinking water	

#### Knife Probe

Application – For direct measurement of frozen and defrosted meat products. (Please specify meter for which this is to be used).



Cat. No.	Description
PH/85020	Knife Kit with probe
PH/85022	Replacement probe for Knife Kit

# Industrial electrode



## **Technical Specifications**

pH range 0-14
Temp range 0-130°C
Max pressure 10 Bar
Probe 120x12mm
Combination Yes
Type AgCl
Junction type Porous PTFE

Cat. No.	Description	
PH/85002	Electrode, industrial pipeline, alass	

# Metal electrode



## Technical Specifications

Temp range 0-80°C
Probe 120x12mm
Combination Yes
Type AgCl
Junction type Annular ceramic

Cat. No.	Description
PH/85202	Electrode, metal, general, glass

## Reference electrodes



## Technical Specifications

Temp range 0 to 90°C

Reference type Single junction Ag/AgCl Fill solution 4M KCl/AgCl

Junction type Ceramic frit
Wetted materials Glass, ceramic
Dimensions 120mm x 12mm
Application General laboratory use

Shelf life 12 Months
Cable 1 metre
Connector 2mm pin

Cat. No.	Description
PH/85270	General purpose reference electrode



Buffers

# Buffer solutions for pH calibration

Cat. No.	Description	Pack size
Buffer solution		
B8065/L6	pH 4 (Colour coded red)	1L
B8065/M2	pH 4 (Colour coded red)	5L
B8335/L6	pH 4 (Colour coded red) (NIST traceable)	1L
B8075/L6	pH 7 (Colour coded yellow)	1L
B8075/M2	pH 7 (Colour coded yellow)	5L
B8355/L6	pH 7 (Colour coded yellow) (NIST traceable)	1L
J1235/L6	pH 9 (Colour coded blue) (NIST traceable)	1L
B8085/L6	pH 10 (Colour coded blue)	1L
B8085/M2	pH 10 (Colour coded blue)	5L
B8375/L6	pH 10 (Colour coded blue) (NIST traceable)	1L
B8205/L6	pH 2	1L
B8215/L6	pH 3	1L
B8225/L6	pH 4	1L
B8225/M2	pH 4	5L
B8345/L6	pH 4 (NIST traceable)	1L
B8235/L6	pH 5	1L
B8245/L6	pH 6	1L
B8265/L6	pH 7	1L
B8265/M2	pH 7	5L
B8365/L6	pH 7 (NIST traceable)	1L
B8285/L6	pH 8	1L
B8295/L6	pH 9	1L
B8295/M2	pH 9	5L
B8395/L6	pH 9 (NIST traceable)	1 L
B8305/L6	pH 10	1 L
B8305/M2	pH 10	5L
B8385/L6	pH 10 (NIST traceable)	1L
Buffer tablets		
B8405/Z7	pH 4	50
B8415/Z7	pH 7	50
B8425/Z7	pH 9.2	50

# Electrode cleaning, storage and filling solutions, 150ml

Cat. No.	Description
PH/85280	Electrode cleaning solution
PH/85282	Electrode storage solution



PH/853

# Reference filling solution, 150ml

Cat. No.	Code	Description	
PH/85300	551-53	Lithium Acetate (LiAC)	
PH/85302	551-54	Tetraethylammonium Chloride (TEAC)	
PH/85304	551-55	Lithium Chloride (LiCl)	
PH/85306	551-56	Ammonium Chloride (NH4 Cl)	
PH/85308	551-64	Potassium Chloride (KCI)	
PH/85310	551-65	Potassium Nitrate (KNO <sub>3</sub> )	
PH/85312	551-66	Sodium Nitrate (NaNO <sub>3</sub> )	
PH/85314	551-68	Potassium Chloride/Silver Chloride (3M KICI/AgCI)	
PH/85316	551-69	Ammonium Sulphate ((NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> )	

# Ion Selective Electrodes

These electrodes can be used with any conventional laboratory or hand held pH meter with a millivolt mode.

A 1 metre cable terminated with a BNC connector is fitted as standard. A longer cable length can be specified at the time of ordering (maximum 10 metres). Probe dimensions are  $120 \times 12$ mm.

Main features and benefits include:

- No Reference electrode needed
- Available in fully submersible and water proof format
- Solid state sensors
- Ideal for unskilled operatives
- No filling solution required
- Virtually unbreakable
- Can be left dry for long periods
- Long lifetime



PH/85220

Cat. No.	Description	Concentration	Limits (ppm)	Temp Range °C	Main Interferences	pH Range	ISAB
PH/85220	Ammonium (NH <sub>4</sub> +)	0.5 – 5 x 10 <sup>-5</sup>	9,000 – 0.9	0 – 50	K <sup>+</sup> , Na <sup>+</sup>	0 – 8.5	CH3COOH
PH/85222	Barium (Ba <sup>2+</sup> )	$10^{-1} - 10^{-5}$	13,000 – 1.4	0 - 50	Sr2+, K+, Na+	3 – 10	LiAc
PH/85224	Bromide (Br)	$1 - 5 \times 10^{-6}$	81,000 – 0.4	5 – 50	I-, CN-, S <sup>2</sup> -	1 – 12	5M KNO₃
PH/85226	Cadmium (Cd <sup>2+</sup> )	$10^{-1} - 1 \times 10^{-6}$	11,200 – 0.1	5 – 50	Hg <sup>2+</sup> , Ag <sup>+</sup> , Cu <sup>2+</sup>	3 – 7	5M KNO₃
PH/85228	Calcium (Ca <sup>2+</sup> )	$10^{-1} - 5 \times 10^{-7}$	4,010 - 0.02	0 - 50	Ba <sup>2+</sup> , Al <sup>3+</sup> , Sr <sup>2+</sup>	3.5 – 11	KCI
PH/85230	Chloride (Cl <sup>-</sup> )	$1 - 3 \times 10^{-6}$	35,000 – 1	5 – 50	I-, Br, CN-, S <sup>2-</sup>	1 – 12	5M KNO₃
PH/85232	Cupric (Cu <sup>2+</sup> )	$10^{0} - 1 \times 10^{-7}$	64,000 - 0.006	5 – 50	Hg <sup>2+</sup> , Ag <sup>+</sup> , S <sup>2-</sup>	2 - 7	5M KNO₃
PH/85234	Cyanide (CN-)	$10^{-2} - 1 \times 10^{-6}$	260 - 0.03	5 – 50	I-, S <sup>2-</sup> , Br	11 – 13	10M NaOH
PH/85236	Fluoride (F-)	$10^{-1} - 1 \times 10^{-6}$	1,900 - 0.02	5 – 50	CH-	4 – 8	TISAB
PH/85238	lodide (I <sup>-</sup> )	$1 - 5 \times 10^{-7}$	127,000 - 0.06	5 – 50	CN-, S <sup>2-</sup>	2 – 12	5M KNO₃
PH/85240	Lead (Pb <sup>2+</sup> )	$10^{-1} - 1 \times 10^{-6}$	20,800 - 0.02	5 – 50	$Hg^{2+}$ , $Ag^+$ , $Cu^{2+}$	3 – 7	LiAc
PH/85242	Nitrate (NO <sub>3</sub> -)	$1 - 7 \times 10^{-6}$	62,000 – 0.4	0 - 50	Cl-, NO-	2 – 11	4M (NH4) <sub>2</sub> SO <sub>4</sub>
PH/85246	Potassium (K <sup>+</sup> )	$1 - 10^{-6}$	39,000 – 0.04	0 - 50	Cs <sup>+</sup> , NH <sub>4</sub> <sup>+</sup>	1 – 9	TEAC
PH/85248	Silver (Ag+)	$10^{0} - 1 \times 10^{-7}$	107,900 - 0.01	5 – 50	S <sup>2-</sup> , Hg <sup>2+</sup>	1 – 9	5M KNO₃
PH/85250	Sodium (Na+)	$3 - 10^{-7}$	69,000 – 0.002	0 - 50	Bα <sup>2+</sup> , Li <sup>+</sup> , K <sup>+</sup>	1 – 9	SISAB
PH/85252	Sulphide (S <sup>2-</sup> )	$1 - 1 \times 10^{-7}$	32,00 – 0.003	5 – 50	Ag <sup>+</sup> , Hg <sup>2+</sup>	13 – 14	10M NaOH
PH/85254	Thiocyanate (SCN-)	$10^{-1} - 2 \times 10^{-6}$	5,800 – 1	5 – 50	I-, CI-, S <sup>2-</sup> , Br	2 – 12	5M KNO₃
PH/85256	Water Hardness	$2 \times 10^{-1} - 5 \times 10^{-5}$	-	0 - 50	$Ba^{2+}$ , $Cd^{2+}$ , $Cu^{2+}$	4.5 - 10	LiAC
PH/85258	Ammonia (NH₃)	1M – 10 <sup>-6</sup> M	0.02	0 – 50	Hydrazine & Aliphatic Amines	11 – 13	1M NaOH

Mono Ion Selective Electrodes are also available, please ask for details.

Please note: That a reference electrode is required for use with mono ion selective electrodes.



E3

# Ion Selective Electrode Solutions

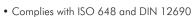


		PURE CHEMISTRY
Cat. No.	Description	Pack
E3NH34P	Ammonia 1000 ppm PrimAg-plus ion reference solution	500ml
E3BA4P	Barium 1000 ppm PrimAg-plus element reference solution	500ml
E3BR4P	Bromide 1000 ppm PrimAg-plus ion reference solution	500ml
E3CD4P	Cadmium 1000 ppm PrimAg-plus element reference solution	500ml
E3CA4P	Calcium 1000 ppm PrimAg-plus element reference solution	500ml
E3CL4P	Chloride 1000 ppm PrimAg-plus ion reference solution	500ml
E3CU4P	Cupric 1000 ppm PrimAg-plus element reference solution	500ml
E3CN4P	Cyanide 1000 ppm PrimAg-plus ion reference solution	500ml
E3F4P	Fluoride 1000 ppm PrimAg-plus ion reference solution	500ml
E3I4P	lodide 1000 ppm PrimAg-plus ion reference solution	500ml
E3PB4P	Lead 1000 ppm PrimAg-plus element reference solution	500ml
E3NO34P	Nitrate 1000 ppm PrimAg-plus ion reference solution	500ml
E3PCH4P	Perchlorate 1000 ppm PrimAg-plus ion reference solution	500ml
E3K4P	Potassium 1000 ppm PrimAg-plus element reference solution	500ml
E3AG4P	Silver 1000 ppm PrimAg-plus element reference solution	500ml
E3NAN4P	Sodium 1000 ppm PrimAg-plus element reference solution	500ml
E3SCN4P	Thiocyanate 1000 ppm PrimAg-plus ion reference solution	500ml

Many more solutions available, please send your specific requirements.

# Pipettes, one mark

# Pipettes, Bulb, Class B



- · Calibrated for delivery
- Manufactured from soda-lime glass with tooled jets to reduce breakage
- Markings in permanent amber stain which are diffused into the surface of the glass for increased chemical resistance

Cat. No.	Code	Capacity, ml	Tolerance± ml	Pk Qty
PP/16110	PRA700B	1	0.015	5
PP/16112	PRA702B	2	0.02	5
PP/16118	PRA704B	5	0.03	5
PP/16128	PRA706B	10	0.04	5
PP/16130	PRA708B	15	0.06	5
PP/16132	PRA710B	20	0.06	5
PP/16134	PRA712B	25	0.06	5
PP/16140	PRA714B	50	0.1	5
PP/16146	PRA716B	100	0.15	2



PP/16134

# Pipettes, Bulb, Class AS

**MBL**®

**MBL**®

- Complies with ISO 648 and DIN 12690
- Calibrated for delivery
- Markings in permanent amber stain
- Manufactured from soda-lime glass with robust tooled jets

Cat. No.	Code	Capacity, ml	Tolerance± ml	Pk Qty
PP/16310	PRA720AS	1	0.008	2
PP/16312	PRA722AS	2	0.01	2
PP/16318	PRA724AS	5	0.015	2
PP/16328	PRA726AS	10	0.02	2
PP/16330	PRA728AS	15	0.03	2
PP/16332	PRA730AS	20	0.03	2
PP/16334	PRA732AS	25	0.03	2
PP/16340	PRA734AS	50	0.05	2
PP/16346	PRA736AS	100	0.08	2



PP/1634

# Pipettes, Bulb, Class AS, to BS1583, ISO 648



One mark, soda glass, calibrated to deliver.

Cat. No.	Code	Capacity, ml	Pk Qty
PP/32110	R371/NC/A/5	1	5
PP/32112	R371/NC/B/5	2	5
PP/32114	R371/NC/C/5	3*	5
PP/32116	R371/NC/D/5	4*	5
PP/32118	R371/NC/E/5	5	5
PP/32128	R371/NC/F/5	10	5
PP/32130	R371/NC/G/5	15*	5
PP/32132	R371/NC/H/5	20	5
PP/32134	R371/NC/I/5	25	5
PP/32140	R371/NC/J/5	50	5
PP/32146	R371/NC/K/2	100	5
*Supplemento	ary to BS range		

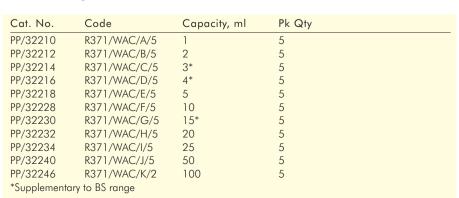


PP/321

# Pipettes, bulb, class AS, to BS1583, ISO 648



One mark, soda glass, calibrated to deliver. With works correction certificate.





PP/322

# Pipettes, graduated

Pipettes, Graduated, Class AS, soda glass, to BS700, ISO 835



**MBL**®

**MBL**®

Amber stain graduations, individually calibrated and printed. Type 3 - Calibrated to deliver from zero at the top down to the jet, run-out.

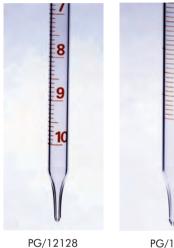
Cat. No.	Capacity, ml	Graduation ml	Pk Qty
PG/32310	1	0.01	5
PG/32312	2	0.02	5
PG/32318	5	0.05	5
PG/32328	10	0.1	5
PG/32334	25	0.2	5



# Pipettes, graduated, class B

- Complies with ISO 835
- Graduations in permanent amber stain which withstands aggressive cleaning solutions
- Manufactured from soda-lime glass with robust tooled jets
- Type 1 Calibrated to deliver from zero at the top to any graduation line down to the shoulder
- Type 2 Calibrated to deliver from any graduation line down to zero at the jet
- Type 3 Calibrated to deliver from zero at the top to any graduation line down to the jet
- Type 4 Calibrated to deliver from any graduation line down to zero at the jet with the last drop expelled by blowing

Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cap., ml	Grad., ml	Pk Qty
Type 1	Type 2	Туре 3	Type 4			
PG/12110	PG/12210	PG/12310	PG/12410	1	0.01	5
PG/12112	PG/12212	PG/12312	PG/12412	2	0.02	5
PG/12118	PG/12218	PG/12318	PG/12418	5	0.05	5
PG/12128	PG/12228	PG/12328	PG/12428	10	0.1	5
PG/12134	PG/12234	PG/12334	PG/12434	25	0.2	5



PG/122

# Pipettes, graduated, class AS

- Complies with ISO 835
- Graduations in permanent amber stain which resists aggressive washing solutions
- Calibrated 'to deliver' with a +5s waiting time
- Manufactured from soda-lime glass with tooled jets for extra strength and to ensure correct outflow

Type 1 - Calibrated to deliver from zero at the top to any graduation line down to the shoulder Type 2 - Calibrated to deliver from any graduation line down to zero at the jet

Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cap., ml	Grad., ml	Tol., ± ml	Pk Qty
Type 1	Type 2	Type 1 with cert*	Type 2 with cert*				
PG/12510	PG/12610	PG/12710	PG/12810	1	0.01	0.007	2
PG/12512	PG/12612	PG/12712	PG/12812	2	0.02	0.01	2
PG/12518	PG/12618	PG/12718	PG/12818	5	0.05	0.03	2
PG/12528	PG/12628	PG/12728	PG/12828	10	0.1	0.05	2
PG/12534	PG/12634	PG/12734	PG/12834	25	0.2	0.1	2

<sup>\*</sup>Supplied with a traceable calibration certificate at 5 points

# Pipettes, Dropping, Neutral glass, with Teat

Cat. No.	Description	Pk Qty
PP/55000	Dropping pipette with teat graduated at 0.5 and 1.0ml	10
PP/55002	Dropping pipette with teat 2ml	10
PP/55004	Dropping pipette without teat graduated at 0.5 and 1.0ml	10
PP/55006	Teat, black natural rubber	10





PP/5500



PP/323

# Pipettes, Pasteur

# Pipettes, Pasteur, soda glass, disposable



Cat. No.	Length	Pk Qty	
Unplugged			
PP/32302	150mm	1000	
PP/32304	230mm	1000	
PP/32312	270mm	1000	
PP/32314	230mm	800	
Pre plugged			
PP/32306	150mm	1000	
PP/32308	230mm	1000	
PP/32310	270mm	1000	

Cat. No.	Description	Pk Qty
Accessory teats PD/96002 PD/36502	Latex 2.0ml PVC	20 100

# Pipettes, Pasteur, Soda glass, sterile, disposable, pre-plugged

Cat. No.	Length	Pk Qty
PP/32330	150mm	250
PP/32332	230mm	250



PG/1625

# Pipettes, Pasteur, Borosilicate glass, disposable, unplugged

Cat. No.	Length	Pk Qty
PP/32340	150mm	1000
PP/32342	230mm	1000

# Pipettes, Pasteur, single use



Soda glass disposable pipettes, conforming to USP Type III requirements

Cat. No.	Code	Description	Pk Qty
PG/16250	SPP002	Pasteur pipette, un-wadded, length 150mm	1000
PG/16252	SPP004	Pasteur pipette, un-wadded, length 230mm	1000
Accessories			
PG/16254	BPP002	Teat for use with Pasteur pipettes, Silicone	100
PG/16256	BPP004	Teat for use with Pasteur pipettes, Latex	100



PP/16250

# Pipettes, Pasteur, plastic

Plastic Pasteur pipettes are a safe alternative to glass and offer the aspirating precision of glass with the safety benefits of plastic. The construction allows the long flexible stem to be bent to draw liquid from narrow or small volume tubes.

Manufactured from medical-grade polystyrene in a class 100,000 cleanroom, Gamma irradiated, RNase, DNase and pyrogen free, individually wrapped. Supplied in a box of 200 with inner bags of 50.

Cat. No.	Code	Description
PP/16250	P0534	Pipette, polystyrene, Pasteur, 145mm
PP/16252	P0900	Pipette, polystyrene, Pasteur, 230mm

# Pipettes, Pasteur, ELKAY LIQUIPETTE™

EMar

Manufactured from Low density polyethylene the Liquipette<sup>™</sup> comes in a range of sizes and packaging options. Graduations are approximate.

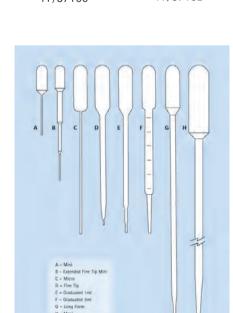
Single use Pasteur pipette with integral bulb

Cat. No.	Sterility	Length, mm	Bulb draw, ml	Drop size, μl	Inner Pk Qty	Pk Qty
Liquipette 1	ml graduated					
PP/76002	NS	152	3.5	40	_	500
PP/76004	S	152	3.5	40	Ind wrap	250
·	•	.02	0.0			200
	ml graduated	1.50	2.5	4.5		500
PP/76010	NS	152	3.5	45	-	500
PP/76012	S	152	3.5	45	Ind wrap	250
Liquipette 1	ml graduated s	small bulb				
PP/76018	NS	140	3.0	40	-	500
PP/76020	S	140	3.0	40	Ind wrap	250
Liquinette no	on graduated fi	ne noint				
PP/76022	NS	150	3.5	20	_	500
PP/76024	S	152	3.5	20	Ind wrap	1000
PP/76028	NS	141	1.5	20	ina wiap	500
·		171	1.5	20		300
	tra long stem					
PP/76102	NS	229	3.5	40	-	500
PP/76104	S	229	3.5	40	Ind wrap	250
Liquipette th	in stem					
PP/76106	NS	152	3.5	401	-	500
Liquipette M	avi					
PP/76110	NS	300	10			100
PP/76112	S	300	10		Ind wrap	150
11//0112	J	300	10		ilia wiap	130



PP/760

PP/37100 PP/37102



PT/800

# Pipettes, Pasteur, with integral bulb

Pasteur-plast pipettes render liquid handling simple and safe. Cross-contamination and carry-over simply cannot occur so that tedious clean-ups are unnecessary. In addition, there is no danger of glass breakage with the resulting danger of infectious material escaping. The pasteur-plast pipettes are made of transparent polyethylene. They are inert to biological fluids and most acids. The low affinity of the surface reduces the loss of cells and valuable proteins through binding

- Soft, elastic bulb
- Unbreakable, reducing the risk of injury associated with glass
- Burr-free orifice for neat, clean and precise dispensing
- Graduated versions have clearly visible embossed external graduations
- Sterilised versions are gas-sterilized and individually packaged
- BSE-free
- Suitable for food use
- Manufactured of PE-HD

Cat. No.	Code	Volume, ml	Length, mm	Drop volume, μl	Drops, per ml	Pk Qty
Ungraduated						
PP/37100	2600151	1.0	155	33	30	500
PP/37102	2600195	10	300	45	22	100
Graduated						
PP/37120	2600171	1.0	150	33	30	500
PP/37122	2600111	3.0	155	40	25	500
Graduated an	d sterile					
PP/37140	2655171	1.0	150	33	30	500 ind wrap
PP/37142	2655111	3.0	155	40	25	500 ind wrap

# Pipettes, transfer

Plastic transfer pipettes, manufactured from premium grade low density Polythene, and having a low-wetting surface with single squeeze pipette filling. Available in sterile and non-sterile versions, the apertures can be heat sealed for sample storage.

Other sizes are available, please enquire, all sizes listed are sold in packs of 500.

	7.1	1 /
Cat. No.	Code	Description
PT/80000	TP0007	Graduated to 1ml
PT/80002	TP0021	Graduated to 1ml, sterile inner packs of 10
PT/80004	TP0008	Graduated to 1ml, sterile, single wrapped
PT/80006	TP0002	Graduated to 3ml
PT/80008	TP0019	Graduated to 3ml, sterile inner packs of 10
PT/80010	TP0009	Graduated to 3ml, sterile, single wrapped

# The same of the sa

PS/16



PS/165



PS/96



# Pipettes, serological, disposable, polystyrene



Sterilin pipettes are available either bulk or individually packaged. The pipettes feature both negative and reverse graduations and have a non-wettable polystyrene surface to prevent readings from being distorted by a meniscus effect. Certified non-pyrogenic to <0.25EU/ml with an accuracy of +/-1% the pipettes are assured sterile by gamma irradiation.

Supplied with suction adaptor unless stated otherwise.

#### Pipettes Standard – Plastic Peel and Bulk

PS/16110 40101K 1 ml pipette, single wrap (shelf pack 100) 1 1000  PS/16112 40102K 2 ml pipette, single wrap (shelf pack 100) 1 1000
PS/16112 40102K 2 ml pipette, single wrap (shelf pack 100) 1 1000
(shelf pack 100) 1 1000
PS/16118 40105 5 ml pipette, single wrap
(shelf pack 100), no adapter 1 200
PS/16218 47105 5 ml pipette, single wrap with
suction adapter (shelf pack 50) 1 200
PS/16134 40125 25 ml pipette, single wrap with
suction adapter (shelf pack 25) 1 200
PS/16140 47150 50 ml pipette, single wrap with
suction adapter (shelf pack 50) 1 50
PS/16310 40301K 1 ml pipette 50 1000
PS/16312 40302K 2 ml pipette 50 1000
PS/16318 40305 5 ml pipette, no adapter 25 200
PS/16428 47310 10 ml pipette, no adapter 25 500

# Pipettes Standard - Paper Peel



Paper peel packaging printed with product code, lot number and expiry date.

Cat. No.	Code	Description	Inner Pk	Pk Qty
PS/16510	40501K	1 ml pipette, single wrap	50	1000
PS/16512	40502K	2ml pipette, single wrap	50	1000
PS/16518	47505	5ml pipette, single wrap	50	200
PS/16528	47510	10ml pipette, single wrap	50	500
PS/16534	47525	25ml pipette, single wrap	25	200
PS/16540	47550	50ml pipette, single wrap	25	50

# Pipettes Serological, Disposable, Polystyrene

Single use made of crystal polystyrene, sterile.

Cat. No.	Description	Pk Qty
PS/96110	1ml pipette, single wrap	1000
PS/96118	5ml pipette, single wrap	200
PS/96128	10ml pipette, single wrap	200
PS/96134	25ml pipette, single wrap	200
PS/96310	1ml pipette, inner pack 25	1000
PS/96318	5ml pipette, inner pack 25	500
PS/96228	10ml pipette, inner pack 25	500

# Pipette accessories

# Rack, serological pipette, Acrylic

Storage rack for 1 to 100ml glass or plastic serological pipettes, 5 angled compartments with 2 holes on the top designed to house pipette controllers. Made from strong, clear Acrylic.

Cat. No.	Description
PS/12040	Rack, pipette, for 1 to 100ml pipettes, clear acrylic



PP/12040

# Pipette stand, vertical

Azlon

Blue chemically resistant polypropylene stand. Very stable with 230mm diameter base plate. Holds up to 94 pipettes vertically.

Cat. No.	Code	Description
PS/12034	SWP033	Pipette stand, vertical, holds 94



PS/12034

# Pipette tray, draw or bench, horizontal, PVC



Can accommodate 7 pipettes with overall stem diameter not exceeding 20mm longitudinally or 16 pipettes with stem diameter not exceeding 10mm laterally. Very useful work station holder not only for pipettes.

Cat. No.	Code	Dimensions (wxdxh), mm
PS/46208	996	280 x 215 x 40



PS/46208

# Stand, pipette, polythene covered wire

Horizontal stand for up to 10 pipettes.

Cat.	No. D	Dimensions (wxdxh), mm
ST/9	3002 1	25 x 156 x 118mm



ST/93002

# Pipette jar, PP

Kartell

Rugged container for pipette storage. No more chipped ends as pipettes are cushioned by polypropylene. The jar, but not the PE cap can be autoclaved at 120°C for 20 minutes. Tight fitting cover protects pipettes during transportation and from dust etc. Welded flanged base gives excellent stability. Can be easily cut down to suit shorter length pipettes. Can be canted on side for drainage with pipettes in-situ.

Cat. No.	Code	Diameter, mm	Height, inner/outer, mm
PJ/46202	592	82	410/426



PJ/46202



PW/46322

# Pipette/burette rinsing set, automatic

**Kartell**LABWARE

High quality and high speed solves the problem of washing pipettes up to 600mm long and Mohr burettes quickly and safely. Indispensable in the laboratory where radioactive, caustic and toxic materials are in use. The polyethylene rinser fills via the spray nozzle situated on the top rim. This eliminates back-syphoning as the water inlet is located above and away from any contaminated waters. Contaminated waters will syphon out totally, once the syphon point at the top of the rinser has been reached, via the large diameter drain situated at the lowest point, before refilling automatically. During washing the pipettes/burettes are housed in specially designed baskets which minimises breakages and is particularly safe as it buffers the tips of pipettes against the soft polyethylene base. Since soaking takes the longest time, two or three baskets of pipettes/burettes can be soaking in their jars whilst another basket full is being washed in the rinser. Low water flow rate is not a problem but it is best to adjust the flow for a cycle of about 90 secs.

Suggested basic set for:	
Pipettes	Burettes
1 x PW/46324	1 x PW/46322
2 x PW/46328	2 x PW/46328
1 x PW/46326	2 x PW/46330
	1 x PW/46326

Cat. No.	Code	Description	Dia. x Height, mm
PW/46322	215	Burette rinser	165 x 750
PW/46324	217	Pipette rinser	165 x 650
PW/46326	218	Jar	165 x 650
PW/46328	219	Basket	130 x 300
PW/46330	1219	Extension handle for use with PW/46328	



BA/3601

# Baskets, pipette, HDPE

Rugged, resilient baskets cushion pipettes. Perforated screen is recessed into the base 20mm for complete drainage. With handle. Basket O.D. 133 mm.

Cat. No.	Code	Height, mm
BA/36010	5241-0020	375
BA/36012	5241-0040	578
BA/36014	5241-0050	781
DA/30014	3241-0030	/01



PC/84

## Pipette sterilising cans

Cylindrical pipette cans manufactured from stainless steel. Can be steam sterilised at 120°C and will withstand dry heat temperatures of up to 180°C.

Cat. No.	Overall length	Diameter
PC/84002	230mm	64mm
PC/84004	407mm	64mm
PC/84006	457mm	64mm

### Pipette filler, Bibbette

- This pipette filler offers incredible control.
- The speed of operation is similar to electronic units many times its price.
- A novel PTFE and Silicone rubber valve assembly controls the vacuum
- By moving the thumb lever, pipettes from 0.1 ml up to 100 ml can be easily filled
- Blow out pipettes are catered for by the depression of a small thumb operated rubber bulb.
- A replaceable PTFE membrane filter ensures liquid is not accidentally drawn into the unit (come in packs of 10).
- The filter and pipette holding cone can be sterilised by autoclaving.
- Each Bibbette comes with full instructions and two membrane filters

Cat. No.	Code	Description
PF/13002	PFL001N	Bibbette pipette controller, Plain
PF/13004	PFL001B	Bibbette pipette controller, Blue
PF/13014	PFL002	Spare membrane filters pack of 10
PF/13016	PFL004	Spare valve assembly



PF/130

### Pipette fillers, rubber

Moulded rubber bulb approx. 60ml capacity, with three glass ball valves which can be controlled by finger pressure. No metal parts to corrode and can be used for all liquids except those which attack rubber.

Cat. No.	Colour	
PF/96112	Red	
PF/96114	Black	
PF/96116	Yellow	
PF/96118	Blue	



PF/961

### Pipette fillers

- Three sizes, 2ml, 10ml and 25ml
- Easy to use design
- Elastic step tip and drain valve

Cat. No	Code	Capacity	Colour	
PF/13118	R622	Up to 2ml	Blue	
PF/13120	R623	Up to 10ml	Green	
PF/13122	R624	Up to 25ml	Red	

### Pipette Controller, Bibbyjet Pro, rechargeable



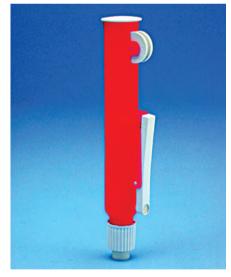
Azlon

The Bibbyjet is powerful, lightweight and ergonomically designed. It fits easily in the hand and is comfortable to use all day.

- LED shows when battery is running low
- The Bibbyjet has a venting feature. The air sucked from the pipette does not go through the pump but is discharged out of the front of the instrument. This avoids corrosion of the internal mechanism by the damp air and vents any fumes away from the operator.
- Mode selector switch for gravity delivery or blow out (with motor power)

A filter and safety valve protect against contamination of the unit and the pipette holder is fully autoclavable. The new Bibbyjet is powerful enough to fill a 50ml pipette in just 10 seconds and the batteries have the power to give a full day's work without recharging. Supplied complete with 2 replacement membrane filters and wall holder.

Cat. No.	Code	Description
PC/15002	PC2000	Bibbyjet Pro, complete with UK charger
Accessories		
PC/15004	PC1011	Silicone adaptor
PC/15006	PC1012	0.2µm filter, sterile, pack of one
PC/15008	PC1013	0.2µm filter, non-sterile, pack of 10
PC/15010	PC1014	3µm filter, non-sterile, pack of one
PC/15012	PC1015	3µm filter, non-sterile, pack of 10
PC/15014	PC1016	Wall support



PF/131



PC/15002



PP/350

### **Pipettors**

### **MiniPipet**

The Volac MiniPipet is a low cost Fixed Volume Micro Pipettor.

The MiniPipet is specifically designed for those users who need to be able to measure small volumes accurately.

### Potential users:

- Diagnostic kit producers
- Universities
- Colleges
- Education
- Hospitals
- Health centres

### Features:

Five fixed volumes colour coded 5µl blue, 10µl yellow, 25µl red, 50µl grey & 100µl white.

Design allows use with either microtips or standard yellow 200µl tips

Fully autoclavable to 121°C

Double action thumb press includes blow-out

Cat. No.	Code	Capacity, μl	Colour
PP/35002	R570/A	5μl	Blue
PP/35004	R570/B	10µl	Yellow
PP/35006	R570/E	25µl	Red
PP/35008	R570/H	50μl	Grey
PP/35010	R570/N	100µl	White
Accessories, Tips	Pack 1000		
PT/36004	D590	200µl Tips Multifit	Yellow

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### Micropipettors, SMART range

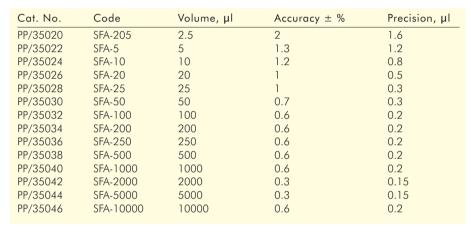
The Smart range of pipettors from Volac, are surprisingly light-weight yet robust. Manufactured from specially engineered plastics to give better protection against chemical and physical corrosion. A special coating of Thermoplastic Elastomer on the handle reduces



he transfer of body heat and ensures high accuracy even during continuous use. The ergonomic design provides such benefits as a light and smooth plunger action, soft touch tip ejection and a soft feel handle grip suitable for both left and right handed users

- Colour coded for easy identification
- Fully autoclavable
- Calibrated in an ISO 17025 accredited laboratory, supplied with individual QC and calibration report in accordance with ISO 8655
- Special PTFE sealing mechanism
- Volume display always visible while pipetting
- Easily accessible recalibration mechanism
- Enhanced UV resistance for higher durability

### Micropipette, single channel, fixed volume



Smart micropipette, variable volume, with large clear 4 digit-display giving smaller increments for wider volume selection options. Resistant free click stop counter and locking mechanism for preventing accidental volume changes.

### Micropipette, variable volume, single channel

Cat. No.	Code	Volume range, μl	Increments, µl
PP/35702	SVA-125	0.1 - 2.5	0.002
PP/35704	SVA-100	0.5 - 10	0.02
PP/35706	SVA-700	2 - 20	0.02
PP/35708	SVA-200	5 - 50	0.1
PP/35710	SVA-500	10 - 100	0.1
PP/35712	SVA-800	20 - 200	0.2
PP/35714	SVA-600	100 - 1000	1
PP/35716	SVA-905	500 - 5000	10
PP/35718	SVA-1000	1000 - 10000	20

### Micropipette, 8 Channel, variable volume

Cat. No.	Code	Volume range, μl	Increments, µl	
PP/35730	SMA8-010	0.5 - 10	0.02	
PP/35732	SMA8-050	5 - 50	0.1	
PP/35734	SMA8-300	30 - 300	0.2	

### Micropipette, 12 Channel, variable volume

Cat. No.	Code	Volume range, μl	Increments, µl
PP/35740	SMA12-010	0.5 - 10	0.02
PP/35742	SMA12-050	5 - 50	0.1
PP/35744	SMA12-300	30 - 300	0.2



PP/357



PP/3573



PP/3574



### Pipettor tip, Volac



Cat. No.	Code	Capacity	Colour	Pk Qty
PT/36202	D590/C	200µl	Yellow	1000
PT/36204	D592/C	1.0ml	Blue	1000
PT/36206	D893	5.0ml	White	500

### Pipette tips Volac, for specific pipettors



Cat. No.	Code	Capacity	Colour	Pk Qty
PT/36208	D894	10.0ml	Blue	40
	For use with o	lder Uni and Ultra rang	es only	
PT/36002	D591	300µl	Clear	1000
	For use with m	nultichannel models only	у	
PT/36210	D895	10.0ml	White	200
	For use with S	mart pipettors only		

### PP/35454

### Stands for Smart micropipettors

Cat. No.	Code	Description
PP/35452	SAS-02	Stand for single micropipettor
PP/35454	SAS-01	Stand for up to 6 micropipettors



### Pipetting reservoir

Cat. No.	Description
PT/76150	Polypropylene reagent reservoir, 50ml, pack of 10

### Pipettors, mechanical, adjustable volume

The Ratioilab range of adjustable pipettors offers, besides precision and reliability, excellent handling properties. They are light weight, convenient and are individually checked according to ISO8655/DIN12650 prior to delivery.

The range, which includes single channel, 8 channel and 12 channel models covers volumes from 0.1µl to 5000µl with across the range. Each pipettor is supplied with operating instructions, certificate of calibration, bench rack, calibration key and lubricant.

All models are autoclavable and have the following features:

- Universal cone for standard pipette tips
- Easy volume setting by smooth running setting ring
- Touch sensitive pressure points for pipetting and discharging
- Individual serial numbers for traceability
- Suitable for either left or right handed operation
- Easy to calibrate
- Corrosion resistant piston and tip ejector

Cat. No.	Description.	Volume	Accuracy (µL)	Precision <±% <%
PP/37000	Single channel adjustable	0.1-2.5	3.00	3.00
PP/37002	Single channel adjustable	0.5-10	1.50	1.50
PP/37004	Single channel adjustable	2.0-20	1.20	1.00
PP/37006	Single channel adjustable	10-100	1.00	0.40
PP/37008	Single channel adjustable	20-200	0.80	0.40
PP/37010	Single channel adjustable	100-1000	0.70	0.25
PP/37012	Single channel adjustable	1000-5000	0.60	0.30
PP/37014	8-channel adjustable	0.5-10	2.50	2.50
PP/37016	8-channel adjustable	5.0-50	1.50	1.00
PP/37018	8-channel adjustable	50-300	1.00	0.50
PP/37020	12-channel adjustable	0.5-10	2.50	2.50
PP/37022	12-channel adjustable	0.5-50	1.50	1.00
PP/37024	12-channel adjustable	50-300	1.00	0.50
Accessory PP/37050	Pipettor stand for up to 5 pipe	ettors		



### Pipettors, single and multi-channel

Brand Transferpette $^{\otimes}$  S pipettors feature a large central pipetting button to separate the ejection function and are suitable for both left and right single-handed operation.

Calibration is easy and does not require any special tools. The 4 position volume display is always clearly visible and an external flag indicates changes from factory settings. The pipettors can be completely autoclaved at 121°C (2bar) according to DIN EN 285

Supplied with DE-M marking, performance certificate, shelf/rack mount and silicone grease. Transferpette S, fixed volume

Cat. No.	Code	Capacity
PP/70000	F-10	10µl
PP/70002	F-20*	20µl
PP/70004	F-25	25µl
PP/70006	F-50	50μl
PP/70008	F-100	100µl
PP/70010	F-200*	200µl
PP/70012	F-500	500µl
PP/70014	F-1000	1000μΙ
For use only with	20 - 200µl tips	



PP/70002

### Transferpette S, adjustable volume

Cat. No.	Code	Range
PP/70040	D-2.5	0.1 - 2.5µl
PP/70042	D-10	0.5 - 10µl
PP/70044	D-20	2 - 20µl
PP/70046	D-50	5 - 50µl
PP/70048	D-100	10 - 100μΙ
PP/70050	D-200	20 - 200µl
PP/70052	D-1000	100 - 1000µl
PP/70054	D-5000	500 - 5000µl
PP/70056	D-10000	1000 - 10000µl

### Please note:

Model D-2.5, when using Brand nano-cap™ tips or tips from other manufacturers, calibration and possibly adjustments is necessary. Model D-5000 for use only with 5ml tip from Brand and 5ml tip from Thermo Fisher Scientific Inc. (Finnpipette®) D-10000 for use with 10ml tip from Brand and appropriate tips from Gilson® and Eppendorf®.

### Pipette sets, Transferpette ${\mathbb R}$ S, adjustable volume in sets of 3 or 5

Cat. No.	Code	Description
PP/70080	MICRO	Pipette set of 3, D-2.5, D-10 and D-100 with 3 TipBoxes and 3 shelf/rack mounts
PP/70082	MIDI	Pipette set of 3, D-20, D-200 and D-1000 with 3 TipBoxes and 3 shelf/rack mounts
PP/70084	MACRO	Pipette set of 3, D-1000, D-5000 and D-10000 with 3 TipBoxes and 3 shelf/rack mounts
PP/70086	STANDARD	Pipette set of 3, D-10, D-100 and D-1000 with 3 TipBoxes and 3 shelf/rack mounts
PP/70088	PACKAGE 1	Pipette set of 5, D-2.5, D-10, D-100, D-200 and D-1000 with 3 TipBoxes and benchtop rack
PP/70090	PACKAGE 2	Pipette set of 5, D-10, D-100, D-200, D-1000 and D-5000 with 4 TipBoxes and benchtop rack

The Brand Transferpette® S-8 and -12 extends the range of single channel models to provide multichannel pipetting and offers all the same features provided in the single channel range. Supplied with DE-M marking, performance certificate, 2 x TipBox filled with tips, shelf/rack mount, reagent reservoir, mounting tool, silicone grease and 1 set of silicone/FKM sealing rings.

### Transferpette S, multichannel

Cat. No.	Code	Number of channels	Range
PP/70100	M8-10	8	0.5 - 10µl
PP/70102	M8-50	8	5 - 50µl
PP/70104	M8-100	8	10 - 100µl
PP/70108	M8-300	8	30 - 300µl
PP/70120	M12-10	12	0.5 - 10µl
PP/70122	M12-50	12	5 - 50µl
PP/70124	M12-100	12	10 - 100µl
PP/70128	M12-300	12	30 - 300µl

### Accessories:

Cat. No.	Code	Description
PS/70000	7048 05	Rack, bench-top to hold 6 single or multichannel pipettors
PS/70002	7048 10	Rack/shelf mount for one single or multichannel pipettor
PS/70004	7053 85	Stand, bench-top for single pipettor up to 1000µl capacity
PS/70006	7053 86	Stand, bench-top for single pipettor 500 to 5000µl capacity
PS/70008	7034 40	Stand, bench-top for single multichannel pipettor



PP/70100



PP/70120







PT/37222



PT/37224



Dispetta dispenser, robust and well-designed, hand operated, for serial dispensing using disposable tips. Five volume settings combined with seven dispenser tip sizes result in 35 different volumes from  $10 \,\mu$ l to 5 ml. The dispenser tip is filled similar to a syringe using a well-positioned lever, after preselecting the dispensing volume the pipet button is pressed for each dispensing step.

- Ergonomic design and light weight for convenient handling
- Smooth and fatigue-free operation
- Precise and convenient volume setting
- Clearly visible volume adjustment, optimized readability
- Table with volume scale fixed directly onto the instrument
- Precise gear mechanism for accurate and reproducible pipetting
- Safe, rapid and easy exchange of tips
- Maintenance free
- Robust design to ensure long life of unit

Capacity					
D.5ml	$1\mu$ l	$2\mu$ l	$3\mu$ l	$4\mu$ l	$5\mu$ l
1.25ml	$10\mu$ l	$20\mu$ l	$30\mu$ l	$40\mu$ l	50µl
2.5ml	25µl	50µl	75µl	100µl	$125\mu$ l
5.0ml	50µl	100µl	150µl	200µl	$250\mu$ l
2.5ml	0.25ml	0.5ml	0.75ml	1.0ml	1.25ml
25ml	0.5ml	1.0ml	1.5ml	2.0ml	2.5ml
50ml	1.0ml	2.0ml	3.0ml	4.0ml	5.0ml

Cat. No.	Description
PP/37200	Pipettor, Dispetta for serial dispensing, 5µl to 5ml
Tips	
PT/37220	Dispetta tip, non-sterile, 0.5ml, pack of 100
PT/37222	Dispetta tip, non-sterile, 1.25ml, pack of 100
PT/37224	Dispetta tip, non-sterile, 2.5ml, pack of 100
PT/37226	Dispetta tip, non-sterile, 5.0ml, pack of 100
PT/37228	Dispetta tip, non-sterile, 12.5ml, pack of 100
PT/37230	Dispetta tip, non-sterile, 25ml, pack of 50, requires adapter
PT/37232	Dispetta tip, non-sterile, 50ml, pack of 25, requires adapter
PT/37234	Adapter for use with 25 and 50ml non-sterile tips
PT/37250	Dispetta tip, sterile, 0.5ml, pack of 100
PT/37252	Dispetta tip, sterile, 1.25ml, pack of 100
PT/37254	Dispetta tip, sterile, 2.5ml, pack of 100
PT/37256	Dispetta tip, sterile, 5.0ml, pack of 100
PT/37258	Dispetta tip, sterile, 12.5ml, pack of 100
PT/37260	Dispetta tip, sterile, 25ml, pack of 25, requires adapter
PT/37262	Dispetta tip, sterile, 50ml, pack of 25, requires adapter
PT/37264	Adapter, sterile, for use with 25 and 50ml sterile tips









PT/37230



PT/37234

### HandyStep electronic pipettor dispenser

The Brand HandyStep electronic pipettor adds versatility to any laboratory environment; any volume from 1.0µl to 50ml can be selected. Brand encoded tops are automatically recognised and displayed, third party tips are accepted but the volume has to be entered manually. The HandyStep provides three different functions: Dispensing, Automatic Dispensing and Pipetting, all with continuously variable volume.

Power for the HandyStep is provided by a re-chargeable NiMH battery pack which automatically recharges when the instrument is placed in the charging dock. Spare batteries are available to avoid down-time, a second battery pack can be charged in the dock while working with the pipettor. All information is preserved while replacing the battery which only takes a few seconds. Supplied with performance certificate, NiMH battery pack, charging dock and AC adapter, plus one each of PD-tip sizes 0.5ml, 1.25ml, 2.5ml, 5ml and 12.5ml.

Technical Specifications									
PD Tip	Volume	Nomin	al volun	ne (A* ±:	≤ ± %)	Nomin	al volur	ne (CV*	≤ %)
size	range								
		100%	50%	10%	1%	100%	50%	10%	1%
0.1ml	1.0µl - 100µl	1.0	1.0	1.6	8.0	0.5	1.0	2.0	12.0
0.5ml	5.0µl - 500µl	0.9	0.9	1.0	5.0	0.3	0.6	1.0	5.0
1.0ml	10.0µl - 1000µl	0.6	0.9	1.0	5.0	0.3	0.5	0.8	4.0
1.25ml	12.5µl - 1250µl	0.6	0.6	0.9	5.0	0.2	0.5	0.7	4.0
2.5ml	25.0µl - 2500µl	0.5	0.6	0.7	3.5	0.15	0.3	0.6	3.0
5.0ml	50.0µl - 5000µl	0.5	0.5	0.7	3.5	0.15	0.4	0.7	3.0
10.0ml	100µl - 10ml	0.4	0.5	0.7	3.5	0.15	0.5	0.8	4.0
12.5ml	125µl - 12.5ml	0.5	0.5	0.8	3.5	0.15	0.6	1.4	6.5
25.0ml	250µl - 25ml	0.5	0.5	0.6	3.0	0.15	0.3	1.0	6.0
50.0ml	500μl - 50ml	0.5	0.5	0.5	3.0	0.15	0.4	1.2	9.0

\*Error limits refer to the nominal volumes and partial volumes relative to the PD tip, obtained with instrument and distilled water at equilibrium with ambient temperature at  $20^{\circ}$ C, and with smooth operation. The error limits defined in ISO 8655 are not exceeded. A = Accuracy, CV = Coefficient of variation.

The nominal volume is the maximum volume printed on the PD-Tip

Cat. No.	Code	Description
PP/15420	705001	Brand HandyStep Electronic pipettor/dispenser with charger
PP/15422	705130	Wall mounting bracket
PP/15424	705025	Spare NiMH battery pack
PD Tips DE-	M marking, 20°	°C
PT/16420	702402	HandyStep tip, non-sterile 0.1ml, pack of 100
PT/16422	702370	HandyStep tip, non-sterile 0.5ml, pack of 100
PT/16424	702372	HandyStep tip, non-sterile 1.25ml, pack of 100
PT/16426	702374	HandyStep tip, non-sterile 2.5ml, pack of 100
PT/16428	702376	HandyStep tip, non-sterile 5ml, pack of 100
PT/16430	702378	HandyStep tip, non-sterile 12.5ml, pack of 100
PT/16432	702380	HandyStep tip, non-sterile 25ml, pack of 50 plus 1 adapter
PT/16434	702382	HandyStep tip, non-sterile 50ml, pack of 25 plus 1 adapter
PT/16450	702404	HandyStep tip, sterile 0.1ml, pack of 100
PT/16452	702384	HandyStep tip, sterile 0.5ml, pack of 100
PT/16454	702386	HandyStep tip, sterile 1.25ml, pack of 100
PT/16456	702388	HandyStep tip, sterile 2.5ml, pack of 100
PT/16458	702390	HandyStep tip, sterile 5ml, pack of 100
PT/16460	702392	HandyStep tip, sterile 12.5ml, pack of 100
PT/16462	702394	HandyStep tip, sterile 25ml, pack of 25 plus 1 adapter
PT/16464	702396	HandyStep tip, sterile 50ml, pack of 25 plus 1 adapter
PT/16466	702399	Adapter, sterile, for use with 25 and 50ml sterile and non-sterile
		tips, pack of 5



PP/15420



PT/16420



PT/16450



PT/160



### Pipette tips, PP, non-sterile



Precision moulded with cleanly finished ends allowing good visibility of tip contents

- Manufactured from metal free virgin polypropylene
- Autoclavable tips are provided non-sterile and clean

Cat. No.	Code	Description	Volume µl	Inner Pk	Pk Qty
PT/16002	BCT10	Clear Gilson Micro	0.5 – 10	1000	2000
PT/16004	BCT20	Clear Eppendorf Micro	0.5 - 10	1000	2000
PT/16006	BCT25	Yellow Gilson	5 – 200	1000	2000
PT/16008	BCT30	Yellow Universal/Eppendorf	2 - 200	1000	2000
PT/16016	BCT70	Blue Universal/Eppendorf	50 – 1000	1000	1000
PT/16106	BCB70	Universal Blue	50 - 1000	1000	10000
PT/16024	BCT100	Blue Gilson Macro	1000 - 5000	250	1000

### Pipette tips, universal, non-sterile

Ratiolab® pipette tips are ideal for all commercially available pipettes. Their uniform high quality and precision make today's pipettes fully effective. The tips are suitable for use with manual or electronic, single or multichannel pipettes.

- Made of high quality polypropylene
- Tight fitting precision cone
- Autoclavable
- Guaranteed dust-free due to special ionization treatment
- Available pre-sterilized in Multiracks or non-sterile in bags
- Excellent transparency due to high quality surfaces
- Minimal residual wetting due to controlled quality of raw materials
- Excellent volume accuracy due to precise tip orifice
- Suitable for all commonly used pipette types (unless otherwise stated)

Cat. No.	Code	Description	Length m	nm Pk Qty
PT/37000	2500190	Universal Pipette Tips crystal, 0,1-10 μl,		
		for Gilson pipetman/Neo	38.3	1000
PT/37002	2500170	Universal Pipette Tips crystal, 0.5-20µl	45.8	1000
PT/37004	2100600	Universal Pipette Tips yellow, 200 $\mu$ l	49.5	1000
PT/37006	2500160	Universal Pipette Tips yellow, 1-250 $\mu$ l	51.2	1000
PT/37008	2100610	Universal Pipette Tips blue, 100-1200 $\mu$ l	69.0	1000
PT/37010	2400650	Universal Pipette Tips Makro II,		
		1000-5000µl for Biohit Proline	133.3	300
PT/37012	2410650	Universal Pipette Tips Makro II,		
		1000-5000 $\mu$ l in rack for Biohit Proline	133.3	1 x 50
PT/37014	2400642	Universal Pipette Tips 1-10ml for Biohit mLine,		
		Gilson Pipetman and Eppendorf Research Plus	153.6	100















PT/37014 PT/37012

### Pipette tips, loose bulk packed, non-sterile, autoclavable

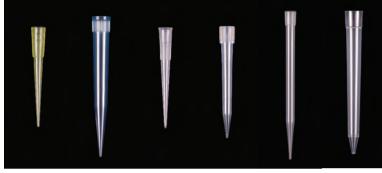
EKAL

Elkay pipette tips are designed to fit and function on a wide variety of single or multichannel pipettes. The finest grade Polypropylene raw material, state-of-the-art mould design and modern production techniques ensure that the optimum sealing and straightness of the tip are met on every occasion. Extended length tips, improved design automation grade tips and low binding technology in the filter tips means the user has a broad range of products to choose from.

Cat. No.	Code	Description	Pk Qty
PT/76034	RES-UPEX-010	TIP natural, extended 10µl - fits all major brands	1000
PT/76006	UNV-STND-000	TIP natural, universal, 200µl - fits all major brands	1000
PT/76002	PIPT-01B	TIP lemon, 200µl - fits all major brands	1000
PT/76004	018	TIP blue, 1 ml - fits all major brands	1000
PT/76024	026	TIP natural, 5ml - Eppendorf & Gilson	250
PT/76042	780308	TIP natural, 5ml - Biohit/Sartorius	1000
PT/76022	062	TIP natural, 5ml - Finnpipette	250
PT/76038	036	TIP natural, 10ml - Gilson Biohit/Sartorius	200
PT/76040	070	TIP natural, 10ml - Finnpipette	100



PT/76002





PT/76002

PT/76004

PT/76006

PT/76010

PT/76022 PT/76024

PT/76034

PT/76036

PT/76038

PT/76040

PT/76042

### Pipette tips, racked, non-sterile

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Cat. No.	Code	Description	Pk Qty
PT/76212	RES-UPEX-096	Tips racked, NS, 10µl, extended, natural - fits all major brands	10 x 96
PT/76214	AUTO-A18	Tips, racked, NS, 1 ml blue - fits all major brands	8 x 60



PT/762

### Pipette tips, multitrack

Ratiolab® Multirack pipette tip system saves time and provides perfect hygienic conditions and simple operation. The tips are placed on a robust matrix, in a 8 x 12 format for all tips up to 300  $\mu$ l, and in a 6 x 10 format for tip size  $100-1000~\mu$ l. They can be picked-up by 1, 8 or 12-channel pipettors as well as by pipetting robots, contamination-free and without any hand contact. Manufactured from durable material, the hinged cover can be opened up to  $180^\circ$ . After use, the Multibox® can be closed firmly by means of a click closure to protect the tips from dust. The racks are completely autoclavable at 121 °C for 20 min and available in sterile and non-sterile packs. Refill trays are available, please contact us for details.

Cat. No.	Code	Description	Length (mm)	Pk Qty
Non-Sterile	, Multirack			
PT/37030	2513192	Pipette Tips crystal, 0,1-10µl	38.3	960
PT/37032	2513172	Pipette Tips crystal, 0.5-20µl	45.8	960
PT/37034	2113602	Pipette Tips yellow, 1-200µl	49.5	960
PT/37036	2513162	Pipette Tips yellow, 1-250µl	51.2	960
PT/37038	2113612	Pipette Tips blue, 100-1200µl	69.0	600
Sterile, Mul	tirack			
PT/37050	2553192	Pipette Tips crystal, 0,1-10µl	38.3	960
PT/37052	2553172	Pipette Tips crystal, 0.5-20µl	45.8	960
PT/37054	2153602	Pipette Tips yellow, 1-200µl	49.5	960
PT/37056	2553162	Pipette Tips yellow, 1-250µl	51.2	960
PT/37058	2153612	Pipette Tips blue, 100-1000µl	69.0	600



PT/37036



PT/37038



PT/76116

### Filter tips, racked, sterile



Cat. No.	Code	Description	Pk Qty
PT/76120	AER-UPEX-S96	Tips racked, sterile, 10µl, natural extended	10 x 96
PT/76108	AER-OREF-S96	Tips racked, sterile, 20µl, natural	10 x 96
PT/76110	AER-2REF-S96	Tips racked, sterile, 100µl, natural	10 x 96
PT/76122	AER-5REF-S96	Tips racked, sterile, 6 - 200µl, natural	10 x 96
PT/76114	AER-1REF-S96	Tips racked, sterile, 20, 100 & 200µl, natural,	
		storage saver	10 x 96
PT/76112	AER-4REF-S96	Tips racked, sterile, 300µl, natural, suitable	
		for multichannel pipettes	10 x 96
PT/76116	AER-STE1-A18	Tips racked, sterile, 1ml, natural	10 x 100
PT/76124	AER-STE9-A18	Tips racked, sterile, 1.25ml, natural, extended	8 x 96

PT/37170





PT/37174



PT/37176

### Pipette tips, aerosol barrier, sterilised

Ratiolab Aerojet pipette tips with special filters, effectively prevent the pipettor shaft from contamination with aerosols and liquids that can be sucked into the pipettor during use. Sterilized and free of RNase-, DNase-, DNA-, pyrogens, human DNA and PCR inhibitors. The low retention nature of these tips with their liquid repellent surface, helps to eliminate the loss of expensive reagents. Made from ultra-hydrophobic PE-HD, they form a perfect and tight fit on all major pipettor brands. Supplied packed in plastic racks with hinged lids

Cat. No.	Code	Range	Length (mm)	Pk Qty
PT/37170	1770010	0.1 - 10μΙ	45.2*	960
PT/37172	1770020	$0.1 - 20\mu$ l	50.8	960
PT/37174	1770100	1 - 100µl	50.8	960
PT/37176	1770200	1 - 200µl	50.5	960
PT/37178	1771000	100 - 1000µl	70.1	600
PT/37180	1771000XL	100 - 1000µl	86.0*	960
* Extended leng	gth for use with narrov	v vessels and reduced ri	isk of cross contamination	on



Cat. No.	Description	Volume	Pk Qty
PT/76150	Polypropylene reagent reservoir	50ml	10

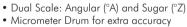


PT/76150

# **Digital Polarimeters**

### Model D7 Polarimeter





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PO/45042



a xylem brand

• Integral LED light source with intensity control

Technica	l Spe	cifico	ations

Toethinear opecifications			
	Angular (°A)	ISS (°Z)	
Range	0 - 360	-30  to  +130	
Sub Division	1	1	
Resolution by Micrometer Drum	0.05	0.1	
Accuracy by estimation	$\pm 0.02$	±0.05	

Cat. No.	Code	Description
PO/45042	31-02	Model D7 Polarimeter with integral LED light source, intensity control, power supply, 200mm 'bubble' polarimeter tube and instructions for use.

### **Digital Polarimeters**

Bellingham and Stanley ADP400 Series polarimeters not only offer three decimal place measurement, they are also packed full of features normally only expected from high-end instrumentation.

A METHODS system allows rapid instrument configuration. Setting the scale (optical rotation, sugar, Specific Rotation, concentration, etc.), selecting the reading type (continuous or single-shot) and limit checking against pre-defined product specifications is simple.

High security software fulfils the operational requirements of FDA regulation 21 CFR Part 11, electronic signatures. User access is configurable and protected with password entry via keypad or RFID tag. Audit trails of readings and configuration are easily viewed on the 4" (10cm) full colour display or downloaded via USB or LAN/Ethernet.

There are two models available in the range; both instruments conform to the minimum requirement of USP/EP/BP for sodium (589nm) measurement.

- ADP430 for use where no temperature control is required or for operation with automatic temperature compensation (ATC) or a water-bath.
- ADP450 with patented XPC technology that uses Peltier to control sample temperature.

### Common features:

- LED/Interference filter
- Standard ICUMSA tubes
- High Definition colour display
- Multiple scales
- Temperature display
- Optical Density display
- Temperature compensation
- Conform to USP/EP/BP/JP (@589nm)

### Technical Specifications

reclinical specifications	
Scales:	
Angular degrees (°A)	-355 to +355
International sugar scale (°Z)	-225 to $+225$
User Scales/Methods	100
Resolution:	
Angular degrees (°A)	0.01/0.001 (selectable)
International sugar scale (°Z)	
Accuracy:	

A | |

 $\begin{array}{ll} \mbox{Angular degrees (°A)} & \pm 0.010 \\ \mbox{International sugar scale (°Z)} & \pm 0.030 \end{array}$ 

Precision (Reproducibility):

Angular degrees (°A)  $\pm 0.002$  International sugar scale (°Z)  $\pm 0.005$ 

User scales & methods library PHR-MEAN statistical, Specific Rotation, Concentration,

Inversion (A-B), Invert Sugar, user defined

Reading time Continuous measurement and display or single shot

(selectable)

Tube length 100 to 200mm

Sample illumination Sodium (589nm) Light emitting diode (100,000+ hours)

Beam diameter 4mm

Optical density 0.0 to 3.0 OD

Instrument housing Polyurethane foam with aluminium base Interfaces 1 x USB (A), 1 x USB (B), 1 x Ethernet

Power:

Instrument housing 24V DC,  $\pm 5\%$ , <2A

External PSU 100 - 240V, 50-60Hz (supplied)
Humidity range <90% RH (non-condensing)

Temperature specification:

Model ADP430 ADP450

Control None or external water-bath Patented XPC Technology

Compensation None, ICUMSA, Quartz or user defined Measuring range 5 -  $40^{\circ}$ C 15 -  $35^{\circ}$ C

Sensor accuracy  $\pm 0.1^{\circ}\text{C}$ 

Stability Water-bath dependent  $\pm 0.2^{\circ}$ C

Stability checks None/delay on single-shot None/delay or SMART

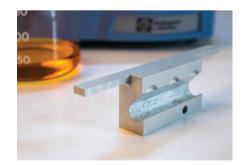
Cat. No.	Code	Description
PO/45028	37-30	Polarimeter, digital model ADP430, water-bath controlled
PO/45030	37-50	Polarimeter, digital model ADP450, Peltier controlled
PO/45032	35-90	Polarimeter tube, Standard ICUMSA, stainless steel,
		100mm
PO/45034	35-91	Polarimeter tube, Standard ICUMSA, stainless steel,
		200mm
PO/45036	35-95	Adapter XPC-100 for use with 100mm standard
		polarimeter tubes
PO/45038	35-96	Adapter XPC-200 for use with 200mm standard
		polarimeter tubes



PO/45028



PO/45032



PO/45036



### Polarimeter tubes

High quality polarimeter tubes for use with any polarimeter conforming to ICUMSA standards, including Model D and ADP ranges manufactured by Bellingham +
Stanley Ltd. Depending on the sample and instrument type, a selection can be made from the following table. Other lengths and configurations may be available, please ask for details.

Technical Specifications	
Collar external diameter: 30mm nominal	Tube internal diameter: 8mm
Window size:15.5mm	Capacity/100mm: 5.02 ml

Cat. No.	Code	Description	Tube length, mm
PO/45052	35-29	Standard glass sample tube with bulb to clear bubble from field of view	100
PO/45054	35-30	Standard glass sample tube with bulb to clear bubble from field of view	200
PO/45056	35-46	Centre filling glass tube with straight central arm for filling from funnel or flexible tube.	100
PO/45058	35-47	Centre filling glass tube with straight central arm or filling from funnel or flexible tube.	200

### **Polarimeter Calibration**

### Quartz control plates

Most commonly, Quartz Control Plates (QCP) are used for verifying and calibrating polarimeters, they are easy to handle and offer extremely good traceability to internationally recognised standards. There are three types of Quartz Control Plates which are supplied with a Certificate of Conformity issued by Bellingham & Stanley showing values in angular rotation (°A) and ISS (°Z) at sodium (589nm) and NIR (850nm) wavelengths at 20°C. These are also available with UKAS certification, please request details. When used with an ADP polarimeter manufactured by Bellingham + Stanley, a thermal block should be used to provide mechanical contact to the instrument's external temperature sensor to ensure that the measured temperature fully represents the actual temperature of the QCP for both stabilisation and compensation objectives.

Cat. No.	Code	Description
PO/45222	34-20	Quartz control plate: 34°A/100°Z
PO/45224	34-21	Quartz control plate: 5°A/15°Z
PO/45226	34-22	Quartz control plate: -10°A/-30°Z
PO/45228	34-241	Thermal block for use with ADP/S



PO/4522

# NALGENE

PU/365

### **Pumps**

### Vacuum pump, hand-operated, PVC body

### NALGENE

These durable pumps easily and quickly attain and hold vacuum of 635 mm Hg. Vacuum trigger release requires only one hand to operate and releases vacuum with the touch of an index finger. Adjustable vacuum release rate. Smaller size (Code No. 6131-0010) has pumping rate of 15cc/stroke and .21 bar positive pressure at the exhaust port. Larger size (Code No. 6131-0020) has rate of 36cc/stroke and .48 bar positive pressure at the exhaust port. Full blank port pressure is obtained with only two strokes. Removable cover on exhaust port and trigger to release vacuum without disconnecting pumps from the line.

Without vacuum gauge. Adjustable vacuum release rate controlled by trigger on pump. Ideal for field or lab use. Nozzle fits standard 1/4-in. I.D. tubing. Supplied with 2ft. length of NALGENE 180 clear plastic tubing.

Cat. No.	Code	Description
PU/36506	6131-0010	Vacuum pump, hand-operated, small
PU/36508	6131-0020	Vacuum pump, hand-operated, large

### Pumps, water jet, metal

Made from nickel plated brass and stainless steel, making the pump extremely robust. Available with either a 1/4" thread or tubing connection; both pumps are fitted with non return valves and rifled nozzles for water and vacuum connections.

Cat. No.	Description
PU/94102	Threaded tap connector (1/4")
PU/94104	Tubing tap connector



PU/94102 & PU/94104

### Pump, water jet, polypropylene

Integral non-return valve. High chemical resistance at a maximum working temperature of  $80^{\circ}$ C. Capable of generating a vacuum of up to 16mbar. Supplied with a 34'' water connection sleeve nut, 1/2'' reducing adapter and tubing connector for use with 9-12mm bore tubing. Suction line connection has a detachable nozzle for use with 6-9mm bore tubing or GL14 screw thread connector.

Cat. No.	Code	
PU/16204	PWD003	



PU/16204

### Pumps, syphon for large containers

A range of pumps for use with vessels from 5 to 210 litres. Nos. 64 and 54 are made from high grade polyethylene, No. 52 is made from high grade polyethylene, rigid PVC and nylon. All pumps are designed to withstand most acids, please specify the names of the chemicals that the pump is intended for being used with, or request a Chemical Resistance Chart.

Cat. No.	Description
PU/96002	For containers up to 25 litres, suction tube 390mm, delivery 6.5 litres per
PU/96004	minute For containers up to 60 litres, suction tube 590mm, delivery 10 litres per minute
PU/96004	For containers up to 205 litres, suction tube 850mm, delivery 18.5 litres per
. 3, , 3000	minute



PU/96006



# NICKEL - ELECTRO LTD. Manufacturers of the Clifton Range

# Clifton Range®

Leading Products For Today's Scientists...



Water Baths Boiling, Stirred, Unstirred, Circulators, Shaking, Ultrasonic.





Centrifuges Mini, Refrigerated, Universal.





Hotplates Blockheaters, Sterilisers, Ovens, Incubators.





Mixers Vortex Mixer, Rotary Mixer.





Metalware Beakers, Crucibles, Spatulas, Spoons, Jugs, Scoops, Tongs.



www.nickel-electro.co.uk

### Waste aspiration system

The E-Vac Aspiration system are compact waste systems that are ideal for use with critical or dangerous liquids, supernatants, pathogens, or any class III or IV biohazard laboratories. Dual hydrophobic filters prevent liquids from contaminating the system. Built in membrane pump automatically switches on when vacuum pressure is applied allowing it to maintain a constant vacuum pressure — perfect for gentle aspiration of small plates and dishes, as well as rapid emptying of larger containers.

- Vacuum settings from -275mm to 625 mbar
- · Lid is available with quick release fittings and level detection sensor or with standard barbed fittings
- Illuminated LED light allows for easy viewing of fluid level
- All wetted parts such as bottle, lid, tubing, connectors and hand operator are autoclavable
- Includes HandE-Vac hand operator with single channel plastic adapter and tubing
- Easy-to-clean UV resistant stainless steel housing

The HandE-Vac handheld aspirator will rapidly remove supernatant from a variety of cell culture or multi-well plates and dishes. This conveniently designed aspirator can be used with Pasteur pipettes, plastic aspiration pipettes or a variety of small laboratory vessels. A number of adapters are available for specific applications.

The pressure-sensitive button on the top of the unit controls the specific amount of vacuum applied. This prevents the accidental aspiration of cells or supernatant associated with normal vacuum techniques.

The unit can be used with a standard in-house vacuum source or with the P-Vac portable aspirator; it is possible to autoclave the unit and is supplied with a single-channel adapter for disposable pipette tips. \*Please note the HandE-Vac unit requires an in-house vacuum system or a P-Vac vacuum pump to make it operational.

Cat. No.	Description
PA/10000	Aspiration system with HandE-Vac controller and single channel disposable tip adapter. 4 litre Polypropylene bottle and lid with quick release tubing connectors and level detection sensor. Two lengths of tubing and filter
PA/10002	Aspiration system with HandE-Vac controller and single channel disposable tip adapter. 4 litre Polypropylene bottle and lid with barbed tubing connectors. Two lengths of tubing and filter
PA/10020	Aspirator, HandE-Vac handheld vacuum controller with pipette tip adapter
PA/10022	Stand for HandE-Vac controller
PA/10024	Adapter, single channel, for disposable tips
PA/10026	Adapter, plastic, 8 channel for disposable tips
PA/10028	Adapter for Pasteur pipettes
Accessories	
PA/10040	Pump P-Vac, vacuum, portable, for use with E-Vac and Hand-Vac aspiration systems
PA/10042	Battery, spare for P-Vac pump

### Laboratory dosing pump

With its SIMDOS series, KNF offers dosing pumps for laboratory use. They are the ideal solution for accurate, reliable and stable dosing applications. They are small, quiet, dryrunning, self-priming and virtually maintenance-free. Below, we offer the remote controlled version with PTFE motor head, other versions are available with PP, PVDF and stainless steel head also with RS232 interfaces.

- Easy calibration
- Cycle mode
- Adaptable to fluid characteristics
- Self-priming, can run dry
- Analogue and impulse control (RC)

Technical Specifications	02	10
Power consumption	10W	24W
Dimensions	140 x 87 x 130mm	150 x 93 x 144mm
Hydraulic connection	UNF 1/4-28	Compression fitting for 4/6mm tube
Flow rate	30µl to 20ml/min	1 to 100ml/min
Dosing volume	30µl to 999ml	1 to 999ml
Specification common to both		
Pump head material	PTF	E
Version	Version Remote control	
Main supply	100–240 V / 50–60 Hz	
Ambient temperature allowed	+5 to +	40 °C
Liquid temperature allowed	+5 to $+$	80 °C
Maximum viscosity allowed	150 (	cSt
Accuracy	+/-2% (nom	inal value)
Repeatability	+/-1	%
Protection class IP65		5
Weight	0.9k	ζg

Cat. No.	Code	Description
PU/45050	FEM 1.02 FT.18 RC	Simdos 02 dosing pump, 30 $\mu$ l to 20ml/min with PTFE head, 6 Bar
PU/45052	FEM 1.10 FT.18 RC2	Simdos 10 dosing pump, 1 to 100ml/min with PTFE head, 6 Bar



PA/1002



PA/10020



PU/45052

### Pumps, Peristaltic

The Verderflex® Vantage 3000 range of tube pumps offers highly accurate, repeatable dosing, for low to medium flow. They are ideally suited for pharmaceutical and laboratory applications. This simple to use, compact pump, may easily be used on a bench top and is ideal for the transfer, dosing or metering of abrasive, shear sensitive and highly viscous fluids.

### 3 Drive Options:

B Model - standard on/off, left/right function C Model - remotely controlled analogue operation P Model - dispensing, programmable & remote operation

### 3 Head Options:

EZ for 1.6mm (WT) thickness tubing \$10 for 2.4mm (WT) thickness tubing R3i for 3.2mm (WT) thickness tubing

### Flow Rates:

Vantage 3000 EZ - Flows from 0.9 ml/min to 1.31 l/min Vantage 3000 S10 - Flows from 20 ml/min to 1.78 l/min Vantage 3000 R3i - Flows from 55 ml/min to 3.25 l/min

Technical Specifications	Version	C Version	P Version
Manual Speed Control	<b>√</b>	✓	<b>√</b>
Remote Speed Control	X	✓	✓
Analogue Inputs (0-10V / 4 to 20mA)	X	✓	✓
Potentiometer (10k Ω)	Х	✓	✓
Volt Free Contacts (Footswitch)	X	✓	✓
Digital Input (RS 232)	X	X	✓
Speed Ramp (Soft Start)	Х	X	✓
Single shot or Cyclic Dosing	X	X	✓
Batch Dosing	X	X	✓
Calibration	Х	✓	1
Keypad Lock	X	✓	✓
Memory Dose	X	✓	✓
10 Dosing Program Memory	Х	X	1

Cat. No.	Model	Description
PU/25114	3000B EZ	Model 3000B peristaltic pump, standard model with low flow rate
PU/25116	3000C EZ	Model 3000C peristaltic pump, remote controlled model with low flow rate
PU/25118	3000P EZ	Model 3000P peristaltic pump, programmable model with low flow rate
PU/25120	3000C S10	Model 3000C peristaltic pump remote controlled with medium flow rate
PU/25122	3000P S10	Model 3000P peristaltic pump remote programmable with medium flow rate
PU/25124	3000C R3i	Model 3000C peristaltic pump remote controlled with high flow rate
PU/25126	3000P R3i	Model 3000P peristaltic pump remote programmable with high flow rate



PU/251

PU/15504

### Pumps, liquid diaphragm, Capex L1 and L1C

Suitable for continuous duty the Capex L1 and L1C are self priming and able to run dry without damage, making them ideal for condensate removal and reservoir drainage.

Both pumps are quiet running. The Capex L1 has been designed for OEM applications and can be easily fitted into equipment without the need for design changes. The Capex L1C is suitable for benchtop use in the laboratory, it is lightweight, portable and has a tough alloy case with fold at carry handle, cable tidy and unique t-slot rails enabling the user to retrofit accessories.

Technical Specifications							
Model Flow Max Max. lift Dimensions Weight							
	(l/min)	Head (m)	(dry) (m)	$h \times w \times I (mm)$	(Kg)		
Capex L1	1.2	8.5	0.75	159 x 88 x 158	2.0		
Capex L1C	1.2	8.5	0.75	214 x 137 x 282	3.75		

Cat. No.	Model	Description
PU/15502	Capex L1	Unencased liquid diaphragm pump
PU/15504	Capex L1C	Benchtop liquid diaphragm pump

### Vacuum pumps, CC series

Two stage oil sealed rotary vane vacuum pumps. Proven robust construction. All the pumps in the range have anti suck back, gas ballast and oil mist eliminator.

Technical Specifications	CCL-21	CCL-31	CCL-141	
No. Stages		2	2	2
Volumetric flow @ 50 Hz				
(swept volume)	litre/min	28	40	136
	m³/hr	1.68	2.1	8.4
	CFM	0.99	1.24	5
Ultimate vacuum (pp)	mbar	< 0.05	< 0.05	< 0.005
Gas Ballast	(variable)	YES	YES	YES
Water vapour pumping	kg/hr	150	250	400
Rotational speed	rpm	3440	1440	2880
Motor power	Watts	200	200	240
Weight	kg	5.5	11.5	13.8
Dimensions	L/W/H - mm	347x137x194	375x178x330	375x178x330
Suction inlet	Hose Tail	6mm	6mm	8mm
Exhaust outlet	Oil mist Eliminator	YES	YES	YES
Available in Single Phase	Voltage	240	Dual 110/240	Dual 110/240

JAVAC
PLL/35402

PU/35402

Cat. No.	Code	Description
PU/35401	CCL-21	Rotary vane pump, two stage 28 ltr
PU/35402	CCL-31	Rotary vane pump, two stage 40 ltr
PU/35403	CCL-141	Rotary vane pump, two stage 136 ltr

### Vacuum pumps, CC series

Dymax vacuum/compressors have a Whisper quiet oil free operation for contamination free pumping of air and gas. Housed in a compact polycarbonate case with low noise operation and rugged reliability, they also conform to EN61010 laboratory safety standard. Features include illuminated on/off switch and integral inlet filter with push-fit cap for easy access and quick cleaning.

Dymax 5	Dymax 8	Dymax 14
5	8	14
0.8	2	2
500	240	240
1.9kg	3.0kg	2.3kg
	210 x 125 x 151mm	
	4mm	
	5 0.8 500	5 8 0.8 2 500 240 1.9kg 3.0kg 210 x 125 x 151mm

Cat. No.	Description
PU/15110	Pump, vacuum/pressure 5 litre
PU/15112	Pump, vacuum/pressure 14 litre
PU/15114	Pump, vacuum/pressure 8 litre



PU/15110

Notes	



PU/4550

### Mini Diaphragm Vacuum Pumps and Compressors



Small portable diaphragm pumps, ideal for general use around the laboratory and educational establishments

- Vacuum down to 15 mbar
- Flow rate 5.5 to 30 l/min
- Compact and portable
- For slightly aggressive or corrosive gasses and vapours
- Maintenance Free
- Easy operation

Technical Specifica	Technical Specifications							
Model	Model N86 KT.18 N811 KT.18 N816.3 KT.18 N938.50 KT18 N816.1.2 KT.18							
Flow Rate (litres/min)	5.5	11.5	16	30	30			
Ultimate Vacuum								
(mBar abs	160	290	20	15	160			
Pressure (bar g)	2.5	2	0.5	0.5	0.5			
Dimensions								
L x H x W (mm)	164x141x90	187x157x90	361x141x90	317x212x110	361x141x102			
Weight, Kg	1.9	2.5	3.95	10	3.95			

Cat. No.	Code	Description	Tubing size
PU/45502	N86 KT.18	Mini Diaphragm Vacuum Pump/Compressor 5.5 I/min	4 mm I.D.
PU/45504	N811 KT.18	Mini Diaphragm Vacuum Pump/Compressor 11.5 I/min	6 mm I.D.
PU/45506	N816.3 KT.18	Mini Diaphragm Vacuum Pump/Compressor 16 l/min	6 mm I.D.
PU/45512	N938.50 KT18	Mini Diaphragm Vacuum Pump/Compressor 30 I/min	10 mm I.D.
PU/45510	N816.1.2 KT.18	Mini Diaphragm Vacuum Pump/Compressor 30 I/min	6 mm I.D.

PU/45122

### Diaphragm, Vacuum Pumps and Compressors



These diaphragm pumps are available in single or double headed versions for a wide range of laboratory applications. They transfer, compress and pump down without contamination. These pumps have an aluminium pump head, CR diaphragm and stainless steel valves.

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- For use with non-aggressive media
- Maintenance-free
- Environmentally friendly

Technical Specifications				
Model	N022 AN.18	N035 AN.18	N035.3 AN.18	N035.1.2 AN.18
Delivery (I/min)	15	30	30	55
Ultimate Vacuum (mbar abs)	100	100	13	100
Operating Pressure (bar g)	4	4		4
Connectors for tube (mm)	ID6	ID9	ID9	ID9
Voltage/Frequencies	230V/50Hz	230V/50Hz	230V/50Hz	230V/50Hz
Motor Protection	IP20	IP20	IP20	IP20
Power	100 W	220 W	300 W	300 W
Operating current	0.75 A	1 A	1.55 A	1.55 A
Weight	4 kg	8.2 kg	11.3 kg	11.3 kg
Dimensions LxHxW (mm)	203x194x145	265x254x143	294x222x250	321x222x250



PU/45124

Cat. No.	Code	Description	Tubing size
PU/45122	N022AN.18	Single head diaphragm pump 15 l/min	6 mm I.D.
PU/45124	N035AN.18	Single head diaphragm pump 30 l/min	9 mm I.D.
PU/45126	N035.3AN18	Double head diaphragm pump 30 l/min	9 mm I.D.
PU/45128	N035.1.2AN18	Double head diaphragm pump 55 l/min	9 mm I.D.
Accessories			
PU/45130	030305	Service kit for N022 AN.18	
PU/45132	030307	Service kit for N035 AN.18	
PU/45134	030315	Service kit for N035.1.2 AN.18 and N035.3AN	V. 18
PU/45138	000350	Fine control valve & vacuum gauge for NO22 A	N.18
PU/45140	000349	Fine control valve & pressure gauge for NO22	AN.18
PU/45142	000354	Fine control valve & vacuum gauge for N035 r	ange
PU/45144	000482	Fine control valve & pressure gauge for N035	range
PU/45146	000346	Filter/Silencer for N022 AN.18	-
PU/45148	000352	Filter/Silencer for N035 range	

### Pumps, vacuum, chemically resistant, Laboport®



These chemically resistant single- and double- head diaphragm pumps are dry running and suitable for use in a wide range of applications. They transfer and pump down without contamination. The patented, stress optimised, diaphragm is PTFE coated. The pump head is TFM™ PTFE (PTFE on N842.3FT.18).

- 100% oil free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapours and condensation
- Chemically resistant
- Suitable for highly aggressive or corrosive gases and vapours
- Maintenance free
- Environmentally friendly
- Gastight, leakage rate approx 6 x 10<sup>-3</sup> mbar x l/s, not tested in serial production
- Accepts 10mm bore tubing
- ATEX compliant according to ATEX II 2G IIB + H2 T3X internal atmosphere only. (Excluding N842.3FT.18)

Technical Specifications				
Single - head models Delivery, litres/min Ultimate vacuum, mbar Dim. (lxhxw), mm Electrical supply Power Weight Kg	N810FT18 10 100 256x187x146 230V/50Hz 100 W 5.9	N820FT18 20 100 268x207x159 230V/50Hz 130 W 7.1	N840FT18 34 100 297x226x171 230V/50Hz 180 W 10.3	
Double-head models Delivery, litres/min Ultimate vacuum, mbar Dim. (lxhxw), mm Electrical supply Power Weight Kg	N810.3FT18 10 8 281x187x140 230V/50Hz 90 W 6.9	N820.3FT18 20 8 312x207x154 230V/50Hz 120 W 9.3	N840.3FT18 34 8 341x226x166 230V/50Hz 245 W 12.6	N842.3FT18 34 2 341x223x167 230V/50Hz 245 W 13.4

Cat. No.	Code	Description
PU/45232	N810FT18	Single head diaphragm pump 10 l/min
PU/45234	N820FT18	Single head diaphragm pump 20 l/min
PU/45236	N840FT18	Single head diaphragm pump 34 l/min
PU/45240	N810.3FT18	Double head diaphragm pump 10 l/min
PU/45242	N820.3FT18	Double head diaphragm pump 20 l/min
PU/45244	N840.3FT18	Double head diaphragm pump 34 l/min
PU/45246	N842.3FT18	Double head diaphragm pump 34 l/min
Accessories		
PU/45250	058077	Service kit for N810 FT.18
PU/45252	058078	Service kit for N820 FT.18
PU/45254	058079	Service kit for N840 FT.18
PU/45256	057357	Service kit for N810.3 FT.18
PU/45258	057358	Service kit for N820.3 FT.18
PU/45260	057359	Service kit for N840.3 FT.18
PU/45262	057359	Service kit for N842.3 FT.18
PU/45264	028129	Baseplate for N810/820
PU/45266	028128	Baseplate for N840
PU/45268	085482	NR800 vapour trap
PU/45270	026231	NH800 condenser
PU/45272	028476	Gas Ballast for pump model N810
PU/45274	028477	Gas Ballast for pump model N820/N840
PU/45276	046380	
	/045115B	Vacuum Controller with valve, tubing, cable and junction box
PU/45278	046382	Twin vacuum controllers with valves, tubing, cables and junction box



PU/45240



PU/45244



PU/45246



# Together, making light work



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The 74 Series

Single-beam spectrophotometers.

Visible & UV/visible.

The 76 Series

Split-beam spectrophotometers.
Visible & UV/visible.



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### Adapters, reduction

Cat. No.	Socket size	Cone size
DA01	10/19	14/23
DA12	14/23	19/26
DA13	14/23	24/29
DA14	14/23	29/32
DA23	19/26	24/29
DA24	19/26	29/32
DA25	19/26	34/35
DA34	24/29	29/32
DA35	24/29	34/35
DA36	24/29	40/38
DA37	24/29	45/40
DA38	24/29	50/42
DA39	24/29	55/44
DA45	29/32	34/35
DA47	29/32	45/40
DA56	34/35	40/38
DA57	34/35	45/40
DA58	34/35	50/42



DA14



XA42





MA1/3

### Adapters, expansion

Cat. No.	Socket size	Cone size
XA10	14/23	10/19
XA21	19/26	14/23
XA31	24/29	14/23
XA32	24/29	19/26
XA41	29/32	14/23
XA42	29/32	19/26
XA43	29/32	24/29
XA52	34/35	19/26
XA53	34/35	24/29
XA54	34/35	29/32

### Adapters, multiple, two necks

Parallel.

Cat. No.	Socket size	Cone size
MA1/11	14/23	14/23
MA1/2	19/26	19/26
MA1/3	19/26	24/29
MA1/33	24/29	24/29

### Adapters, multiple, three necks

Two parallel and one at  $45^{\circ}$ .

Cat. No.	Socket size	Cone size
MA4/23	19/26	24/29



MA4/23



MF10/3B/SC

### Adapters, cone/flexible tubing

Right angle connection. With screw thread tubing connector which has a 9mm o.d. nozzle.

Cat. No.	Cone size
MF10/1B/SC	14/23
MF10/2B/SC	19/26
MF10/3B/SC	24/29
MF10/4B/SC	29/32
MF10/5B/SC	34/35
Spares FF/16202 FF/16702	Spare screw thread tubing connector PP Spare screw thread tubing connector PTFE

### Adapters, cone/screwthread

Straight. Suitable for locating plain stem thermometers.

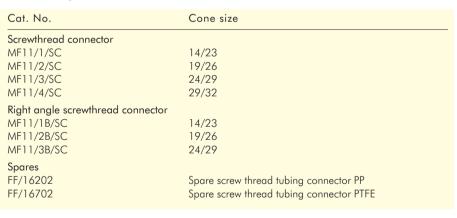
Cat. No.	Thread	Cone size
ST51/13	13	14/23
ST52/13	13	19/26
ST53/13	13	24/29
ST54/13	13	29/32
ST51/18	18	14/23
ST52/18	18	19/26
ST53/18	18	24/29
ST54/18	18	29/32
ST52/24	24	19/26
ST53/24	24	24/29



ST53/13

### Adapters, stopcock, cone/flexible tubing

GP Rotaflo key, bore 3mm. Supplied complete with screw thread which has a 9mm o.d. nozzle for tubing attachment.





MF11/3/SC

### Adapters, receiver, straight delivery

Cat. No.	Socket size
RA1/22	19/26
RA1/23	24/29



RA1/22

RA4/22

### Adapters, receiver, socket to cone

With side socket @ 15° angle.

Cat. No.	Socket size	Cone size
RA4/11 RA4/22	14/23 19/26	14/23 19/26

### Adapters, receiver, plain bends, short

Cat. No.	Socket size
RA1/01	14/23
RA1/02	19/26
RA1/03	24/29

### Adapters, receiver, plain bends, long

Cat. No.	Socket size	
RA1/11	14/23	
RA1/12	19/26	
RA1/13	24/29	



RA1/01 and RA1/13



RA2/22

### Bends, with side arm to provide vent to atmosphere

Cat. No.	Socket size	Cone size
RA2/11	14/23	14/23
RA2/22	19/26	19/26
RA2/23	19/26	24/29

### Bends, plain, socket to cone

Cat. No.	Socket size	Cone size
RA9/11	14/23	14/23
RA9/22	19/26	19/26
RA9/23	19/26	24/29
RA9/33	24/29	24/29
·	•	



RA9/22

### **Water Estimation**

Dean and Stark apparatus.

# Receivers for light entrainers

Complies with BS 756. Receivers have 19/26 socket and 24/29 cone.

Cat. No.	Capacity, ml	Grad., ml
WE6/23/2	2.0	0.05
WE6/23/7	7.5	0.10
WE6/23/10T	10.0*	0.10
WE6/23/25	25.0	0.20
*With GP Rotaflo	o stopcock.	



WE6/23/10T

### Receivers for heavy entrainers

Complies with BS 756. Receivers have a 19/26 socket and 24/29 cone.

Cat. No.	Capacity, ml	Grad., ml
WE7/23/12	12.5	0.1



WE7/23/12



MF27/3/13



MF28/3/250/SC



MF29/3/250



C1/12/SC

### Bottles



Cat. No.	Socket size	Thread
MF27/3/13	24/29	13

### Dreschel bottle heads, plain

Comply with BS 2461.

Cat. No.	Cone size
MF28/3/125/SC	24/29
MF28/3/250/SC	24/29
MF28/3/500/SC	24/29

### Dreschel bottle heads, sintered

Comply with BS 2461. Cone 24/29..

Cat. No.	Porosity	Stem length, mm
MF48/03/125	0	130
MF48/03/250	0	165
MF48/03/500	0	215
MF48/13/125	1	130
MF48/13/250	1	165
MF48/13/500	1	215
MF48/23/500	2	215

### Dreschel gas washing bottles

Cat. No.	Capacity	Socket size	
MF29/3/125	125	24/29	
MF29/3/250	250	24/29	
MF29/3/500	500	24/29	

### Condensers



With screw thread connections (except air condensers). All condensers are supplied complete with screw thread connectors (4510/02).

### Liebig

A condenser designed to give turbulent ow in the water jacket with a comparatively slow rate of ow of coolant water by use of a small annular space.

Cat. No.	Approx surface area x 10 <sup>2</sup> m <sup>2</sup>	Socket size	Cone size	Approx. effective x overall length, mm
C1/11/SC	0.60	14/23	14/23	155 x 260
C1/12/SC	1.00	19/26	19/26	208 x 340
C1/13/SC	1.00	24/29	24/29	250 x 390
C1/22/SC	2.00	19/26	19/26	395 x 530
C1/23/SC	2.00	24/29	24/29	395 x 535
Spares				
FF/16202	Spare screw thread tubing connector			
FF/16702	Spare screw thread tubing connector PTFE			

### Coil, Graham

The surface area is considerably greater than the corresponding Liebig condenser of similar dimensions. The coil condenser is extremely efficient in the reflux mode where counter-current cooling is possible.

Cat. No.	Approx surface area x 10 <sup>2</sup> m <sup>2</sup>	Socket size	Cone size	Approx. effective x overall length, mm
C3/12/SC	2.0	19/26	19/26	165 x 305
C3/13/SC	2.0	24/29	24/29	165 x 310
C3/22/SC	4.0	19/26	19/26	320 x 460
C3/23/SC	4.0	24/29	24/29	320 x 465
C3/24/SC	4.0	29/32	29/32	320 x 470
CX3/05/SC	2.0	-	34/35	160 x 320
CX3/06/SC	3.5	-	40/38	207 x 365
CX3/08/SC	2.0	-	50/42	155 x 348



CX3/06/SC

### Double surface, Davies

With increased surface area and effectiveness compared with a corresponding Liebig condenser.

Cat. No.	Approx surface area x 10 <sup>2</sup> m <sup>2</sup>	Socket size	Cone size	Approx. effective x overall length, mm
C5/11/SC	1.7	14/23	14/23	160 x 275
C5/12/SC	1.7	19/26	19/26	160 x 295
C5/13/SC	2.3	24/29	24/29	160 x 300
C5/22/SC	2.3	19/26	19/26	200 x 340
C5/23/SC	3.0	24/29	24/29	200 x 345
C5/24/SC	3.0	29/32	29/32	205 x 365
CX5/23/SC	3.0	-	24/29	205 x 350
CX5/25/SC	3.0	-	34/35	205 x 360



C5/12/SC

### Allihn

An inexpensive condenser, giving greater surface area than the corresponding Liebig type due to the bulb sections. This type is normally used under reflux.

Cat. No.	Approx surface area x 10 <sup>2</sup> m <sup>2</sup>	Socket size	Cone size	Approx. effective x overall length, mm
CX7/05/SC	1.3	-	34/35	250 x 335
CX7/06/SC	1.3	-	40/38	250 x 365
CX7/08/SC	1.5	-	50/42	250 x 365
CX7/33/SC	1.8	24/29	24/29	400 x 545



CX7/33/SC



EX5/55/100

### Extraction liquid-solid, Soxhlet extractors

To BS 2071 where applicable. Designed primarily for use with proprietary makes of paper thimble and suitable sizes are listed on page 203. Large samples may be placed directly in the extractor body.

Cat. No.	Approx surface area x 10 <sup>2</sup> m <sup>2</sup>	Socket size	Cone size	Approx. effective x overall length, mm
EX5/21	6	19/26	14/23	150
EX5/32	20	24/29	19/26	175
EX5/43	40	29/32	24/29	200
EX5/53	60	34/35	24/29	205
EX5/55	60	34/35	34/35	205
EX5/55/100	100	34/35	34/35	240
EX5/63	100	40/38	24/29	220
EX5/83	200	50/42	24/29	250
EX5/75	600	75mm*	34/35	370
EX5/105	2000	100mm*	34/35	535
* Approximat	e height is measured	from the wide end	of the cone.	



JC75F

### Adapters and clips

Items EX5/75 and EX5/105 are designed to accommodate large samples. They utilise 75mm and 100mm at flange joints and require the at socket adapters and clips listed below.

Cat. No.	Description	To fit	Socket size	Flange size, mm
DA5/75	Adapter	EX5/75	34/35	75
DA5/100	Adapter	EX5/105	34/35	100
JC75F	Clip	EX5/75	-	75
JC100F	Clip	EX5/105	-	100



JC100F

### Complete standard assemblies.

EX/12008 100 EX5/63 FR250/3S CX7/06/SC EX/12010 200 EX5/83 FR500/3S CX7/08/SC EX/12012 600 EX5/75 FR21/5S CX5/25/SC	Cat. No.	Nominal Capacity, ml	Extractor etc.	Components Flask	Condenser
DA5/75 JC75F	,		EX5/83 EX5/75 DA5/75	,	,,



EX/12012

### Flasks, round bottom, short neck

Cat. No.	Nominal cap, ml	Socket size	Approx overall height, mm	Approx. neck length, mm
FR5/OS	5	10/19	50	5
FR5/1S	5	14/23	65	15
FR10/OS	10	10/19	65	15
FR10/1S	10	14/23	70	15
FR25/1S	25	14/23	75	10
FR25/2S	25	19/26	80	15
FR25/3S	25	24/29	80	15
FR50/1S	50	14/23	90	15
FR50/2S	50	19/26	90	15
FR50/3S	50	24/29	95	15
FR50/5S	50	34/35	95	10
FR100/1S	100	14/23	105	15
FR100/2S	100	19/26	108	15
FR100/3S	100	24/29	110	15
FR100/4S	100	29/32	114	15
FR100/5S	100	34/35	112	10
FR150/2S	150	19/26	114	15
FR150/3S	150	24/29	115	15
FR150/4S	150	29/32	120	15
FR150/5S	150	34/35	118	10
FR250/1S	250	14/23	126	15
FR250/2S	250	19/26	129	15
FR250/3S	250	24/29	130	15
FR250/4S	250	29/32	135	15
FR250/5S	250	34/35	138	15
FR500/2S	500	19/26	147	15
FR500/3S	500	24/29	150	15
FR500/5S	500	34/35	166	25
FR1L/2S	1000	19/26	177	15
FR1L/3S	1000	24/29	180	15
FR1L/5S	1000	34/35	196	25
FR1L/7S	1000	45/40	201	25
FR2L/3US	2000	24/29	205 215	10 20
FR2L/3S FR2L/4S	2000 2000	24/29 29/32	224	20
			228	
FR2L/5S FR3L/3S	2000 3000	34/35 24/29	240	25 20
FR3L/5S	3000	34/35	249	25
FR4L/7S	4000	45/40	290	25
FR5L/4S	5000	29/32	270	20
FR5L/5US	5000	34/35	275	20
FR6L/7S	6000	45/40	300	25
FR10L/5S	10000	34/35	350	25
INTOL/JJ	10000	UT/ UU	550	25



Short neck

### Flasks, round bottom, medium neck

Cat. No.	Nominal cap, ml	Socket size	Approx overall height, mm	Approx. neck length, mm
FR50/3M	50	24/29	130	45
FR100/3M	100	24/29	145	45
FR150/3M	150	24/29	150	45
FR250/3M	250	24/29	165	45
FR500/3M	500	24/29	180	45



Medium neck



FR500/3U and FR2L/3US

# 250ml FF250/35

FF250/3S

### Flasks, round bottom, uniform overall height

These flasks are suitable where interchangeability of stirring equipment, gas inlet tubes etc. is required in flasks of differing capacities.

Cat. No.	Nominal cap, ml	Socket size	Approx overall height, mm	Approx. neck length, mm
FR500/3U	500	24/29	205	70
FR1L/3UM	1000	24/29	205	40
FR2L/3US	2000	24/29	205	10
FR5L/5US	5000	34/35	275	20

### Flasks, flat bottom, short neck

These flasks are not suitable for use under vacuum or pressure.

Cat. No.	Nominal cap, ml	Socket size	Approx overall height, mm	Approx. neck length, mm
FF50/2S	50	19/26	80	10
FF50/3S	50	24/29	85	10
FF100/2S	100	19/26	95	10
FF100/3S	100	24/29	100	15
FF100/4S	100	29/32	100	15
FF100/5S	100	34/35	105	15
FF150/2S	150	19/26	105	10
FF150/3S	150	24/29	110	15
FF150/5S	150	34/35	115	10
FF250/2S	250	19/26	115	10
FF250/3S	250	24/29	120	15
FF250/4S	250	29/32	125	10
FF250/5S	250	34/35	125	10
FF500/2S	500	19/26	135	15
FF500/3S	500	24/29	140	15
FF500/5S	500	34/35	155	25
FF1L/3US	1000	24/29	170	25
FF1L/5S	1000	34/35	175	25
FF2L/3S	2000	24/29	205	20
FF2L/4S	2000	29/32	210	20
FF2L/5S	2000	34/35	215	25
FF4L/7S	4000	45/40	260	25



FF500/3UM

### Flasks, flat bottom, medium neck

These flasks are not suitable for use under vacuum or pressure.

Cat. No.	Nominal cap, ml	Socket size	Approx overall height, mm	Approx. neck length, mm
FF100/3M	100	24/29	130	45
FF150/3M	150	24/29	140	45
FF250/3M	250	24/29	150	45
FF500/3UM	500	24/29	170	45
FF1L/3M	1000	24/29	190	45

### Flasks, round bottom, two necks

Centre neck and one angled side neck. The axis of the side neck meets the axis of the centre neck at the bottom of the flask. The 'septum' side necks have a parallel o.d. of 19mm and i.d. of 15.4mm and are designed for use with suba-seals allowing safe liquid introduction by syringe.

Cat. No.	Nominal cap, ml	Socket size	Approx overall height, mm	Approx. neck length, mm
FR10/1S/SEP	10	14/23	Septum	60
FR25/1S/SEP	25	14/23	Septum	77
FR25/1S/1A	25	14/23	14/23	77
FR50/1S/1A	50	14/23	14/23	89
FR100/3S/1A	100	24/29	14/23	110
FR100/3S/2A	100	24/29	19/26	110
FR250/3S/1A	250	24/29	14/23	130
FR250/3S/2A	250	24/29	19/26	130
FR500/3S/1A	500	24/29	14/23	150
FR500/3S/2A	500	24/29	19/26	150
FR1L/3S/1A	1000	24/29	14/23	180
FR1L/3S/2A	1000	24/29	19/26	180
FR2L/5S/2A	2000	34/35	19/26	230



FR25/1S/1A

### Flasks, round bottom, three necks

Centre neck and two angled side necks. The axes of the side necks meet the axis of the centre neck at the bottom of the flask.

Cat. No.	Nominal cap, ml	Centre x side socket	Approx overall height, mm
FR25/1S/11A	25	14/23 x 14/23	77
FR25/2S/11A	25	19/26 x 14/23	80
FR50/1S/11A	50	14/23 x 14/23	89
FR50/2S/11A	50	19/26 x 14/23	92
FR50/2S/22A	50	19/26 x 19/26	92
FR100/2S/11A	100	19/26 x 14/23	110
FR100/3S/11A	100	24/29 x 14/23	110
FR100/3S/22A	100	24/29 x 19/26	110
FR250/2S/22A	250	19/26 x 19/26	130
FR250/3S/11A	250	24/29 x 14/23	130
FR250/3S/22A	250	24/29 x 19/26	130
FR250/4S/11A	250	29/32 x 14/23	135
FR250/4S/22A	250	29/32 x 19/26	135
FR500/3S/11A	500	24/29 x 14/23	150
FR500/3S/22A	500	24/29 x 19/26	150
FR500/4S/22A	500	29/32 x 19/26	155
FR1L/3S/22A	1000	24/29 x 19/26	180
FR1L/4S/22A	1000	29/32 x 19/26	185
FR1L/4S/44A	1000	29/32 x 29/32	185
FR1L/5S/22A	1000	34/35 x 19/26	195
FR2L/3US/22A	2000	24/29 x 19/26	205
FR2L/5S/22A	2000	34/35 x 19/26	230
FR3L/5S/22A	3000	34/35 x 19/26	250



FR500/3S/22A

### Flasks, round bottom, three necks

All parallel. Packs of 5.

Cat. No.	Nominal cap, ml	Centre x side socket	Approx overall height, mm
FR250/3S/22P	250	24/29 x 19/26	130
FR250/4S/11P	250	29/32 x 14/23	135
FR500/4S/22P	500	29/32 x 19/26	155
FR1L/3S/22P	1000	24/29 x 19/26	180
FR1L/4S/22P	1000	29/32 x 19/26	185
FR1L/5S/22P	1000	34/35 x 19/26	195
FR1L/5S/33P	1000	34/35 x 24/29	195
FR2L/3US/22P	2000	24/29 x 19/26	210
FR2L/4S/22P	2000	29/32 x 19/26	220
FR2L/4S/44P	2000	29/32 x 29/32	218
FR2L/5S/22P	2000	34/35 x 19/26	230
FR2L/5S/33P	2000	34/35 x 24/29	230
FR2L/7S/44P	2000	45/40 x 29/32	235
FR3L/5S/22P	3000	34/35 x 19/26	250
FR3L/5S/33P	3000	34/35 x 24/29	250
FR4L/7S/44P	4000	45/40 x 29/32	270
FR5L/5US/33P*	5000	34/35 x 24/29	275
FR6L/7S/44P *Sold singly	6000	45/40 x 29/32	300



FR1L/3S/22P



FK300/3L

### Flasks, Kjeldahl.

Cat. No.	Nominal cap, ml	Socket size	Overall . height, mm
FK300/3L	300	24/29	290
FK500/3L	500	24/29	300
FK800/3L	800	24/29	320



FIB500/3

# Flasks, lodine

Items FIB250/3 and FIB500/3 comply with BS 2735.

Cat. No.	Nominal cap, ml	Joint Size, ml	Min cup. capacity, ml
FIB250/3	250	24/29	20
FIB250/4	250	29/32	20
FIB500/3	500	24/29	20
FIB500/4	500	29/32	20
Accessory stoppers	s to ft		
SIB24	-	24/29	-
SIB29	-	29/32	-

### Flasks, conical, Erlenmeyer

Standard wall. These asks are intended for general purpose use.

	Cat. No.	Nominal cap, ml	Socket size	Overall height, mm	Approx. dia., mm
	FE10/1	10	14/23	60	32
	FE25/1	25	14/23	70	42
	FE25/2	25	19/26	75	42
	FE50/2	50	19/26	85	51
	FE50/3	50	24/29	90	51
	FE100/1	100	14/23	105	64
	FE100/2	100	19/26	105	64
	FE100/3	100	24/29	105	64
	FE150/2	150	19/26	115	73
	FE150/3	150	24/29	115	73
	FE250/2	250	19/26	135	85
	FE250/3	250	24/29	135	85
	FE250/4	250	29/32	128	85
	FE250/5	250	34/35	135	85
	FE500/2	500	19/26	170	105
	FE500/3	500	24/29	170	105
	FE500/4	500	29/32	165	105
	FE500/5	500	34/35	165	105
	FE1L/3	1000	24/29	210	131
	FE1L/4	1000	29/32	210	131
	FE1L/5	1000	34/35	205	131
	FE2L/4	2000	29/32	275	166
	FE2L/5	2000	34/35	260	166



FE250/3

## Reaction flasks and lids



### Wide neck reaction flasks

A range of spherical\* asks from semi-micro to pilot plant scale fitted with large diameter at ange joints. This design has several advantages over conventional conical jointed flasks.

- Lids can be easily detached
- Large stirrers can be accommodated
- Vessels can be easily cleaned
- Quick and easy addition and removal of solids or resinous material
- Flasks and lids using the same size joints are fully interchangeable

Cat. No.	Nominal cap, ml	Flange bore, mm	Overall height, mm			
FR250F	250	75	90			
FR500F	500	75	115			
FR700F	700*	100	135			
FRILF	1000	100	155			
FR2LF	2000	100	185			
FR3LF	3000	100	210			
FR4LF	4000	100	225			
FR5LF	5000	100	245			
FR6LF	6000	100	260			
FR10LF	10000	100	320			
FR20LF	20000	100	400			
*FR700F is cyli	*FR700F is cylindrical shaped and fits a 500ml heating mantle.					



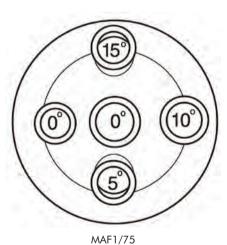
FR5LF

### Multi-socket/flat flange lids

A series of multi-socket lids for use with the Quickfit range of wide neck reaction flasks and culture vessels. They allow introduction of a great variety of standard Quickfit equipment for stirring, temperature measurement, aeration and general distillation procedures. The parallel side neck can be fitted with a multiple adapter so that larger dropping funnels can be used.

Lids with a single socket neck are of use where simple extraction, refluxing or mixing only are required.

Cat. No.	Flange	Centre	Parallel	Sid	e sockets	
	bore, mm	socket		5°	10°	15°
MAF1/75	75	19/26	14/23	19/26	19/26	19/26
DA5/75	75	34/35	-	-	-	-
MAF2/2	100	19/26	19/26	2x19/26	19/26	-
MAF2/32	100	19/26	19/26	24/29	19/26	-
MAF2/41	100	19/26	14/23	14/23	14/23	29/32
MAF2/52	100	19/26	19/26	19/26	19/26	34/35
MAF3/52	100	24/29	19/26	19/26	19/26	34/35
DA4/100	100	29/32	-	-	-	-
MAF4/41	100	29/32	14/23	14/23	14/23	29/32
DA5/100	100	34/35	-	-	-	-
MAF5/2	100	34/35	19/26	-	2x19/26	-



.,.....,,,

### Clips for flanged flasks and lids

To fit vessels with ange bores as indicated.

Cat. No.	Description
JC75F	For 75mm bore flanges
JC100F	For 100mm bore flanges



JC75F in position



FB250/3SC

### Filter flasks, Buchner filter flasks

Features a unique 'push in' connector which allows tubing to be fitted easily, quickly and in complete safety. Tubing is attached to the plastic connector which is then simply inserted into a socket on the side of the ask and tightened to give a rm vacuum seal. This system offers major benefits over traditional glass side arm connectors as it is:

- Safe: Less risk of breakage and personal injury.
- Easy to use: Simply push in connector and tighten screw cap
- Effective: Provides a firm leak-free seal.
- Economical: Risk of breakage and cost of replacement greatly reduced.
- Durable: Connector components are chemically resistant and are autoclavable.

Cat. No.	Nominal cap, ml	Socket size	Overall height, mm	Approx. dia., mm
FB100/2SC	100	19/26	105	70
FB100/3SC	100	24/29	105	70
FB250/3SC	250	24/29	140	85
FB250/4SC	250	29/32	145	85
FB500/3SC	500	24/29	172	105
FB500/4SC	500	29/32	172	105
FB1L/3SC	1000	24/29	220	135
FB1L/4SC	1000	29/32	220	135



FC7/23

### Fractionating columns, plain

Borosilicate glass with ground-glass joints. Designed for use with various types of column packing e.g. Raschig rings.

Cat. No.	Approx. overall length, mm	Approx. surface area x 10-2m2	Approx. effective length, mm	Approx. overall height, mm	Cone size	Socket size
FC7/23	365	2	250	365	24/29	24/29
FC7/43	615	4	500	615	24/29	24/29



### Column packing

Packing, for use with above plain fractionating columns.

Manufactured from borosilicate glass for contamination-free performance.

Available as Raschig rings in 1 litre bags.

Raschig rings; Short lengths of glass tubing.

Cat. No.	Approx. dia, mm	Approx. length, mm	Description
FC8/09	9	9	Raschig rings



EX13/26

### Packing supports

Packing support, for Raschig rings within plain fractionating columns. Support is passed through socket of column and rests at the constriction above the cone. Manufactured from chemically resistant borosilicate glass.

Cat. No.	Diameter, mm	To t socket size
EX13/12	16	19/26
EX13/23	21	24/29
EX13/25	29	34/35
EX13/26	35	40/38

### Fractionating columns, Vigreux

Horizontal indentations ensure intimate vapour and liquid contact. Angled indentations redistribute liquid from walls to centre of column.

Cat. No.	Approx. effective length, mm	Cone size	Sets of points	Socket size
FC3/13	360	24/29	7	24/29
FC3/23	600	24/29	12	24/29
FC3/14	360	29/32	7	29/32

### Joint clips

For securing conical and spherical glass joints. GC and GS clips have PTFE-encapsulated steel springs and are highly resistant to chemical attack and can be used up to  $250^{\circ}$ C. KC and KS clips are DELRIN® polyacetal, suitable for use up to  $80^{\circ}$ C and with most chemicals except halogen gases and acids.

Cat. No.	Cat. No.	Joint size	Colour code
DELRIN®	PTFE		
For conical	glass joints		
KC10	GC10	10/19	Mint
KC12	GC12	12/21	Violet
KC14	GC14	14/23	Yellow
KC19	GC19	19/26	Blue
KC24	GC24	24/29	Green
KC29	GC29	29/32	Red
KC34	GC34	34/35	Orange
KC40	GC40	40/38	Ochre
KC45	GC45	45/40	Brown
For spherico	ıl glass joints		
KS13	-	S13	Violet
KS19	-	S19	Blue
KS29	-	S29	Red
KS35	-	S35	Orange
Delrin® is a 1	registered trademark of	DuPont Ltd.	



FC3/13



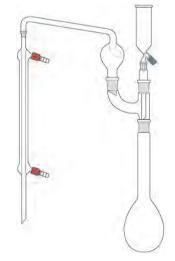
GC series

### Nitrogen (Kjeldahl)

### Macro Kjeldahl distillation assembly

This assembly uses the same ask for distillation as for the digestion stage and conversion from one stage to the other can be done very quickly.

Cat. No.	Description	Socket size	Cone size
280MC	Complete assembly	-	-
Components:			
C1/12/SC	Condenser	19/26	19/26
D3/12	Dropping funnel, 50ml	-	19/26
FK500/3L	Kjeldahl flask, 500ml	24/29	-
MA1/3	Multiple adapter	19/26	24/29
RA1/22	Delivery adapter	19/26	-
SH7/12	Splash head	19/26	19/26



280MC

### Markham semi-micro distillation unit

To BS 1428, Part B2. Reference: Markham, R., Biochem., 1., 1942, 36, 790.

Cat. No.	Description	Socket or cup size	Cone or ball size
46MC	Complete assembly	See below	See below
Component part	s (spares)		
JC19	Spherical joint clip	-	-
MC1/F19 /SC	Condenser	S19	-
MC46/SC	Markham still body		
25ml capacity	10/19	S19	



46MC



### Dropping funnels

Cylindrical, stem with cone, glass stopcock or GP Rotaflo stopcock.

Cat. No.	Nominal capacity, ml	Cone & Socket size			
Glass stopcock					
D1/11	50	14/23			
D1/21	100	14/23			
D1/22	100	19/26			
D1/42	500	19/26			
D1/62	1000	19/26			
GP Rotaflo stopcock					
D1/11GP	50	14/23			
D1/21GP	100	14/23			
D1/22GP	100	19/26			
D1/32GP	250	19/26			
D1/42GP	500	19/26			
D1/62GP	1000	19/26			

# Soomi soomi

D2/42

### Separating funnels

Pear shape, glass or GP Rotaflo stopcock. Stem with cone.

Cat. No.	Nominal capacity, ml	Cone & Socket size		
Glass stopcock				
D2/01	25	14/23		
D2/11	50	14/23		
D2/12	50	19/26		
D2/21	100	14/23		
D2/22	100	19/26		
D2/31	250	14/23		
D2/32	250	19/26		
D2/42	500	19/26		
D2/43	500	24/29		
D2/62	1000	19/26		



D3/32

### Dropping funnels

Open top stem with cone, GP Rotaflo stopcock.

Cat. No.	Nominal capacity, ml	Cone & Socket size
D3/12	50	19/26
D3/22	100	19/26
D3/32	250	19/26

### Stillheads

Cat. No.		one size
	Flask	Condenser
Recovery bends, sloping		
SH1/11	14/23	14/23
SH1/22	19/26	19/26
SH1/23	24/29	19/26
SH1/33	24/29	24/29



SH1/22

### Stillheads, plain

With thermometer sockets.

Cat. No.	Cor	ne size	Socket size
	Flask	Condenser	
SH4/1	14/23	14/23	14/23
SH4/22	19/26	19/26	14/23
SH4/2	19/26	19/26	19/26
SH4/23	24/29	19/26	14/23
SH4/33	24/29	24/29	14/23
SH4/24	29/32	19/26	14/23
SH4/44	29/32	29/32	14/23



SH4/23

### Splash head adapter

Cat. No.	Socket size	Cone size	
SH17/23	19/26	24/29	



SH17/23

### Splash heads

Cat. No.	Cone size	
	Flask	Condenser
Sloping		
SH7/02	19/26	19/26
SH7/03	24/29	19/26
SH7/43	24/29	24/29
Splash heads, vertical		
SH7/12	19/26	19/26
SH7/13	24/29	19/26
SH7/53	24/29	24/29



SH7/02



SB stoppers

### Stoppers

Hollow blown to reduce weight.

Cat. No.	Cone size
SB10	10/19
SB12	12/21
SB14	14/23
SB19	19/26
SB24	24/29
SB29	29/32
SB34	34/35

SH4A

### Fixed immersion thermometer pocket

Closed end, made to t Quickfit stillheads. It will take a normal unjointed laboratory thermometer.

Cat. No.	Cone size	Approx. stem length, mm
SH4A	14/23	45

### Test tubes

With Quickfit® precision ground joint. Accepts stoppers on page 405. All dimensions and capacities are approximate.

Cat. No.	Socket size	Overall, mm	Dia., mm	Cap., ml
MF24/0/4	10/19	100	14	5
MF24/12/4	12/21	100	17	10
MF24/1	14/23	100	19	11
MF24/1/5	14/23	125	19	15
MF24/1/6	14/23	150	19	19
MF24/2	19/26	100	23	19
MF24/2/6	19/26	150	23	31
MF24/3	24/29	150	29	54
MF24/3/8	24/29	200	29	75
MF24/5	34/35	250	41	195



MF24/3



BC24

### Centrifuge tubes

Each tube is marked with its weight to the nearest 0.1g to enable tubes of similar weight to be selected from any batch. Max RCF 3000.

Cat. No.	Socket size	Overall, mm	Dia., mm	Cap., ml	
BC24/C14T	14/15	17 to 17.3	115	10	
BC24/C24R	24/20	28 to 29	115	30	



MF/23

### Drying, angled

Cat. No.	Cone size
MF23/1	14/23
MF23/2	19/26
MF23/3	24/29
MF23/4	29/32

# Racks and storage

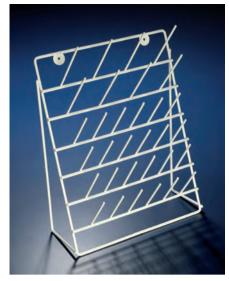
#### Draining rack, epoxy coated



Azlon

- High quality draining racks suitable for use with plastic and glass labware.
- Made of chemically resistant epoxy coated steel.
- There are eight pegs 110 mm long and twenty four pegs 80 mm in length.
- Overall dimensions of the rack are 410 x 300 mm.
- Can be used in various formats see ordering information for details.
- Rack with free-standing support is shown.

Cat. No.	Code	Description
DR/16606	RWK070	Rack only
DR/16614	RWK070FS	Rack with integral free standing support



DR/16614

#### Draining rack, wall mountable, polystyrene

- Lightweight easy to assemble polystyrene draining racks designed to be wall mounted
- Pegs simply slot into place on the back board and are spaced to allow various sizes of labware to fit
  on to the rack
- Water is collected in the trough at the base of the rack and drains away via a rubber tube, which can be directed into a nearby sink or container.
- Supplied with wall mounting accessories.
- A set of narrower pegs for test tubes, volumetric flasks, etc. is also available

Cat. No.	Code	Description	Peg I x o.d.	Rack h x w mm
DR/16602	WRP001P	Rack, including 72 pegs, trough and draining tube	120 x 16	650 x 450
DR/16604	WRP002P	Set of 11 narrow pegs	100 x 6	



DR/16602

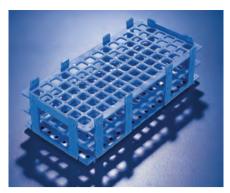
#### Multistand rack

Multistand racks, Polyamide, 25 place for tubes with a diameter 10 to 17 mm. Several different sized tubes can be accommodated safely at the same time via the patented holder system.

Cat. No.	Description
RA/90010	Multistand rack, 25 place for tubes 10 to 17mm diameter



RA/90010



TR/16212

### Test tube racks

### Test tube rack, self assembly, PP



- Economical and sturdy test tube racks
- Supplied in space saving flat packs of 5 racks for self assembly
- Wide range of sizes for tubes from 13 to 31 mm diameter plus micro-centrifuge tubes
- Autoclavable and sink in water baths
- Alpha numeric place coding

#### 1.5 ml Microcentrifuge tube racks

Cat. No.	Code	Tube Size (O.D) mm	No. of places	Size of rack (lxwxh) mm	Pack size	
TR/16242	RPW001P	White	128	265x126x38	5	
TR/16244	RPB001P	Blue	128	265x126x38	5	



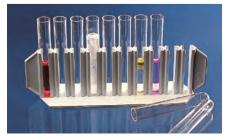
TR/462

#### Test tube rack, PP

## **Kartell**LABWARE

Large capacity racks. Autoclavable at 121°C for 20 mins. Can be used dry and in water baths. Will not float. Special design allows samples to be incubated at same temperature. Can be used in freezers without deforming or becoming brittle. Will not rot, rust or deform. Alpha numerical grid reference on top tier for easy identification of samples. Colour coded. Stackable

Cat. No.	Code	Colour	Hole dia, mm	Hole format
TR/46202	00564-03	White	13	6 x 15
TR/46204	00564-04	Blue	13	6 x 15
TR/46206	00564-06	Yellow	13	6 x 15
TR/46208	00564-10	Red	13	6 x 15
TR/46212	00565-03	White	16	5 x 12
TR/46214	00565-04	Blue	16	5 x 12
TR/46216	00565-06	Yellow	16	5 x 12
TR/46218	00565-10	Red	16	5 x 12
TR/46222	00566-03	White	20	4 x 10
TR/46224	00566-04	Blue	20	4 x 10
TR/46226	00566-06	Yellow	20	4 x 10
TR/46228	00566-10	Red	20	4 x 10
TR/46232	00567-03	White	25	4 x 10
TR/46234	00567-04	Blue	25	4 x 10
TR/46236	00567-06	Yellow	25	4 x 10
TR/46238	00567-10	Red	25	4 x 10
TR/46242	00568-03	White	30	3 x 8
TR/46244	00568-04	Blue	30	3 x 8
TR/46246	00568-06	Yellow	30	3 x 8
TR/46248	00568-10	Red	30	3 x 8



TR/46352

#### Test tube racks, PP

**Kartell**LABWARE

Specifically designed for titration work. The test tubes are held in position by the upstand support. The whole contents of the test tube are visible at all times. Can withstand temperatures up to 120°C. Can be used in water baths.

Cat. No.	Code	Hole dia.,	No. of places	Dimensions, mm
TR/46352	130	16 mm	10	55 x 220 x 62.5
TR/46354	131	18 mm	9	55 x 220 x 65
TR/46356	135	20 mm	8	54 x 220 x 65.5

racks, test tube

#### Test tube racks, PP

**Kartell** ABWARE

Lightweight, unbreakable traditional pattern test tube racks. Autoclavable.

Cat. No.	Code	No. of tiers	Hole Dia.	Array	Size, mm
TR/46462	370	2	18 mm	1x10	250 x 60 x 74
TR/46464	559	3	12 mm	2x6	190 x 60 x 80
TR/46466	560	3	20 mm	2x6	190 x 60 x 80
TR/46468	562	3	20 mm	2x12	375 x 65 x 95



TR/4646

#### Microcentrifuge tube racks, floating

**NALGENE** 

Thaw, cool and incubate samples at elevated or reduced temperatures. Racks will float with a full load of filled tubes. Tubes are supported below the lip. On bench top, rack legs prevent bottom of tubes from touching bench surface. Excellent temperature resistance from -70°C to 100°C. Each hole has moulded in letters and numbers for easy sample identification.

NB Nalgene Polypropylene racks are not autoclavable.

Cat. No.	Code	Tube sizes, ml	Array	Pk Qty
White square	e rack 103 x 103 x 5974-0404	65mm 0.5, 1.0, 1.2, 1.5 and 2.0	4x4	4
	rack 66mm diame 5974-4015	eter 1.0, 1.2, 1.5 and 2.0	8	4
	rack <b>96</b> mm diame 5974-1015	eter 1.0, 1.2, 1.5 and 2.0	20	4



TR/360

#### Microtube rack, Acrylic

Rack for 5ml Microcentrifuge tubes, 20 place, acrylic, houses all major brands of 5mL tubes. The tubes sit upright and are supported at two levels in the rack. The crystal clear colour of the rack allows for easy sample viewing.

Cat. No.	Description
TR/12000	Rack, Microcentrifuge tube, acrylic, 20 x 5ml



TR/12000

## Microtube rack, reversible, 96 place

Autoclavable polypropylene rack has 96 wells for  $0.5 \, \text{ml}$  microcentrifuge tubes on one side and 96 wells for  $1.5/2.0 \, \text{ml}$  microcentrifuge tubes on the other side. Racks are arranged in standard  $8 \times 12$  array. Handy lid snaps into place via tabs on each end of rack.  $0.5 \, \text{ml}$  wells are separated by moulded-in grid lines, making them easier to see. Raised rings around the  $1.5/2.0 \, \text{ml}$  wells make tubes easier to remove. Packs of  $5.0 \, \text{ml}$  The assorted pack contains one of each rack: blue, green, pink, yellow, and orange. Overall dimensions  $246 \times 121 \times 50 \, \text{mm}$ .

Cat. No.	Description
TR/91002	Rack, reversible, 96 position, natural
TR/91004	Rack, reversible, 96 position, blue
TR/91006	Rack, reversible, 96 position, green
TR/91008	Rack, reversible, 96 position, pink
TR/91010	Rack, reversible, 96 position, yellow
TR/91012	Rack, reversible, 96 position, assorted



TR/910



TR/36

### Test tube peg racks, filled PP

**NALGENE** 

Suitable for sample collection tubes, reaction tubes or similar-diameter tubes. Will not float in a water bath. Can be used to dry inverted tubes. Also can be used to hold and dry electrophoresis and chromatography plates. Chemical resistant. (Autoclavable)

Cat. No.	Code	Tube sizes	(lxwxd), mm	Array	Pk Qty				
White racks	White racks								
TR/36040	5977-0013	10-13 mm	179x127x64	8x12	2				
TR/36042	5977-0017	14-17 mm	187x105x70	5x10	2				
Blue racks									
TR/36340	5977-0313	10-13 mm	179x127x64	8x12	2				
TR/36342	5977-0317	14-17 mm	187x105x70	5x10	2				

## Test tube racks, Unwire<sup>™</sup>, ResMer<sup>™</sup>

#### **NALGENE**

Unwire test tube racks securely hold a full load of test tubes or centrifuge tubes in the following popular sizes: 13, 16, 20, 25 and 30mm. Up to 72 of the smaller diameter tubes can be held at once. All sizes are moulded in six bright, permanent colours. ResMer™ manufacturing technology makes these racks keep their bright colours longer. Useful in a wide temperature range with good chemical resistance. (Autoclavable).



TR/36 Unwire

Cat. No. Code  White racks  TR/36002 5970-00  TR/36004 5970-00  TR/36006 5970-00  TR/36010 5970-00  Orange racks  TR/36102 5970-01  TR/36104 5970-01  TR/36106 5970-01  TR/36108 5970-01  TR/36108 5970-01  TR/36108 5970-01  TR/36204 5970-02  TR/36204 5970-02  TR/36208 5970-02  TR/36208 5970-02  TR/36304 5970-02  TR/36304 5970-03  TR/36304 5970-03  TR/36308 5970-03  TR/36404 5970-04  TR/36404 5970-04  TR/36404 5970-04	013 13 016 16 020 20 025 25 030 30 113 13 116 16 120 20 125 25 130 30 213 13 216 16 220 20 225 25	20 24 25 30 28 20 24 25 30 28 20 24 25 30 28	00x102x57	Array  6x12 6x12 4x10 4x10 3x8  6x12 4x10 4x10 3x8  6x12 4x10 4x10 3x8
TR/36002 5970-00 TR/36004 5970-00 TR/36006 5970-00 TR/36008 5970-00 TR/36010 5970-00  Orange racks TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36108 5970-01 TR/36108 5970-01 TR/36204 5970-02 TR/36204 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36304 5970-02 TR/36304 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03	016     16       020     20       025     25       030     30       113     13       116     16       120     20       125     25       130     30       213     13       216     16       220     20       225     25       25     25	24 25 30 28 20 24 25 30 28 20 24 25 30 28	#8x127x70	6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10 4x10
TR/36004 5970-00 TR/36006 5970-00 TR/36008 5970-00 TR/36010 5970-00 Orange racks TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 TR/36204 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36208 5970-02 TR/36304 5970-02 TR/36304 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03	016     16       020     20       025     25       030     30       113     13       116     16       120     20       125     25       130     30       213     13       216     16       220     20       225     25       25     25	24 25 30 28 20 24 25 30 28 20 24 25 30 28	#8x127x70	6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10 4x10
TR/36006 5970-00 TR/36008 5970-00 TR/36010 5970-00 Orange racks TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 TR/36202 5970-02 TR/36204 5970-02 TR/36204 5970-02 TR/36208 5970-02 TR/36208 5970-02 TR/36304 5970-02 TR/36304 5970-02 TR/36304 5970-03 TR/36304 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03	020     20       025     25       030     30       113     13       116     16       120     20       125     25       130     30       213     13       216     16       220     20       225     25       25     25	25 30 28 20 24 25 30 28 20 24 25 30 28	50x102x83 20x121x92 23x108x83 30x102x57 48x127x70 50x102x83 20x121x92 23x108x83 30x102x57 48x127x70 650x102 x83 20x102x57 20x10x57	4x10 4x10 3x8 6x12 6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10
TR/36008 5970-00 TR/36010 5970-00 Orange racks TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36304 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03	025     25       030     30       113     13       116     16       120     20       125     25       130     30       213     13       216     16       220     20       225     25       25     25	30 28 20 24 25 30 28 20 24 25 30 28	00x121x92 33x108x83 00x102x57 48x127x70 60x102x83 00x121x92 233x108x83 00x102x57 68x127x70 60x102 x83 00x121x92 233x108x83	4x10 3x8 6x12 6x12 4x10 4x10 3x8 6x12 4x10 4x10
TR/36010 5970-00 Orange racks TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36300 5970-03 TR/36300 5970-03 TR/36300 5970-03 TR/36300 5970-03 TR/36300 5970-03 TR/36300 5970-03	30       30       30       30       30       31       31       41       420       20       25       25       25       30       30       213       214       16       220       225       25       25	28 20 24 25 30 28 20 24 25 30 28	33x108x83	3x8 6x12 6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10
Orange racks TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36310 5970-03 TR/36308 5970-03	113 13 116 16 120 20 125 25 130 30 213 13 216 16 220 20 225 25	20 24 25 30 28 20 24 25 30 28	00x102x57	6x12 6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10
TR/36102 5970-01 TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36402 5970-04 TR/36404 5970-04	116     16       120     20       125     25       130     30       213     13       216     16       220     20       225     25	24 25 30 28 20 24 25 30 28	#8x127x70	6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10
TR/36104 5970-01 TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	116     16       120     20       125     25       130     30       213     13       216     16       220     20       225     25	24 25 30 28 20 24 25 30 28	#8x127x70	6x12 4x10 4x10 3x8 6x12 6x12 4x10 4x10
TR/36106 5970-01 TR/36108 5970-01 TR/36110 5970-01 Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	20 20 25 25 30 30 213 13 216 16 220 20 225 25	25 30 28 20 24 25 30 28	50x102x83 20x121x92 233x108x83 30x102x57 48x127x70 50x102 x83 20x121x92 233x108x83	4x10 4x10 3x8 6x12 6x12 4x10 4x10
TR/36108 5970-01 TR/36110 5970-01 TR/36110 5970-01 Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	25 25 30 30 213 13 216 16 220 20 225 25	30 28 20 24 25 30 28	00x121x92 33x108x83 00x102x57 48x127x70 60x102 x83 00x121x92 233x108x83	4x10 3x8 6x12 6x12 4x10 4x10
TR/36110 5970-01 Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36308 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	213 13 216 16 220 20 225 25	28 20 24 25 30 28	33x108x83	3x8 6x12 6x12 4x10 4x10
Yellow racks TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	213 13 216 16 220 20 225 25	20 24 25 30 28	00x102x57	6x12 6x12 4x10 4x10
TR/36202 5970-02 TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	216       16         220       20         225       25	24 25 30 28	18x127x70 6 50x102 x83 2 00x121x92 2 33x108x83 3	6x12 4x10 4x10
TR/36204 5970-02 TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	216       16         220       20         225       25	24 25 30 28	18x127x70 6 50x102 x83 2 00x121x92 2 33x108x83 3	6x12 4x10 4x10
TR/36206 5970-02 TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	220 20 225 25	25 30 28	50x102 x83 4 00x121x92 4 33x108x83 3	4x10 4x10
TR/36208 5970-02 TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	225 25	30 28	00x121x92	4x10
TR/36210 5970-02 Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04		28	33x108x83	
Blue racks TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	230 30			3x8
TR/36302 5970-03 TR/36304 5970-03 TR/36306 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04				
TR/36304 5970-03 TR/36306 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04				
TR/36306 5970-03 TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	313 13	20	00x102x57	6x12
TR/36308 5970-03 TR/36310 5970-03 Green racks TR/36402 5970-04 TR/36404 5970-04	316 16	24	18x127x70	6x12
TR/36310 5970-03 <b>Green racks</b> TR/36402 5970-04 TR/36404 5970-04	320 20	25	50x102x83	4x10
Green racks TR/36402 5970-04 TR/36404 5970-04	325 25	30	00x121x92	4x10
TR/36402 5970-04 TR/36404 5970-04	30	28	33x108x83	3x8
TR/36404 5970-04				
		20	00x102x57	6x12
TD /0 / 40 / FO70 O/	116 16	24	18x127x70	6x12
TR/36406 5970-04	120 20	25	50x102x83	4x10
TR/36408 5970-04	125 25	30	00x121x92	4x10
TR/36410 5970-04	130 30	28	33x108x83	3x8
Red racks				
TR/36502 5970-05	513 13	20	00x102x57	6x12
TR/36504 5970-05	516 16	24	18x127x70	6x12
TR/36506 5970-05	520 20	25	50x102x83	4x10
TR/36508 5970-05	525 25	30	00x121x92	4x10
TR/36510 5970-05	125 25	28	33x108x83	3x8

More space-efficient than full-size test tube racks. Fit easily in ice or water baths and won't float. All the features of full-size Unwire test tube racks. ResMer<sup>TM</sup> manufacturing technology makes these racks keep their bright colours longer. Useful in a wide temperature range with good chemical resistance. (Autoclavable).

Cat. No.	Code	Tube sizes	(lxwxd), mm	Array
White racks				
TR/36012	5972-0013	13 mm	102x102x56	6x6
TR/36014	5972-0016	16 mm	126x126x68	6x6
TR/36016	5972-0020	20 mm	128x103x83	4x5
TR/36018	5972-0025	25 mm	122x122x75	4x4
TR/36020	5972-0030	30 mm	109x109x84	3x3
Blue racks				
TR/36312	5972-0313	13 mm	102x102x56	6x6
TR/36314	5972-0316	16 mm	126x126x68	6x6
TR/36316	5972-0320	20 mm	128x103x83	4x5
TR/36318	5972-0325	25 mm	122x122x75	4x4
TR/36320	5972-0330	30 mm	109x109x84	3x3
Green racks				
TR/36412	5972-0413	13 mm	102x102x56	6x6
TR/36414	5972-0416	16 mm	126x126x68	6x6
TR/36416	5972-0410	20 mm	128x103x83	4x5
TR/36420	5972-0430	25 mm	109x109x84	3x3
·	3972-0430	23 mm	109X109X04	SXS
Red racks				
TR/36512	5972-0513	13 mm	102x102x56	6x6
TR/36514	5972-0516	16 mm	126x126x68	6x6
TR/36516	5972-0520	20 mm	128x103x83	4x5
TR/36520	5972-0530	25 mm	109x109x84	3x3



TR/36 Unwire

#### Test tube stands, wooden, plain

Hardwood with plastic end supports. Packed flat for transport and storage.

Cat. No.	Number of holes x size
TR/47002	6 x 22 mm
TR/47004	12 x 22 mm
TR/47006	6 x 32 mm
TR/47008	2 x 32 mm & 4 x 22 mm
110,47000	2 x 32 mm & 4 x 22 mm

TR/4700 and TR/4701

#### Test tube stands, wooden, with drying pegs

Hardwood with plastic end supports.

Cat. No.	Number of holes x size
TR/47012	6 x 22 mm
TR/47014	12 x 22 mm
TR/47018	2 x 32 mm & 4 x 22 mm

#### Test tube racks

# Clifton Range

Test tube racks suitable for use with Clifton baths. Made of high grade stainless steel. Overall dimensions of rack: 270mm long x 70mm wide, height to top of lifting handle: 138mm. Max number of racks per bath:-

Bath size 4 litre=1 rack, 8 litre=2 racks, 14 litre=4 racks, 22/28 litre=6 racks

Cat. No.	Code	Description
BW/85250	6872	Test tube rack, stainless steel, 36 holes x 13mm dia
BW/85252	6870	Test tube rack, stainless steel, 26 holes x 17mm dia
BW/85254	6873	Test tube rack, stainless steel, 18 holes x 19mm dia
BW/85256	6871	Test tube rack, stainless steel, 16 holes x 26mm dia
BW/85258	6900	Test tube rack, stainless steel, 12 holes x 32mm dia



BW/85250



TR/84002



TR/930



ST/13002



RF/25100



RF/25120

#### Test tube rack, Z pattern, aluminium

Z pattern test tube rack No of Holes x Diameter (mm) 8 x 13mm, 6 x 19mm and 5 x 28mm. Height 76mm x Length 203mm x Width 114mm.

Cat. No.	Description
TR/84002	Z pattern test tube rack

#### Test tube racks, nylon coated mild steel

Cat. No.	Tube Size	Format	
TR/93002	13mm	4 x 6	
TR/93004	13mm	3 x 12	
TR/93006	16mm	3 x 4	
TR/93008	16mm	4 x 6	
TR/93010	16mm	3 x 12	
TR/93012	20mm	3 x 6	
TR/93014	20mm	3 x 12	
TR/93016	25mm	3 x 4	
TR/93018	Universal bottles	2 x 6	

#### Stands, petri dish

- Holds up to six 90mm petri dishes
- Manufactured from epoxy-coated steel
- Autoclavable
- Ideal for small batch incubation and moving samples

Cat. No.	Code	Colour
ST/13002	SWP062	White

#### Refractometers

#### Refractometer, Kern



Azlon

A range of economically priced refractometers in 3 versions: hand-held, digital and bench type. The analogue hand-held version is universal, maintenance free; the optical system and prism cover are manufactured from a special material that allows low-tolerance measuring.

The digital version is again maintenance free, has a large TFT colour digital display with integrated temperature reading. Manufactured to international IP65 protection class against dust, and water splashes.

The Abbe bench type refractometer allows easy, efficient and sustainable use in everyday applications. An integrated scale allows the unit to be used for different applications and permits reading of measurement results accurately.

Please note: Other models are available for different applications and ranges, please enquire.

Technical Specifications			
Model	ORA 1RE	ORF 1RS	ORT 1RS
Scale	Refractive index	Refractive index	Refractive index/Brix
Measuring range	1,333 - 1,405 nD	1,3330 - 1,5400 nD	Brix 0-95%
	1,405 - 1,468 nD		R.I. 1,3000 - 1,7000 nD
	1,468 - 1,517 nD		
Division	0,005 nD	±0,0001 nD	Brix 0,25%
			R.I. 0,0005 nD
Accuracy		$\pm 0,0005 \; nD$	Brix $\pm$ 0,1%
			R.I. $\pm$ 0,0002 nD

Cat. No.	Code	Description
RF/25100	ORA 1 RE	Refractometer, hand-held 1,333 - 1,517 nD
RF/25120	ORF 1RS	Refractometer, digital RI 1,3330 - 1,5400 nD
RF/25140	ORT 1RS	Refractometer, bench type, Abbe RI 1,3000 - 1,7000 nD, Brix 0 - 95%

### Refractometers, hand held

Eclipse Range for Industrial environments

- Extensive choice of scale range
- Excellent field of view
- Large insulated hand grip for insulation and comfort
- Ingress Protection to IP65
- Certificates of Calibration supplied as standard

Cat. No.	Code	Description	Range	Division
RF/45106	45-01	Sugar % (°Brix)	0 - 15	0.1
RF/45108	45-02	Sugar % (°Brix)	0 - 30	0.2
RF/45112	45-03	Sugar % (°Brix)	0 - 50	0.5
RF/45114	45-08	Sugar % (°Brix)	28 - 65	0.2
RF/45116	45-05	Sugar % (°Brix)	45 - 80	0.2
RF/45118	45-06	Sugar % (°Brix)	72 - 95	0.2
RF/45122	45-22	Wine - °Zeiss (ABV	10 - 135	1
RF/45134	45-81	Low Volume (Nectar < 1 -micro-litre) % (°Brix)	0 - 50	0.5
RF/45136	45-82	Low Volume (Nectar < 1 -micro-litre) % (°Brix)	45 - 80	0.2
RF/45126	45-26	Starch (%)	0 - 30	0.2
RF/45128	45-41	Refractive Index	1.330 -1.420	0.001
RF/45140	45-44	Antifreeze - °C protection	-40 to 0°C	5
		and Battery acid SG	1.1 - 1.35	0.05
RF/45142	45-46	% Ethylene Glycol	0 - 60	2.5
		and % Propylene Glycol	0 - 60	2.5
RF/45144	45-65	Salinity (% NaCl)	0 - 28	0.2



RF/4510

#### Hand held, digital, OPTi range

Highly reliable, premium quality instruments suitable for use in the harshest of environments. There are many different models covering not only the commonplace food, beverage and chemical instruments but also life science, automotive, heat transfer and even customer specific applications.

- Zero calibrate with water
- AG Test mode self validation

Technical Specifications	
Resolution (°Brix/ RI) / Accuracy	$0.1, 0.0001/\pm0.2/\pm0.0003$
Automatic temperature tompensation	ICUMSA / App. Specific / None
Sample volume	0.3ml
Ambient temperature range / time	5 – 40°C, 2 seconds
Battery Life / type	10,000 readings, 3V, 2 x AAA (LR03)
Dimensions (I x w x h) / weight	120 x 55 x 35mm, 100g
	•

#### Single Scale Models

Cat. No.	Code	Range	
RF/45220	38-02	0-54% Sugar (°Brix)	
RF/45222	38-20	1.33-1.42 RI	
RF/45224	38-22	0-30% Starch	
RF/45226	38-23	0-40% Urea (CRC)	
RF/45228	38-28	0-28% Salinity (NaCl)	
RF/45242	38-34	0-85% Sugar (°Brix)	
RF/45244	38-A1	0-95% Sugar (°Brix)	

#### Dual scale models

Cat.	No.	Code	Application	Range A	Range B
RF/45	5230	38-49	Brewing	10-135° Zeiss (ABV)	0-30° Plato
RF/45	5232	38-51	Aquatic	0-180% Seawater (PPT)	1.000-1.070 Seawater SG
RF/45	5234	38-53	Veterinary	1.000-1.050 Urine SG (SM)	1.000-1.050 Urine SG (LM)
RF/45	5236	38-31	Gen. Purpose	0-54° Brix	1.33-1.42 RI
RF/45	5238	38-37	Chemical	1.33-1.42 RI	5-40°C (temperature)
RF/45	5240	38-83	Aviation	1.33-1.42 RI (ATC)	0-0.25 DiEGME (FSII)



RF/452



RF/65002

#### Refractometer, portable Refracto 30PX and 30GS

Industries that are using Refracto models include:— Food, beverages, Cosmetics, Oil, Paints, Solvents, pharmaceuticals, power stations for coolants, freezing points, lubricants.

Results are automatically displayed in a wide choice of units, such as RI, Brix %, HFCS42, HFCS55,

Save your results then download to either a printer or PC via the integrated infrared interface.

Complete with carry case, Software, batteries and cleaning tissues.

The new extended range portable Refractometer 30GS has all the advantages of the 30PX but with a wider measuring range and a Gold and sapphire cell for quicker temperature response.

- Wide measuring range 1.32-1.50 PX , 1.32-1.65 GS
- Calibrate with purified water

#### Example of results downloaded to Excel

Sam ID	ple N°	Result Value	Unit	Tempe Value	erature Unit	Ten N°	np. comp. Alpha value	Measured Date	Time
A	49	1.3313	nD	22.4	°C			21/1/03	4:37
В	50	1.3362	nDt	22.4	°C	0	1.974	22/1/03	4:39

Cat. No.	Code	Description
RF/65002	51324650	Refracto 30PX
RF/65004	51324660	Refracto 30GS, with extended range
DM/65004	51325006	Infrared adapter
RF/65008	51325003	Cleaning tissues

a xylem brand



RF/45550 & RF/45552

#### Abbe 5 Refractometer

- Dual Scale: Brix and RI
- Dispersion measurement feature
- Optional light source
- Low cost model

#### **Technical Specifications**

Scale	RI	°Brix
Range	1.30 - 1.70	0 - 95°
Scale Division	0.0005	0.25°
Temperature Range	5 – 75 °C	
Temperature Resolution	0.1 °C	
Temperature Accuracy	±1°C	

Cat. No.	Code	Description
RF/45550	44-501	Refractometer model Abbe 5
Accessory		
RF/45552	44-520	Abbe 5 Light Source with integral intensity
		control 230V, 50Hz

Notes Control of the	

### Xylem/B&S Digital Refractometers

#### RFM700M Series

RFM700-M Series refractometers are robust, low cost, fully automatic instruments that are ideally suited to the food, sugar and beverage industries but can also be used in many other nonfood applications where temperature control is not required.

- Auto-sense "hands free" measurement
- Classic red or new full colour M-Model display
- Simple audit trail (date, time & batch no.)
- Alpha-numeric keypad for easy data entry
- USB connectivity
- Flat sapphire prism surface for easy-cleaning
- Simple operation for factory environments
- Selectable read type: Continual, single, intelligent auto-sense

#### Software Features:

- Easy to use Installation Wizard
- 7 Menu languagesBrix and R.I. scales as standard
- Multiple user defined scales
- On-board clock
- Batch and Quality numbers
- Supervisor PIN

Model	RFM712-M	RFM732-M	RFM742-M
Scales:			
Refractive index	1.32 -1.42	1.32 - 1.54	1.32 - 1.54
Sugar (Brix)	0-50	0 - 100	0 - 100
User-defined	100	100	100
Resolution:			
Refractive index	0.0001	0.0001	0.00001
Sugar (Brix)	0.1	0.1	0.01
Accuracy:			
Refractive index	±0.0001	±0.0001	±0.00005
Sugar (Brix)	±0.1	±0.1	±0.04
Precision (reproducibility)			
Refractive index	±0.00005	±0.00005	±0.00001
Sugar (Brix)	±0.05	±0.05	±0.01
User scale library	20+ Pre-programm	ed scale including HFCS	(3), Sugar (4),
		nust (5), Urine SG (3), Gl	
F.	SII, and more: Plus cu	ustomer programmable u	user scales via PC
Reading time	Minimum 4	seconds (optional time	delay)
Temperature control	None- Automati	c Temperature Compens	ation (ATC)
Temperature compensation	ICI	JMSA, AG, User, none	
Sample temperature range		0-100°C	
Sample temperature range Measuring temperature range		0-100°C 5 - 40°C	
Sample temperature range Measuring temperature range Temperature sensor accuracy		0-100°C 5 - 40°C ±0.03°C	
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability		0-100°C 5 - 40°C	
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation:		0-100°C 5 - 40°C ±0.03°C ±0.05°C	
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix)		0-100°C 5 - 40°C ±0.03°C ±0.05°C 5 - 80°C	
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix)  AG Fluids		0-100°C 5 - 40°C ±0.03°C ±0.05°C 5 - 80°C 5 - 40°C	ial function
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined	Simple coefficie	0-100°C 5 - 40°C ±0.03°C ±0.05°C 5 - 80°C 5 - 40°C at (units/°C) or polynom	ial function
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined Temperature stability checks	Simple coefficie De	0-100°C 5 - 40°C ±0.03°C ±0.05°C 5 - 80°C 5 - 40°C at (units/ °C) or polynom lay in seconds or none	
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined	Simple coefficie De Light emitting	0-100°C 5 - 40°C ±0.03°C ±0.05°C 5 - 80°C 5 - 40°C at (units/ °C) or polynom lay in seconds or none Diode 589nm (100,000	+ hours)
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined Temperature stability checks Sample illumination	Simple coefficie De Light emitting	0-100°C 5 - 40°C ±0.03°C ±0.05°C 5 - 80°C 5 - 40°C at (units/ °C) or polynom lay in seconds or none	+ hours)
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined Temperature stability checks Sample illumination Prism/ Dish	Simple coefficien De Light emitting Artificial Sapphire/	0-100°C 5 - 40°C ±0.03°C ±0.05°C  5 - 80°C 5 - 40°C  11 (units/ °C) or polynom lay in seconds or none Diode 589nm (100,000 Stainless Steel 316/ PEEI	+ hours)
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined Temperature stability checks Sample illumination Prism/ Dish Prism seal	Simple coefficien De Light emitting Artificial Sapphire/	0-100°C 5 - 40°C ±0.03°C ±0.05°C  5 - 80°C 5 - 40°C  nt (units/ °C) or polynom lay in seconds or none Diode 589nm (100,000 Stainless Steel 316/ PEEI Silicone/ Resin	+ hours)
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined Temperature stability checks Sample illumination Prism/ Dish Prism seal Interfaces	Simple coefficier De Light emitting Artificial Sapphire/ 1 :	0-100°C 5 - 40°C ±0.03°C ±0.05°C  5 - 80°C 5 - 40°C  at (units/ °C) or polynom lay in seconds or none Diode 589nm (100,000 Stainless Steel 316/ PEEI Silicone/ Resin  x USB (A), 1 x USB (B)	+ hours)
Sample temperature range Measuring temperature range Temperature sensor accuracy Sample temperature stability Temperature Compensation: Sucrose (Brix) AG Fluids User-defined Temperature stability checks Sample illumination Prism/ Dish Prism seal Interfaces Power:	Simple coefficier De Light emitting Artificial Sapphire/	0-100°C 5 - 40°C ±0.03°C ±0.05°C  5 - 80°C 5 - 40°C  nt (units/ °C) or polynom lay in seconds or none Diode 589nm (100,000 Stainless Steel 316/ PEEI Silicone/ Resin	+ hours) < (spill barrier)



RF/45686



RF/45680

#### Xylem/B&S Digital Refractometers (continued)

#### RFM300M Series

a xylem brand The RFM300-M series are a range of high precision Peltier temperature controlled benchtop refractometers. Featuring, amongst many others, wide beam optics and a durable membrane touch-button interface. This range is ideally suited for use in demanding applications within the food, beverage, chemical and industrial industries.

- 4.3" High definition colour display
- Tactile chemical resistant keypad
- Flat prism surface for easy-cleaning
- Wide beam scan for non-homogenous samples
- Three decimal place Brix precision\* (6 d.p. RI)
- US/EP/BP/JP compliant
- Supports FDA regulation 21 CFR Part 11
- PHR-MEAN & Coffee Solids Methods
- USB & Ethernet connectivity
- Dual display function Brix/SG
- Save over 8000 readings
- Reading, user & config audit trails
- Print to secure PDF
- Simple USB "Back-up & Clone"
- User maintenance prompts

#### Methods:

- Equivalent Brix/SG
- Coffee Total Solids
- Daily Offsets

Conforms to GLP, OIML; ASTM D 5006, USP/EP/BP; and with optional software, operational requirements of FDA regulation 21 CFR Part 11.

The RFM900-T Series of high precision Peltier temperature controlled benchtop refractometers feature a wide measuring range up to 1.70 RI with a 7" touch-screen user interface. Ideally suited for use in applications within the chemical, petrochemical, pharmaceutical, flavours and fragrance industries as well as in academic research.

- Widest RI Range
- Highest accuracy
- · Peltier controlled
- Easy clean prism
- RFID login
- 21 CRF P11 compliant
- Maintenance prompts

#### Software Features:

- 7" High definition touchscreen
- Temperature Stability Checks
- Measurement Methods
- Reading Limits Check
- Calibration Log/Audit Reports
- PIN Protection FID user clearance
- GLP Printout
- 4000+ stored results
- Tabular form of saved results
- FR Part 11
- Print to secure PDF
- Simple USB "Back-up & Clone"
- Audit Trails
- Maintenance prompts
- Remote control & diagnostic display language options



RF/45690

Model	RFM330-M	RFM340-M	RFM960-T	RFM970-T
Scales:				
Refractive index	1.32 - 1.58	1.32 - 1.58	1.30 1.70	1.30 1.70
Sugar (°Brix)	0 - 100	0 - 100	0 - 100	0 - 100
User-defined	100	100	100	100
Resolution:				
Refractive index	0.0001	0.000001 (selectable up to 6 d.p.)	1.30 1.70	0.000001 (selectable up to 6 d.p.)
Sugar (°Brix)	0.1	0.01/ 0.001 (selectable up to 3 d.p.)	0.1	0.01/0.001
Accuracy:				
Refractive index	±0.0001	±0.00002 (1.32 - 1.38 RI) ±0.0004 (1.38 - 1.58 RI)	±0.0001	±0.00002
Sugar (°Brix)	±0.1	±0.010 (0-30° Brix) ±0.30 (30 - 100° Brix)	±0.1	±0.02
Precision (reproducibility)				
Refractive index	±0.00005	±0.000005 (6 d.p)	±0.00005	±0.000005 (6 d.p.)
Sugar (°Brix)	$\pm 0.05$	±0.005 (3 d.p)		$\pm 0.005$
User scale library	20+ pre-progra including HFCS sucrose SG (3), I wine must (5), U PHR-MEAN and customer progra user scales	(3),sugar (4), NaCl, Butyro, rine SG (3) more; plus	20+ pre-progincluding HFC sucrose SG (3) PHR-MEAN, U plus customer user scales via	S (3),sugar (4) I, ASTM D214 rea and more; programmable
Reading time		seconds (depend		
Measuring temperature range	0°C or 10°C bel		0°C or 10°C b	
<del>-</del>	whichever is gree		whichever is gr	
Temperature sensor accuracy Sample temperature stability	±0.03°C ±0.05°C	±0.03°C ±0.05°C	±0.03°C ±0.02°C	±0.03°C ±0.02°C
Temperature Compensation:				
Sucrose (Brix)		5 - 80°0		
AG Fluids	6	5 - 40°0		
User-defined	Simple coeff	icient (units/ °C)	or polynomial	tunction
Temperature stability checks	(inde	/ delay time/ rep pendently selecto	ible by Method)	
Sample illumination		ting diode 589nr		
Prism/ Dish		ire/ Stainless Ste		
Prism seal Interfaces	Silicon/ Resin 3 x USB (A), 1 x	Silicon/ Resin USB (B), 1 x Ethe		Kalrez® (RS232)
Power:				
Instrument		24V DC, ±59	,	
External PSU		0 - 240V, 50 - 60		
Humidity range		<90% RH (non c	andanaina)	

Cat. No.	Code	Description
RF/45680	19-00	Refractometer model RFM712-M, RI 1.32 - 1.42, Brix 0 - 50°
RF/45682	19-10	Refractometer model RFM732-M, RI 1.32 - 1.54, Brix 0 - 100°
RF/45684	19-20	Refractometer model RFM742-M, RI1.32 - 1.54, Brix 0 - 100°
RF/45686	19-35	Refractometer model RFM330-M, RI1.32 - 1.58, Brix 0 - 100°
RF/45688	19-45	Refractometer model RFM340-M, RI 1.32 - 1.58, Brix 0 - 100°
RF/45690	19-60	Refractometer model RFM960-T, RI 1.30 - 1.70, Brix 0 - 100°
RF/45692	19-70	Refractometer model RFM970-T, RI 1.30 - 1.70, Brix 0 - 100°



RF/45686



RF/45680



RF/410

#### Certified Reference Materials for Refractometers

- Aqueous solutions up 40 °Brix
- Calibration Oils for high range applications
- High accuracy
- Traceable to NIST and ICUMSA
- UKAS certified
- 12-months validity

AG Fluids - Multi-pack of 5 x 5ml bottles

Cat. No.	Product	Code	Refractive Index	°Brix
RF/41012	AG2.5	90-501	1.33659	2.50
RF/41014	AG5	90-502	1.34026	5.00
RF/41016	AG7.5	90-503	1.34401	7.50
RF/41018	AG10	90-504	1.34782	10.00
RF/41020	AG11.2	90-505	1.34968	11.20
RF/41022	AG12	90-506	1.35093	12.00
RF/41024	AG12.5	90-507	1.35171	12.50
RF/41026	AG15	90-508	1.35568	15.00
RF/41028	AG40	90-518	1.39986	40.00

Maximum Uncertainty: ±0.000037 RI ±0.019 °Brix

Calibration Oil - Multi-pack of 5 x 5ml bottles

Cat. No.	Code	Refractive Index	°Brix
RF/41050	90-525	1.46990	71.81

Maximum Uncertainty: ±0.000074 RI; ±0.030 °Brix



RF/75802

## Refrigerators

#### Refrigerators and freezers, basic



a xylem brand

Labcold basic fridges and freezers are available in two sizes only: large upright and small under counter. Manufactured to the high standard you would expect from Labcold, these fridges and freezers are laboratory standard at a budget price, featuring robust enameled exteriors and wipe clean plastic interiors.

Cat. No.	Model	Description	Ext Dimensions (HxWxD) mm	Capacity litres	Shelves
RF/75802	RLPL04043	Refrigerator, basic, under counter 105 litres	841x495x500	105	3+1 drawer
RF/75804	RLFR1804	Refrigerator, basic, upright 505 litres	1710x765x725	505	4
RF/75806	RLVL03203	Freezer, basic, under counter 70 litres	835x500x490	70	2+3 drawers
RF/75808	RLVF1825	Freezer, basic, upright 505 litres	1710x765x725	505	6

Notes			

refrigeration

Labcold Spark-free refrigerators are manufactured with an interior having all sources of potential ignition removed from the chamber. Anything that could cause a spark is located outside of the chamber making it a significant aid to laboratory safety. For extra security a built in lock is fitted.

The temperature display features high and low audio and visual temperature alarms along with a door open alarm. The controller also records the minimum and maximum temperature since the last reset. For improved temperature stability a fan is included for more even circulation and air distribution. As an added feature, off cycle automatic defrosting is included, complete with 6 adjustable shelves.

NB: Not suitable for the storage of open containers of volatile substances

#### **Technical Specifications**

Capacity (litres) 400
Temperature range  $0^{\circ}\text{C}$  to  $+10^{\circ}\text{C}$ Factory set point  $+4^{\circ}\text{C}$ 

Exterior dimensions (HxWxD) 1855 x 600 x 585mm Chamber dimensions (HxWxD) 1620 x 506 x 485mm

Weight 69Kg Shelves 6

Shelf dimensions (WxD) 5 x 500 x 410mm plus 1 x 500 x 230mm

Door Type Solid

Lock Type Key lock with two keys

An access port is available as an optional extra, please enquire.

Cat. No.	Model	Description
RF/75022	RLPR1514	Spark-free refrigerator, 400 litres



RF/75022

Labcold specialises in supplying the medical and scientific community with refrigerators and freezers designed to meet the requirements of the most demanding laboratory.

#### **Our range includes:**

- Sparkfree fridges & freezers
- Blood product storage
  - Pharmacy refrigeration
- Reagent fridges
- ULT freezers
- Cooled incubators



www.labcold.com



RF/75116



RF/75216



RF/75202

#### Refrigerators, Pharmacy



Powered by the unique IntelliCold® Controller, these refrigerators are designed for the safe storage of temperature sensitive pharmaceuticals. They provide superior temperature uniformity and energy consumption. With extra safety features such as a door open alarm, alarm battery back up plus automatic temperature data logging. All models also feature an energy saving LED internal light that can be operated independently of door opening.

Designed for easy operation, the simple to use four button controller is clearly labelled and allows minimum/maximum temperatures to be displayed at the touch of a button. An SD card is also available for the transfer of temperature data from the controller to any web enabled PC running Internet Explorer 8 or above.

- All metal construction with fully adjustable shelves
- Temperature range: +2°C to +8°C
- Door open alarm
- High & Low temperature alarms
- Alarm battery back up (batteries not supplied)
- Mains fail alarm (if batteries fitted)
- Minimum/maximum temperature recording
- Automatic temperature data logging for up to 13 months
- SD card available for data transfer
- Temperature display
- Fan circulated interior
- Off-cycle auto defrost
- Remote alarm contacts
- Models 150 litres and above fitted with an access port
- Door lock
- Internal light
- Ammonia free with environmentally friendly refrigerant

#### Solid Door Models

Cat. No.	Model	Dimensions hxwxd (mm)	Capacity litres	Shelves
RF/75112	RLDF0110A	538x450x510	36	2
RF/75114	RLDF0210A	735x450x510	66	3
RF/75116	RLDF0510A	835x600x600	150	3
RF/75118	RLDF1010A	1500x600x700	340	6
RF/75120	RLDF18041	1710x765x725	505	5

#### Glass Door Models

Cat. No.	Model	Dimensions hxwxd (mm)	Capacity litres	Shelves
RF/75216	RLDG0510A	835x600x600	150	3
RF/75218	RLDG1010A	1500x600x700	340	6

#### Fridge Freezer



This space saving sparkfree fridge freezer features separate cooling systems for both chambers which will give the operator improved temperature control. Fitted with external locks for each chamber for improved laboratory security, the fridge compartment is auto defrost for extra convenience. As an optional extra, temperature displays with high/low alarms and min/max recording can be fitted to each component. Please see Labcold product RLAA5002 on the next page.

- Sparkfree safety interior
- CFC, HCFC and ammonia free
- Fridge temperature range: +2°C to 10°C
- Freezer temperature range: -18°C to -23°C

Cat. No.	Model	Description	Ext. dimensions hxwxd (mm)	Capacity litres	Shelves
RF/75202	RLFF13246/LK	Fridge freezer, spark free, 230/160 litres	1965x595x630	230/160	4+4 drawers

#### Refrigerators and freezers



**※LABCOLD** 

The Labcold Spark-free range has a specially manufactured sparkfree interior with all sources of potential ignition removed from the chamber. Anything that could cause a spark is located outside of the chamber.

For extra security a built in lock is fitted. The temperature display features high and low audio and visual temperature alarms along with a door open alarm.

Both the fridge and the freezer are available in an under-bench or bench-top configuration.

- Temperature display
- High/Low alarm
- Door open alarm
- Door lock

Technical Specifications				
Model	RLPRO217	RLVF0217	RLPR0517	RLVF0417
Туре	Bench top refrigerator	Bench top freezer	Under bench refrigerator	Under bench freezer
Capacity (litres)	66	66	150	124
Dimensions (HxWxD) mm	740x450x510	740x450x510	835x600x600	830x600x600
Shelves	1	1	3	0
Drawers	0	0	0	3
Temperature range	0 to 10°C	-18 to -25°C	0 to 10°C	-18 to -23°C
Set point	+5°C	-20°C	+5°C	-20°C

Important note: These Spark-free refrigerators and freezers are not designed for storing open containers of volatile substances.

Cat. No.	Model	Description
RF/75860	RLPRO217	Bench top spark free refrigerator 66 litre
RF/75862	RLVF0217	Bench top spark free freezer 66 litre
RF/75858	RLPRO517	Under bench spark free refrigerator 150 litre
RF/75856	RLVF0417	Under bench spark free freezer 124 litre



RF/75860

# Temperature display/alarm with min/max display

This compact battery powered temperature display can be factory fitted to most Labcold refrigerators and freezers or can be purchased separately.

Powered by a single battery (not supplied) the Labcold RLAA5002 alarm is triggered if the temperature reaches above or below the high and low temperature limits set by the operator. It can also display minimum and maximum temperatures since the last reset and will show the temperature in either centrigrade or fahrenheit. Highly versatile, this temperature display with alarm is suitable for temperature ranges from -50°C to +70°C and can be set to trigger anywhere within this range.

Cat. No.	Model	Description	Ext. dimensions HxWxD (mm)	Weight
RF/75182	RLAA5002	Factory fitted temperature display	115x62x15	93 gms (exc battery)
RF/75184	RLAA5002/1	Free standing alarm	115x62x15	93 gms



RF/75184

Notes	



RF/75308

#### Freezer, Spark-free, upright



Labcold Spark-free upright freezer, manufactured with an interior having all sources of potential ignition removed from the chamber. Anything that could cause a spark is located outside of the chamber making it a significant aid to laboratory safety. For extra security a built in lock is fitted. The temperature display features high and low audio and visual temperature alarms along with a door open alarm. The controller also records the minimum and maximum temperature since the last reset, defrost is actioned manually, supplied with 6 fixed shelves.

NB: Not suitable for the storage of open containers of volatile substances

Technical Specifications	
Capacity (litres)	400
Temperature range	-12°C to -24°C
Factory set point	-20°C
Exterior dimensions (HxWxD)	1855 x 600 x 585mm
Chamber dimensions (HxWxD)	1620 x 470 x 480mm
Weight	79Kg
Shelves	6
Shelf dimensions (WxD)	480 x 410mm
Door Type	Solid
Lock Type	Built in

An access port is available as an optional extra, please enquire.

Cat. No.	Model	Description
RF/75308	RLVF1514	Spark-free freezer, 400 litres

# \*LABCOLD

RF/75508

#### Freezers, chest



Completely spark-free, the chest configuration of these freezers helps reduce temperature rises when the door is opened.

- Spark-free interior
- Door lock
- Easy-grip door handle
- CFC, HCFC and ammonia free
- Temperature set-point range: -18 to -25°C
- Visual high temperature alarm
- Operator controlled defrost

Cat. No.	Model	Ext. dimensions hxwxd (mm)	Capacity litres	Storage baskets
RF/75502	RLCF0720	860x750x730	215	1
RF/75508	RLCF1520	860x1300x730	447	2
RF/75510	RLCF2120	860x1700x730	607	3

Notes	

#### Ultra low temperature upright and chest freezers



#### Standard features

- Micro processor controller with digital display
- Approx. 72 hours battery back up for alarms, loggings and temperature display in case of power cut
- Prepared for GSM alarm
- Prepared for connection of 2 additional probes
- Auto cycle in case of probe failure
- Ambient temperature display
- Direct download of logged data on USB memory stick
- Direct upload of new software via USB memory stick
- 3-level password protected
- Battery level indication
- Display text available in different languages
- Temperature graph
- Door lock

#### Data logging features

- Integrated data logger
- RS485/USB Interface
- Integrated memory for 30 years

#### Alarm features

- Visual and acoustic alarm
- Adjustable high/low temperature alarm
- Power failure alarm Probe failure alarm Instrument failure alarm Open door alarm
- Contact for remote alarm
- Shows all alarms

#### Upright freezers

Model	ULUF15	ULUF65	ULUF125	ULUF450-2M
Capacity	7L	54L	106L	393L
Temperature range, °C	-90/-40	-86 /-40	-86/-40	-86/-40
External dimensions				
(WxDxH) mm	400x630x665	600x700x810	950x725x810	720x885x1990
Internal dimensions				
(WxDxH) mm	150x143x310	361x468x320	361x493x600	481x608x1345
Castors fitted	No	No	No	Yes
Lighting	No	No	No	Yes
Chamber material Stainless Steel				
Cabinet material	Varnished Steel**			

<sup>\*\*</sup>Also available with a stainless steel exterior as optional extra, please enquire.

#### Chest freezers

Table in all Constitution				
Technical Specificatio	ns			
Model	ULTF80	ULTF220	ULTF320	ULTF420
Capacity	71L	189L	284L	386L
Temperature range, °C	-84/-40	-84/-40	-86/-40	-86/-40
External dimensions				
(WxDxH) mm	552x648x850	920x695x885	1262x698x885	1562x698x885
Internal dimensions				
(WxDxH) mm	390x390x450	760x440x635	1100x440x630	1400x440x630
Castors fitted	No	Yes	Yes	Yes
Lighting	No	No	No	No
Chamber material Varnished Steel				
Cabinet material White painted steel				
Cubinermalena		vville paliti	eu sieei	

C	at. No.	Model	Description
RF	776000	ULUF15	Upright freezer, -90°C, 7 litre capacity
RF	776002	ULUF65	Upright freezer, -86°C, 54 litre capacity
RF	/76004	ULUF125	Upright freezer, -86°C, 106 litre capacity
RF	776006	ULUF450-2M	Upright freezer, -86°C, 393 litre capacity
RF	776008	ULTF80	Chest freezer, -84°C, 71 litre capacity
RF	/76010	ULTF220	Chest freezer, -86°C, 189 litre capacity
RF	776012	ULTF320	Chest freezer, -86°C, 284 litre capacity
RF	776014	ULTF420	Chest freezer, -86°C, 386 litre capacity



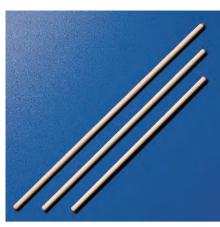
RF/76000



RF/76002



RF/76014



RG/92204

#### Rods

### Rods, stirring

Cat. No.	Description	Pk Qty
RG/92202	Glass rod 300 x 6mm	10
RG/92204	PVC rod 250 x 8mm	10



RG/96506 with RG/92202

#### Rod shields (Policemen), PVC

PVC shields designed to fit over stirring rods to protect against abrasions.

Cat. No.	I.D. (mm)	Pk Qty
RG/96502	3	10
RG/96504	4/5	10
RG/96506	6	10
RG/96508	8	10



RU/96206

#### **Rules**

#### Rules, meter, horizontal reading

Double sided - one side divided into inches, the other into cm and mm.

Cat. No.	Divisions
RU/96206	Inches and cm



MG/90002



MG/90004

# Micrometer and Caliper gauges

#### Micrometer Gauge

Available in both digital and non-digital versions

Cat. No.	Description
MG/90010	Micrometer, external range 0 - 25mm x 0.01mm (±0.002mm)
MG/90012	Micrometer, pro, digital, external range 0 - 25mm x 0.001mm

#### Calliper, Vernier

With roller adjustment and optional digital LCD display

Cat. No.	Description
MG/90002	Caliper gauge, Vernier, 125mm x 0.1mm
MG/90004	Caliper gauge, digital, 150mm x 0.1mm, supplied in vinyl pouch

# Safety, bench protection

### BENCHGUARD®, bench protector



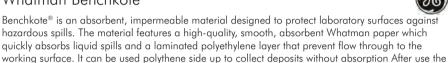
- Highly absorbent paper ideal for protecting work surfaces against accidental spillages of damaging chemicals and biohazards
- Plastic coated underside to prevent soak through
- Available in roll or sheet form and supplied in easy to use dispenser packs
- BenchGuard® Extra has double the absorbency for use in more demanding applications

Cat. No.	Code	Absorption,ml/m2	Dimensions	Pk Qty
Benchguard®				
SB/17002	BG50	400	50m x 49cm roll	each
SB/17004	BG60	400	60cm x 49cm sheets	100
BenchGuard®	Extra			
SB/17008	BG50E	1000	50m x 49cm roll	each
SB/17010	BG60E	1000	60cm x 49cm sheets	50



SB/1700

#### Whatman Benchkote®



sheet can be incinerated or disposed of according to local regulations.

Benchkote Plus® is a thicker, more absorbent material for more demanding applications and can absorb in excess of 0.75 litres of water per square meter.

Cat. No.	Code	Size	Туре	Pk Qty
Benchkote® SB/17122 SB/17124 SB/17126	2300-916 2300-731 2300-772	46 X 57CM 46CM X 50M 92CM X 50M	Sheets Reel Reel	50 Each Each
Benchkote® Plus SB/17128 SB/17130	2301-6150 2301-6160	50 X 60CM 60CM X 50M	Sheets Reel	50 Each



SB/171

Notes	



SC/95230



I tomorals

SC/95234

## Safety cabinet

#### Microbiology Re-circulating Safety Cabinet, Circulaire Class II

The Guardian range of recirculating Class II Biological Safety Cabinets provide the best features available in Class II Cabinets. As standard, they are provided with a motorised sash, high-intensity LED lighting, low power consumption, low noise and Visionaire™ full colour touch screen control. A number of options are available, including double outlet HEPA filters, base stands, gas supplies and a host of others

The cabinets are designed and independently type tested according to Class II European standard BSEN 12469:2000 and are available in 800mm, 1200mm or 1800mm widths with one outlet HEPA filter. All sizes are available with 2 outlet HEPA filters (to ensure compliance with BS5276:1992) as one of the many options available. Standard features include a fully closing sliding sash and constantly displayed inflow and down flow air velocities.

#### Additional Standard features:

- Visionaire® flush mounted colour touch screen showing all cabinet operating parameters.
- Low energy and low noise level fans ensuring true laminar and turbulence- free air flow distribution throughout the chamber.
- Adjustable intensity LED lighting and a high angled front window for optimal viewing and supervision at either seated or standing positions.
- UV lighting and full length electronic sliding toughened glass sash which closes in full when the cabinet is not in use or requires sterilisation.
- The front of the cabinet lifts up ensuring easy access to all internal surfaces.
- Multiple sectioned removable mirror finish 316 grade stainless steel work surface which is quick and easy to remove for cleaning or autoclaving.
- Profiled air in-take grilles across the entire width of the cabinet ensure good air flow even with an operator in position.
- Electronic door closure, protected by IRISS an infra-red beam across the base of the sash opening. Should this beam be broken by inadvertently positioned apparatus or hands, the closure of the door will be aborted, thus preventing any potential injuries, instrument or sash damage.
- The cabinet can be pre-programmed to start or finish at a pre-programmed time to avoid wasting time during the cabinet purge at the start and end of the day.
- The inbuilt UV light can be used to sterilise the entire working chamber, plus connection to a proprietary VHP or formalin system is possible to ensure the safe and complete sterilisation of the cabinet and filters.
- Fitted with a user programmable timer allowing the light on time and delay time to be easily programmed.
- To comply with British and European Standards, the cabinet can only be controlled by a user pincode ensuring that only authorised and trained users can operate the equipment unsupervised.
- In addition to operator pin access, the laboratory supervisor has their own pin access to change various cabinet settings such as audible alarm or key press cancellation (essential in 'quiet' labs), control of electrical sockets and user access.
- All service and adjustment procedures are performed from the front or top of the cabinet, including
  exchange of HEPA filters and adjustments to circuit boards and sensors. This ensures the cabinet can
  stay in situ without making any positional changes within the laboratory during maintenance.
- Two standard electrical sockets are supplied fitted into the rear of the cabinet; these are independently fused and also controlled from the Visionaire Touch Screen.
- ISO Class 4 Clean Air to BS EN ISO 14644-1 (1999)

Designed and manufactured in the UK using epoxy coated Zintec Mild Steel with toughened glass glazing panels, the best quality possible is guaranteed

#### Additional Options:

- Service valves for Gas, Vacuum, Nitrogen or similar
- 2nd Outlet HEPA filter ensures compliance with BS5726
- Base Stand
- Base Cupboard
- Uninterruptable Power Supply (UPS) for areas prone to power failure
- Anti-blowback valve and Ductwork
- Stainless Steel Manufacture (Painted, polished or brushed)
- Formaldehyde sterilisation & neutralization system.

Technical Specificatio	echnical Specifications		
	CT800	CT1200	CT1800
External dimensions (WxDxH mm) Internal dimensions	800 x 750 x 1330	1200 x 750 x 1330	1800 x 750 x 1330
(WxDxH mm)	720 x 630 x 754	1107 x 630 x 754	1720 x 630 x 754

Cat. No.	Code	Description
SC/95230	CT800	Microbiological safety cabinet Class II, 800mm wide
SC/95232	CT1200	Microbiological safety cabinet Class II, 1200mm wide
SC/95234	CT1800	Microbiological safety cabinet Class II, 1800mm wide

# Safety clothing

#### Apron, polythene, disposable – flat dispenser pack

Disposable polythene aprons, with halter neck and waist ties are supplied in convenient, at wall mountable or worktop dispenser packs which allow easy, non-stick removal of each apron. Resistant to fluid and bacteria penetration.

Cat. No.	Size (w x l) cm	Colour	Inner	Case	
SC/66002	69 x 107	White	100	1000	
SC/66004	69 x 122	White	100	1000	

#### Apron, polythene, disposable - on a roll

Aprons on a roll are manufactured from the same material as the dispenser pack version but are supplied on rolls for convenience. 69 x 117cm - Longer length available

Cat. No.	Colour	Inner Pk	Case	
SC/66102	White	200 Roll	1000	
SC/66104	Blue	200 Roll	1000	
SC/66106	Red	200 Roll	1000	
Accessory				
SC/66114	Dispenser, plastic covered	Each	Each	



High quality, flexible and waterproof rubber apron for heavy duty applications. Hard wearing, offering excellent resistance to fats, oils and high temperatures. One size to t all: 91 x 107cm (36 x 42"). Supplied with adjustable ties. Each apron individually wrapped in a polybag, 20 pieces per carton.

Cat. No.	Description
SC/66120	Apron, red rubber, 91 x 107cm

#### Apron, cryo

Cryo aprons, blue, with multi-layers to protect the torso and legs against temperature from  $-160^{\circ}$ C to + 150°C. The waterproof nylon outer cover offers protection from contact with ultra- cold surfaces and from splashes.

Ideal for working in deep-freeze environments, with cryogenic liquids, dry ice, liquid nitrogen (vapour phase) or when working with autoclaves. The aprons have adjustable straps and quick release buckles at the waist and neck.

Cat. No.	Description
CR/15000	Apron, cryogenic, blue, 915mm long
CR/15002	Apron, cryogenic, blue, 1070mm long
CR/15004	Apron, cryogenic, blue, 1220mm long
CR/15006	Apron, cryogenic, blue, 1380mm long

#### Laboratory coats

Visitor's lab-coat, white, breathable, lightweight material. Designed for light duty applications and offers a barrier against non-hazardous particles and liquid splashes, with a zip fastener, available in sizes small, medium, large, extra-large, 2XL, 3XL and 4XL\*.

Cat. No.	Description
SC/68320	Visitor's lab coat, lightweight breathable

Coverall, white, designed to offer cost effective protection against hazardous dusts and limited Type 5/6 liquid splashes. With elasticated hood, ankles, cuffs and waist, 2 way zip with storm flap, ultra-low linting, Available in sizes small, medium, large, extra-large, 2XL, 3XL and 4XL\*.

Cat. No.	Description
SC/68324	Lab coverall, protects against dust and limited Type 5/6 liquid splashes

<sup>\*</sup>Please state size when ordering



SC/661



SC/66120



CR/1500



SC/68320 SC/68324



#### SC/6820

#### Laboratory coats, polyester cotton

White polyester/cotton laboratory coats for men and women, with two side and one top pocket and concealed stud front fasteners. Men's coat features a centre back vent. More colours and sizes available.

Cat. No.	Size	
Male, length 100cm		
SC/68202	Small	
SC/68204	Medium	
SC/68206	Large	
SC/68208	Extra large	
Female, length 110cm		
SC/68210	86-89	
SC/68212	90-94	
SC/68214	95-99	
SC/68216	100-104	
SC/68218	105-109	
SC/68220	110-115	
SC/68222	116-121	

SC/6830

#### Laboratory coats, Howie style, White

Designed to conform to Howie report guidelines, side fastening with four layers of fabric in the front for extra protection against minor chemical splashes, specially designed neck band to avoid chin irritation. Two hip level and one breast patch pockets, panelled back with side vents for ease of movement. Stretch cuffs at wrist and all studs are made from stainless steel. (N.B. All garments fasten to the right.)

Cat. No.	Chest size, cm	
Polyester/cotton		
SC/68302	92	
SC/68304	100	
SC/68306	108	
SC/68308	116	

More colours and sizes are available on request.

Notes	

# Safety, eye protection

Regulation 4 of the Personal protective Equipment (PPE) legislation requires eye or face protection in hazardous areas. The legislation is designed to help provide protection from varying hazards such as impact, chemical splash or VDU work.

#### Protective eyewear safety codes EN 166 standard

Optical properties:

Class 1 For continuous work Class 2 For intermittent work

For occasional work but must not be worn continuously Class 3

Resistant to mechanical damage (anti-scratch)

Ν Resistant to misting/fogging

Mechanical properties:

High energy impact (190m/sec)

Medium energy impact (120m/sec) Grade 1 В F Low energy impact (45m/sec) Grade 2 Increased robustness, general purpose. S

Increased robustness, general purpose impact- performance at extreme

temperatures

Areas of use for frames:

Liquids (chemical) Large dust particles 5 Gas and fine dust particles 8

Short circuit arc

Molten metals and hot solids (also applies to lenses)

#### Eye protector, model Comet

Ultra lightweight modern eye protector. Clear polycarbonate frame with anti-scratch and anti-mist lens. Conforms to EN 166 IFT

Cat. No.	Description
SE/66002	Eye protector, Comet

#### Safety spectacles

Uvex Pheos clear anti-mist/scratch resistance lenses, manufactured to EN166 1F KN.

- Optimal all-round protection
- Wide field of unimpaired vision
- Design led side protection
- Frameless, light and easy to clean

Cat. No.	Description	
SE/66014	Safety spectacles, Uvex Pheos clear anti-mist/scratch resistance lens	

Visitors over spectacles, lightweight, vented side arms and clear anti-scratch coated lenses, can be worn over most prescription spectacles, manufactured to EN166-1-FT

Cat. No.	Description	
SE/66016	Visitors over spectacles, lightweight, vented side arms and clear antiscratch coated lenses.	

#### Eye protector, model 389X

Economical stylish nylon frame with integral browquard. Wrap around lens, integral side shields with adjustable arm length settings. Anti-Scratch/Anti-Mist polycarbonate lenses. Conforms to EN166 1FT.

Cat. No.	Description
SE/66010	Eye protector, 389X

#### Eye protector, model Solar

Solar Sporty, high-tech polycarbonate two-tone Burgundy & Black frame, sleek pre-set sports arms with contrast rubber comfort tips and sculpted Clear polycarbonate lenses provides up to 99.9% protection from UV light, marked with filtering scale number 2-1-2. Conforms to EN166 1FT

Cat. No.	Description
SE/66012	Eye protector, Solar

#### Eyeshield, AM series

The original, this eyeshield is ideal for visitors/contractors. The raised nose bridge and preset temples make it a comfortable fit.

Co	at. No.	Description
SE	/66104	Polycarbonate EN166-2F (Pack 10)



SE/66002



SE/66014



SE/66016



SE/66010



SE/66012



SE/66104



SE/66214

#### Eye protector, goggle

Indirect ventilation, Anti-scratch lens and elasticated headband. EN166 349BT approved.

Cat. No.	Code	Description
SE/66214	328	Eye protector, econo-goggle



SE/66018

#### Lens cleaning tissues

Cleaning Tissues Uvex, suitable for all types of safety spectacles and goggles, supplied in a box of 450 sheets.

Cat. No.	Description	
SE/66018	Cleaning Tissues for safety spectacles and goggles, box of 450 sheets	



SE/66552

#### Faceshield

Strong and economical with a choice of headband and visors, some of which accept a chinguard, Please note that the headband and visors are sold separately

Polycarbonate visor gives high resistance to heavy impact and 99.9% effective protection against UV light.

- Browguard ratchet adjustable head harness. Fitted comfort sweatband.
- Multi-positional visor settings. EN166-1-3B approved.
- Visor 8" (203mm) clear with excellent all round visibility. Provides full face protection from flying particles and liquid splash. EN166-1-89BT approved.

Cat. No.	Description	
SE/66552	Ratchet browguard without Visor	
SE/66554	Clear visor, polycarbonate	

Visor and browguard sold separately.



SE/6662 with visor

#### Faceshield, Clearways

Clearways faceshield, strong and economical with a choice of headbands and visors with or without chinguard.

#### Headbands

Cat. No.	Code	Description
SE/66622	F0082/CB20	Browguard with Ratchet Headband, EN166-3B, without Visor
SE/66624	F0083/CB14	Browguard with Elastic Headband, EN166-3B, without Visor

#### Visors

Cat. No.	Code	Description
SE/66728	F0085	200mm clear Polycarbonate visor, will accept Chinguard, EN166-1-3B
SE/66730	F0086	200mm clear acetate visor EN166-1-3F
SE/66734	F0088	200mm clear acetate visor, will accept Chinguard, EN166-1-3F
SE/66736	F0089	Chinguard to suit

# Safety, fire

#### Fire Blanket, Silicon Coated Glass Fibre

Impregnated with a re retardant formula making them tremendously resilient to heat. Supplied in a rigid plastic case to allow easy opening and storage. BSEN:1869.

Cat. No.	Code	Dimensions, cm
SF/93602	FB1010	100 x 100
SF/93604	FB1212	120 x 120
SF/93606	FB1218	180 x 120



SF/93602

# Safety, first aid

#### First aid kits

The new BS-8599-1 compliant kits. Wall mounting brackets are included with all kits. Small size kit for 5 persons or less. Medium size kit for 5-25 persons. Large size kit for more than 25 persons.

Contents or Refill	Small	Medium	Large
Burn Relief Dressing 10cm x 10cm	1	2	2
Wash proof Assorted Plasters	40	60	100
Eye Pad Dressing with Bandage Sterile	2	3	4
Foil Blanket Adult Size	1	2	3
Large HSE Dressing 18cm x 18cm			
Sterile Unboxed	1	2	2
Medium HSE Dressing 12cm x 12cm			
Sterile Unboxed	4	6	8
Nitrile Gloves Pair	6	9	12
Mouth to mouth Resuscitation Device with Valve	1	1	2
Finger Dressing with Adhesive Fixing 3.5cm	2	3	4
First Aid Guidance Leaflet	1	1	1
Conforming Bandage 7.5cm x 4m	1	2	2
Microporous Tape 2.5cm x 5m	1	1	1
Moist Cleansing Wipes	20	30	40
Safety Pins Assorted	6	12	24
Single Use Triangular Bandage 90cm x 127cm	2	3	4
Universal Shears Small 6	1	1	1



SF/93220

Cat. No.	Code	Dimensions (HxWxD) mm
SF/93220 SF/93222 SF/93224	First aid kit, small, in green box First aid kit, medium, in green box First aid kit, large, in green box	180 x 270 x 90 225 x 275 x 90 255 x 345 x 100
Refills SF/93226 SF/93228 SF/93230	Small refill Medium refill Large refill	



SF/93226

#### Eye wash kit

Contained in a translucent case is an assortment of neatly packed eye care products. Contents: 3 x 500ml bottles of eye wash, 3 eye pad dressings and 1 wall-hanging bracket.

Cat. No.	Description
SF/93332	Eye wash kit
Refills	
SF/93330	Eye wash solution, 500ml



SF/93332



SF/93340

#### Eye wash post

Robust dual purpose HSE compliant eye wash station in wipe clean hardwearing ABS plastic with dust proof hinged cover. Illuminated printed instructions - useful if a power failure occurs so the station can be located. Central mirror for easy application. Overall dimensions (HxWxD) 36cm x 51cm x 10cm. Contents: 2 x 500ml eyewash saline, 2 x eyepad dressings, 5 x 20ml pods, 1 mirror.

Cat. No.	Description
SF/93340	Premier eyewash post



SF/93336

#### Eye wash station

Eye wash station comes with 2 x 500ml sterile saline solutions and a built in mirror.

Cat. No.	Description
SF/93336	Eye wash station
Refills	
SF/93330	Eye wash solution, 500ml



SF/93330

#### Eye wash

A sterile saline solution used in emergencies for irrigation of the eyes, should they come into contact with foreign bodies or hazardous substances.

Supplied in 500ml bottles.

Cat. No.	Description
SF/93330	Saline eye wash solution, sterile



SF/93320

#### Eye wash pods

A sterile saline solution used in emergencies for irrigation of the eyes, should they come into contact with foreign bodies or hazardous substances. Supplied in a pack of  $25 \times 20$ ml pods.

Cat. No.	Description
SF/93320	Sterile saline eye wash pods



SF/93352

SF/93350

#### Emergency Showers and Eye Washers

Showers and shower/eye-wash units, tested and approved according to EN15154-1 and EN15154-2 for indoor use only.

Cat. No.	Model	Description
SF/93350	DS23	Hand operated wall mounted shower, head only, galvanised steel piping, flow rate 75 litres/minute, F 1 feed connection.
SF/93352	DLV53	Hand operated Pedestal eye-wash and shower, height to shower head 220cm, height to top of eye-wash bowl 107cm, green epoxy-painted galvanised steel piping. Shower flow-rate 75 litres/minute, eye-wash 11.5 litres/minute, F 1 feed connection, F 11/4 eye-wash draining connection

Also available in stainless steel

#### Antiseptic cleansing wipes

Impregnated with chlorohexidine and cetrimide solution these antiseptic wipes are alcohol free and conform to Health and Safety Recommendations. They are ideal for cleansing wounds and surrounding skin prior to bandaging. Suitable for personal hygiene use or as a bacterial cleanser on work surfaces.

Cat. No.	Pk Qty	
SF/93402	100	



SF/93402

# **Spill Kits**

#### Laboratory spill kit

Supplied in a tough, durable mini case. Highly visible for emergencies. For clearing spills of Oils; Acids/Liquid Chemicals.

#### Mercury spill kit

Mercury spill kit for all small mercury spills, developed with the mercury safety experts and pharmacy department at University Hospital London. The kit comes supplied in a highly visible tough durable mini case with easy to follow instructions.

#### Body fluid kit

Requires all you need to effectively clean up body fluid spills. Cleans up vomit, urine, blood and drinks. Reduces the spread of potential diseases. Recommended for laboratories, hospitals, doctors surgeries, schools, hotels and restaurants and leisure centres.

	Laboratory Spill kit (Oils & Chemicals)	Body Fluid Kit	Mercury Kit
Contents	3 pads 2 socks 250g loose absorbent Scoop Gloves 3 disposable bags & ties	Super absorbent Disinfectant spray Alcohol wipes Scoop Scraper Gloves Aprons Biohazard bags	Microfined sulphur Calcium hydroxide Scoop Absorbent alloy wool Brush Gloves/Mask Syringe Waste container
Dimensions	35 x 29 x 12cm	35 x 29 x 12cm	23 x 20 x 9cm

Cat. No.	Code	Sorbency	Max(L)	Weight (kg)
SF/92006	0276/L	Chemical + oil	5	1.6
SF/92008	0276/LR	Refill, Chemical + oil		
SF/92010	0276/M	Mercury		0.7
SF/92012	0276/BF	Body Fluids	20	1.8



Lab spill kit



SF/92012



SF/92010

SF/92050

### General purpose spill kits

This range of emergency response spill kits enable you to effectively respond to any oil, chemical or general fluid spill on site, land and water. Meet with EA guidelines and legislation and assist with ISO 14001 compliance.

- Choose Drizit Maintenance spill kits for oils, coolants, water, detergents and mild chemical solutions
  Choose Drizit HazMat (Chemical) spill kits for acids, caustics and corrosive chemicals
- Choose Drizit Oil

	"Spill kit 50	Spill kit 240	Spill kit 340"
Format	Grab Bag	Heavy duty, UV stabilised highly visible, water proof container.	Heavy duty, UV stabilised highly visible, water proof container
Contents	25 pads 40cm x 52cm 4 socks 125cm x 7.5cm 1 cushion 55cm x 35cm x 10cm Dammit® slab PPE Disposable bag & ti	150 pads 40cm x 52cm 5 mini socks 125cm x 7.5cm 1 large sock 300cm x 7.5cm 2 cushions (55cm x 35cm x 10cm) Dammit® putty, & mat PPE 3 disposable bags & ties	10 pads 40cm x 52cm 1 Mini roll 50cm x 42m 5 Socks (125cm x 7.5cm) 2 Cushions (55cm x 35cm x 10cm) Dammit Mat (65cm x 45cm) 2 Stakes Dammit® putty, & mat PPE 3 disposable bags & ties
Dimensions	50 x 50 x 18cm	78 x 48 x 78cm	102 x 61 x 102cm

Cat. No.	Code	Sorbency	Max(L)	Weight (kg)
	SK50			
SF/92050	0171	Oil	46 - 56	4.7
SF/92052	0271	Haz Mat	28 - 44	5.3
SF/92054	0371	Maintenance	28 - 44	5.1
	SK240			
SF/92240	0174/7	Oil	165 - 210	32.3
SF/92242	0174/7/R	Oil	165 – 210	17.8
SF/92244	0274/7	Haz Mat	100 - 166	33.8
SF/92246	0274/7/R	Haz Mat	100 – 166	19.3
SF/92248	0374/7	Maintenance	100 - 166	33.1
SF/92250	0374/7/R	Maintenance	100 – 166	18.6
	SK340			
SF/92340	0174/8	Oil	272 - 345	47.9
SF/92342	0174/8/R	Oil	272 – 345	25.4
SF/92344	0274/8	Haz Mat	168 - 269	50.7
SF/92346	0274/8/R	Haz Mat	168 – 269	28.2
SF/92348	0374/8	Maintenance	168 - 269	50
SF/92350	0374/8/R	Maintenance	168 – 269	27.5

See cleaning section for related products

Notes		

# Safety, hand protection

#### Gloves, disposable, polyethylene, non-sterile

Inexpensive, disposable for general duties.

Packs of 100

Cat. No.	Size	
SG/26002	Small	
SG/26004	Medium	
SG/26006	Large	



SG/2600

#### Gloves, disposable, vinyl

Ambidextrous disposable vinyl gloves in packs of 100.

Cat. No.	Size	
Lightly powdered		
SG/26022	Small	
SG/26024	Medium	
SG/26026	Large	
SG/26028	Extra Large	
Powder free		
SG/26032	Small	
SG/26034	Medium	
SG/26036	Large	



SG/2602

#### Gloves, disposable, natural latex

Ambidextrous natural latex disposable gloves. Natural colour, non-sterile, available as powdered or powder free.

Cat. No.	Size	Pk Qty
Powdered		
SG/26112	Small	100
SG/26114	Medium	100
SG/26116	Large	100
Powder free		
SG/26122	Small	100
SG/26124	Medium	100
SG/26126	Large	100



SG/2612

#### Gloves, Safeskin exam PFE

Textured powder free latex ambidextrous

- 240 mm / 9.5" length
- Beaded cuff
- Low latex protein content
- Low in chemicals and chemical contact sensitizers
- Ideal for procedures requiring grip and tactile sensitivity in wet and dry conditions

Cat. No.	Size	Pk Qty	
SG/56000	X-Small	10 x 100	
SG/56002	Small	10 x 100	
SG/56004	Medium	10 x 100	
SG/56006	Large	10 x 100	
SG/56008	X-Large	10 x 90	



SG/5600

#### Gloves exam Satin Plus®

Smooth powder free latex ambidextrous

- 240 mm / 9.5" length
- Beaded cuff
- Low latex protein content
- Low in chemicals and chemical contact sensitizers
- Ideal for procedures requiring enhanced tactile sensitivity in dry conditions

Cat. No.	Size	Pk Qty
SG/56100	X-Small	10 x 100
SG/56102	Small	10 x 100
SG/56104	Medium	10 x 100
SG/56106	Large	10 x 100
SG/56108	X-Large	10 x 90



SG/5610



SG/9610



SG/9611

#### Gloves, Nitrile

Powder free Nitrile examination gloves, strong beaded cuff.
These gloves contain no natural rubber latex, no protein or powder, eliminating the risks of powder induced contamination and skin allergies. Packs of 100.

Cat. No.	Size
White	
SG/96102	Small
SG/96104	Medium
SG/96106	Large
SG/96108	X-Large
Blue	
SG/96112	Small
SG/96114	Medium
SG/96116	Large
SG/96118	X-Large





SG/46010

# Gloves, Nitrile purple and green

Powder-free non-sterile Nitrile gloves, 100% Natural rubber, latex free, length 240mm, manufactured in a dedicated Nitrile factory. Beaded cuff and textured fingers for enhanced grip, sold in packs of 10 dispensers of 100 gloves per dispenser

Cat No	Size	Palm width, mm
Purple		
SG/46000	Small	± 80
SG/46002	Medium	± 95
SG/46004	Large	± 110
SG/46006	Extra large	> 110
Green		
SG/46010	Small	± 80
SG/46012	Medium	± 95
SG/46014	Large	± 110
SG/46016	Extra large	> 110



SG/5620

#### Gloves, Safeskin purple Nitrile®

Powder free nitrile ambidextrous

- Textured finger tips for improved grip
- Latex free for individuals sensitized to latex protein
- Beaded cuff
- Low in chemicals and chemical contact sensitizers
- Tested for permeation to ten chemotherapy drugs and 4% glutaraldehyde

Ideal for procedures requiring grip and tactile sensitivity, where optimum barrier protection is required in wet and dry conditions.

Cat No	Size	Pk Qty
242mm length		
SG/56200	X-Small	10 x 100
SG/56202	Small	10 x 100
SG/56204	Medium	10 x 100
SG/56206	Large	10 x 100
SG/56208	X-Large	10 x 90

#### Gloves, Nitrile, Green, SOL-VEX™

Sol-vex<sup>™</sup> has been the most successful Nitrile glove for the past decade and has become the industry standard for a high performance and chemical protection. The glove provides an outstanding combination of mechanical strength and chemical resistance and is 2-3 times more resistant to snags and punctures than latex or vinyl. The Nitrile formulation is exceptionally soft and flexible making the glove more comfortable and less tiring in use.

Sol-vex $^{\text{TM}}$  gloves have a "sand-patch" finish providing both excellent wet and dry grip. The glove is comfortable to wear and long lasting. Size range 6-11 (No half sizes available).

Cat No	Code	Description	Pk Qty
SG/2610:	2 37-675/6	Gloves, Nitrile, SOLVEX™ size 6	12 x 12
SG/2610	4 37-675/7	Gloves, Nitrile, SOLVEX™ size 7	12 x 12
SG/2610	37-675/8	Gloves, Nitrile, SOLVEX™ size 8	12 x 12
SG/2610	37-675/9	Gloves, Nitrile, SOLVEX™ size 9	12 x 12
SG/2611	37-675/10	Gloves, Nitrile, SOLVEX™ size 10	) 12 x 12
SG/2611	1 37-675/11	Gloves, Nitrile, SOLVEX™ size 11	12 x 12



# Gloves, Marigold Suregrip – Yellow Heavyweight

Flock lined with raised surface pattern on palms and fingers to provide excellent grip, even on wet surfaces. Nominal length 300mm.

Cat No	Size	Pk Qty
SG/96202	7.5	12PR
SG/96204	8.5	12PR
SG/96206	9.5	12PR
SG/96208	10.5	12PR



SG/9620

#### Household Rubber Glove, Flock Lined

ldeal for general, domestic and hospital use these gloves have textured palms and fingers providing excellent grip even when wet. Sold in case of  $12 \times 12$  pairs

Cat No	Description
SG/26202	Yellow – Small
SG/26204	Yellow – Medium
SG/26206	Yellow – Large
SG/26208	Yellow — X-Large
SG/26212	Blue — Small
SG/26214	Blue – Medium
SG/26216	Blue - Large
SG/26218	Blue — X-Large
SG/26222	Pink — Small
SG/26224	Pink – Medium
SG/26226	Pink - Large
SG/26228	Pink — X-Large



SG/262



SG/66008

#### Gloves, heat protection, 'Crusader Flex'

Nitrile dip coating on a felt liner. Heat protective coating that extends the entire length of the glove, both front and back. Hard wearing. Designed for intermittent handling of medium to hot objects up to 200°C. Excellent grip. (Sold as a pair). Length, 330mm

Cat. No.	Code	Description	Size
SG/66008	42-474	Crusader Flex	10



SG/28204

#### Thermal Glove, Navy

Can be used for protection to -25°C.

Cat. No.	Size
SG/28204	One Size



CR/9110

### Gloves, Cryogenic

Designed to provide protection down to -190°C. Supplied in pairs.

Cat. No.	Description
CR/91100	Cryo gloves 7½ - 8
CR/91102	Cryo gloves 8½ - 9
CR/91104	Cryo gloves 9½ - 10



SH/1600

#### Hand/finger protectors, silicone rubber

- Ideal for the safe handling of hot beakers, flasks, etc.
- Capable of withstanding temperatures up to 250°C.
  Also capable of handling cold objects down to -57°C.
- Contact surfaces are multi-studded for positive grip.

Cat. No.	Reference	Description
SH/16002	PGR402	Medium
SH/16006	PGR406	Finger



### Safety masks and respirators

#### Explanation of safety mask coding:

EN141, EN143, EN149 and EN371 are the recognised European safety standards set for safety masks and respirators, the following classifications are all very similar, but have slightly different wording:

OEL = Occupational Exposure Limits
APF = Assigned Protection Filter
WEL = Workplace Exposure Limits
PEL = Permissible Exposure limit

MAC = Maximum Admissible Concentration

TLV = Threshold Limit Value FF = Filtering Facepiece

P1 protects against low levels of dust, solid and liquid aerosols up to 4 x OCL or 4 x APF

P2 offers higher levels of protection than P1 up to 12 x OEL, or 4 x APF

P3 offers higher levels of protection than P2 but with higher levels of dust and up to 50 x OEL or 20 x APF. These masks are also suitable for handling hazardous powders such as found in the pharmaceutical industry.

#### Surgical mask, non-woven, 3-ply

A three layer pleat style mask with ties. Features a polyester/cellulose inner facing for extra comfort, and a polypropylene outer facing for additional strength. Available in green and blue.

Cat. No.	Description	Pk Qty
SM/93102	Surgical mask, green	20x50
SM/93104	Surgical mask, blue	20x50

#### 3M™ 8710E Dust respirator

The lightweight 8710E provides comfortable, effective respiratory protection against fine dusts. The convex shape twin-strap design and nose-clip ensure a good fit over a wide range of face sizes. EN149 FFP1 Particulates: Assigned protection factor; 4 (NPF 4).

Cat. No.	Description	Pk Qty
SM/13026	8710E Dust Respirator	20

#### 3M<sup>™</sup> 8812 Dust respirator (valved)

The valved 3M 8812 provides comfortable, effective respiratory protection against fine dusts. The convex shape and 3M Cool Flow valve reduce heat build-up to offer comfortable protection particularly in hot and humid conditions. EN149 FFP1. Particulates: Assigned protection factor: 4 (NPF 4).

Cat. No.	Description	Pk Qty
SM/13038	8812 Dust respirator (Valved)	10

#### 3M<sup>™</sup> 9913 Nuisance odour respirator

Comfortable protection against fine dusts and relief from nuisance levels of organic vapours. EN 149:2001 FFP1 - Below WEL for organic vapours. Particulates Assigned Protection Factor: 4 (NPF 4).

Cat. No.	Description	Pk Qty
SM/13064	9913 Respirator, nuisance odour	20

#### 3M<sup>™</sup> 9915 Nuisance level, acid gas, respirator

Designed to provide relief from nuisance levels of acid gases, also provides effective respiratory protection against fine dusts. EN 149:2001 FFP1 - Below WEL for acid gases. Particulates Assigned Protection Factor 4 (NPF 4)

Cat. No.	Description	Pk Qty
SM/13078	9915 Respirator, acid gas	20

#### 3M™ 8835 Dust/ mist respirator (valved)

The valved 3M 8835 provides protection against higher levels of fine dusts, mists and metal fumes. The easy to breathe through material and Cool Flow valve reduces heat build-up inside the respirator. The easy to clean material and face seal allows the respirator to be re-used and hygienically cleaned between shifts reducing costs. Conforms to EN149:2001 FFP3 RD.

Cat. No.	Description	Pk Qty	
SM/13066	Respirator, dust, mist and metal fumes, valved	5	



SM/93102



SM/13026



SM/13038



SM/13064



SM/13078



SM/13066



#### Dust/Mist respirator

Soft close cell foam nose piece for an excellent facial seal, with valve for easier exhalation EN149:2001 + A1:2009

Cat. No.	Description
SM/13082	Dust/mist respirator with exhalation valve, pack of 20



SM/13084

#### Nuisance odour respirator

Moulded with adjustable nose clip and exhalation valve for protection against non-toxic and low-to-average toxicity solid and liquid aerosols (e.g. oil-mists) in concentrations up to  $12 \times MAC/OEL/TLV$  or  $10 \times APF$ .

Cat. No.	Description
SM/13084	Dust/mist respirator with adjustable nose piece and exhalation valve, pack of 10



SM/13086

#### High toxicity contaminants respirator

Moulded with adjustable nose clip and exhalation valve for protection against high toxicity contaminants in concentrations up to  $50 \times MAC/OEL/TLV$  or  $20 \times APF$ .

Cat. No.	Description
SM/13086	High toxicity contaminants respirator, with adjustable nose clip and exhalation valve, pack of 5



SM/13088

#### Low toxicity contaminate respirator, mesh

Flexible comfort nose seal, strong & durable shell for reduced consumption with valve for easier exhalation, Dolomite clogging tested for better breathing resistance for longer periods of time. Protection against non-toxic and low-to-average toxicity solid and liquid aerosols (e.g. oil-mists) in concentrations up to 12 x MAC/OEL/TLV or 10 x APF.

Cat. No.	Description
SM/13088	Low toxicity contaminants respirator, mesh. flexible nose seal and exhalation valve, pack of 10



SM/13092

#### Dust, mist and metal fume respirator

Moulded cup shaped disposable respirator suitable for use in multiple environments. Fitted with an integrated exhalation valve which increases airflow and reduces heat build-up. Conforms to EN149:2001 FFP3.

Cat. No.	Description
SM/13092	Respirator, dust, mist and metal fumes, valved, pack of 12 x 5

# Safety, respirators

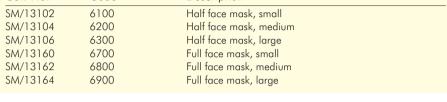
# Respirators, reusable, half mask, 3M<sup>™</sup> 6000 Series



- LightweightCost effective
- Wide field of vision
- Excellent visibility
- Easy adjustment
- Comfortable fit
- Tested in accordance with EN 140
- Easy to use bayonet filter fitting system

The popular 3M 6000 Series are designed for workers who are exposed to gases, vapours, fine particles or a combination of these.

Cat. No.	Code	Description
SM/13102	6100	Half face mask, small
SM/13104	6200	Half face mask, medium
SM/13106	6300	Half face mask, large
SM/13160	6700	Full face mask, small
SM/13162	6800	Full face mask, medium
SM/13164	6900	Full face mask, large





SM/1310

Filters, for use with 3M<sup>™</sup> 6000 Series respirators most will also fit 7000 series masks, please check for confirmation

3M part no.	Filter type	European standard	Max usage limitations Half masks	
Particulate Pr	P2	EN 143	10 x WEL	
2128	P2 + nuisance level organic vapour and acid gas	EN 143	10 x WEL (below WEL for gases/vapours 10 x WEL for ozone)	
2135 2138	P3 P3 + nuisance level organic	EN 143	20 x WEL	
	vapour and acid gas	EN 143	20 x WEL (below WEL for gases/vapours 10 x WEL for ozone)	
5911	P1	EN 143	4 x WEL	
5925	P2	EN 143	10 x WEL	
5935	P3	EN 143	20 x WEL	
6035	P3 (encapsulated)	EN 143	20 x WEL	
Gas and Va	oour Protection			
6051	A1	EN 141	10 x WEL or 1,000ppm whichever is the lower for certain organic gases/vapours	
6054	K1	EN 141	10 x WEL or 1,000ppm whichever is the lower for ammonia	
6055	A2	EN 141	10 x WEL or 5,000ppm whichever is the lower for certain organic gases/vapours	
6057	ABE1	EN 141	10 x WEL or 1,000ppm whichever is the lower for certain organic, inorganic and acid gases	
6059	ABEK1	EN 141	10 x WEL or 1,000ppm whichever is the lower for certain organic, inorganic, acid gases and ammonia	
6075	A1 + formaldehyde	EN 141	10 x WEL or 1,000ppm whichever is the lower for certain organic gases/vapours and 10ppm for formaldehyde	
6096	A1HgP3	EN 141	10 x WEL or 1,000ppm whichever is the lower for mercury and 20 x WEL for particulates	
Combined C	Fas and Vapour Protection			
Combined Gas and Vapour Protection  Combine any 6000 Gas and Vapour filter with any of the 3M™ 5000 Series particulate filters (use additional 501 retainer). Maximum usage limitations, as detailed above.  6098 AXP3 (for full face mask				
point gas.	use only)	EN 371	Depends on particular low boiling	
6099	ABEK2P3R (for full face mask			
30//	use only)	EN 143	20 x WEL or 5,000ppm, whichever is the lower for certain organic, inorganic, acid gases and ammonia. Particulates up to 40 x WEL	



SM/1316



SM/13126

#### Respirators (continued)

C	C 1			
Cat. No.	Code	Description		
Particulate filters				
SM/13110	2125 P2	Protects against solids and liquid particles P2R.		
SM/13112	2128 P2	Protects against nuisance level organic vapour and acid gasses P2R		
SM/13114	2135 P3	Protects against solids and liquid particles P3R		
SM/13116	2138 P3	Protects against solids and liquid particles P3R, with extra protection against organic and acid gases, vapours under limit and OEL and ozone up to 10 x TLV.		
SM/13170	6035	Filter 6035, protects against solids and liquid particles P3R.		
Gas and vapour f	ilters			
SM/13120	6050 A1	Protects against organic vapour A1		
SM/13122	6054 K1	Protects against Ammonia vapour K1.		
SM/13124	6055 A2	Protects against organic vapour A2		
SM/13126	6057 ABE1	Protects against organic vapour ABE1		
SM/13128	6075 A1	Protects against organic vapours + Formaldehyde A1		
SM/13130	6059	Protects against organic vapours ABEK1		
SM/13132	6099	Protects against gases, vapours and particulates ABEK2P3R.		
Gas, vapour and	particulate fi	İlters		
SM/13134	6096	Gas, Vapour and Particulate Filter A1 HgP3 R filters protects against mercury, organic vapours, boiling point > 65 degrees C, and particulates.		
SM/13172	5911	Gas, vapour and particulate filter 5911 protect against solids and liquid particles P1		
SM/13174	6051	Gas and vapour cartridge 6051 protects against organic vapours A1. PK64		
SM/13176	6098	Gas, vapour and particulate filter 6098 protects against gases, vapours and particulates AXP3R		
Pre-filters				
SM/13144	5925	Particulate Filter for use as a pre-filter for use with gas and vapour filters, protects against solids and liquid particles P2R		
SM/13146	5935	Particulate Filter for use as a pre-filter for use with gas and vapour filters protects against solids and liquid particles P3R		
Accessory				
SM/13150	501	Pre-filter retainer clip, used to clamp particulate pre-filters on to gas and vapour filters.		

# Safety screens

#### Safety screen, hinged type, polycarbonate



- Tough, clear polycarbonate
- Supplied as three panels joined by polypropylene hinges
- Adjustable, can be used as a tight triangle or extended out to a straight line configuration.
- Suitable for classrooms, laboratories and factories
- Stronger than armoured glass giving maximum protection from flying glass, hot liquids and other hazards
- The material has a very low flammability being self extinguishing (passes BS2782 part 5 1970 Methods 508A and 508D) (DIN 4 102)
- The bases consists of a pair of plastic coated metal feet measuring 60 x 150 mm and weighing 700g.
- The bases can be clamped or bolted onto the bench to give greater stability
- Each set is supplied with two base sets but without clamp

Cat. No.	Code	Height mm	Outside panel widths mm	Centre panel widths mm	Total width mm
SS/16512	SGT002	380	180	230	590
SS/16514	SGT004	610	180	230	590
SS/16516	SGT006	610	226	300	750
SS/16518 SS/16520	SGT012 SGT014	Spare shield base Shield clamp with hand screw for securing shield base to the bench			



SS/16514

# **Mandatory Signs**



Ear protectors must be worn in this area



Now wash your hands



Eye protection must be worn



Protective gloves must be worn



Protective clothing must be worn

SL/92042 300 x 100mm SL/92044 600 x 200mm SL/92002 300 x 100mm SL/92004 600 x 200mm

SL/92038 300 x 100mm

SL/92040 600 x 200mm

SL/92034 300 x 100mm SL/92036 600 x 200mm SL/92022 300 x 100mm SL/92024 600 x 200mm SL/92010 300 x 100mm SL/92012 600 x 200mm



Keep locked



Ear protectors must be worn

Protective footwear must be worn

SL/92014 300 x 100mm SL/92016 600 x 200mm



Wear face mask

SL/92018 300 x 100mm SL/92020 600 x 200mm



Wear face shield

SL/92026 300 x 100mm SL/92028 600 x 200mm



Respirators must be worn

SL/92030 300 x 100mm SL/92032 600 x 200mm

SL/92006 300 x 100mm

SL/92008 600 x 200mm

# Safe Condition Signs



SL/92052 200 x 300mm



First aid

SL/92094 200 x 300mm



Emergency shower

SL/92102200x300mm

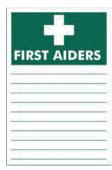


Emergency Eye Wash

SL/92104 200 x 300mm



SL/92096 200 x 300mm



SL/92098 200 x 300mm

# Fire Exit Signs



SL/92046 400 x 150mm SL/92064 600 x 200mm



SL/92078 400 x 150mm SL/92080 600 x 200mm



SL/92082 400 x 150mm SL/92088 600 x 200mm



SL/92090 400 x 150mm SL/92092 600 x 200mm



SL/92100 400 x 150mm SL/92048 600 x 200mm



SL/92050 400 x 150mm SL/92054 600 x 200mm



SL/92056 400 x 150mm SL/92058 600 x 200mm



SL/92060 400 x 150mm SL/92062 600 x 200mm



SL/92066 400 x 125mm SL/92068 600 x 200mm



SL/92070 300 x 150mm SL/92074 400 x 200mm



SL/92072 300 x 150mm SL/92076 400 x 200mm



SL/92084 450 x 200mm SL/92086 600 x 200mm

# **Multipurpose Signs**



SL/92246 600 x 450mm



SL/92248 600 x 450mm



SL/92250 400 x 300mm SL/92252 600 x 450mm

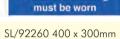


SL/92254 400 x 300mm SL/92256 600 x 450mm



SL/92258 400 x 300mm







SL/92262 300 x 200mm



# **Hazard Warning Diamonds**





SL/92118



SL/92130



SL/92120

SL/92132



SL/92122

SL/92134

NON-FLAMMABLE COMPRESSED

GAS



SL/92124

SL/92136



SL/92126

SL/92138



SL/92128

**RADIOACTIVE I** 

SL/92116

SL/92140



SL/92142



SL/92144

SL/92146



SL/92148



SL/92150



SL/92152

# Labels on a roll

All 50 x 50mm labels, 250 per roll











SL/92154

SL/92156

SL/92158

SL/92160

SL/92162











**Hazard Signs** 

All signs 200 x 300mm unless otherwise stated



















SL/92190 SL/92192 -400 x 600mm



SL/92196

SL/92198

substances

SL/92200

SL/92202

SL/92204

SL/92206

SL/92208 SL/92210 -400 x 600mm

















gas





SL/92212

SL/92214

SL/92216

gas

Spontaneously

combustible

SL/92218

peroxide

SL/92220

agent

SL/92222

SL/92224

SL/92226

SL/92228



















Hazard

SL/92242

SL/92244

SL/92230

SL/92232

SL/92234

SL/92236

SL/92238

SL/92240

# Cosh and Laboratory Tapes

25mm x 66m labels continuous tape



SL/92174



SL/92176



SL/92178



SL/92180



SL/92182



SL/92184





# **Safety Posters**



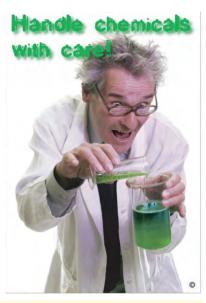
SL/92268 - 420 X 594mm, laminated paper



SL/92270 - 525 x 775mm



SL/92272 - 525 x 775mm



SL/92274 - 525 x 775mm

# Safety, storage cabinets

# Safety storage cabinets

Systemlabor FWF90 safety cabinets are designed to ensure the safe storage of flammable chemicals. The cabinets are re rated to 90 minutes at 200°C and certified in accordance with DIN 12925-1. In the event of fire they keep the temperature of the stored chemicals below critical levels, long enough to allow safe evacuation of the laboratory. Acid storage cabinets are constructed of solid propylene for the storage of corrosive chemicals. All safety cabinets are ventilated to avoid the build-up of noxious fumes. Please ask for details of the full range of products and a quotation.

# Hazardous substances and flammable liquid storage cabinets

- Flush fitting handles
- Adjustable perforated shelves
- Liquid tight sumps
- Robust steel construction
- Reinforced doors
- Easy drain perforated shelves (galvanised)
- Removable sump tray
- Hi-Viz warning yellow colour
- Warning symbols supplied
- Tough powder coated finish
- Lockable

Cat. No.	Code	Description	Overall dimensions (HxWxD) mm	Shelves
SC/24262	HZ5	Single door cabinet	700X350X300	1
SC/24264	HZ6	Single door cabinet	700X900X460	1
SC/24266	HZ3	Single door cabinet	900X460X460	1
SC/24268	HZ4	Double door cabinet	900X900X460	1
SC/24270	HZ1	Double door cabinet	1800X900X460	3



SC/242



SC/24262

# Acid and alkali storage cabinets

These cabinets enable safe and identifiable storage in the workplace

- Strong steel construction
- Easy-drain perforated shelves (galvanised)
- Removable sump
- Durable clean white finish
- Resilient powder coating
- Lockable

Cat. No.	Code	Description	Overall dimensions (HxWxD) mm	Shelves
SC/24142	AA5	Acid & alkali storage cabinet	700x350x300	1
SC/24144	AA6	Acid & alkali storage cabinet	700X900X460	1
SC/24146	AA3	Acid & alkali storage cabinet	900x460x460	1
SC/24148	AA4	Acid & alkali storage cabinet	900x900x460	1
SC/24150	AA1	Acid & alkali storage cabinet	1800x900x460	3



SC/241



SC/24142



SC/24304

# Fireproof safety cabinets – EN14470-1 Type 30min – FM approved

Fireproof safety cabinet, 30 min fire-rated for storing flammable substances! Designed, tested and approved according to EN14470-1 standard that requires the safest features to protect your flammable chemical from fire. Also available in 90 and 60 minutes.

- Tested and approved according to EN14471-1 and EN1363-1 and FM
- 30 minutes fire resistant built in HPL
- Self-closing door(s) with thermo-fuse
- Removable retention tank
- Adjustable retention shelves
- Normalized label
- Ventilation inlet and outlet with thermo-fuse
- Pedestal area to move easily with a forklift
- Doors with cylinder locks

Cabinets to store up to 4 different substances are also available.

Technical S	pecifications
3031E	W605 x D630mm x H635mm – supplied with 1 base trough and 1 perforated cover plate
3032E	W1115mm x D630mm x H635mm – supplied with 1 base trough and 1 perforated cover plate
3034E	W605mm x D550mm x H1980mm – supplied with 1 base trough and 3 shelves
3035E	W1115mm x D550mm x H1980mm – supplied with 1 base trough and 3 shelves
3032M11	W1115mm x D630mm x H635mm – 2 compartments – supplied with 2 base troughs and 2 perforated cover plates
3034M2	W605mm x D550mm x H1980mm – 2 compartments - supplied with 2 base troughs and 4 shelves
3035M11	W115mm x D550mm x H1980mm – 2 compartments - supplied with 2 base troughs and 6 shelves
3035M22	W1115mm x D550mm x H1980mm – 4 compartments - supplied with 4 base troughs and 8 shelves

Cat. No.	Model	Description
SC/24300	3031E	Ecosafe under bench cabinet – one door
SC/24302	3032E	Ecosafe under bench cabinet - two doors
SC/24304	3034E	Ecosafe tall cabinet – one door
SC/24306	3035E	Ecosafe tall cabinet – two doors
SC/24308	3032M11	Ecosafe multi-risk under bench cabinet – two doors – two compartments
SC/24310	3034M2	Ecosafe multi-risk tall cabinet – one door – two compartments
SC/24312	3035M11	Ecosafe multi-risk tall cabinet – two doors – two compartments
SC/24314	3035M22	Ecosafe multi-risk tall cabinet – two doors – four
		compartments
Accessories		
SC/24316	E48	Retention shelf for one door cabinets
SC/24318	E35	Retention shelf for two doors cabinets
SC/24320	T148	Drawer for one door cabinets
SC/24322	T235	Drawer for two doors cabinets
SC/24324	C148	Perforated cover plate for one door cabinet
SC/24326	C235	Perforated cover plate for two door cabinet
SC/24328	CDF-ACORG	Filtration Box
SC/24330	CDV-A	Ventilation Box
SC/24332	KRC	Connection Kit



# Safety, waste disposal

# Waste bin, pedal operated

White plastic mobile pedal bin, capacity 60L. Overall dimensions -  $700 \times 380 \times 490$ mm.

Cat. No.	Description
SD/91002	Pedal bin



SD/91002

Azlon

# Disposal bins, cardboard & LDPE

• Self assembly rigid boxes for safe disposal of broken glass.

- Glass is safely held in strong, leak-proof and puncture resistant LDPE liner.
- Lid has an integral waste flap for easy use and has a sealing feature for use when full.
- Boxes are clearly printed with instructions for use.

Cat. No.	Code	Description	Size (WxDxH, cm)
SD/13002	DBG001P	Glass disposal bin floor standing	30 x 30 x 70
SD/13004	DBG002P	Glass disposal bin bench top	23 × 23 × 26.5



SD/1300

# Sharps containers – Sharpsafe

The Sharpsafe containers are available in various sizes and comply with BS 7320:1990 and UN3291. Also available in the range is the Clinisafe, a multi-purpose clinical waste collection unit for Cytotoxic Placental and Laboratory waste and the Quiver, an ideal container for holding laparoscopic instruments.

Cat. No.	Description	Pk Qty
SD/26402	Sharpsafe 2 litre	50
SD/26404	Sharpsafe 4 litre	50
SD/26406	Sharpsafe 7 litre	50
SD/26408	Sharpsafe 13 litre	20
SD/26410	Sharpsafe 24 litre	10
SD/26412	Sharpsafe pocket size	100
SD/26416	Quiver 7.5 litre	20
SD/26418	Clinisafe 9 litre	20



SD/2640

# Disposal bags Biohazard autoclave bags with warning instruction and sterilization indicator field, strong 50µm Polypropylene film with broad seam at bottom. Autoclavable at 134°C (When autoclaving, the bag must not be completely sealed).

Cat. No.	Dimensions (WxDxH, mm)	Volume (approx) Litres	Pk Qty
AC/16300	300 x 500	8	500
AC/16302	400 x 780	38	500
AC/16304	600 x 800	60	500
AC/16306	700 x 1100	110	350



AC/1630



IS/162

# Scoops, weighing, borosilicate glass

Scoops, measuring, polypropylene

• Base is flat enabling scoops to stand horizontally • The capacity is clearly moulded on each size

Code

SWL006

SWL008

SWL012

SWL018

SWL024

SWL030

SWL036

SWL140

• Made from opaque white polypropylene • Top is flat for levelling of powders

Scoops

Cat. No.

IS/16218

IS/16228

IS/16234

IS/16240

IS/16246

IS/16256

IS/16266

IS/16276

**PYREX**<sup>®</sup>

Azlon

Pk Qty

5

5

5

5

5

Ideal for weighing small quantities of powder and then introducing into volumetric flasks etc.

Capacity

5ml

10ml

25ml

50ml

100ml

250ml

500ml

1000ml

Cat. No.	Code	Capacity	Length	Pk Qty
BS/12202	2115/02M	3ml	70mm	10
BS/12204	2115/04M	6ml	85mm	10
BS/12206	2115/06M	10ml	100mm	10

Overall length

82mm

102mm

137mm

160mm

198mm

259mm

315mm

385mm



BS/1220

SC/8400

# Scoops, cylindrical, stainless steel

Cat. No.	Capacity	Diameter x overall length
SC/84002	100ml	80 x 180mm
SC/84004	250ml	100 x 260mm
SC/84006	500ml	100 x 325mm
SC/84008	1000ml	115 x 340mm



SF/9300

# **Sealing film**

# Sealing film, Parafilm M

Designed to stretch over and seal a wide range of laboratory vessels. Supplied in dispensing boxes containing rolls with paper backing to prevent sticking. Parafilm is not suitable for use with solvents.

Cat. No.	Roll width x length
SF/93002	50mm x 75m (2 x 246ft)
SF/93004	100mm x 38m (4 x 124ft)
SF/93006	100mm x 75m (4 x 248ft)
SF/93008	500mm x 15m (19.6 x 49ft)



SF/93010

# Parafilm cutter

Sturdy transparent acrylic dispenser. Protected cutter with very sharp blade. Holds 1 or 2 rolls of the 50mm width film or 1 of the 100mm width.

Cat. No.	Description
SF/93010	Parafilm cutter

# **Shakers**

# Shaker, orbital, mini SSM1



The compact SSM1 provides a smooth uniform circular motion with an orbit of 16mm. It is supplied with a non-slip mat that can hold up to four multi-well plates or diagnostic cards.

The shaking action is ideal for samples of 0.5 to 5ml held in multi well plates, dishes and Petri dishes. The shaker can be used in incubators and environmental chambers (up to  $40^{\circ}$ C and  $80^{\circ}$ M humidity). Alternatively, an accessory cradle system is available that can accommodate a variety of vessels including flasks, bottles or beakers via four rubber securing bars. It turns the SSM1 into a very effective mini platform shaker. It will hold up to:  $4 \times 250$ ml or  $2 \times 500$ ml or  $1 \times 1000$ ml Erlenmeyer flasks or bottles. These larger vessels are held between the rubber bars.

The flexible cradle system has the benet that different combinations of vessels can be used offering maximum versatility.

Speed is variable from 30 to 300 rpm. Once set on the digital display, the shaking speed is effectively maintained even over long periods of time. Shaking times can be set to run for 1 to 999 minutes on the built-in digital timer, or the unit can be set for continuous operation.

- Smooth orbital shaking action
- Orbit of 16mm is ideal for larger samples, for example multi-well plates
- Built-in digital timer
- Variable speed control to 300rpm
- Supplied with non-slip mat for multi-well plates etc.
- Optional accessory cradle system for flasks and bottles

Technical Specifications	
Platform dimensions (WxL)	220 x 220mm
Speed range	30 to 300rpm
Orbit diameter	16mm
Maximum load	3kg
Operational temperature range	$+4 \text{ to } +40^{\circ}\text{C}$
Maximum permissible humidity	80%
Overall dimensions (WxDxH)	240 x 300 x 140mm
Net weight	5kg
Electrical supply	230V, 50Hz, 50W

Cat. No.	Code	Description
SH/15108	SSM1	Shaker, orbital, mini
SH/15110	SSM1/1	Accessory cradle with 4 securing bars
SH/15112	SSM1/2	Large platform (holds up 8 plates)
SH/15114	SSM1/3	Clear Acrylic lid

# Shaker, orbital, lab scale, SSL1



This lab scale platform shaker has a powerful yet quiet shaking mechanism that has been designed for problem free continuous use. It is, ideal for most culturing/aeration applications. It can be used in environmental chambers and CO2 incubators with a maximum humidity of 80%.

A digital built-in timer allows shaking times from 1 to 999 minutes to be set. After the timer has counted down, the shaker stops and sounds an alert.

A large capacity cradle type platform is available, it has six rubber cushioned horizontal securing bars with quick release handles. They can be easily adjusted both vertically and horizontally to hold most sizes and types of vessel. For example, they will accommodate the following Erlenmeyer flasks or bottles: 12 x 250ml or 8 x 500ml or 6 x 1000ml or 2 x 2000ml.

A larger platform is available as an optional accessory (model SSL1/1), which is designed to increase the capacity of the SSL1. The platform is  $510 \times 510$ mm with six securing bars. It will accommodate the following Erlenmeyer flasks or bottles:  $30 \times 250$ ml or  $16 \times 500$ ml or  $9 \times 1000$ ml or  $4 \times 2000$ ml. When this platform is fitted, the maximum permissible speed is 150rpm.

Technical Specifications	
Platform dimensions	335 x 335mm
Speed range	30 - 300rpm
Orbit/amplitude	16mm
Maximum load	10kg
Overall dimensions (WxDxH)	360 x 42 x 270mm
Operational temperature range	+4 to +40°C
Maximum permissable humidity	80%
Net weight	11kg
Electrical supply	230V, 50Hz

Cat. No.	Code	Description
SH/15220	SSL1	Shaker, Orbital, lab scale
SH/15222	SL1/1	Large capacity accessory platform 510 x 510mm with six rubber cushioned horizontal bars



SH/1510



SH/15220

# SH/15326

# Shaker, reciprocating, lab scale, SSL2

astuart\*

Model SSL2 has construction and control identical to SSL1 but with reciprocating shaking action with an amplitude of 20mm and speed range of 25 to 250 strokes / minute. It produces a rigorous side-to-side mixing action ideal for extractions etc.

The cradle type platform has six rubber cushioned horizontal securing bars with quick release handles. They can be easily adjusted both vertically and horizontally to hold most sizes and types of vessel. For example, they will accommodate the following Erlenmeyer flasks or bottles:  $12 \times 250$ ml or  $9 \times 500$ ml or  $6 \times 1000$ ml or  $2 \times 2000$ ml.

Technical Specifications	
Shaking action	Reciprocating
Platform dimensions (WxL)	335 x 335mm
Speed range	25 to 250 rpm
Orbit / amplitude	20mm
Maximum load	10kg
Operational temperature range	+4 to +40°C
Maximum permissible humidity	80%
Overall dimensions (WxDxH)	360 x 420 x 270mm
Net weight	11kg
Electrical supply	230V, 50Hz, 50W

Cat. No.	Model	Description
SH/15326	SSL2	Shaker, reciprocating, lab scale

SH/15350 with SH/15354

# Shakers, gyratory and see-saw, mini



These compact rockers are ideal where gentle mixing is required, either on the bench or in incubators. There is a choice of two models:

Model SSM3 provides a 3D gyratory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. The angle of tilt can be moved to any position by hand to optimise mixing of vessels.

Model SSM4 has a see-saw rocking action that creates a wave motion within vessels such as culture flasks, petri dishes etc. Digital selection of both speed and time facilitates accurate and reproducible conditions. Both parameters are controlled via an easy to use encoder control knob and displayed on the bright LED display. Both models are supplied with a nonslip mat which holds flat based vessels securely in place during mixing. An accessory tier system can be fitted in seconds, without the need for tools, tripling the available space for samples. Each tier is securely held in place by magnets.

- Small space saving design
- Ideal for personal use
- Gentle rocking action
- Choice of two models: 3D gyratory action SSM3 See-saw wave action SSM4
- Digital speed control and built-in timer
- Optional tier system available to increase capacity

Technical Specifications		
Model	SSM3	SSM4
Rocking action:	3D gyratory	See-saw wave
Platform dimensions, mm (WxL):	235 x 235	235 x 235
Speed range:	5 to 70rpm	5 to 70rpm
Angle of tilt:	3 to 12°	7°
Angle:	Yes by hand	No
Maximum load, kg:	3	3
Dimensions, mm (WxDxH):	240 x 300 x 165	240 x 300 x 150
Tier height, mm:	125 each tier	125 each tier
Operational temp. range:	$+4$ to $+40^{\circ}$ C	+4 to +40°C
Maximum permissible humidity:	80%	80%
Net weight, kg:	5	5
Electrical supply:	230V, 50Hz	230V, 50Hz
IP Rating:	30	30

Cat. No.	Model	Description
SH/15350	SSM3	Rocker, gyratory, mini
SH/15352	SSM4	Rocker, see-saw, mini
SH/15354	SSM3/1	Tier system (2 platforms plus 8 bar)



SH/15352

# Rockers, lab scale



These rockers have large platforms able to accommodate a number of samples, ideal for a busy lab. They are very quiet in operation and designed to be on continuously. Two models are available: Model SSL3 provides a 3D gyratory motion, ideal for low foaming agitation, DNA extractions, staining and de-staining procedures etc. The angle of tilt can be moved to any position by hand to optimise mixing of vessels.

Model SSL4 has a see-saw rocking action that creates a wave motion within vessels such as culture flasks, petri dishes etc.

Rockers are often used in conjunction with incubators and environmental chambers. Both units can be used in temperatures up to 40°C and humidity up to 80%. They are supplied with a non-slip mat and have digital selection of both speed and time making them very easy to operate. An accessory tier system can be fitted in seconds, without the need for tools, tripling the available space for samples, each tier is securely held in place by magnets.

- Large platforms, ideal for multiple users
- Gentle rocking action
- Choice of two models: 3D gyratory action SSL3 See-saw wave action SSL4
- Digital speed control and built-in timer
- Optional tier system available to increase capacity

Technical Specifications		
Model	SSL3	SSL4
Rocking action:	3D gyratory	See-saw wave
Platform dimensions, mm:	355 x 355	355 x 355
Speed range:	5 to 70rpm	5 to 70rpm
Angle of tilt:	$3 \text{ to } 12^{\circ}$	7°
Angle adjustable:	Yes by hand	No
Maximum load, kg:	10	10
Dimensions, mm (WxDxH):	360 x 420 x 170	360 x 420 x 160
Tier height, mm:	125 each tier	125 each tier
Operational temp. range:	$+4 \text{ to } +40^{\circ}\text{C}$	+4 to +40°C
Maximum permissible humidity:	80%	80%
Net weight, kg:	10	10
Electrical supply:	230V, 50Hz, 50W	230V, 50Hz, 50W
IP Rating:	30	30

Cat. No.	Model	Description
SH/15360	SSL3	Rocker, gyratory, lab scale
SH/15362	SSL4	Rocker, see-saw, lab scale
SH/15364	SSL3/1	Tier system (2 platforms plus 8 bar), fits both models



SH/15360



SH/15362

# Shakers, Microtitre, SSM5 and SSL5



- High-speed vibrational mixing action ideal for microtitre plates and microcentrifuge tubes
- SSM5 holds up to four 96 well plates
- SSL5 holds up to eight 96 well plates
- Digital selection of mixing speed
- Built-in digital timer or continuous operation
- Ideal for use in CO2 incubators or environmental chambers
- Optional tube holders available for the mixing of microcentrifuge tubes
- With BioCote® antimicrobial protection

Technical Specifications			
Model	SSM5	SSL5	
Platform dimensions (w x l)	220 x 220mm	306 x 306mm	
Number of plate positions	4	8	
Speed range	250 to 1250rpm	250 to 1250rpm	
Orbit diameter	1.5mm	1.5mm	
Maximum load	1kg	2kg	
Operational temperature range	$+4$ to $+40^{\circ}$ C	+4 to +40°C	
Maximum permissible humidity	80%	80%	
Overall dimensions (w x d x h)	240x300x160mm	360x420x160mm	
Net weight	5kg	9kg	
Electrical supply	230V, 50Hz, 50W	230V, 50Hz, 50W	

Cat. No.	Code	Description
SH/15002	SSM5	Shaker, microtitre, mini
SH/15003	SSL5	Shaker, microtitre, labscale
Accessories		
SH/15004	SSM5/1	Tube holder for 1.5ml tubes
SH/15006	SSM5/2	Tube holder for 0.5ml tubes
SH/15008	SSM5/3	Tube holder for 0.2ml tubes



SH/15002



SH/40000



SH/40020



SH/40022

# Shakers, heavy duty, orbital, analogue and digital

## Analogue:

The OHAUS 16 kg Capacity Analog Heavy Duty Orbital Shaker is designed for a wide range of applications that require basic shaking control. Shaker provides reproducible motion that is evenly distributed throughout the entire surface of the tray. Suitable for use in cold rooms, incubators and CO2 environments 0 to 40°C, maximum humidity 80% RH

- Microprocessor controls
- Continuous or timed operation
- 16 kg weight capacity
- Exceptional speed control, accuracy and durability
- LED displays for speed and time
- Calibration mode for speed
- Speed Ramping
- Spill-Resistant

# Digital:

The digital version also has a capacity of 16kg, the unit is suitable for cell cultures that require accurate and repeatable results. An easy to read independent LED touch pad displays speed and time together for ease of use

- RS232 Interface:
- User calibration for speed
- Load sensor detects unbalanced
- Overload protection with audible and
- Speed ramping audible alarm

Technical Specifications	Analogue	Digital
Speed range	25 to 500rpm	15 to 500rpm
Timer	1 to 120 minutes	1 second to 160 hours
Orbit	19mm	19mm

Cat. No.	Description
SH/40000	Analogue orbital shaker, heavy duty, maximum load 16kg
SH/40002	Digital orbital shaker, heavy duty, maximum load 16kg with 160-hour timer
SH/40020	Platform with adjustable clamps, 4 bars
SH/40022	Platform, separating funnel, 3 x 500ml to 2 litre capacity

Other clamps are available, please enquire



From stirrers to shakers, centrifuges to dry block heaters, lifts to clamps, the newly expanded OHAUS portfolio is filled with products perfect for life science applications, giving you countless opportunities to maximize your reach in your customer's laboratories.

Don't limit yourself to just measurement — Do More!









www.ohaus.com

# Shakers, orbital temperature controlled

Thermal shakers and cooling thermal shakers are designed for applications that require consistent and precise results. With heating, cooling and shaking capabilities, these shakers use interchangeable blocks to accommodate a wide variety of tubes and microplates. The easy-to-use, 4.3", colour, LCD touch screen allows the user to save and track progress through the live status bar for five user defined programs, each with five individual steps.

The shaker can operate in conditions from 5 to 35°C, maximum 80% relative humidity, non-condensing

- Rapid heating, cooling and high-speed shaking ability
- Internal memory stores five separate 5-step programs
- USB interface
- Programmable for automated use
- Temperature ramp
- Single point calibration mode for 6 user defined temperatures
- Pulse mode feature
- Maximum temperature limiting function
- Audible alarm

Technical Specifications	
Temperature range	Ambient +4 to 100°C (heated version), 17 below ambient to
	100°C (cooled version)
Speed range	300 to 3000rpm
Timer	59 minutes (heated version), 1 minute to 99 hours (cooled version)
Orbit	3mm
Maximum weight load	1 block

Cat. No.	Description
SH/40050	Shaker, heated including 1.5ml tube block with cover
SH/40052	Digital orbital shaker, heating and cooling, with 1.5ml tube block with cover
SH/40070	Block, microplate with lid
SH/40072	Block, 24 place x 2ml
SH/40074	Block, 9 place x 5ml
SH/40076	Block, 9 place x 15ml conical
SH/40078	Block, 4 place x 50ml



SH/40050



SH/40052



SH/40070

Notes ————————————————————————————————————



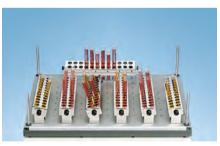
SH/25300 & SH/25320



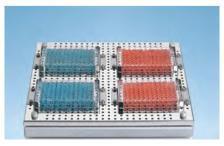
SH/25302



SH/25322



SH/25324



SH/25326

# Shaker, orbital, large capacity Model 3020

A large capacity orbital shaker, for gentle motion or vigorous mixing of the most varying liquids. Even in continuous operation, thanks to its useful shaking amplitude and the option of adjusting its speed, this shaker performs well. The large capacity shaking tray not only accepts heavier loads, but also deep well microplates, which make this shaker indispensable in the growing of micro-organisms, cell and tissue cultures.

A number of accessory trays are available creating a versatile shaking set-up; the anodised aluminium perforated tray for instance accepts stainless steel clamps for Erlenmeyer flasks, these items, along with others are offered below.

The shaking platform is equipped with four support rods with screw-type clamps for secure attachment of glassware; a special rubber pad ensures a non-slip grip of objects on the shaking tray. The quiet running motor is microprocessor-controlled, adjustable in steps of 1.0 rpm with gentle start-up and provides constant speed during continuous operation, independent of load. The speed and remaining time are indicated by two LC displays.

This shaker is well-suited for use in laboratories, incubation rooms and moderating rooms in ambient temperatures between +10 °C and +50 °C.

Technical Specifications	
Moving platform:	676 x 540 mm
Max load.	30Kg
Shaking amplitude:	32mm
Shaking frequency without rack:	20 - 250 rpm
Shaking frequency with rack:	20 - 200 rpm
Timer	1 min – 99.59 hours, or continuous operation
Dimensions (WxDxH):	745 x 730 x 135 mm
Electrical requirement:	230V*
*Other voltages on request	

Cat. No.	Code	Description
SH/25300	3020	Large capacity orbital shaker
Accessories		
SH/25302	3980	Shaking tray made of 3-mm-thick anodised aluminium, 670 x 537 mm, with holes to accommodate clamps for Erlenmeyer flasks and accessories or equipment
SH/25304	3983	Clamps, stainless steel for 25 ml Erlenmeyer flasks, tray capacity 99
SH/25306	3984	Clamps, stainless steel for 50 ml Erlenmeyer flasks, tray capacity 99
SH/25308	3985	Clamps, stainless steel for 100 ml Erlenmeyer flasks, tray capacity 50
SH/25310	3986	Clamps, stainless steel for 200 ml Erlenmeyer flasks, tray capacity 26
SH/25312	3987	Clamps, stainless steel for 300 ml Erlenmeyer flasks, tray capacity 26
SH/25314	3988	Clamps, stainless steel for 500 ml Erlenmeyer flasks, tray capacity 26
SH/25316	3989	Clamps, stainless steel for 1000 ml Erlenmeyer flasks, tray capacity 12
SH/25318	3990	Clamps, stainless steel for 2000 ml Erlenmeyer flasks, tray capacity 9
SH/25320	3981	Rack frame for doubling the capacity by accommodating two shaking trays 3980; distance between trays - 205 mm. The bottom tray can be loaded with standard flasks up to a max. of 500 ml.
SH/25322	3982	Universal mount consisting of two longitudinal bars and six transverse bars, Screw-type clamps are used for adjusting the longitudinal bars vertically and transverse bars horizontally
SH/25324	3953	Stainless steel test tube rack; the perforated section can be tilted by 90° with clamping springs for secure grip and silent shaking of glasses; can be screwed onto shaking tray 3980 for a max. of 24 tubes, 12-17mm diameter Capacity of tray: nine test tube racks
SH/25326	3910	Stainless steel holding frame for 96 place deep well microplates for screwing on to shaking tray 3980, complete with attachment materials Capacity of tray 15 test plates

# Shaker, flask, SF1

Holding up to eight asks or bottles, up to 500ml capacity, the SF1 creates a vigorous mixing action by simulating hand shaking. It is especially useful for applications where prolonged shaking is required. Robust construction, mounted on four rubber feet to absorb vibration and prevent unnecessary movement on the bench. Analogue timer covers 10 to 60 minutes with a manual override. Electronic feed-back control ensures a constant speed irrespective of load. Supplied with two side arms, eight clamps and Allen key. An optional extension kit is available, catalogue number SF1/2 which consists of two extension arms and four extra clamps. It increases the capacity to twelve bottles or asks.

- Vigorous shaking action
- Timed operation or continuous running
- Robust construction
- Ideal for extractions

Technical Specifications	
Speed range	8 to 800 oscillations/min
Amplitude	1.5mm
Overall dimensions (WxDxH)	780 x 270 x 240mm
Maximum load	3kg
Net weight	8.3kg
Electrical supply	230V, 50Hz, 50W

Cat. No.	Model	Description
SH/15432	SF1	Flask shaker with two side-arms, eight clamps and Allen key
SH/15434	SF1/1	Spare clamp
SH/15436	SF1/2	2 x accessory side-arms and 4 clamps



SH/15432

# Sieves

# Test sieves, stainless steel

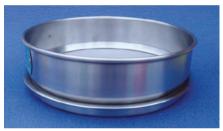
A range of test sieves to ISO 3310/1. All stainless steel construction with stainless steel woven wire mesh, complete with certificate of conformity, diameter 200mm or 300mm.

- Other diameters and apertures available.
- 8" ASTM sieves available.

Details on request.

Cat. No. 200mm diam.	300mm diam.	Nominal Aperture
SV/94104	SV/94204	3.35mm
SV/94106	SV/94206	2.80mm
SV/94108	SV/94208	2.36mm
SV/94110	SV/94210	2.00mm
SV/94112	SV/94212	1.70mm
SV/94114	SV/94214	1.40mm
SV/94116	SV/94216	1.18mm
SV/94118	SV/94218	1.00mm
SV/94120	SV/94220	850micron
SV/94122	SV/94222	710micron
SV/94124	SV/94224	600micron
SV/94126	SV/94226	500micron
SV/94128	SV/94228	425micron
SV/94130	SV/94230	355micron
SV/94132	SV/94232	300micron
SV/94134	SV/94234	250micron
SV/94136	SV/94236	212micron
SV/94138	SV/94238	180micron
SV/94140	SV/94240	150micron
SV/94142	SV/94242	125micron
SV/94144	SV/94244	106micron
SV/94146	SV/94246	90micron
SV/94148	SV/94248	75micron
SV/94150	SV/94250	63micron
SV/94152	SV/94252	53micron
SV/94154	SV/94254	45micron
SV/94156	SV/94256	38micron
Accessories		
SV/94160	Lid for 200mm sieves	
SV/94162	Receiver for 200mm sieve	es
SV/94260	Lid for 300mm sieves	
SV/94262	Receiver for 300mm sieve	es

<sup>\*\*</sup>These sieves are available in full and half height, please state which is required when ordering. Please note, full height (50mm) is supplied as standard if the height is not specified.



SV/94126



SV/542



SV/543



SV/54290 & SV/54292



# Sieves

Endecotts test sieves BS410, available in either brass or stainless steel frames with stainless steel woven wire mesh, complete with certificate of conformity. Diameter 200mm, full height, 50mm deep. 100mm and 300mm diameter and a range of other apertures plus sieves to ISO or ASTM are available on request.

Cat. No. Brass	Cat. No. Stainless steel	Aperture
SV/54202	SV/54302	16.00mm
SV/54204	SV/54304	13.20mm
SV/54206	SV/54306	11.20mm
SV/54208	SV/54308	9.50mm
SV/54210	SV/54310	8.00mm
SV/54212	SV/54312	6.70mm
SV/54214	SV/54314	5.60mm
SV/54216	SV/54316	4.75mm
SV/54218	SV/54318	4.00mm
SV/54220	SV/54320	3.35mm
SV/54222	SV/54322	2.80mm
SV/54224	SV/54324	2.36mm
SV/54226	SV/54326	2.00mm
SV/54228	SV/54328	1.70mm
SV/54230	SV/54330	1.40mm
SV/54232	SV/54332	1.18mm
SV/54234	SV/54334	1.00mm
SV/54236	SV/54336	850micron
SV/54238	SV/54338	710micron
SV/54240	SV/54340	600micron
SV/54242	SV/54342	500micron
SV/54244	SV/54344	425micron
SV/54246	SV/54346	355micron
SV/54248	SV/54348	300micron
SV/54250	SV/54350	250micron
SV/54252	SV/54352	212micron
SV/54254	SV/54354	180micron
SV/54256	SV/54356	150micron
SV/54258	SV/54358	125micron
SV/54260	SV/54360	106micron
SV/54262	SV/54362	90micron
SV/54264	SV/54364	75micron
SV/54266	SV/54366	63micron
SV/54268	SV/54368	53micron
SV/54270	SV/54370	45micron
SV/54272	SV/54372	38micron

# Accessories

Cat. No.	Description
SV/54290	Brass lid
SV/54292	Brass receiver
SV/54390	Stainless steel Lid
SV/54392	Stainless steel receiver



SV/542

# Soil sieve set

Set of 9 sieves, nominal mesh numbers 10, 20, 30, 40, 60, 80, 100, 120 and 240 mounted in aluminium frames with aluminium lid and receiver. Pan diameter 100mm, height 45mm. Other mesh sizes available on request

Cat. No.	Description
SV/84002	Soil sieves, set of 9

# Sieve shaker, Minor 200

The Minor 200 has been developed and manufactured to combine low cost with the benefits of a well-designed and engineered shaker. It incorporates many features usually found only on larger, more expensive models.

It is ideal for the use in laboratories and plants since it is compact and genuinely portable (weighing only 17kg). The sieve stack is held firmly in position by a clamping belt system. Removing it allows the whole unit to be stored in a space less than 200 mm high.

There are no rotating parts in the Minor 200 - consequently it is quiet in operation and maintenance free.

- Electromagnetic drive for quiet and virtually maintenance free operation
- Compact & portable (weighing only 17kg)
- Requires only small storage space due to small footprint and easily removable clamping belt system (included)
- Complies with the requirements of AASHTO T 27

Cat. No.	Code	Description
SV/54506	MIN200/23050	Sieve shaker, Minor 200

# Sieve shaker, Octagon 200

The Octagon 200 is suitable for all sieving tasks, both in the laboratory environment as well as onsite and provides optimum sieving action for fast and reproducible results. It is robust, compact and sufficiently lightweight to be portable. The electromagnetic drive is combined with a 3D sieving motion that ensures excellent separation efficiency in a short period of time. A digital display, as well as a quick-release clamping system, makes operation very easy and straightforward.

- Easy-to-use sieve clamping system
- Accepts up to 8 full height 200 mm (8") diameter sieves
- Suitable for dry and wet sieving
- 10 amplitude settings & digital timer
- 3D sieving motion allows for high separation efficiency and non-blinding sieving action
- No mechanical moving parts
- Compact & portable

Cat. No.	Code	Description
SV/54508	OCT200/23050	Sieve shaker, Octagon 200, 230V, 50Hz
SV/54510	OCT200/23060	Sieve shaker, Octagon 200, 230V, 60Hz
SV/54514	ZMWSK-OCT200	Wet sieving attachment.

# Sieve shaker, Octagon 200CL

The Octagon 200CL provides precise, reproducible and error-free sieving processes.

Several unique features have been developed specifically for this sieve shaker, including the 'Closed Loop' amplitude control for ultimate reproducibility.

The Octagon 200CL is designed to work with Endecotts' SieveWare, the new software for easy evaluation and documentation of the sieving process.

- Closed Loop' total amplitude control ensures reproducible sieving
- Digital controls for easy and reliable operation
- Easy-to-use sieve clamping system
- Accepts up to 8 full height 200 mm (8") diameter sieves
- Suitable for dry and wet sieving
- 3D sieving motion for high separation and non-blinding sieving action
- No mechanical moving parts
- Compact & portable

Cat. No.	Code	Description
SV/54512	OCT200CL/100-240	Sieve shaker, Octagon 200CL
SV/54514	ZMWSK-OCT200	Wet sieving attachment.

# Sieve Shaker, electromagnetic

This shaker uses impulses to impart a triple vibrating action; vertical, lateral and rotational. Simple and sturdy construction making it ideal for continuous and intense use. It is operated and controlled via a separate control panel enabling high precision, performance and repeatability. This unit will accept 200, 250, 300 and 315mm, 8 and 12inch diameter sieves.

The shaker can hold up to 10 sieves. It is fitted with a digital 1 to 999 minute timer, accessed through the digital control panel. This separate panel also gives the user control of the vibration intensity and pauses between sieving actions, which is particularly useful when sieving ne materials. Wet sieving kits in the appropriate sizes may be used with this shaker. For operation on 230V, 50Hz.

Cat. No.	Description
SV/94500	Sieve shaker, electromagnetic



SV/54506



SV/54508



SV/54512



SV/94500

# SP/840

# Spatulas

# Spatulas, Chattaway pattern, nickel

Cat. No.	Description	Pk Qty
SP/84002	Medium 100mm long	5
SP/84004	Medium 150mm long	5
SP/84024	Medium 180mm long	5
SP/84006	Medium 200mm long	5



# Spatulas, Chattaway pattern, stainless steel

Cat. No.	Description	Pk Qty
SP/84018	Medium 100mm long	5
SP/84020	Medium 150mm long	5
SP/84026	Medium 180mm long	5
SP/84022	Medium 200mm long	5

# Spatulas, spoon one end, nickel

Cat. No.	Length, mm	
SP/84102	120	
SP/84104	150	
SP/84108	180	
SP/84106	210	
With micro spoon	, 0.2ml capacity	
SP/84110	150	



SP/8412

# Spatulas, spoon one end, nickel

Cat. No.	Length, mm
SP/84118	120
SP/84120	150
SP/84124	180
SP/84122	210
With micro spoon, 0.2m	ll capacity
SP/84130	150

# Spatulas, micro pattern

Cat. No.	Description	Pk Qty
SP/84140	Chattaway pattern, Nickel, 150mm long	5
SP/84142	Chattaway pattern, Stainless Steel, 150mm long	5

# Spatulas, PTFE coated



Cat. No.	Description	Pk Qty
SP/84150	Chattaway pattern, Stainless Steel PTFE Coated,	
	150mm long, lightweight	5
SP/84152	Spoon one end, Stainless Steel PTFE Coated, 150mm long	10
SP/84154	Stainless Steel PTFE Coated - Micro, 150mm long	10

# Spatulas, offset spoon, stainless steel

Cat. No.	Length, mm
SP/84202	190



SP/84202

# Spatulas, Trulla pattern, stainless steel

Cat. No.	Length, mm	
SP/94014	175	



SP/94014

# Spatulas, palette knives, polypropylene handles

Parallel blade, stainless steel, autoclavable

Cat. No.	Length, mm	
SP/44202	105	
SP/44204	150	
SP/44206	200	
SP/44208	250	
SP/44210	300	
•		



SP/442

# Spatulas, Nuffield pattern

Cat. No.	Length, mm	Pk Qty	
SP/94116	140	10	



SP/94116

Azlon

# Spatulas, polypropylene

- Moulded strong tapered spatulas with chamfered ends.
- Virtually unbreakable and retain shape after flexing.
- Good chemical and heat resistance.
- Autoclavable.
- Can be used as tongue depressors

Cat. No.	Code	Length, mm	Pk Qty	
SP/16204	SWY062P	165	10	
SP/16206	SWY064P	245	10	



SP/1620

SP/25002



SP/25016



# Spectrophotometers

# Spectrophotometers, 6300 series



The Models 6300 and 6305 are designed to provide the user with a reliable high quality, simple to operate system for routine analysis.

- Dual display wavelength and photometric result
- Versatile sampling systemFull interfacing capability

Size/Weight

Technical Specifications	
Optics Wavelength	Single beam
Range	320-1000nm (6300) / 198-1000nm (6305)
Resolution/Accuracy	1nm / ±2nm
Bandwidth	8nm (6300) / 6nm (6305)
Grating	1200lines/mm
Transmittance	
Range	0 to 199.9%T
Resolution	0.1%T
Accuracy	±1%T
Stray light	<0.5%T (6300)
	<0.5%T @ 340 & 220nm (6305)
Absorbance	
Range/Resolution	-0.300 to 1.999A / 0.001A
Concentration	
Range/Resolution	-300 to 1999Conc / 0.1/1
Photometric noise	<1% (6300) <0.001A @ 0A @ 400nm (6305)
Photometric stability	1%/hr (6300) <0.002A/hr (6305)
Outputs Analogue	(0 to 1.999V d.c.) RS232 serial port
Light source	Tungsten halogen (6300) Xenon lamp module (6305)
Input voltage/Power	110/230V a.c20% +10% @50/60Hz / <50W

Cat. No.	Code	Description
SP/25002	630 501	Spectrophotometer 6300 visible
SP/25004	635 001	Spectrophotometer 6305 UV/visible
Accessories		
SP/25016	632 001	Sipper pump (230V) version
SP/25018	632 031	Sipper pump (110V) version
SP/25020	634 001	4 position cell holder
SP/25022	648 001	Single cell jacketed cell holder
SP/25024	630 005	10-100mm cell holder
SP/25028	012 094	Xenon lamp module (6305)
SP/25030	012 075	Tungsten halogen lamp (6300)
SP/25032	630 028	Dust cover
Cuvettes		
SP/25646	035 027	Visible (glass) 10mm path length cuvette
SP/25648	035 123	Visible (glass) micro (500µl) cuvette
SP/25280	035 126	Visible (glass) semi-micro (1 ml) cuvette
SP/25278	035 028	UV (quartz) cuvette (2.0 to 3.5ml)
SP/25286	035 125	UV (quartz) micro (500 $\mu$ l) cuvette
SP/25282	035 127	UV (quartz) semi-micro (1 ml) cuvette

365(w)x272(d)x160(h)mm / 6Kg

Notes		

# Jenway 72 Series scanning spectrophotometers



The 72 series spectrophotometers are the first scanning spectrophotometers in the Jenway range to leverage diode array technology to produce exceptionally fast results. The range includes two models: model 7200 covers a wavelength range of 335 to 800nm with a spectral bandwidth of 7nm and model 7205 covers a wavelength range of 198 to 800nm with a spectral bandwidth of 5nm. The 72 series spectrophotometers offer measurement modes for single wavelength with basic absorbance and transmittance; concentration calculated using a standard or a factor; optical density; quantitation with the ability to create a calibration curve using up to 6 standards and 3 replicates; full spectrum scanning and kinetics where up to 3 wavelengths can be measured simultaneously.

- Scanning diode array technology
- Colour touchscreen navigation
- Small footprint and lightweight
- Fast scan speed
- English, French and German language options
- Multiple USB ports for data storage and printer connectivity
- Extensive range of accessories available



SP/25098

## **Technical Specifications** 7200 7205 Model Spectral bandwidth (nm) 5 198 - 200 Wavelength Range (nm) 335 to 800 Measurement Time (Kinetics) 15 to 9999 seconds 7 to 9999 seconds Spectrum Range 335 to 800nm 198 to 800nm Tungsten Halogen Lamp Light source Xenon Lamp Wavelength + 2nm Accuracy Repeatability ± 2nm

**Photometrics** Transmittance 0 to 199.9% Absorbance -0.300 to 2.500A

Accuracy +/- 0.01A at 1.0A and 546nm +/- 0.005A/h at 0.04A and 546nm Stability (A) +/-0.002A at 0.04A and +/-0.02A at 2.0A and 546nm Noise

Stray Light at 340nm, %T < 1%T according to ANSI/ASTM E387-72

Concentration

+/- 2500 Range Blank with a single standard or factor Calibration

+/- 1000 Factor Standard +/- 1000

Optical Density

Factor +/- 1000

Quantitation

+/- 2500 Range

Blank with up to 6 standards Calibration Curve fit algorithms Linear and linear through zero

**Kinetics** 

Calibration Blank with a factor Display Graphical and concentration Concentration and rate of change Analysis

Spectrum

Absorbance or % transmittance and up to 50 spectral analysis points Analysis

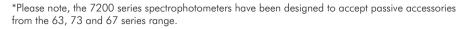
Other

Beam height 15mm

Limited by attached mass storage device Results memory

Removable media USB (supplied) Outputs USB x 2

100 - 240VAC at 50 to 60HzSupply voltage/frequency 12V DC, 3.8A Power Size (WxDxH) 212 x 422 x 120mm 2.8kg Weight



Cat. No.	Code	Description
SP/25098	720 501	Spectrophotometer model 7205, visible scanning, 198 to 800nm
SP/25100	720 001	Spectrophotometer model 7200, visible scanning, 335 to 800nm
SP/25102	725 201	Cell, heated with 10 x 10mm cuvette holder
SP/25104	SMP50/PRINTER	Printer, external, rechargeable battery
PH/25520	037 702	Paper roll, thermal



SP/25100



SP/25102



SP/25104



# SP/25040



SP/25070

# Spectrophotometers, models 7300, 7305, 7310 and 7315



The range includes two basic models, 7300 and 7305 and two advanced models, 7310 and 7315. The 7300 and 7305 feature measurement modes for absorbance, % transmittance and

The 7310/15 add spectrum scanning, kinetics and quantitation. Fitted with a USB port on the front of the unit so results can be stored directly to a USB memory stick. These models can store up to 240 methods which can be copied from one unit to another using the USB capability. Enhanced security features allow the settings and methods to be locked preventing unauthorized changes. The home page can also be customized and selected modes restricted, which is ideal for teaching laboratories.

Technical Specifications				
Model	7300	7305	7310	7315
Wavelength Range	320 to	198 to	320 to	198 to
	1000nm	1000nm	1000nm	1000nm
Wavelength Resolution/	. ,			
accuracy/bandwidth	Inm / ±	/ ±2nm / 5nm		
Absorbance Range		-0.300 to		
Transmittance Range	. 1	0 to 19		
Photometric Accuracy		•	1.000 Absorbanc	e
Concentration/Quantitation Ro	ange	-300 to Selectable 1/0.		
Concentration Units	no units %		, mEq/l, mEq, M,	mhd uhd
Concentration offits			mg/l, $\mu$ g/l, ng/l, $\mu$	
		_	/ml, ng/ml, μg/μl	-
	mg, ai, µg	mol/l, n		, τιθ/μι/
Concentration Calibration	Bla		standard or facto	r
Quantitation Calibration		Ü		p to 6 standards
Kinetics Display		Gr		ited concentration
value				
Kinetics Calibration			Blank with a sing	le standard or factor
Spectrum Scan Data Interval				or 5nm
GLP				ock & calendar,
			•	rator ID
Light Source	Tungsten	Xenon	Tungsten	Xenon
	halogen	lamp	halogen	lamp
Outputs Analogue, RS232, Internal printer Size (WxDxH) /Weight 275 X 400 X 220mm / 6kg				
Size (WxDxH) /Weight		2/5 X 400 X 2	ZUMM / 6kg	

Cat. No.	Code	Description
SP/25040	730 001	Spectrophotometer model 7300 Visible
SP/25050	730 501	Spectrophotometer model 7305 UV/Visible
SP/25060	731 001	Spectrophotometer model 7310 Visible scanning
SP/25070	731 501	Spectrophotometer model 7315 UV/Visible scanning
Accessories		
SP/25030	012 075	Tungsten halogen lamp
SP/25290	730 545	Xenon lamp module
SP/25292	735 001	Dust cover
SP/25640	660 101	Internal printer (packed)
PH/25520	037 702	Paper roll for thermal printer
SP/25294	735 401	8 cell automatic turret
SP/25296	735 201	Sipper pump
SP/25298	735 301	Peltier
SP/25300	735 701	Sipper/Peltier pump
SP/25302	630 204	10 x10mm path length cuvette holder
SP/25304	637 071	Test tube holder (accepts 10mm square cuvettes, 16 and
		24mm diameter test tubes)
SP/25024	630 005	10 to 100mm adjustable path length cuvette holder
SP/25306	630 304	Micro-cuvette holder with reduced aperture
SP/25308	736 201	Water heated 10x10 single cell holder
SP/25312	019 146	4GB USB memory sticks for external memory

# Spectrophotometer, Jenway 7615 Scanning Visible 76 Series, single Beam



The 7615 split beam spectrophotometer provides accurate and reliable results in various applications from teaching, to industrial applications and routine sample analysis in quality control environments. Featuring a 7" HD touchscreen, the display allows full spectrum scans; quantitation curves and kinetics runs to be viewed

Fitted with a 10 mm x 10 mm cuvette holder, accepting a sample volume of 3 ml, the light-excluding domed lid is designed to allow tall multi-cell changers or test tubes to be used.

Using CPLive<sup>TM</sup> connectivity, the user can upload results and protocols safely and securely to the cloud, share data with colleagues, and simultaneously manage multiple devices.

Supplied with universal power supply, and pack of 100 disposable cuvettes.

- Full spectrum scanning
- Up to 4 wavelengths can be measured simultaneously
- Capability to create a calibration curve using up to 20 standards
- Enhanced connectivity and data storage with CPLive™
- USB port

Technical Specifications	
Range/ Accuracy/ Repeatability	198 to 1000nm/± 2.0nm/± 0.5nm
Transmittance/Absorbance	0 to 199.9% / -0.300 to 2.500Abs
Accuracy	$\pm$ 1%T, $\pm$ 0.010Abs at 1.000Abs
Display	Graphical
Range/ Spectral bandwidth	198 to 1000nm (1.5nm)
Scan interval	Selectable 1, 2, 5 or 10nm
Analysis	Absorbance or % transmittance and peaks and valleys
	and area under curve
Light source	Xenon lamp
Internal memory	10GB for results and methods
Outputs	USB Type A x2, USB Type B x1, Ethernet (RJ-45)
Power supply unit	24 V d.c. 2.5 A
Size (w x d x h)/Weight	280 x 500 x 156mm/9kg

Cat. No.	Code	Description
SP/25320	761 501W	Spectrophotometer 7615, split beam UV/ Visible scanning, with 10 x 10mm holder white
SP/25322	761 501B	Spectrophotometer 7615, split beam UV/ Visible scanning, with 10 x 10mm holder black
SP/25304	637 071	Test tube holder, (accepts 10mm square cuvettes, 16 and 24mm diameter test tubes)
SP/25294	735 401	8 cell automatic turret
SP/25296	735 201	Sipper pump
SP/25298	735 301	Peltier
SP/25300	735 701	Sipper/ Peltier pump
SP/25314	035 262	Tray cell for ultra-micro sample volumes from 0.7 to 5µl
SP/25316	035 263	Cap 1mm path length, replacement
SP/25318	035 264	Cap 0.2mm path length, replacement



SP/2532



SP/25294



SP/25300



SP/25314



# Spectrophotometer, Life Science



This spectrophotometer is based on the highly successful 73 series spectrophotometers therefore it has all the same features including icon driven software and an improved navigation system for easy and intuitive usability. As a life science spectrophotometer, it has pre-programmed methods for the measurement of nucleic acid concentrations and protein assays plus measurement modes for determining the purity of nucleic acids and optical density (OD) for cell harvesting. As well as the dedicated life science measurement modes this instrument can also be used as a standard spectrophotometer with measurement modes for photometrics, concentration, multiwavelength, spectrum scanning, quantitation and kinetics.

- 5nm spectral bandwidth
- Pre-programmed for DNA/RNA & Protein analysis
- Purity scan across entire wavelength range
- Standard spectrophotometer functions
- Method and result saving to USB memory stick



SP/25700

Technical Specifications	
Parameter	Genova Plus 198 to 1000nm with Xenon lamp

Resolution/accuracy/ Repeatability  $1 \text{nm} \pm 2 \text{nm} \pm 0.5 \text{nm}$ 

Spectral bandwidth

Photometric Transmittance/Absorbance 0 to 199.9% /- 0.300 to 2.500A

Photometric Resolution 0.1%T, 0.001A Concentration/Quantitation Range 0 to 9999

Kinetics Measurement time 2 to 9999 seconds

Kinetics Calibration / Display Blank with a single standard or factor/ Graphical and

concentration Spectrum/Purity Range / Interval 198 to 1000nm / Selectable 1, 2 or 5nm

DNA Measurement Modes dsDNA, ssDNA, RNA, Oligonucleotides, 260/280, 260/

230, Variable ratio Protein Measurement Modes BCA, Bradford, Lowry, Biuret, Direct UV

Method storage 312 (including pre-programmed methods) Outputs USB, Analogue, RS232, Integral printer

Size  $(w \times d \times h)$  / Weight 275 x 400 x 220mm / 6Kg

Cat. No.	Code	Description
SP/25700	736 501	Genova Plus life science spectrophotometer fitted with micro- cuvette holder, supplied with 10x10mm cuvette holder, pack 100 disposable micro-cuvettes, instruction manual, universal power supply, USB memory stick
SP/25294	735 401	8 cell automatic turret
SP/25296	735 201	Sipper pump
SP/25298	735 301	Peltier
SP/25300	735 701	Sipper/Peltier pump
SP/25302	630 204	10 x10mm path length cuvette holder
SP/25304	637 071	Test tube holder (accepts 10mm square cuvettes,16 and 24mm diameter test tubes)
SP/25024	630 005	10 to 100mm adjustable path length cuvette holder
SP/25306	630 304	Micro-cuvette holder with reduced aperture
SP/25308	736 201	Water heated 10x10 single cell holder
SP/25312	019 146	4GB USB memory sticks for external memory

Notes		

# Spectrophotometer, Genova Nano micro-volume



A fusion of the high calibre Genova Plus life science spectrophotometer and Jenway's innovative micro-volume measurement accessory.

Small sample volumes as low as  $0.5\mu l$  can be measured with a high degree of accuracy, reproducibility and speed. Cleaning is quick and simple; wiping the read heads with a microfibre cloth removes all trace of the sample, allowing faster change over between samples and therefore increasing sample throughput.

- Micro-volume, life science and standard spectrophotometer in 1
- Temperature controlled with optional Peltier Accessory (735 301 SP/25298)
- Ideal for DNA, RNA and Protein measurements
- $\bullet$  Only  $0.5\mu l$  sample volume required
- Purity scan over entire wavelength range, 198 to 1000nm
- Detects DNA concentrations as low as 2ng/µl
- Easy and quick to clean
- Method and result saving to USB memory stick

Technical Specifications	
Parameter	Genova Nano fitted with Press to read Xenon lamp
Wavelength Range/Accuracy	198 to $1000$ nm $\pm 2$ nm
Spectral Bandwidth/Path Length	5nm / 0.2 or 0.5mm (auto-ranging)
Maximum Concentration	6,000 ng/μl (dsDNA) (at 0.2mm)
Detection Limit/Time	$2.0$ ng/ $\mu$ l (dsDNA) (at $0.5$ mm) / $< 6.5$ seconds
Minimum/Maximum sample Size	0.5µl (at 0.2mm),1.0µl (at 0.5mm) Max 5.0µl
DNA measurement modes	dsDNA, ssDNA, RNA, Oligonucleotides, 260/280, 260/
	230, Variable ratio
Protein measurement modes	Pierce 660, BCA, Bradford, Lowry, Biuret, Direct UV
Sample Pedestal Material	Quartz stainless steel
Size (WxDxH)/Weight	275 x 400 x 220mm 7.7kg

Cat. No.	Code	Description
SP/25702	737 501	Genova Nano micro- spectrophotometer UV/Visible scanning spectrophotometer fitted with micro-volume accessory, supplied with 10x10 cuvette holder, micro-cuvette holder, 4GB USB memory stick, calibration manuals and universal power supply

# Double beam spectrophotometer with variable bandwidth



Delivery includes: 6850 double beam spectrophotometer, supplied fitted with single 10x10mm cuvette holder in sample and reference position, instruction manual, power cables, PC software on CD ROM with USB connection cable and dongle, 4GB USB memory stick, 2 x quartz cuvettes, 4 x glass cuvettes and FREE dust cover and 230V power supply

Jenway Prism PC software is supplied as standard and offers additional functionality with preloaded methods for DNA/RNA and protein analysis, as well as extensive post-measurement tools, unlimited results saving and easy export of data.

The 6850 double beam spectrophotometer is ideal for quality control, general research, pharmaceutical, biochemical and clinical laboratory applications.

- Double beam spectrophotometer with highly stable optics
- Conforms to European Pharmacopeia requirements
- Jenway Prism PC software included as standard
- Extensive range of accessories available

Technical Specifications	
Wavelength range/resolution	190 to 1100nm x 0.1nm
Spectral bandwidth	Variable 0.5, 1, 2, 4, 5nm
Photometric range	- 0.3 to 3.0A 0 to 200%T
Multi-wavelength	Up to 10 wavelengths, up to 20 wavelengths with PC software
Calculations	Ratio, difference, formulae with factors
Spectrum range	Any range between 190 and 1100nm
Scan speed/Interval	100 to 2000nm/min / 0.1, 0.2, 0.5, 1, 2 or 5nm
Scan interval	
Light source	Tungsten halogen and Deuterium lamps
Outputs	USB and parallel
Size (WxDxH)/Weight	600 x 450 x 200mm / 22kg
Size (**XDXi ij/ *Velgili	000 x 430 x 20011111 / 22kg

Cat. No.	Code	Description
SP/25200	6850/230V	Spectrophotometer 6850, double beam
Accessories		
SP/25210	685 131	Cell holder, water heated, 10. x 10mm single
SP/25212	685 005	Cuvette holder, 10 to 100mm path length
SP/25214	685 304	Cuvette holder, micro
SP/25216	685 401	Cell changer, automatic, 8 position
SP/25218	685 024	Lamp kit, Tungsten Halogen
SP/25220	685 021	Lamp, Deuterium



SP/25702



SP/25702 open



SP/25200

More spectrophotometers are listed in our Water section. Please see page 502



ST/93002

# **Stands**

# Stand, pipette, polythene covered wire

Horizontal stand for up to 10 pipettes. Dimensions  $125 \times 156 \times 118$ mm.

Cat. No.	Description
ST/93002	Pipette stand



PS/12034

White chemically resistant polypropylene stand. Very stable with 230mm diameter base plate. Holds up to 94 pipettes vertically.

Cat. No.	Code	Description
PS/12034	SWP033	Pipette stand, vertical, holds 94



ST/9410

# Retort bases, steel

With 10mm tapped bush in centre of short side. All bases have rubber feet. (Supplied without rods)

Cat. No.	Dimensions, mm
Finished in blue acrylic paint	
ST/94102	160 x 100
ST/94104	200 x 125
ST/94106	250 x 160
ST/94108	315 x 200



ST/9430

# Rods

All 10mm threaded.

Cat. No.	Cat. No.	Cat. No.	Dimensions, diam. x length
Mild steel	Aluminium	Stainless steel	
ST/94302	ST/94402	ST/94522	10 X 500mm
ST/94304	ST/94404	ST/94524	12.5 X 600mm
ST/94306	ST/94406	ST/94526	12.5 X 750mm
ST/94308	ST/94408	ST/94528	12.5 X 1000mm



ST/44216 & ST/94008

# Bossheads, alloy

Suitable for rods up to 16mm diameter.

Cat. No.	Description
ST/44216	With offset jaws and nickel plated brass tommy screws.
ST/94008	With blue plastic headed nickel plated steel screws.

# Clamps, aluminium alloy

Will accept articles from 2 – 90mm.

Cat. No.	Description
ST/94010	Clamp with cork lined jaws
ST/94012	3-prong clamp with rubber covered jaws



ST/9401

# Ring with boss-head, eccentric series

Constructed in Zinc plated mild steel with welded joints, fitted with an alloy boss-head which is diecast on to the stem and fitted with blue plastic headed nickel steel screws.

These rings have a standard stem length which measures approximately 60mm to the centre of the boss-head.

Cat. No.	Code	Internal diameter	Centre to centre
ST/94020	2013/2	50mm	85mm
ST/94022	2013/4	62mm	95mm
ST/94024	2013/5	69mm	95mm
ST/94026	2013/6	75mm	100mm
ST/94028	2013/8	82mm	103mm
ST/94030	2013/11	100mm	110mm
ST/94032	2013/14	125mm	125mm
ST/94034	2013/15	131mm	128mm
ST/94036	2013/17	150mm	135mm



ST/94020

# Funnel, filter, holder, PP

Kartell

Single or double holder for funnels as small as 25mm (with adapter supplied) and up to 170mm. Without adapter can be used with powder funnels with stem diameter not exceeding 35mm. Two olives provided for use with rods from 8mm to 14mm.

Cat. No.	Code	Places	Funnel size, mm
FH/46222	268	1	25 - 170
FH/46224	269	2	25 - 170



FH/4622

# Funnel, separating, holder, PP

Kartell

Horseshoe funnel holder especially for separating funnels. Supplied with two 'olives' so will fit supporting rod diameters 8 to 14mm. Cannot be used with funnels below 75mm diameter.

Cat. No.	Code	Description	Funnel size, ml	
FH/46220	970	Funnel holder	125 - 1000	



FH/46220

# Clamp, burette

Kartell

A one-piece clamp which holds 50ml burettes firmly to a laboratory stand. Can be fitted and adjusted with one hand.

Cat. No.	Pk Qty
ST/44204	3



ST/44204

SC/1620

# Clamps, burette, polypropylene and rubber

- Spring loaded polypropylene clamps that are corrosion resistant
- Allow clear view of graduations along the full length of the burette.
- Rubber grips prevent slipping.
- A conical compression piece on the central boss provides a firm grip on rods 11 14mm in diameter

Cat. No.	Code	Description
SC/16202	CWH002	Single
SC/16204	CWH004	Double

Azlon



ST/44202

# Clamp, burette, double

High strength alloy casting with plastic jaws. Suitable for all burettes up to 100ml capacity.

Cat. No.	Description
ST/44202	Burette clamp, double

# Stands, tripod, triangular, stainless steel

Cat. No.	Height x sides, mm
ST/94616	200 x 125



ST/44302

# Stand, tripod, triangular, iron rod

Cat. No.	Height x sides, mm
ST/44302	200 x 125

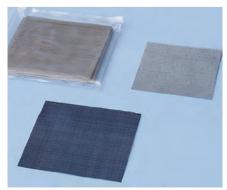


ST/4801

# Stands, triangles, pipeclay

Pipeclay stems on stout wire.

Cat. No.	Sides, mm	Pk Qty
ST/48012	50	10
ST/48014	63	10
ST/48016	75	10



ST/4410

# Gauzes, plain

Supplied in packs of 10.

Cat. No.	Sides, mm
ST/44102	125 x 125
ST/44104	150 x 150

# Stirrers, magnetic

# Stirrer, Magnetic, ultra-thin

Ultra-thin, light-weight magnetic stirrer that can be programmed to mix and stir between 15 and 1500 rpm. The pre-set speed is 15 rpm, but the speed can be easily adjusted in increments of 15 rpm. Each time the speed is changed an LED warning light flashes. The direction of the rotor can be set as clockwise or counter clockwise by pressing the reverse key.

The low-profile design of the stirrer enables it to be used and stored in restricted spaces such as in fume hoods or in cabinets. The unit weighs 0.3 kg, and measures  $175 \times 125 \times 20.5 \text{ mm}$ . The square (110 x 110mm) platform is water-proof and resistant to most laboratory chemicals; the maximum load is 2.0 kg and operates on a 220/240V mains supply.

Cat. No.	Description
ST/10000	Stirrer, magnetic ultra- thin, 15 to 1500rpm



ST/10000

# Stirrer, magnetic, mini SM5



The SM5 mini stirrer from Stuart is a powerful magnetic stirrer, capable of stirring up to 1 litre, with adjustable stirring speeds up to a maximum of 2,000rpm. The unit is made from robust polypropylene with a chemically resistant polycarbonate top.

- Lightweight
- Capable of stirring up to 1L
- Universal power adaptor
- With BioCote antimicrobial protection

Technical Sp	ecifications		
Capacity		1 Litre	
Speed		350 to 2000 rpm	
Weight		500g	
Dimensions		143 x 143 x 66mm (w x h x d)	
Electrical supply		120 to 230V, 50-60Hz	
PP Rating		IPX1	
Cat. No.	Code	Description	

Cat. No.	Code	Description
ST/15004	SM5/STUART	Mini magnetic stirrer, SM5



ST/15004

# Stirrer, magnetic, analogue



Magnetic stirrer, analogue with LED display for speed, fitted with connection for SCT1 contact thermometer which is available as an optional extra. Available in Black or White with either a ceramic or metal top (Aluminium) Stirring speed 50 to 2000rpm, maximum capacity 15 litres.

Cat. No.	Code	Description
ST/15010	SS151B	Stirrer, magnetic, analogue with metal top, blue
ST/15012	CS151B	Stirrer, magnetic, analogue with ceramic top, blue

Different colour options available upon request. Please state colour when ordering, blue will be automatically supplied if not specified.





ST/15210

# Stirrers, magnetic, UC151 and US151



Model UC151 has a glass ceramic top which has excellent chemical resistance. The surface is also very easy to clean. The white surface ensures good visibility of colour changed, during titrations for example.

Model US151 has a robust stainless steel top plate that does not produce eddy currents like aluminium and so ensures a very powerful coupling and stirring action.

Both models have an integral fitting for a retort rod and are supplied with  $2 \times 25$ mm PTFE coated stir bars. The bottom is shaped to allow a retort base to slide underneath the unit if required so saving further bench space.

- Choice of robust stainless steel or chemically resistant ceramic top plate
- Powerful magnets for strong stirring action
- Compact space saving design

Technical Specifications				
	US151	UC151		
Plate Material	Stainless steel	Glass ceramic		
Plate Dimensions, mm	150 x 150			
Stirrer speed, rpm	100 - 2000			
Max. stirring capacity, L*	15			
Dimensions (WxDxH), mm	172 x 248 x 109	172 x 248 x 107		
Net weight, kg	2			
Electrical supply	230V, 50Hz, 50W			

<sup>\*</sup>Based on water contained in a 20 litre glass boiling flask

Cat. No.	Code	Description
ST/15210	UC151	Stirrer, ceramic plate,
ST/15212	US151	Stirrer, stainless steel plate,
ST/14002	SR1	Retort rod, 600mm x 12mm diameter



ST/15302

# Stirrer, magnetic, 3 position, SB161-3



A space saving and economical unit with three independent stirring positions in a footprint only  $600 \times 270 \, \text{mm}$ . Easily accommodates  $3 \times 2$  litre beakers.

The stainless steel top plate is robust and, unlike aluminium, does not produce eddy currents and so ensures a very powerful coupling and stirring action. Powerful magnets and motor give stirring speed up to 1500rpm and volumes up to 15 litres\*. Supplied complete with 3 x 25mm PTFE coated stir bars.

- Three independently controlled stirring positions
- Powerful magnets for strong magnetic coupling
- Stainless steel top plate

Technical Specifications	
Plate material	Stainless steel
Plate dimensions, mm	550 x 210
Speed range, rpm	100 to 1500
Overall dimensions (WxDxH), mm	600 x 270 x 110
Net weight, kg	7
Electricity supply	230V, 50Hz, 150W

<sup>\*</sup> Based on water contained in a 20 litre at bottom boiling flask.

Cat. No.	Code	Description
ST/15302	SB161-3	Stirrer, magnetic, 3 position

# Stirrers, magnetic with hotplate

# Magnetic stirrers with hotplate, analogue/digital



Magnetic hotplate stirrers, analogue and digital with LED display for both speed and temperature, metal plate size 150 x 150mm, ceramic plate size 120 x 120. Fitted with connection for SCT1 contact thermometer which is available as an optional extra. Available in Black or White with either a ceramic or metal top (Aluminium).

\*Please state colour when ordering, blue will be automatically supplied if not specified.

Technical Specifications			
	Metal top		Ceramic top
Stirrer speed		50 to 2000rpm	
Plate size		150 x 150mm	
Heated area	150 x 150mm		120 x 120mm
Maximum temperature	325°C		450°C
Maximum stirring capacity		15 litres	

Cat. No.	Code	Description
SH/15030	SS152B	Stirrer hotplate, magnetic, analogue with metal top, blue
SH/15032	CS152B	Stirrer hotplate, magnetic, analogue with ceramic top, blue
SH/15550	SD150B	Stirrer hotplate, magnetic, digital with metal top, blue
SH/15552	CD150B	Stirrer hotplate, magnetic, digital with ceramic top, blue



SH/15030

# Magnetic stirrer with hotplate, Premium range



Magnetic hotplate stirrers, analogue and digital with full colour TFT temperature and speed display and two plate materials. Metal plate size 150 x 150mm, ceramic plate size 120 x 120. Fitted with connection for Pt100 temperature sensor available as an optional extra. Available in a range of other colours Black, White, Pink. Avocado, Tangerine, Red, Violet as well as the Blue version listed with either a ceramic or metal top (Aluminium).

\*Please state colour when ordering, blue will be automatically supplied if not specified.

Cat. No.	Code	Description
SH/15570	SP152B	Stirrer hotplate, Premium, magnetic, digital with metal top, blue
SH/15572	CP152B	Stirrer hotplate, Premium, magnetic, digital with ceramic top, blue

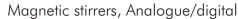


SH/15572



SH/15622

SH/15624





With a choice of robust aluminium or chemically resistant ceramic top, these stirrer hotplates fit into any laboratory environment. On the Analogue model, the temperature is displayed by means of a printed calibration scale rather than the arbitrary 1 – 10 scale. The LED temperature indicator surrounds the heater control knob and progressively illuminates to indicate the actual surface temperature. This provides a bright, obvious indication that the unit is hot, which can be seen from across the room

The digital version replaces the LED temperature indicator with a digital display for those users who want to more accurately observe the hotplate surface temperature. Both digital units the UC152D & US152D are compatible with the SCT1 temperature controller for precise sample temperature control. All hotplate models feature a "Hot" warning light which will flash once the hotplate surface reaches 50°C. The "Hot" light will continue to flash even once the unit has been switched off and unplugged from the mains, until the surface temperature drops below 50°C.

- LED temperature indicator on analogue units
- Digital display of surface temperature on digital models
- Choice of glass ceramic or ceramic coated metal surface
- Hot warning light, remains active even when unplugged
- Compact design to save bench space
- Units can be stored on side, minimising required storage space
- Design allows retort base to slide underneath
- Digital models are compatible with SCT1 temperature controller

Technical Specifications	US152+US152D	UC152+UC152D
Plate Material	Coated Aluminium/Silicon	Glass ceramic
Plate Dimensions, mm	150 x 150	150 x 150
Heated Area, mm	150 x 150	120 x 120
Heater Power, Watt	700	500
Max plate temp, °C	325	450
Stirrer Speed, rpm	100 - 2000	
Maximum Stirring Capacity, L*	15	
Dimensions (w x d x h), mm	172 x 248 x 120	172 x 248 x 122
Net weight, kg	2.9	
Electrical supply	230V, 50Hz, 750W	

<sup>\*</sup>Based on water contained in a 20 litre glass boiling flask.

amic plate, analogue
ted aluminium plate, analogue
amic plate, digital
ted aluminium plate, digital
nometer
x 12mm diameter
1

# Temperature Controller, accessory SCT1



For accurate temperature control of aqueous or oil based samples in the laboratory. The SCT1 is designed for use with Stuart stirrer hotplates. It can be used as a precise temperature controller up to a maximum of 200°C or as a digital thermometer up to 325°C.

It features an in-built clamp to allow either horizontal or vertical retort rod mounting. The stainless steel temperature probe can be detached allowing removal of the main body of the SCT1 temperature controller from potentially damaging fumes. The SCT1 temperature controller regulates the hotplate to accurately control the temperature of the sample, which is set via the large LED display.

- Accurate liquid temperature control
- Built in retort fitting and probe holder
- Detachable temperature probe
- Bright, easy to read LED display
- With BioCote® antimicrobial protection

Technical Specifications	SCT1
Sensor type	PT100
Probe	Stainless steel
Temperature range °C	50° to 200°C
Accuracy, °C	±0.5°C
Resolution	1°C
Dimensions (WxDxH)	90mm x 75mm x 123mm
Weight	0.3kg (inc. probe)

Cat. No.	Code	Description
SH/15644	SCT1	Contact thermometer, digital
SH/15646	SCT1/1	Probe holder
SH/15648	SCT1/2	PTFE probe
ST/14002	SR1	Retort rod, 600mm x 12mm diameter



SH/15644

# Magnetic stirrer hotplate kits



The Stuart range of Undergrad hotplate stirrers are now available to buy in a complete kit which includes:

- SCT1 Temperature Controller
- SCT1/1 Probe Holder
- SR1 Retort Rod

Choose from either a chemically resistant ceramic topped hotplate stirrer or a more robust aluminium/silicon alloy topped hotplate stirrer to create your kit. Both versions are available with either analogue or digital control.

Cat. No.	Code	Description
SH/15660	UC152/KIT	Hotplate stirrer kit: UC152 ceramic hotplate stirrer, SCT1
SH/15662	US152/KIT	temperature controller, SCT1/1 probe holder and SR1 retort rod Hotplate stirrer kit: US152 aluminium hotplate stirrer, SCT1 temperature controller, SCT1/1 probe holder and SR1 retort rod
SH/15664	UC152D/KIT	Hotplate stirrer kit: UC152D digitally controlled ceramic hotplate stirrer, SCT1 temperature controller, SCT1/1 probe holder and SR1 retort rod
SH/15666	US152D/KIT	Hotplate stirrer kit: US152D digitally controlled aluminium hotplate stirrer, SCT1 temperature controller, SCT1/1 probe holder and SR1 retort rod



SH/15660

# Magnetic stirrer, 3 position with hotplate, SB162-3



A space saving and economical unit with 3 independent heating/stirring positions in a footprint only  $600 \times 270$ mm. Easily accommodates  $3 \times 2$  litre beakers.

Unit only requires one power point and is ideal for quality control applications where multiple samples require simultaneous heating and stirring, under the same conditions.

A "Hot" warning light for each plate will flash whenever its temperature is above 50°C and will operate even when the hotplate is turned off and connected to the mains. The top plates are a robust aluminium/silicon alloy, providing even plate temperature. Powerful magnets and motor give stirring speed up to 1500rpm and volumes up to 15 litres.\*

Supplied complete with 3 x 25mm PTFE coated stir bars.

- Three independently controlled stirring/heating positions
- Separate "Hot" warning lights for each plate
- Powerful magnets for strong magnetic coupling

Technical Specifications	
Plate material	Al/Si alloy
Individual plate dimensions, mm	160 x 160
Heater power, W	3 x 700
Maximum plate temperature. °C	325
Speed range, rpm	100 to 1500
Overall dimensions (WxDxH), mm	600 x 270 x 110
Net weight, kg	11
Electricity supply	230V, 50Hz, 2250W

<sup>\*</sup>Based on water contained in a 20 litre glass bottom boiling flask.

Cat. No.	Code	Description
SH/15702	SB162-3	Stirrer, magnetic, 3 position with heating
ST/94304		Retort rod, 600 x 125mm



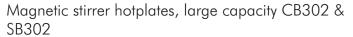
SH/15702



SH/15812



SH/15814





Stylish and economical, general purpose stirrer hotplates designed with safety as well as performance in mind

The 'Hot' warning light will ash whenever the plate temperature is above 50°C and will operate even when the hotplate is turned off and connected to the mains. Powerful magnets and motor give stirring speed up to 1500rpm and volumes up to 15 litres.

Model CB302 has a glass ceramic top that has excellent chemical and temperature resistance. The chemical properties make the surface very easy to keep clean and the thermal properties allow very high plate temperatures while ensuring the edges stay cooler, reducing the chance of accidental burner.

Model SB302 has a robust aluminium/silicon alloy top plate. The very good heat transmission of this material gives rapid heating and ensures even temperature distribution across the whole of the plate. With fitting for retort rod and supplied complete with 2 x 25mm PTFE coated stir bars.

- Choice of robust aluminium or chemically resistant ceramic plate
- Flashing 'Hot' plate warning light
- Independent safety circuit to protect against overheating
- Powerful stirring action
- Ideal for handling large vessels

Technical Specifications	CB302	SB302
Plate dimensions, mm	300 x 300	300 x 300
Heated area, mm	200 x 200	300 x 300
Plate material	Glass ceramic	Al / Si alloy
Heater power, W	1200	600
Max. plate temp. °C	450	300
Stirrer speed, rpm	100 to 1500	100 to 1500
Maximum stirring capacity, litres	15	15
Overall dimensions (WxDxH), mm	300 x 365 x 105	300 x 365 x 105
Net weight, kg	7	7
Electrical supply	230V, 50Hz	230V, 50Hz

Cat. No.	Code	Description
SH/15812	CB302	Stirrer/hotplate, ceramic plate, 1200W
SH/15814	SB302	Stirrer/hotplate, aluminum plate, 600W
ST/94304		Retort rod, 600 x 125mm

# Magnetic stirrer hotplate, infra red heating, CR302



Using a very efficient infra red heater of just 900W this stirrer unit will boil 1 litre of water over 30% faster than a conventional ceramic hotplate of 1200W.

Rare earth magnets give powerful stirring of up to 15 litres with feedback control from 100 to 1500rpm. This highly efficient stirrer hotplate is ideal when large volumes of liquid need to be heated and stirred, particularly microbiological media.

With fitting for retort rod and supplied with 2 x 25mm followers

- Very efficient heating saving time and energy
- Powerful magnetic stirring
- "Hot" warning light for user safety
- Chemically resistant ceramic top



ST/15912

# Technical Specifications

Plate dimensions, mm

Heated area, mm

Heater power, W

Stirrer speed range

Overall dimensions (WxDxH), mm

Mass, kg

Electricity supply

300 x 300

140 dia.

900

100 to 1500

300 x 365 x 105

4

230V, 50Hz, 950W

Cat. No.	Code	Description
ST/15912	CR302	Stirrer hotplate, infrared

# Magnetic stirrer hotplates, multi position



The surface temperature is infinitely adjustable up to  $120\,^{\circ}$ C, producing a maximum medium temperature of  $70\,^{\circ}$ C (depending on type of vessel). Speed remains constant, even when load changes with IP40 class protection.

- Adjustable reverse operation
- Suitable for continuous operation
- Adjustable speed in increments of 10 rpm-0-1000rpm

Technical Specifications			
Model	RT5	RT10	RT15
Number of stirring positions x 0.4L	5	10	15
Stirring position distance	90mm	90mm	90mm
Stirring quantity max. (H2O)	2	4	61
Speed range	0 - 1000rpm	0 - 1000rpm	0 - 1000rpm
Stirring bar length min/max	25mm/30mm	25mm/30mm	25mm/30mm
Heat output	175 W	375 W	580 W
Dimensions (WxHxD)	120x60x610mm	190x60x610mm	280x60x610mm
Weight	4 kg	7.5 kg	10.5 kg
Voltage	230/115/100V	230/115/100V	230/115/100V
Frequency/power	50/60Hz/200W	50/60Hz/410W	50/60Hz/620W

Cat. No.	Code	Description
ST/75152	3690600	5 Place magnetic stirrer/hotplate
ST/75154	3691100	10 Place magnetic stirrer/hotplate
ST/75156	3692600	15 Place magnetic stirrer/hotplate



ST/75156

# Overhead stirrers

# General purpose, model SS10



Easy to use general purpose overhead stirrer suitable for day to day laboratory use with aqueous and low viscosity liquids such as light oils, up to 15 litres. With good speed control and overload protection usually found in more advanced models, the SS10 represents excellent value for money.

- Used with volumes up to 15 litres
- Aqueous to low viscosity liquids
- Keyless chuck
- Quiet running
- Budget price

# High performance, model SS20

A powerful stirrer designed for demanding laboratory applications. Suitable for stirring liquids up to medium viscosity, including oils and microbiological media, up to 25 litre capacity. Features a hollow shaft arrangement to facilitate easy adjustment of paddle height. Advanced overload protection and sophisticated, responsive speed control.

- Used with volumes up to 25 litres
- · Low to medium viscosity liquids
- Hollow shaft
- Keyless chuck

Technical Specifications	SS10	SS20
Speed range	100 to 2000rpm	100 to 2000rpm
Max. viscosity	10,000mPas	20,000mPas
Torque at chuck	15Ncm	27Ncm
Chuck range	1.5 - 13mm dia.	1.5 - 13mm dia.
Hollow shaft	No	3 - 8mm dia.
Dimensions (w x d x h)	85 x 175 x 230 mm	85 x 195 x 230 mm
Net weight	2.7kg	3.2kg
Electrical supply	230V, 50 / 60Hz, 50W	230V, 50 / 60Hz, 80W

Cat. No.	Code	Description
SO/15002	SS10	Overhead stirrer, general purpose
SO/15004	SS20	Overhead stirrer, high performance



SO/15002



SO/15004



SO/151

# Overhead stirrers accessories

# Stands

#2stuart

Extra strong retort stands with H-pattern base for stability and robust support rod. Both versions include bosshead.

Technical Specif	fications	SS10/1	SS10/2
Base (w x d x h) Rod (dia. x l) Net weight		400 x 350 x 25mm 16 x 700mm 7.6kg	550 x 480 x 25mm 25 x 850mm 20.2kg
C I N	C 1	D	

Cat. No.	Code	Description
SO/15108	SS10/1	Stand, general purpose
SO/15110	SS10/2	Stand, heavy duty

# Stirrer paddles

Made from high grade stainless steel, there is a choice of five paddle heads and two lengths of 8mm diameter paddle rod. The heads screw on and off the rods, so they can be mixed and matched depending upon stirring requirements. This gives maximum versatility and value for money. For complete paddle, order rod plus head(s)

Technical Sp	ecifications				
Paddle rods	SS10/5	SS10/6			
Diameter Length	8mm 350mm	8mm 550mm			
Paddle heads Total width	SS10/10 60mm	SS10/11 94mm	SS10/12 80mm	SS10/13 50mm	SS10/14 60mm

Cat. No.	Code	Description
Paddle rods		
SO/15212	SS10/5	Paddle rod, 350mm
SO/15214	SS10/6	Paddle rod, 550mm
Paddle heads		
SO/15316	SS10/10	Small paddle head
SO/15318	SS10/11	Large paddle head
SO/15320	SS10/12	Large propeller head (2 blade)
SO/15322	SS10/13	Small propeller head (4 blade)
SO/15324	SS10/14	Anchor paddle head



(Paddle heads shown fixed to rod)

# Stirring paddles, PP



A variety of blades made of chemically resistant polypropylene and fixed to a steel rod covered with Polypropylene. Rods are 8mm diameter and 350mm long.

Cat. No.	Code	Description	Blade w x h
SO/46202	428	Two fixed blades	39 x 15 mm
SO/46204	430	'U' shape blade	65 x 78 mm
SO/46206	431	Two collapsible blades	57 mm fully extended
SO/46208	432	Two collapsible blades	98.5 mm fully extended



SO/4620

#### Stirrer bars

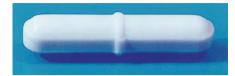
#### Stirrer bars, P.T.F.E covered, cylindrical

Plain design with rounded ends.

Cat. No.	Length x o.d., mm	Pk Qty
SB/76702	8 x 3	5
SB/76704	12 x 4.5	5
SB/76706	25 x 6	5
SB/76708	30 x 6	5
SB/76710	45 x 8	5
SB/76712	50 x 8	5
SB/76714	60 x 9	5



SB/767



SB/762



SB/763

#### Stirrer bars, P.T.F.E covered with pivot ring

For use in containers with bases that are slightly curved or uneven.

Cat. No.	Length x o.d., mm	Pk Qty
SB/76222	8 x 3	5
SB/76224	12 x 4.5	5
SB/76226	25 x 6	5
SB/76228	30 x 6	5
SB/76230	45 x 8	5
SB/76232	50 x 8	5
SB/76234	60 x 10	5

#### Stirrer bars, P.T.F.E covered, disc

For use in tubes. The smallest size will create a vortex in a standard 10mm cuvette.

Cat. No.	Length x o.d., mm	Pk Qty
SB/76340	6 x 9	5
SB/76342	6 x 10	5
SB/76344	10 x 20	5
SB/76346	12 x 30	5



SB/764

#### Stirrer bars, P.T.F.E covered, oval

For use in round bottom flasks.

Cat. No.	Length x o.d., mm	Pk Qty
SB/76450	20 x 10	5
SB/76452	30 x 16	5
SB/76454	40 x 20	5
SB/76456	50 X 20	5

#### Stirrer bar sets

Boxed set of 12 octahedral bars containing 2 of each; 13x8, 15x8, 25x10, 38x10, 51x10 and 64x10mm

Cat. No.	Description
SB/76722	Stirrer bar, set of 12

Boxed set of 18 plain cylindrical bars containing 2 of each; 10x6, 15x6, 20x7, 25x8, 30x8, 40x8, 50x8, 60x10 and 80x10mm

Cat. No.	Description
SB/76724	Stirrer bar, set of 18



SB/76724

#### Magnetic stirrer bar retrievers, P.T.F.E. coated

A useful tool for removing stirrer bars from vessels

Cat. No.	Size	
SB/76802	150 x 10mm	
SB/76804	250 x 10mm	
SB/76806	350 x 10mm	



SB/7680

SR/760



SR/761



SR/762

#### Stoppers

#### Stoppers, natural red rubber

Available as either solid stoppers, stoppers with one hole or stoppers with two holes. Standard holes are 3.0mm diameter in the 5 to 8mm base diameter single hole stoppers and 5.0mm diameter in all other sizes of one and 2 hole stoppers.

Cat. No. Solid	Cat. No. One hole	Cat. No. Two holes	Bottom dia. mm	Top dia. mm	Length mm	Pk Qty
SR/76002	~	~	3	4.5	12	50
SR/76004	~	~	4	5.8	14	50
SR/76006	SR/76106	~	5	7	16	50
SR/76008	SR/76108	~	6	8	16	50
SR/76010	SR/76110	~	7	9	16	20
SR/76012	SR/76112	~	8	10.5	20	20
SR/76014	SR/76114	~	9	11.5	20	20
SR/76016	SR/76116	~	10	12.5	20	20
SR/76018	SR/76118	~	11	14	24	20
SR/76020	SR/76120	~	13	16	24	20
SR/76022	SR/76122	SR/76222	15	18	24	20
SR/76024	SR/76124	SR/76224	17	20.3	26	20
SR/76026	SR/76126	SR/76226	19	22.5	28	20
SR/76028	SR/76128	SR/76228	21	24.5	28	20
SR/76030	SR/76130	SR/76230	23	26.5	28	20
SR/76032	SR/76132	SR/76232	25	28.5	28	20
SR/76034	SR/76134	SR/76234	27	31	32	10
SR/76036	SR/76136	SR/76236	29	33	32	10
SR/76038	SR/76138	SR/76238	31	36	35	10
SR/76040	SR/76140	SR/76240	33	38.5	38.5	10
SR/76042	SR/76142	SR/76242	35	40.5	38.5	10
SR/76044	SR/76144	SR/76244	37	42.5	38.5	10
SR/76046	SR/76146	SR/76246	39	44.5	38.5	10
SR/76048	SR/76148	SR/76248	41	47	42	5
SR/76050	SR/76150	SR/76250	43	49	42	5
SR/76052	SR/76152	SR/76252	45	51	42	5
SR/76054	SR/76154	SR/76254	49	55	42	5
SR/76056	SR/76156	SR/76256	53	59.5	45.5	2
SR/76058	SR/76158	SR/76258	57	64	49	2
SR/76060	SR/76160	SR/76260	62	69	49	2
SR/76062	SR/76162	SR/76262	67	74	49	2
SR/76064	SR/76164	SR/76264	71	78	49	1
SR/76066	SR/76166	SR/76266	75	85	54	1
SR/76068	SR/76168	SR/76268	79	89	54	1
SR/76070	SR/76170	SR/76270	86	96	54	1
SR/76072	SR/76172	SR/76272	92	102	54	1
SR/76074	SR/76174	SR/76274	99	109	54	1
SR/76076	SR/76176	SR/76276	105	116.5	63.5	1

Stoppers are also available in grey Neoprene - please ask for details.

Assorted pack of 67 solid or natural rubber stoppers, sizes included, 5 of each; 7, 8, 9, 10, 11, 13, 15, 17, 19, 21, 23 and 2 of each 25, 27, 29, 31, 33, 35mm

Cat. No.	Description
SR/76080	Assorted stoppers, red rubber, solid, pack of 67
SR/76082	Assorted stoppers, red rubber, 1 hole, pack of 67
SR/76084	Assorted stoppers, red rubber, 2 holes, pack of 48 (5 of each sizes 15-29 and 2 each 31-37)

#### Stoppers, translucent silicone

Hardness 46/55 IRHD, to BS2775:87.

Cat. No.	Bottom diam. (mm)	Top diam. (mm)	Length (mm)	Pk Qty
SR/76302	3	4.5	12	50
SR/76304	4	5.8	14	50
SR/76306	5	7	16	50
SR/76308	6	8	16	50
SR/76310	7	9	16	50
SR/76312	8	10.5	20	20
SR/76314	9	11.5	20	20
SR/76316	10	12.5	20	20
SR/76318	11	14	24	10
SR/76320	13	16	24	10
SR/76322	15	18	24	10
SR/76324	17	20.3	26	10
SR/76326	19	22.5	28	5
SR/76328	21	24.5	28	5
SR/76330	23	26.5	28	5
SR/76332	25	28.5	28	2
SR/76334	27	31	32	2
SR/76336	29	33	32	2
SR/76338	31	36	35	2
SR/76340	33	38.5	38.5	2
SR/76342	35	40.5	38.5	1
SR/76344	37	42.5	38.5	1
SR/76346	39	44.5	38.5	1
SR/76348	41	47	42	1
SR/76350	43	49	42	1
SR/76352	45	51	42	1
SR/76354	49	55	42	1
SR/76356	53	59.5	45.5	1
SR/76358	57	64	49	1
SR/76360	62	69	49	]
SR/76362	67	74	49	]
SR/76364	71	78 04	49	]
SR/76370	86	96	54	]
SR/76374	99	109	54	1
SR/76376	105	116.5	63.5	



SR/763

Larger sizes also available and with either one or two holes, please ask for details

Notes



SW/130

#### **Swabs**

#### Swabs, disposable, plain



High quality medical grade polypropylene ensures all swab tubes are non-toxic and have low moisture permeability. Every swab has a tamper evident seal and is printed with a lot number, expiry date and full description.

Cat. No.	Code	Description	Case Qty
SW/13002	150C	Plain swab, wooden shaft	100
SW/13004	155C	Plain swab, plastic shaft	100
SW/13006	160C	Plain swab, wire shaft	100
SW/13012	168C	Plain swab, twisted wire shaft	100
SW/13008	152C	Charcoal coated swab	100
SW/13014	165KS01	Plain swab, wooden shaft, individually wrapped, sterile	1000
SW/13016	165KS100	Plain swab, wooden shaft, sterile, bulk wrapped in inner packs of 100	2500



SW/131

#### Swabs, disposable, transport



All Sterilin swabs carry the CE mark for class Ila medical devices. The swabs unique packaging system combines a nitrogen flushed aluminium inner bag with a laminated film pouch to keep the product as fresh as the day it was manufactured. Each tube is printed with a lot number, expiry date and has a tamper evident sleeve ensuring complete traceability and guaranteeing sterility. There are 50 pieces per aluminium inner bag and 500 swabs in each case.

Cat. No.	Code	Description	Case Qty
SW/13132	108C-USE	Transport swab, amies, plastic shaft	500
SW/13134	114C-USE	Transport swab, amies with charcoal,	
		plastic shaft	500
SW/13136	110C-USE	Transport swab, amies, minitip,	
		wire shaft	500
SW/13138	116C-USE	Transport swab, amies with charcoal,	
		minitip, wire shaft	500
SW/13140	190C-USE	Transport swab, amies, twisted wire shaft	500
SW/13142	192C-USE	Transport swab, amies with charcoal,	
		twisted wire shaft	500
SW/13144	111C-USE	Transport swab, stuart agar, plastic shaft	500



SW/132

#### Swabs, disposable, viral and chlamydia



Sterilin transport swabs with special media for the optimal recovery of viral pathogens or Chlamydia and carrying the CE mark for class Ila medical devices. These swabs are individually wrapped in Sterilins' unique, plastic film pouch within an outer, nitrogen flushed, aluminium pack. The swabs are supplied sterile and in case quantities of 25.

Cat. No.	Code	Description	Case Qty
SW/13252	144C	Chlamydia, plastic shaft	25
SW/13258	147C	Virus, plastic shaft	25

#### Swab rinse kits for environmental sampling



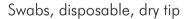
Enables easy monitoring of bioburden levels on surfaces and equipment. Sterile sampling templates (10cm x 10cm) allows accurate microbial loading of surfaces to be calculated. Alginate tipped swabs dissolve fully to ensure complete delivery of microbial sample into the SRK solution.

Cat. No.	Code	Description	Case Qty
SW/13372	902C	Swab rinse kit with standard alginate tip	25
SW/13374	903C	Swab rinse kit with alginate tip swab	25
SW/13376	904C	Swab rinse kit with large tip swab	25
SW/13378	905C	Square sampling kit	10

### Swabs, amies, plastic stem

Swabs, Amies, Gamma irradiated, plastic stem, sterile, 12mm diameter x 140mm long, supplied in a polypropylene test tube, individually wrapped, peel pack of 100, expiry 560 days from date of manufacture..

Cat. No.	Code	Description
SW/90002	SV0021K	Swab Modified Amies Medium Transport
SW/90004	SV0023K	Swab Amies Medium Transport , with Charcoal



Sterilised by ethylene oxide. Individually wrapped. For use when samples do not have to be transported.

Cat. No.	Code	Description	Case Qty
SW/23402	TS/8-A	Woodstick swab with a cotton tip	1000





SW/90002

#### Swabs, disposable, non sterile

Dimensions:  $150 \times 2.5 \text{ mm}$  (tip  $\pm 5 \text{ mm}$ ).

Cat. No.	Code	Description	Case Qty
SW/23422	TS/10-NS	Woodstick swabs with cotton tip, 100 swabs sealed in a mini grip bag	5000



SW/23532

#### Swabs, disposable, sterile in shockproof tube

Sterilised by ethylene oxide. Individually wrapped in shockproof polypropylene round bottom tubes sealed by the label. Tube dimensions 13 x 165 mm (dia x length).

Cat. No.	Code	Description	Case Qty
SW/23532	TS/6-A	Woodstick swabs with cotton tip	500
SW/23534	TS/19-A	Polystyrene shafted swab with viscose tip	500



SW/23534

#### Swabs, disposable, sterile Viscose tip

Individually wrapped in a peel pouch, Gamma irradiated, flexible Polypropylene shaft with viscose tip providing a better sampling material than cotton.

Cat. No.	Description	Case Qty
SW/23406	Swab, polypropylene flexible shaft with a Viscose tip, sterile	1000

#### Wooden Applicators

Wooden applicators 150mm long packed in cases of  $50 \times 1000$ ..

Cat. No.	Description
SW/43702	Wooden applicators



SW/23406



SS/95010

#### Luminometer, ATP, SystemSURE Plus

Instant reading Bacterial count instrument. 4 easy steps - results in seconds: Swab, Snap, Insert, Read In conjunction with the Aquasnap™ testing swabs, SystemSURE Plus measures adenosine triphosphate (ATP), the universal energy molecule found in all animal, plant, bacterial, yeast and mold cells. When ATP is brought into contact with Hygiena's unique, liquid luciferase/luciferin reagent in the Aquasnap testing device, light is emitted in direct proportion to the amount of ATP present. SystemSURE Plus measures the amount of light generated and provides information on the level of contamination in just

- Detects down to 1 femtomole of ATP
- 250 programmable locations per sample plan
- 20 programmable sample plans
- Alphanumeric location ID
- Stores 2000 results
- SURE-Trend analysis software

The Data Analysis Software SURE-Trend, supplied with the unit, is an easy-to-use result database management software. It allows companies to track results, quickly identify problem areas and generate reports for management or recordkeeping.

- PC/Windows® based software
- Quick querying and trending of results
- Customise reports and charts
- Export data into Excel
- Identifies problem areas for immediate corrective action.

Aquasnap are user-friendly,self contained ATP testing devices used with SystemSURE Plus. Both contain a unique liquid-stable reagent

- All-in-one sampling device & reagent system
- 12-month shelf life
- Unique liquid-stable reagent
- Tolerant to temperature abuse

SS/95010 SLIREII SystemSLIRE Plus ATP luminometer	Cat. No.	Code	Description
33/73010 Systemsone 1103 / 11 Tollinometer	SS/95010	SUREII	SystemSURE Plus ATP luminometer
SS/95014 AQ100X Aquasnap swab for Total ATP, pk100	SS/95014	AQ100X	Aquasnap swab for Total ATP, pk100
SS/95016 AQ100 Aquasnap swab for Free ATP, pk 100	SS/95016	AQ100	Aquasnap swab for Free ATP, pk 100



#### **Syringes**

#### Syringes, plastic, sterile, disposable

Sterile single use, disposable syringes, the clear barrel allows visualisation of contents. The barrel also has bold scale markings to aid in setting an accurate dose.

Supplied without needles, luer slip fitting.

The Emerald type has up to 30% less material than other popular brands minimising waste.

Cat no Qty	Code	Capacity, ml	Description	Туре	Pack
SY/96102	303172	1	Concentric luer slip	Plastipak	120
SY/96116	307727	2	Concentric luer slip	Emerald	100
SY/96118	307731	5	Concentric luer slip	Emerald	100
SY/96120	307736	10	Concentric luer slip	Emerald	100
SY/96110	300613	20	Eccentric luer slip	Plastipak	120
SY/96112	301231	30	Eccentric luer slip	Plastipak	60
SY/96114	300866	50	Eccentric luer slip	Plastipak	60



Syringes, plastic, disposable, without needles, Luer fitting

Cat. No.	Capacity, ml	Pk Qty
SY/96152	100 (non-sterile)	25



SY/96152

#### Syringe, hypodermic, all glass, Luer fitting, without needle

Cat. No.	Capacity, ml
SY/92002	1
SY/92004	2
SY/92006	5
SY/92008	10
SY/92010	20



SY/920

#### Syringe, glass, metal Luer lock fitting, without needle

Cat. No.	Capacity, ml	
SY/93012	1	
SY/93014	2	
SY/93016	5	
SY/93018	10	



SY/930

#### Syringe, glass, Luer fitting with metal tip, without needle

Capacity, ml	
2	
5	
10	
20	
50	
100	
	2 5 10 20 50



SY/931

# 

SY/933

#### Syringe needles, disposable, B-D Microlance®

Sterile single use. Individually wrapped. Luer fitting. In packs of 100.

Cat. No.	Code	Gauge x length, mm	Colour	Wall Description
SY/93350	300300	26G x 10	Brown	Intradermal
SY/93352	300600	25G x 16	Orange	Regular
SY/93354	300800	23G x 25	Blue	Regular
SY/93356	304432	21G x 38	Green	Thin regular
SY/93358	304827	20G x 25	Yellow	Thin Intravenous
SY/93360	301750	19G x 50	Cream	Regular
SY/93362	301500	19G x 38	Cream	Regular
SY/93364	304622	18G x 38	Pink	Microthin

Other sizes of B-D needles available-details on request.



SY/934

#### Syringe needles

Hypodermic Needles, sharp end, luer lock fitting, Non sterile, packs of 10 Complete range of sizes from 8G to 29G and 25mm to 457mm available on request.

Cat. No.	Code	Gauge	Length, mm
SY/93400	M612/03	12	50
SY/93402	M612/05	12	76
SY/93404	M612/06	12	100
SY/93406	M612/08	12	150
SY/93408	M614/03	14	50
SY/93410	M614/05	14	76
SY/93412	M614/06	14	100
SY/93414	M614/08	14	150
SY/93416	M616/03	16	50
SY/93418	M616/05	16	76
SY/93420	M616/06	16	100
SY/93422	M616/08	16	150
SY/93424	M618/03	18	50
SY/93426	M618/05	18	76
SY/93428	M618/06	18	100
SY/93430	M618/08	18	150
SY/93432	M620/03	20	50
SY/93434	M620/05	20	76
SY/93436	M620/06	20	100
SY/93438	M620/08	20	150



Filling Cannula, blunt end, luer lock fitting, non-sterile, packs of 10. Complete range of sizes from 8G to 29G and 25mm to 457mm available on request.

Cat. No.	Code	Gauge	Length, mm
SY/93450	M712/03	12	50
SY/93452	M712/05	12	76
SY/93454	M712/06	12	100
SY/93456	M712/08	12	150
SY/93458	M714/03	14	50
SY/93460	M714/05	14	76
SY/93462	M714/06	14	100
SY/93464	M714/08	14	150
SY/93466	M716/03	16	50
SY/93468	M716/05	16	76
SY/93470	M716/06	16	100
SY/93472	M716/08	16	150
SY/93474	M718/03	18	50
SY/93476	M718/05	18	76
SY/93478	M718/06	18	100
SY/93480	M718/08	18	150
SY/93482	M720/03	20	50
SY/93484	M720/05	20	76
SY/93486	M720/06	20	100
SY/93488	M720/08	20	150

#### Syringes, Gastight, 1700 series

- Capacities 10-500µL Cemented needles (LTN), removable needles (RN), luer tip (LT)
- Precision-machined PTFE-tipped plungers
- Replaceable plungers

Cat. No.	Description
Luer tip SY/90102 SY/90104 SY/90106 SY/90108 SY/90110 SY/90112	Syringe, gas tight 1701 luer tip, $10\mu$ l Syringe, gas tight 1702 luer tip, $25\mu$ l Syringe, gas tight 1705 luer tip, $50\mu$ l Syringe, gas tight 1710 luer tip, $100\mu$ l Syringe, gas tight 1725 luer tip, $250\mu$ l Syringe, gas tight 1725 luer tip, $250\mu$ l Syringe, gas tight 1750 luer tip, $500\mu$ l
Cemented needle SY/90202 SY/90204 SY/90206 SY/90208 SY/90210	Syringe, gas tight 1701 cemented needle, 10µl Syringe, gas tight 1702 cemented needle, 25µl Syringe, gas tight 1705 cemented needle, 50µl Syringe, gas tight 1710 cemented needle, 100µl Syringe, gas tight 1725 cemented needle, 250µl
Removable needle SY/90302 SY/90304 SY/90306 SY/90310 SY/90312	Syringe, gas tight 1701 removable needle, $10\mu$ l Syringe, gas tight 1702 removable needle, $25\mu$ l Syringe, gas tight 1705 removable needle, $50\mu$ l Syringe, gas tight 1710 removable needle, $100\mu$ l Syringe, gas tight 1725 removable needle, $250\mu$ l Syringe, gas tight 1750 removable needle, $500\mu$ l



#### Syringes, Gastight, 1000 series

- Capacities 1 100mL
- Cemented needles (LTN), removable needles (RN), luer tip (LT)
   Precision-machined PTFE-tipped plungers
- Replaceable plungers

Cat. No.	Description
Luer tip	
SY/90402	Syringe, gas tight 1001 luer tip, 1ml
SY/90404	Syringe, gas tight 1002 luer tip, 2.5ml
SY/90406	Syringe, gas tight 1005 luer tip, 5ml
SY/90408	Syringe, gas tight 1010 luer tip, 10ml
Cemented needle	
SY/90502	Syringe, gas tight 1001 cemented needle, 1ml
SY/90504	Syringe, gas tight 1002 cemented needle, 2.5ml
SY/90506	Syringe, gas tight 1005 cemented needle, 5ml
SY/90508	Syringe, gas tight 1010 cemented needle, 10ml
Removable needle	
SY/90602	Syringe, gas tight 1001 removable needle, 1ml
SY/90604	Syringe, gas tight 1002 removable needle, 2.5ml
SY/90606	Syringe, gas tight 1005 removable needle, 5ml
SY/90608	Syringe, gas tight 1010 removable needle, 10ml





SY/90508



SY/90608

#### **Hub Needles**

(See gauge index below)

- Metal hub (N) or Kel-F hub (KF) needles in convenient six packs
- Use with LT syringes
- 304 stainless steel (sst.) needle
- Standard needle length: 2"/51 mm



SY/91008

Gauge	Cat. No. Metal Hub (N)			Co		
	Point style 2	Point style 3	Point style 5	Point style 2	Point style 3	Point style 5
33	SY/91002	SY/91102	-	-	-	-
26s	SY/91004	SY/91104	SY/91202	SY/91302	SY/91402	SY/91502
26	SY/91006	SY/91106	SY/91204	SY/91304	SY/91404	SY/91504
21	SY/91008	SY/91108	SY/91206	SY/91306	SY/91406	SY/91506
16	SY/91010	SY/91110	SY/91208	SY/91308	SY/91408	SY/91508

#### Removable Needles

(See gauge index below)

- For use with RN-style syringes and connectors
- 304 stainless steel (sst.) needles
- Convenient six packs



SY/91006

Gauge	Cat. No. For 2.5 - 100µl syringes			Cat. No.	For 250µl - 10ml syri	nges
	Point style 2	Point style 3	Point style 5	Point style 2	Point style 3	Point style 5
33	-	SY/91122	-	-	-	-
26s	SY/91152	SY/91162	SY/91172	SY/91182	SY/91192	SY/91176
26	SY/91154	SY/91164	SY/91174	SY/91184	SY/91194	SY/91178

Gauge	auge Table O.D. Tolera	nce	I.D. Tolero	ınce	Wall Th	ickness	Volume
	in	mm‡	in	mm‡	in	mm‡	L/inch
33	.00800085	0.21	.00350050	0.11	0.002	0.05	0.20
26s	.01840189	0.47	.00450055	0.13	0.007	0.18	0.26
26	.01800185	0.46	.00950110	0.26	0.004	0.10	1.25
16	.06450655	1.65	.04550485	1.19	0.009	0.23	28.25



- AS Point Style AS: special conical style needle point designed to withstand the demands of multiple injections; exclusively used on autosampler syringes.
- 2 Point Style 2: 10 12° bevelled non-coring needle point recommended for septum penetration; only needle gauges 26s 22 are recommended for optimum septum penetration.
- 3 Point Style 3: blunt needle point for use with HPLC injection valves and for sample pipetting.
- 4 Point Style 4: 10 12° bevelled needle point recommended for life science applications; special point styles such as 12° and 45° are available on request
- 5 Point Style 5: conical needle with side port for penetration of septa, thin-gauged vinyls and plastics without coring; minimises septum damage.

Some placement needles can be specified as electro-tapered.
Use this style for applications such as attaching PTFE tips, or for use on on-column GC injectors.

#### Test tubes

#### Test tubes, soda glass



Samco soda glass test tubes are suitable for general mixing and simple laboratory work. They will withstand moderate warming (e.g. in a water bath). They should not be placed in naked flames.

Light wall, with rim

3				
Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/42002	50 x 6	0.45	0.2	250
TT/42004	50 x 10	0.6	2.8	250
TT/42006	75 x 10	0.6	4.2	100
TT/42008	75 x 12	0.6	6.2	100
TT/42010	100 x 12	0.6	8.3	100
TT/42012	100 x 16	0.6	15.5	100
TT/42014	125 x 16	0.6	19.4	100
TT/42016	125 x 18	0.6	25.0	100
TT/42018	150 x 16	0.6	23.3	100
TT/42020	150 x 18	0.6	30.0	100
TT/42022	150 x 24	0.8	53.2	50



TT/420

Medium wall, rimless, bacteriological quality

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/42104	50 x 10	1.0	2.3	250
TT/42106	75 x 10	1.0	3.4	100
TT/42108	75 x 12	1.0	5.4	100
TT/42110	100 x 12	1.0	7.1	100
TT/42112	125 x 16	1.0	17.4	100
TT/42118	150 x 16	1.0	20.8	100
TT/42120	150 x 18	1.0	27.2	100
TT/42122	150 x 24	1.2	49.5	50

#### Durham tubes

Soda glass, in packs of 250.

<	AMCO>

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	
TT/42132	25 x 6.5	0.65	0.5	
TT/42134	30 x 6.5	0.65	0.6	
TT/42136	35 x 8	0.65	1.2	
TT/42138	50 x 7.5	0.65	1.4	

#### Test tubes, Samco '33' borosilicate glass

Samco borosilicate glass test tubes are suitable for all usual laboratory applications. They will withstand temperature changes up to and including boiling of samples; they are also highly chemically resistant.

Medium wall, with rim

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/42206	75 x 10	1.0	3.4	100
TT/42208	75 x 12	1.0	5.4	100
TT/42210	100 x 12	1.0	7.1	100
TT/42212	100 x 16	1.2	13.1	100
TT/42214	125 x 16	1.2	16.4	100
TT/42218	150 x 16	1.2	19.7	100
TT/42220	150 x 18	1.2	25.9	100
TT/42222	150 x 24	1.2	49.5	50

Test tubes, borosilicate glass, medium wall, rimless

·	9 ,	•		
Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/42306	75 x 10	1.0	4.2	100
TT/42308	75 x 12	1.0	6.2	100
TT/42310	100 x 12	1.0	8.3	100
TT/42312	100 x 16	1.2	13.1	100
TT/42314	125 x 16	1.2	16.4	100
TT/42318	150 x 16	1.2	19.7	100
TT/42320	150 x 18	1.2	25.9	100
TT/42322	150 x 24	1.2	49.5	50



TT/423





TT/124

#### Test tubes, Pyrex® borosilicate glass

High quality test tubes designed and constructed for optimum performance.

- Allows use at high temperatures
- Excellent resistance to chemical attack
- Heavy wall tubes have the additional advantage of lower replacement costs & improved user safety.

#### Medium wall with rim

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/12406	10 x 75	1.0	4.2	100
TT/12408	12 x 75	1.0	6.2	100
TT/12410	12 x 100	1.0	8.3	100
TT/12412	16 x 100	1.2	13.1	100
TT/12414	16 x 125	1.2	16.4	100
TT/12418	16 x 150	1.2	19.7	100
TT/12420	18 x 150	1.2	25.9	100
TT/12422	24 x 150	1.2	42.5	100

#### Medium wall, rimless

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/12506	10 x 75	1.0	4.2	100
TT/12508	12 x 75	1.0	6.2	100
TT/12510	12 x 100	1.0	8.3	100
TT/12512	16 x 100	1.2	13.1	100
TT/12514	16 x 125	1.2	16.4	100
TT/12518	16 x 150	1.2	19.7	100
TT/12520	18 x 150	1.2	25.9	100
TT/12522	24 x 150	1.2	42.5	100

#### Heavy wall with rim

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/12614	16 x 125	1.8	13.6	100
TT/12618	16 x 150	1.8	16.4	100
TT/12620	18 x 150	1.8	22.0	100
TT/12622	24 x 150	1.8	44.2	100

#### Heavy wall, rimless

Cat. No.	Size, mm	Wall, mm	Approx, volume, ml	Pk Qty
TT/12714	16 x 125	1.8	13.6	100
TT/12718	16 x 150	1.8	16.4	100
TT/12722	24 x 150	1.8	44.2	100

#### Tubes, culture, Pyrex® borosilicate

#### **PYREX**®

**PYREX**®

Disposable rimless glass culture tubes. Inner pack 250. For full range please see page 462.

Cat. No.	Size, mm	Approx, volume, ml	Pk Qty
TC/12002	10 x 75	4.0	1000
TC/12004	12 x 75	6.0	1000
TC/12006	13 x 100	10.0	1000
TC/12008	16 x 100	11.0	1000
TC/12010	16 x 125	15.0	1000
TC/12012	16 x 150	19.0	1000
TC/12014	16 x 150	23.0	1000
TC/12016	18 x 150	28.5	500
TC/12018	20 x 150	36.0	500



TT/120

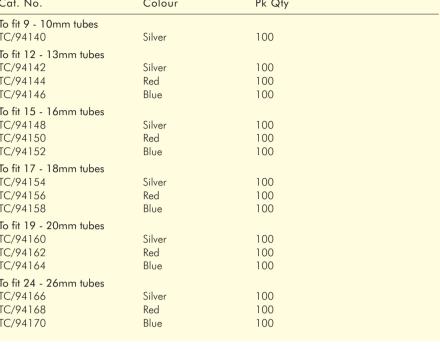
#### Labocap Caps

Rust proof, washable, reusable, heat resistant, sterilizable test tube caps. Tight sealing, air circulation warranted, available in different colours to aid sample identification and coding.

The anodic oxidised coloured aluminium caps are not resistant against alkaline detergents. Therefore we recommend the use of neutral cleaning products.

Temperature max 140°C

Colour	Pk Qty
Silver	100
Silver	100
Red	100
Blue	100
Silver	100
Red	100
Blue	100
Silver	100
Red	100
Blue	100
Silver	100
Red	100
Blue	100
Silver	100
Red	100
Blue	100
	Silver Silver Red Blue



#### Test tubes, disposable

Round bottomed for easy sample removal. Made from optically clear Polystyrene or Polypropylene for chemical and thermal resistance. Supplied non sterile.

Cat. No	. Code	Description	Approx, volume, ml	Pk Qty
TT/5200	2 2052-004	12x75mm in PS for clinical applications		
		inc FACS	5.4	3000
TT/5200	4 2056-000	13x75mm in PS for clinical analysers	5.4	4000
TT/5200	6 2025-001	13x100mm in PS for auto-samplers inc ICPs	8.5	1000
TT/5200	8 2026-001	13x100mm in PP for auto-samplers inc ICPs	8.5	1000
TT/5201	0 2046-500B	16x100mm in PS for auto-samplers		
		and urinalysis	14.5	2000
TT/5201	2 2047-000	16x100mm in PP for auto-analysers	14.5	2000
TT/5201	4 2017-001	17x100mm in PS, graduated for urinalysis	14.8	1000
TT/5201	6 2018-001	17x100mm in PP, graduated	14.8	1000

#### Caps, test tube

Available in two styles to suit application and user preferences. Manufactured from virgin polyethylene and supplied in a pack of 1000.

#### Ezee-topper™ Caps

Cat. No.	TT/52102	TT/52104	TT/52106	TT/52108	TT/52110	TT/52114
Tube OD, mm	13	13	13	13	13	16
Colour	Natural	Red	Blue	Green	Yellow	Natural

#### Flange Plug Tite Caps

Cat. No.	TT/52116	TT/52118	TT/52120	TT/52122	TT/52124	TT/52128
Tube OD, mm	12-13	12-13	12-13	12-13	12-13	15.4
Colour	Natural	Red	Blue	Green	Yellow	Natural



TC/941



TT/52014



TT/52128



#### Test tube holders

Test tubes, round base, disposable

Description

Plastic test tubes available in clear polystyrene and translucent polypropylene.

Test tube, Polystyrene 12 x 75mm

Test tube, Polystyrene 16 x 100mm

Test tube, Polypropylene 12 x 75mm

Test tube, Polypropylene 16 x 100mm

#### Test tube holders

Cat. No.

TT/30000

TT/30002

TT/30010

TT/30012

Cat. No.	Description	Pk Qty
TH/93002	Brass with wooden handle. Accepts tubes up to 45mm diam.	Each
TH/94002	Nickel plated spring steel. Accepts tubes up to 50mm diam.	10
TH/47002	Wooden with spring	10



TH/93002 & TH/94002

#### Its so easy...

All kinds of laboratory consumables, that make daily work in your lab easier, increase precision, optimize processes and raise the efficiency of your analytical work.



**Liquid handling** products for working with fluids



**Labware** for general lab applications



**Life sciences** products for microbiology and biotechnology



**Cryo** products for deep-freeze applications

#### ratiolab® stands for

- Disposable plastics product manufacture of the highest precision Made in Germany
- Quality and reliability for more than
   4 decades
- Design, development and production of customized products
- Quality management according to DIN EN ISO 9001:2008



#### www.ratiolab.com

Pk Qty

1000

1000

1000

1000

Capacity

5ml

5ml

12ml

12<sub>m</sub>l





## ratiolab

disposables for sciences

Ratiolab GmbH · Am Siebenstein 6-10 63303 Dreieich, Germany Tel. +49 (0) 6103 30025-0 Fax +49 (0) 6103 30025-55 info@ratiolab.com

#### Tubes, sample, glass, flat bottom

Supplied with polythene push on stoppers. Wall thickness 0.85mm.

SAMCO
-

Sterilin

Cat. No.	Size, mm	Pk Qty	
TS/42002	50 x 12	100	
TS/42004	50 x 19	100	
TS/42006	50 x 25	100	
TS/42008	75 x 19	100	
TS/42010	75 x 25	100	
TS/42012	100 x 25	100	
TS/42014	150 x 25	100	



TS/420

#### Tubes, sample, plastic, flat bottom

- Sterilin non sterile sample tubes are manufactured in either polypropylene or polystyrene with a choice of push or screw caps
  The products are suitable for samples 5ml and 10ml
  Labelled tubes are available for sample identification

Cat. No.	Code	Description	Capacity, ml	Pk Qty		
Polystyrene	Polystyrene with polyethylene cap					
TS/16606	Z5PS	Labelled tube, screw cap	5	1000		
TS/16608	Z5PSNL	Tube, no label, screw cap	5	1000		
TS/16610	Z10PS	Labelled tube, screw cap	10	500		
TS/16612	Z10PSNL	Tube, no label, screw cap	10	500		
Polypropyle	ne with polye	ethylene cap				
TS/16206	Z5PE	Labelled tube, screw cap	5	1000		
TS/16208	Z5PENL	Tube, no label, screw cap	5	1000		
TS/16210	Z10PE	Labelled tube, screw cap	10	500		
TS/16212	Z10PENL	Tube, no label, screw cap	10	500		



TS/16610 & TS/16612

Notes ————————————————————————————————————



TC/652



TC/65254



Well plates

#### Thermal cyclers

Techne® has upgraded their established thermal cycler range to provide easier programming and increased instrument flexibility. The Prime range has been designed to enhance the user experience with an outstanding touch interface and identical software for all models. The new range provides high performance, exceptional value and reliability.

#### <sup>3</sup>Primebase Thermal Cyclers

The most feature packed personal thermal cycler on the market and the only entry-level cycler to offer programming via a touch interface. With rapid ramp rates and a small footprint it is the ideal instrument for researching and teaching laboratories.

- Touchscreen interface on all models
- High performance cycling block
- USB software upgrade and program transfer

#### <sup>3</sup>PrimeX and <sup>3</sup>PrimeG Thermal Cycler

These mid-sized cyclers match all the features of the <sup>3</sup>Prime instrument alongside expanded sample capacity and gradient cycling capability. <sup>3</sup>PrimeX units can be upgraded to achieve gradient capability. The gradient function can be enabled at any time with a simple unlock code without the need for any hardware modifications.

Technical Specifications		
Model	<sup>3</sup> Primebase	<sup>3</sup> PrimeX and 3PrimeG
Sample capacity: 0.2ml	24	48
Sample capacity: 0.5ml	18	30
Maximum heating rate	3.0°C/s	
Block temperature range	10°C to 100°C (4°C final hold)	
Block uniformity at 55°C	<±0.3°C	
Temperature accuracy at 55°C	<±0.25°C	
	Gradient is standard on 3PrimeG ar	nd
	can be upgraded on the 3PrimeX	
Gradient Range		30°C to 80°C
Maximum Gradient		14°C
Minimum Gradient		1°C
Туре	2 Peltier element/block	4 Peltier element/block
Selectable heated lid temperature	35°C to 115°C or off	
Heated Lid pressure	Fixed	Adjustable, dependent
		on consumables
Program interface	3.5 VGA colour touchscreen	
	with graphical display	
Maximum number of programs		
stored	1000	
Data transfer	USB port	
Auto re-start on power failure	Yes	
Dimensions (WxDxH), mm	210 x 350 x 180	
Weight, kg	6	
Voltage	100-230V, 50-60Hz	
Power	155W	

Cat. No.	Code	Description
TC/65250	3PRIMEBASE/02	3Prime thermal cycler, 24 x 0.2ml
TC/65252	3PRIMEBASE/05	3Prime thermal cycler, 18 x 0.5ml
TC/65254	3PRIMEX/02	3PrimeX thermal cycler, 48 x 0.2ml
TC/65256	3PRIMEX/05	3PrimeX thermal cycler, 30 x 0.5ml
TC/65258	3PRIMEX/USB	3PrimeX gradient upgrade
TC/65260	3PRIMEG/02	3PrimeG gradient thermal cycler, 48 x 0.2ml
TC/65262	3PRIMEG/05	3PrimeG gradient thermal cycler, 30 x 0.5ml

#### <sup>5</sup>Prime and <sup>5</sup>PrimeG Thermal Cyclers



The  $^5$ Prime instrument is a full sized model that will become your reliable laboratory partner for routine PCR. Prime units can be upgraded to achieve gradient capability. The gradient function can be enabled at any time without the need to change a block. The simple process is installed via an unlock code.

- $\bullet$  Fast ramp rate of up to  $3.4^{\circ}\text{C/sec}$
- A wide range of blocks available including 0.2ml, 0.5ml, 384-well and Combi-Block\* options
- A USB port enables the transfer of programs between instruments and temperature logs to your PC
- Gradient cycling is available directly using the PrimeG instrument or by upgrading the Prime unit

\*Techne have developed a new Combi-block for the Prime range of thermal cyclers. This provides unrivalled flexibility with ability to accommodate  $33 \times 0.2$ ml tubes and  $33 \times 0.5$ ml tubes, in 6 rows and 11 columns. Prime Combi-Block cyclers are available with or without a temperature gradient, which is upgradable later.

- Flexible 0.2ml and 0.5ml
- Gradient capability
- Total reliability

Technical Specifications		
Model	<sup>5</sup> Prime	<sup>5</sup> PrimeG
Sample capacity 0.2ml	96 (33 in Combi-Block)	
Sample capacity 0.5ml	60 (33 in Combi-Block)	
Accepts 384 well	Yes	
Maximum heating rate	3.4°C/s	
Block temperature range	<±0.3°C	
Block uniformity at 55°C	<±0.3°C	
Temperature accuracy at 55°C	<±0.25°C	
Gradient:	Can be gradient enabled	Yes
Maximum Gradient	n/a	29°C for 96 & 60
		25°C for Combi-Block,
		19°C for 384
Minimum Gradient	n/a	1°C
Туре	8 Peltier element/block	
Selectable heated lid temperature	35°C to 115°C or off	
Heated Lid pressure	Adjustable, dependent on consumal	bles
Program interface	5.7 VGA colour touchscreen	
Maximum number of programs sto		
Data transfer	USB port	
Auto re-start on power failure	Yes	
Dimensions (WxDxH), mm	240 x 420 x 240	
Weight, kg	9.4	
Voltage	100-230V, 50-60Hz	
Power	450W	

Cat. No.	Code	Description
TC/65370	5PRIME/02	Prime thermal cycler, 96 x 0.2ml
TC/65372	5PRIME/05	Prime thermal cycler, 60 x 0.5ml
TC/65374	5PRIME/384	Prime thermal cycler, 384 well
TC/65376	5PRIME/C	Prime thermal cycler, Combi-Block
TC/65378	5PRIMEX/USB	Prime gradient upgrade
TC/65380	5PRIMEG/02	PrimeG gradient thermal cycler, 96 x 0.2ml
TC/65382	5PRIMEG/05	PrimeG gradient thermal cycler, 60 x 0.5ml
TC/65384	5PRIMEG/384	PrimeG gradient thermal cycler, 384 well
TC/65386	5PRIMEG/C	PrimeG gradient thermal cycler, Combi-Block



TC/653



TC/65372



Well plates



TC/20000



TC/20004



The PCRmax Alpha cyclers are developed to deliver not only the best quality data you can expect from PCRmax but also to innovate and exceed the high standards expected by the community.

- USB connectivity
  Android driven 7" tablet interface Quad core speed and excellent connectivity and feel
- Active sample cooling For sharper amplification and minimal non-specific amplification
- Programme Wizard Generate a protocol specific to your sequence, template source and amplicon length in seconds.

Technical Specifications	
Format	Single or double block
Block option	96 or 384 well format
Maximum heating rate	3.4°C per second
Block temperature	10°C to 100°C (4°C final hold) uniformity at 55°C
	±0.3°C
Temperature accuracy at 55°C	±0.25°C
Gradient	Yes (on all formats) Max 29°C to min 1°C
Maximum number of programmes stored	1000
Туре	8 Peltier elements
Adjustable heated lid temperature	35°C to 115°C or off
Weight / dimensions (LxWxH) in mm	11Kg / 430 x 260 x 200
Power	100 - 230Vac, 50-60Hz, 450W

Cat. No.	Code	Description
TC/20000	AC196	Thermal-cycler, Alpha PCRmax, 1 chassis with single 96 well block
TC/20002	AC1384	Thermal-cycler, Alpha PCRmax, 1 chassis with single 384 well block
TC/20004	AC296	Thermal-cycler, Alpha PCRmax, 2 chassis with 2 x 96 well blocks
TC/20006	AC2384	Thermal-cycler, Alpha PCRmax, 2 chassis with 2 x 384 well blocks
TC/20008	AC2196	Thermal-cycler, Alpha PCRmax, 2 chassis with one 96, and one 384
		well blocks



TC/20020

#### Thermal cyclers, PCRmax Eco48 real time PCR system

- Fastest block-based real-time PCR system with the ability to run 40 cycles in 20 minutes (or less when optimised).
- The PCRmax Eco 48 is an open platform that can utilise any chemistry, dye or PCR reagent.

Technical Specifications	
Volume per well	Validated for 5 to 20µl
Detection sensitivity	1 copy
Temp range & uniformity	35 to 100°C ±0.1°C
Average ramp rate	5.5°C/sec
Thermal system	48-well, Proprietary hollow silver block, Peltier-
	based system with conductive fluid
Consumables	48-well custom plates and optical adhesive seals
Optical system	Dual LED excitation (452–486 nm and 542–582
	nm). CCD camera 4 emission filters (505–
	545nm, 562-596nm, 604-644nm, 665-705nm)
Calibrated dyes	SYBR®, FAMTM, HEXTM, ROXTM, Cy®5.
	Additional dyes within the wavelength range
	compatible with Eco 48 filters are supported with
	no additional calibration required for
	implementation
Passive reference dyes	Use of ROXTM is supported, but optional

Cat. No.	Code	Description
TC/20020	Eco48	Thermal-cycler, Eco48 real time PCR system with software and loading dock
TC/20022	Ecoplate48	Plates for Eco48 Thermal-cycler
TC/20023	Ecoseal48	Seals for Eco48 Thermal-cycler
TC/20024	Ecodock48	Plate loading dock, spare for Eco48 Thermal-cycler



TC/20022 & TC/20023

#### **Thermometers**

#### Thermometers

Eco-friendly thermometers filled with various coloured non-toxic expansion liquid as a substitute for general purpose mercury filled thermometers. Fitted with a non-roll end cap with an integral ring to allow suspension of the thermometer in a sample. Supplied in a protective PVC casing.

Cat. No.	Code	Range, °C	Division, °C	Immersion	Length, mm	Pk Qty
Green spirit TH/33250 TH/33252 TH/33254 TH/33256 TH/33258 TH/33260	46/700/0 46/700/1 46/701/0 46/701/1 46/703/0 46/703/1	-35 to +50 -35 to +50 -10 to +50 -10 to +50 -10 to +110 -10 to +110	1 1 0.5 0.5 1	76mm Total 76mm Total 76mm Total	305 305 305 305 305 305	5 5 5 5 5
TH/33262 TH/33264	46/706/0 46/706/1	-10 to +150 -10 to +150	1	76mm Total	305 305	5 5
Red spirit TH/33230 TH/33232 TH/33202 TH/33204 TH/33206 TH/33208 TH/33210	44/815/0 44/814/0 44/430/0 44/423/0 44/401/0 44/403/0 44/406/0	-50 to 50 -100 to 50 -10 to 110 -10 to 110 -10 to 50 -10 to 110 0 to 150	1 1 1 0.5 1	Total Total 76mm 76mm 76mm 76mm 76mm	300 300 150 205 305 305 305	Each Each 10 5 5 5
Blue spirit TH/33312 TH/33314 TH/33316 TH/33320 TH/33322 TH/33342 TH/33344 TH/33346 TH/33350 Brown spirit	44/830/7 44/808/8 44/809/8 44/810/8 44/811/8 44/812/8 44/800/8 44/801/8 44/802/8 44/803/8 44/804/8	-10 to 110 -10 to 50 -35 to 50 -20 to 110 -20 to 150 -10 to 210 -10 to 50 -35 to 50 -20 to 110 -20 to 150 -10 to 260	1 0.5 1 1 1 0.5 1	Total Total Total Total Total Total Total 76mm 76mm 76mm 76mm	155 305 305 305 305 405 305 305 305 305 405	Each Each Each Each Each Each Each Each
TH/33352 TH/33354	44/815/0 44/814/0	-10 to 300 -10 to 330	1 2	Total Total	300 300	Each Each

<sup>\*\*</sup>Other ranges available, please enquire

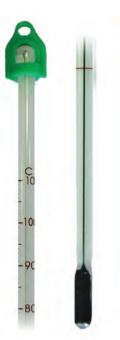


Red spirit

#### Thermometer case, slot front, brass

For thermometers 5-7mm in diameter.

Cat. No.	Length accommodated, mm
TH/33402	155
TH/33404	305
TH/33406	355
TH/33408	405



Green spirit



TH/3340

## Procession The Procession Th

TH/335 & TH/336



TH/335 & TH/336



TH/337

#### Thermometers, laboratory precision with certificate.

High precision spirit filled thermometers supplied complete with a Guarantee of Accuracy and presented in a sturdy storage box. These thermometers are made to the highest possible standards and are checked at every stage during manufacture to ensure they comply with ISO 9001:2008 Quality Management requirements. A 100% inspection is carried out on the finished item at 2 points (0 and 35°C) or 3 points, (0, 35 and 90°C) across their working range and certified to be within the specified tolerances.

These thermometers are supplied with a manufacturer's calibration certificate; it is also possible to purchase these thermometers with a UKAS calibration certificate using the same calibration points. Alternatively, they can be checked at user specified points at an additional cost to the standard UKAS certification.

Cat. No.	Description
Partial (76mm) imm	ersion, blue spirit filled with calibration certificate:
TH/33540	Range, 0 to 40°C x 0.1°C, tube length 405mm, calibrated at 2 points
TH/33542	Range, 0 to 40°C x 0.2°C, tube length 405mm, calibrated at 2 points
TH/33544	Range, -1 to 51°C x 0.1°C, tube length 405mm, calibrated at 2 points
TH/33546	Range, -1 to 51°C x 0.2°C, tube length 405mm, calibrated at 2 points
TH/33548	Range, -1 to 101°C x 0.2°C, tube length 405mm, calibrated at 3 points
TH/33550	Range, -1 to 201°C x 0.5°C, tube length 405mm, calibrated at 3 points
TH/33552	Range, -1 to 250°C x 0.5°C, tube length 405mm, calibrated at 3 points
TH/33554	Range, -35 to 50°C x 0.5°C, tube length 305mm, calibrated at 2 points
TH/33556	Range, -20 to 110°C x 0.5°C, tube length 305mm, calibrated at 3 points
TH/33558	Range, -20 to 150°C x 0.5°C, tube length 305mm, calibrated at 3 points
TH/33560	Range, -10 to 50°C x 0.5°C, tube length 305mm, calibrated at 2 points
TH/33562	Range, -10 to 110°C x 1.0°C, tube length 205mm, calibrated at 3 points
TH/33564	Range, -10 to 150°C x 1.0°C, tube length 205mm, calibrated at 3 points
TH/33566	Range, 0 to 40°C x 1.0°C, tube length 205mm, calibrated at 2 points
Partial (76mm) imm	ersion, red spirit filled with calibration certificate:
TH/33568	Range, -100 to 50°C x 1.0°C, tube length 305mm, calibrated at 2 points
TH/33570	Range, -80 to 30°C x 1.0°C, tube length 305mm, calibrated at 2 points
TH/33572	Range, -50 to 50°C x 1.0°C, tube length 305mm, calibrated at 2 points
Total immersion, blu	ue spirit filled with calibration certificate:
TH/33640	Range, 0 to 40°C x 0.1°C, tube length 405mm, calibrated at 2 points
TH/33642	Range, 0 to 40°C x 0.2°C, tube length 405mm, calibrated at 2 points
TH/33644	Range, -1 to 51°C x 0.1°C, tube length 405mm, calibrated at 2 points
TH/33646	Range, -1 to 51°C x 0.2°C, tube length 405mm, calibrated at 2 points
TH/33648	Range, -1 to 101°C x 0.2°C, tube length 405mm, calibrated at 3 points
TH/33650	Range, -1 to 201°C x 0.5°C, tube length 405mm, calibrated at 3 points
TH/33652	Range, -1 to 250°C x 0.5°C, tube length 405mm, calibrated at 3 points
TH/33654	Range, -35 to 50°C x 0.5°C, tube length 305mm, calibrated at 2 points
TH/33656	Range, -20 to 110°C x 0.5°C, tube length 305mm, calibrated at 3 points
TH/33658	Range, -20 to 150°C x 0.5°C, tube length 305mm, calibrated at 3 points
TH/33660	Range, -10 to 50°C x 0.5°C, tube length 305mm, calibrated at 2 points
TH/33662	Range, -10 to 110°C x 1.0°C, tube length 205mm, calibrated at 3 points
TH/33664	Range, -10 to 150°C x 1.0°C, tube length 205mm, calibrated at 3 points
TH/33666	Range, 0 to 40°C x 1.0°C, tube length 205mm, calibrated at 2 points
•	d spirit filled with calibration certificate:
TH/33668	Range, -100 to 50°C X 1.0°C, tube length 305mm, calibrated at 2 points
TH/33670	Range, -80 to 30°C X 1.0°C, tube length 305mm, calibrated at 2 points
TH/33672	Range, -50 to 50°C X 1.0°C, tube length 305mm, calibrated at 2 points

The following table of thermometers with designation 'F' are identical to certain IP and ASTM specifications and marked accordingly. Length 400mm, 100mm immersion.

Cat. No.	Designation	IP	ASTM	Range °C	Div.
TH/33750	F50C/100	77C	37C	-2 to +52	0.2
TH/33752	F75C/100	78C	38C	+24  to  +78	0.2
TH/33754	F100C/100	79C	39C	+48  to  +102	0.2
TH/33756	F125C/100	80C	40C	+72  to  +126	0.2
TH/33758	F150C/100	81C	41C	+98  to  +152	0.2
TH/33760	F255C/100	82C	42C	+95  to  +255	0.5

#### Thermometer, max/min, "Sixes" pattern

Spirit filled glass in grey plastic frame 200mm high, dual range -30 to  $50^{\circ}$ C x  $1^{\circ}$ C and -20 to  $130^{\circ}$ F x  $2^{\circ}$ F Complete with re-setting magnet.

Cat. No.	
TH/33960	

#### Thermometer, max/min "Sixes" pattern

Spirit filled glass in cream plastic frame 205mm long, dual range -35 to  $50^{\circ}$ C and -30 to  $120^{\circ}$ F. With push button reset.

Cat. No.	
TH/33962	



TH/33960

#### Thermometer, wall hanging

215mm long, red spirit filled, dual scale -20 to 50°C and 0 to 120°F

Cat. No.	Туре
TH/33970	Wooden mount
TH/33972	Plastic mount

#### Thermometer, pocket, red spirit

155mm long glass pocket test thermometer with plastic reversible case which reverses to form handle. Comes with pocket clip

Cat. No.	Range
TH/33940	-10 to 110°C

#### Thermometers, digital

#### Thermometer, oven, digital

Digital oven thermometer with count up/down timer, with 92dB audible alarm. Temperature reading is indicated on a backlit display within five seconds. The unit has a calibration function allowing the user to fine-tune the thermometer ( $\pm 2.2^{\circ}$ C).

Can be used as a free standing unit on a laboratory bench, or attached to the oven using the magnetic strip on the back of the unit.

- Temperature range -50 to  $+300^{\circ}$ C.
- Accuracy  $\pm 1^{\circ}$ C (20 to 120°C)
- Resolution 0.1°C/°F
- Powered by 2 x 1.5 volt AAA batteries
- Dimensions 19 x 70 x 152mm
- Weight 175 grams

Cat. No.	Description
TH/33986	Oven thermometer, digital with probe, -50 to 300°C
BA/93004	Battery, Alkaline, 1.5V, pack of 4

#### Thermometer, clinical, digital

Electronic oral clinical thermometer with digital display. Reading in  $^{\circ}$ C with 0.1 $^{\circ}$ C resolution. Supplied with case.

Cat. No.	Description
TH/33002	Clinical digital thermometer



TH/33962



TH/33972



TH/33986



TH/33002



TH/33014



Thermometer, fridge freezer with audible alarm

Fridge/freezer thermometer

Digital fridge freezer alarm with a water-resistant probe with a 1-meter cable. Records maximum and minimum temperatures from -24.9°C to 69.9°C.

White horizontal fridge/freezer thermometer with blue temperature scale indicating recommended

• Programmable high/low audible alarm

Thermometer, fridge freezer

Twin sensors measure external and internal temperature

Description

- Audible temperature alarm
- Accuracy of  $\pm 1^{\circ}$ C

Cat. No.

TH/33014

Large easy to read LCD

Cat. No.	Code	Description
TH/95150	810-125	Thermometer, fridge freezer, -24.9 to 69.9°C



TH/95150



TH/95160 TH/95162

#### ThermaLite2 digital thermometer

Housed in a high impact ABS plastic case with a built-in stainless-steel probe. The unit features a CalCheck 0.0°C (±0.1°C) function that allows the user to verify the accuracy of the thermometer. The addition of a silicone boot, available separately, increases the water resistance to IP65 rating. Supplied with a free traceable certificate of calibration.

- Temperature range -39.9 to 149.9°C, resolution 0.1°C, accuracy of  $\pm 0.5$ °C (-39.9 to 124.9°C)
- Low battery indication
- High impact ABS plastic case
- Available in six colours, suitable for different applications
- Tip diameter 3.3mm x 80mm long
- Clear easy to read display

Cat. No.	Code	Description
TH/95160	226-112	Thermolite2 pocket digital thermometer, White* with built-in stainless-steel probe
TH/95162	830-280	Boot, silicone for Thermolite2 for water resistance to IP65 rating

<sup>\*</sup>Also available in Grey, Yellow, Green, Red or Blue. Please specify colour required, White is automatically supplied if no colour is specified.



TH/35012

#### Thermometer, Key pocket



A K-type pocket thermometer, which is available with a selection of interchangeable probes. Robust and easy to operate, the Key is supplied complete with HI-98517-13 general purpose/penetration probe and batteries.

Technical Specificat	ons	
Range	-40 to 550°C	
Resolution	1°C	
Accuracy	±2°C	
Dims/weight	175 x 41 x 23mm/78g	
	<u> </u>	

Cat. No.	Code	Description
TH/35012	HI-98517	Keypocket thermometer
Accessories		
TH/35018	HI-98517-13	Penetration probe 130mm
TH/35020	HI-98517-15	General purpose probe 170mm
TH/35022	HI-98517-30	General purpose probe 320mm
TH/35024	CERT-CAL	UKAS traceable calibration certificate

#### Waterproof Pocketherm Folding Thermometer

Model P125W Waterproof Pocketherm Folding Thermometer, suitable for both air and product temperature measurements. Certified to European Standard EN13485:2002 making it particularly suitable for use anywhere in the cold chain.

Rated IP65, the thermometer is the perfect choice for demanding process environments.

- Temperature range -40°C to +125°C
- Stepped 1.5mm probe for faster response
- Probe can be angled for ease of use
- · Large LCD display
- Displays temperature in degrees Centigrade
- Auto switch off feature
- Flashing LED with audible alarm for instant temperature recognition
- BioCote Antimicrobial protection

Cat. No.		Description
	TH/95052	Thermometer, P125W, -40 to $+125^{\circ}$ C, pocket type with folding probe



#### Thermometer, folding probe

These thermometers offer ease of use, fast response, and high accuracy combined with the unique safety feature of a foldaway probe. They are ideally suited for liquids or semisolid sampling having a stainless steel probe which is adjustable through 45°, 90°, 135° or 180° angles. Ideal applications include Industry, Laboratory, Education and Food Hygiene temperature tests.

- Measures °C or °F
- ABS case with stainless steel foldaway probe
- Opening the probe switches the unit on
- Auto power off after 1 hour of no activity or folding the probe away switches the unit off
- Extra large 22mm LCD display with function indicators
- Min/max memory since power on or last reset
- Low battery indicator
- Supplied with a wrist strap & battery

A calibration certificate, tested at 4 points, is also available, please ask for details.

Technical Specifications	
Range	-50°C to +300°C (-58° to +572°F)
Resolution	$0.1^{\circ}\text{C} \text{ (-}19.9^{\circ}\text{C to } + 199.9^{\circ}\text{C) } 1^{\circ}\text{C others}$
Accuracy	$\pm1^{\circ}\text{C}$ (-30°C to +250°C) $\pm2^{\circ}\text{C}$ others
Sampling	Every second
Power	1 x 1.5V AAA battery
Dimensions	160 x 50 x 18mm (unit), 115x4mm (probe)
Weight	70g (including battery)

Cat. No.	Description
TH/95004	Folding probe thermometer



Notes Control of the



TH/95170

TH/95174



TH/95180



TH/95190

#### Thermometers, Infra-red

#### Thermometer, Thermapen IR infra-red

Thermapen IR infra-red thermometer with fold-away stainless-steel probe for contactless\* surface temperature measurement. Infrared range is -49.9 to 349.9°C with a distance to target ratio of 5:1 whilst the probe range covers -49.9 to 299.9°C. The probe conveniently folds back through 180° into the side of the instrument when not in use.

The default emissivity is 0.95 but can be adjusted between 0.1 and 1.0, if required via the mode button.

Supplied with a free traceable certificate of calibration.

\*Please note, the probe must be in the closed position for the Infra-red contactless feature to function.

- Automatic 360° rotational display
- Adjustable emissivity for different surfaces
- Tip diameter 3.3mm x 80mm long
- Max/Min temperature function
- High impact ABS plastic housing

Cat. No.	Code	Description
TH/95170	228-065	Thermometer, infra-red with probe, -49.9 to 349.9°C
TH/95172	830-480	Boot, silicone
TH/95174	830-001	Zip pouch
TH/95176	832-002	Wall bracket, stainless steel

#### Thermometer, RayTemp digital infra-red

The RayTemp digital infra-red thermometer features an automatic 360° rotatable display, which can be set in 90° increments or locked in one position. The default emissivity is 0.95 but can be changed from 0.1 to 1, if required, the unit has a 5:1 optic ratio (target distance/diameter ratio) The three-button keypad, incorporates measure, mode and max/min functions. Power is supplied via 3 AAA batteries that give a minimum of 5000 hours battery life.

Supplied with a free traceable certificate of calibration.

\*This unit does not incorporate laser alignment

- Adjustable emissivity for different surfaces
- Meets the European Standard EN 13485
- Records the max/min temperatures
- High impact duty ABS plastic case

Cat. No.	Code	Description
TH/95180	228-120	Thermometer, infra-red, rotatable display, -49.9 to 349.9°C
TH/95181 TH/95182	830-227 814-132	Boot, silicone Comparator
10/70182	014-132	Comparator

#### Thermometers, Waterproof, K type

Therma waterproof thermometers provide IP66/67 protection and are housed in a robust ABS case with an integrated rubber seal to ensure complete water tightness. The unit covers a temperature range of -99.9 to 299.9°C with a 0.1 °C resolution and auto-ranging to 1 °C resolution over the range of 300 to 1372°C. A large LCD display with max/min, hold, open circuit, low battery indication and an optional backlight is included.

\*The thermometer is supplied without a probe (K type) which are listed elsewhere in this section.

- Robust waterproof case offering IP66/67 protection
- Large, easy to read backlit display
- Max/min & hold functions
- Integrated rubber seal for durability
- Interchangeable probe facility

Cat. No.	Code	Description
TH/95190	232-101	Thermometer, waterproof without probe, -99.9 to 1372°C
TH/95192	143-162	Probe, penetration K type
TH/95194	830-257	Boot, silicone

#### Thermometer, Max/Min memory alarm

This cost-effective digital thermometer is ideal for liquid and semi-solid sampling. The Stainless Steel probe is connected to the unit with a 1 metre cable and can be clipped to the instrument body for single-handed use.

- -50° to 150°C x 0.1°C
- Measures in °C or °F
- Sampling rate of one reading per second
- Data Hold function retains displayed value
- Min/Max Memory
- Programmable alarm for Min/Max values
- Auto Power Off after 1 hour
- 100mm x 4mm Ø Stainless Steel pointed tip probe with handle and 1m cable
- Impact resistant ABS case incorporates a desk stand
- Supplied with a probe protector cap & battery

Cat. No.	Code	Description
TH/95010	ST-9258	Max/Min Thermometer Model ST-9258



TH/95010

## COMARK A Pluke Company

## Thermometers, Comark C26 and C28 Industrial (Type T and Type K)

Using type T or type K thermocouples (depending on model), the C26 and C28 are simple to use, reliable and accurate for temperature measurements in all food and industrial environments. The case has a built-in rubber boot and is rated to IP67 dust and waterproof standards; Comark also uses BioCote Antimicrobial Protection, the only antimicrobial solution to be awarded HACCP International Certification, to provide an important extra level of defence against cross-contamination. A wide range of Comark probes with sub-miniature connector are available, additional features include a permanent clock and countdown timer within the display, with selectable alarms to allow probe insertion times to be monitored.

- Large LCD display with permanent clock
- Auto switch-off conserves battery life
- Thermocouple sensor for high accuracy
- Durable poly-carbonate case
- Built-in protective boot
- BioCote Antimicrobial Protection
- NSF Certified (Model C28 only)

Cat. No.	Code	Description	
TH/95210	3614013	Thermometer, C26 for use with T type thermocouples, -200 to 400°C	
TH/95212	3059014	Thermometer, C28 for use with K type thermocouples, -200 to 600°C, NSF certified	
Thermocoup	les for use with	Model C28 only	
TH/95220	3058553	Thermocouple, AK28M Flexible wire air probe, -100 to 250°C, K type	
TH/95222	3058594	Thermocouple, AK33M High temperature air probe, -100 to 400°C, K type	
TH/95224	3059643	Thermocouple, IK21M General purpose immersion probe, -100 to 850°C, K type	
TH/95226	3059670	Thermocouple, IK24M General purpose immersion probe, -100 to 1100°C, K type	
TH/95228	3060372	Thermocouple, PK24M Standard industrial penetration probe, -50 to 250°C, K type	
TH/95230	3060678	Thermocouple, SK24M Heavy duty general purpose probe, -50 to 650°C, K type	
Thermocouples for use with Model C26 only			
TH/95240	3615695	Thermocouple, PT22M/W, Standard industrial penetration probe, -100 to 250°C, T type	
TH/95242	3058651	Thermocouple, AT26M, Flexible wire air probe, -100 to 250°C, T type	



TH/95210



TH/95212



TH/95240



TH/95034

#### Thermometer, high accuracy

Digital thermometer with dual inputs to accept K & J Type thermometer probes and sensors. Offering higher accuracy readings and fast response times. Ideal for industrial, laboratory and educational use.

- -200° to 1370°C x 0.1° below 1000°C Type K -200° to 1100°C x 0.1° below 1000°C Type J
- Measures in °C, °F or Kelvin, user-selectable
- 55mm dual LCD display with backlight and function indicators
- Dual input thermometer accepts 2 inputs with individual measurements or as differential measurements, T1 minus T2
- Sampling rate of 2.5 times per second
- Data hold freezes displayed values
- Min/Max memory since power on or last reset
- Average function of the last 10 measured values
- Auto power-off
- Low battery indication
- Impact-resistant ABS case with a 4mm camera bush for tripod mounting
- Supplied with soft carry case, 2 x 950mm bead probes and battery

Cat. No.	Code	Description
TH/95034	ET-959	High accuracy, twin input digital thermometer

#### Accessory probes, K type

Cat. No.	Code	Description	Length	Diam.	Max. temp
TH/95022	ARK-2	Stainless Steel Air Probe	100mm	3.2mm	350°C
TH/95024	ARK-3	Stainless Steel Air Probe	200mm	6mm	350°C
TH/95026	IMK-6	Stainless Steel Immersion Probe	50mm	3.2mm	400°C
TH/95028	IMK-8	Stainless Steel Immersion Probe	100mm	3.2mm	400°C
TH/95030	PNK-2	Stainless Steel Penetration Probe	100mm	1.5mm	400°C
TH/95032	PNK-4	Stainless Steel Penetration Probe	100mm	3.2mm	400°C

Further probes available, please ask for details.



TH/95050

#### Thermometer, high Accuracy

The KM20REF High Accuracy Reference Thermometer for checking the calibration of all types of thermometer/probe combinations. Platinum Resistance Thermometer (PRT) technology and permanently attached PRT probe for highest system accuracy.

#### Features:

- Displays temperature -100°C to 199.9°C
- Supplied with 5 point UKAS Calibration Certificate (points -18°C, 0°C, +8°C, +20°C, +70°C)
- Auto switch-off feature
- Supplied with carry case

The KM20REF High Accuracy Reference Thermometer can be used in-conjunction with the KM820/VAL Validation Calibration Check Unit (price available on request) to calibrate contact and infrared thermometers.

Cat. No.	Description
TH/95050	Thermometer, Model KM20REF, high accuracy, -100 to $+199.9^{\circ}\text{C}$ with UKAS certificate

#### Thermometer, Industrial, models Therma 1, 3 & Elite

Rugged and easy to use instruments that operate through the range of -100 to 1370°C with a 0.1°C or 1°C resolution. Robust ABS case that contains 'Biomaster' additive that helps to reduce bacterial growth. Easy to read, 12mm LCD display with open circuit 'Err' and low battery indication. Each thermometer is powered by three 1.5 volt AAA batteries that gives a minimum of five years battery life. The units will power off automatically after ten minutes, maximising battery life. This feature can be disabled by the user, if required.

#### Therma Elite

Has all the features of a Therma 1 thermometer but with the addition of a backlit display, max/min memory function and a mode button for the selection of 0.1/1 °C/°F. The thermometer also incorporates a calibration trim function ( $\pm 2$  °C) which allows users to compensate for thermocouple probe errors. Free traceable certificate of calibration included.

Technical Specifications		
Model	Therma 1/Elite	Therma 3
Range 0.1°C	-99.9 to 299.9°C	n/a
Range 1°C	300 to 1372°C	-100 to 1372°C
Resolution	0.1°C & 1°C	1°C
Accuracy	±0.4°C ±0.1%	±1°C ±0.1%
Sensor type	K thermocouple	9
Dimensions	25 x 56 x 128m	m
Weight	130 grams	

Cat. No.	Description
TH/95120	Thermometer, Industrial, model Therma 1
TH/95122	Thermometer, Industrial, model Therma 3
TH/95124	Thermometer, Industrial, model Therma Elite

For suitable probes see entry below.



TH/9512

#### Thermometer, Differential

This digital thermometer allows two type K thermocouple probes to be used simultaneously. The display can be switched to show probe T1 or T2 temperature or the difference between probes T1 and T2 (T1-T2). There is a custom, 15mm LCD display with °C, T1, T2, diff, hold, open circuit and low battery indication. The unit incorporates an auto-power off facility that automatically turns the instrument off after approximately 10 minutes, maximising battery life. Easy to use, silicone rubber key switches which activate the various functions of each instrument. Conveniently located front-mounted thermocouple probe sockets. Free traceable certificate of calibration included.

Technical Specifications	
Range	-100°C to 1372°C
Resolution	0.1°C to 299.9°C, thereafter 1°C
Accuracy 1°C	$\pm 0.4$ °C $\pm 1$ % of reading
Battery	3x1.5V AAA
Battery life	7500 hours
Sensor type	K thermocouple
Dimensions	32 x 71 x 141mm
Weight	220 grams

Cat. No.	Description
TH/95130	Thermometer, Differential

Accessory temperature probes type K for Therma series and models 2202/3

Cat. No.	Description
TH/95142	Penetration probe, Ø3.3 x 130mm, maximum temperature 250°C
TH/95144	Needle penetration probe, Ø1.8 x 100mm, maximum temperature 250°C
TH/95146	Ribbon surface probe, Ø8 x 130mm, maximum temperature 250°C



TH/95130



#### 10/9311



#### Thermometer, Precision PT100

High accuracy precision thermometers available in two versions, the Precision and the precision Plus. Both models have large, easy to read, LCD display with open circuit 'Err' and low battery indication. The control panel has on/off, max/min and display hold buttons.

The units are powered by three 1.5-volt AAA batteries that give a minimum of 2000 hours battery life.

#### Precision

- Temperature range -199.9 to 499.9 °C with 0.1 °C resolution and accuracy of  $\pm 0.2$  °C.
- Supplied with free traceable certificate of calibration
- Probe not included

#### Precision Plus

- Temperature range -199.99 to 199.99°C with a 0.01°C resolution and accuracy of  $\pm 0.05$  °C
- Supplied with free traceable UKAS certificate of calibration
- PT100 1/10th DIN liquid probe 160-222, supplied

Please note: - The accuracies quoted are for instruments only.

Other probes are available on request.

Cat. No.	Model	Description
TH/95110	222-053	Thermometer, Precision, -199.9 to 499.9°C, without probe and traceable calibration certificate
TH/95112	222-051	Thermometer, Precision Plus -199.9 to 199.9°C with liquid probe and traceable UKAS calibration certificate
TH/95114	160-222	Liquid probe PT100 1/10th DIN
TH/95116	830-221	Boot, silicone, white
TH/95118	832-050	Wall bracket, stainless steel and boot



Notes		

#### Tiles

#### Tiles, plain white, ceramic

Cat. No.	Size, mm	Pk Qty
TI/98104	150 x 150	10



TI/98104

#### Tiles, spotting, porcelain

Cat. No.	Size, mm	Cavity diam., mm	No. of cavities
TI/98208	112 x 81	25	6
TI/98210	115 x 91	17	12



TI/982

#### Tile, spotting

- High quality, unbreakable spotting tile
- 12 cavities, holding approximately 1ml
  Economic alternative to ceramic plates
- Autoclavable

Cat. No.	Code	Description
TI/96002	TWR000P	Spotting tile, 115 x 95mm



TI/96002

#### **Timers**

#### Stopwatch, mechanical

13 jewel lever movement, 1/5th second, 60 minute, 60 second, chrome finish metal case 50mm diameter, stop/start top crown button, side hand re-set.

Cat. No.	Description	
TW/65002	Stopwatch, mechanical	



TW/65002



TW/95202



TW/65014



TW/95316



TW/65122

#### Stopwatches, digital

Housed in an impact-resistant ABS case these stopwatches are easy to use for timing single events.

#### ATM-136 7.2mm Digit Stopwatch

- 1/100 sec. precision with lap counter (for first 30 minutes) and 1 second thereafter
- Calendar & time (12/24-hour format)
- Daily alarm
- Hourly chime
- Big digit display (digit height 7.2mm)
- Case size: 64 x 53 x 19mm
- Supplied with battery and neck cord

#### ATM-308 12mm Digit Stopwatch

- 1/100 sec. precision with lap counter (for first 30 minutes) and 1 second thereafter
- Calendar & time (12/24-hr format)
- Daily alarm
- · Hourly chime
- Water and shock resistant structure
- Case size: 72 x 64 x 20mm
- Supplied with battery and neck cord

Cat. No.	Code	Description	
TW/95202	ATM-136	7.2mm Digit Stopwatch	
TW/95204	ATM-308	12mm Digit Stopwatch	
TW/95208	ACAL-TM	Calibration certificate for stopwatch	

#### Timer, count down

Timer counts down from 60 minutes with alarm, 60 x 60 x 35mm. Accepts R6 battery (supplied).

Cat. No.	Description
TW/65014	Timer, count down

#### Timer, count up and down, digital

A simple to use count-up or count-down timer. It is ideal for laboratories, education and industry.

- 99min's 99sec's x 1 second
- Large 20mm LCD display
- Count-down mode with Alarm on expiry
- Count-down can be stopped and restarted at any point
- Memory to store last count-down time setting
- Repeat function for Count-down times
- Cumulative count-up function count up can be paused and re-started without losing the cumulative time count
- Impact-resistant ABS case with flip-out desk stand and rear magnet

Cat. No.	Description
TW/95316	Timer, count up/down

#### Timer, count up and down, digital, three channel

Counts up and down to/from 24 hours with alarm at end of count down period, three timing channels, clock with stopwatch, memory, 10mm digits, stand and magnet, 93x70mm, batteries 2 x LR44.

Cat. No.	Description
TW/65122	Timer, count up/down

#### Timer, countdown, waterproof

Countdown timer waterproof resistance to IP65 with large display and audible alarm. Time can be set up to 99 hours, 99 minutes and 99 seconds. The timer has a magnet pads and a keyhole slot for attaching to an appliance or wall mounting. Dimensions are 22 x 89 x 130mm and the timer is powered by 2 x AAA batteries.

Cat. no.	Code	Description
TH/95154	806-150	Timer, countdown, waterproof



TH/95154

#### Timer, count up and down, large display

Large LCD display counting up with 4 timing channels: seconds, minutes and hours; decimal seconds; 1/100 second; decimal minutes. Count down timer with memory and alarm at the end of count down period. Normal time with calendar and alarm. Case size 90x160x70mm, 3.5x6.3x2.8", R14/C size battery.

Cat. no.	Description
TW/65126	Count up/down timer



TW/65126

#### Timer, bench, single channel

Count up or count down modes. It is Ideal for laboratories, education and industry. Clearly marked non-slip rubber function buttons and a large hi-contrast LCD display make it easy to use.

- Hours, minutes or seconds
- 12hr or 24hr selectable mode
- 11mm LCD display
- Slide switch to select modes clock, count up, timer (for countdown mode)
- Count Down mode with sonic alarm on expiry
- Count Up mode until stopped
- Memory for count down times
- Impact resistant ABS case with non slip rubber feet

Cat. no.	Description
TW/95320	Timer, bench



TW/95320

#### Stop clock, LCD, 24 hour

Bench mounted stop clock housed in a white ABS case measuring  $100 \times 120 \times 45$ mm. Minutes are displayed 14mm high, seconds are displayed 11mm high. Three function buttons for start/stop, mode and split/lap/reset

Count up timing is initially 1/100 second up to 40 minutes, with lap and split options, then 1 second up to 24 hours with an accuracy of 1 second over a 24 hour period. Supplied with an R6 battery.

Cat. no.	Description
TW/65132	Stop clock, bench mounted, 24 hour, complete with battery



TW/65132



TC/160



TC/12020



TC/12032



TC/12046

#### Tissue Culture

#### Culture tubes, disposable plastic

Suitable for suspension culture procedures

- Available in two sizes: 12x75mm (5ml) and 17 x 100mm (13ml)
- Feature a two position cap, leave loose for gaseous exchange or push down tight to seal
- Available in polypropylene or polystyrene with a round base
- Individually or bulk packed
- All tubes feature a white marker spot for easy labelling and printed graduations
- Tubes are gamma irradiated for ensured sterility

Cat. No.	Product Code	Description	Tube size, mm	Approx volume, ml	Inner Pack	Case Qty	
Polystyrene tubes							
TC/16002	75CTS1	5ml culture tube	12x75	4	1x100	500	
TC/16004	75CTS	5ml culture tube	12x75	4	25	500	
TC/16006	100CTS1	13ml culture tube	17x100	12	1x100	500	
TC/16008	100CTS	13ml culture tube	17x100	12	25	500	
Polypropylen	e tubes						
TC/16010	75CTP1	5ml culture tube	12x75	4	1x100	500	
TC/16012	75CTP	5ml culture tube	12x75	4	25	500	
TC/16014	100CTP1	13ml culture tube	17x100	12	1x100	500	
TC/16016	100CTP	13ml culture tube	17x100	12	25	500	

#### Culture Tubes, PYREX® - disposable glass

**PYREX**®

Sterilin

Manufactured from chemically inert Pyrex® glass. Tubes and caps can with stand autoclaving at  $121^{\circ}\text{C}$ .

Cat. No.	Product Code	Dimensions, mm	Approx volume, ml	Case Qty
Glass Culture Tub	e, Rimless, Round Bott	tom		
TC/12002	99445-10	10x75	4	1000
TC/12004	99445-12	12x75	6	1000
TC/12006	99445-13	13x100	10	1000
TC/12008	99445-15	15x85	11	1000
TC/12010	99445-16	16x100	15	1000
TC/12012	99445-16X	16x125	19	1000
TC/12014	99445-16XX	16x150	23	1000
TC/12016	99445-18	18x150	28.5	500
TC/12018	99445-20	20x150	36	500
Glass Culture Tub	e, Screw Neck, Round	Bottom		
TC/12020	99449-13	13x100	8.5	1000
TC/12022	99449-16	16x100	15	1000
TC/12024	99449016X	16x125	19	1000
TC/12026	99449-16XX	16x150	20	1000
TC/12028	99449-20	20x125	30	500
TC/12030	99449-20X	20x150	34	500
Glass Culture Tub	e, Screw Neck, Flat Bo	ottom		
TC/12032	99448-16	16x125	17	1000
TC/12034	99448-19	19.5x145	29.5	500
Screw cap with ru	bber liner			
TC/12040	99999-13	13		1000
TC/12042	99999-15	16		1000
TC/12044	99999-18	20		1000
Screw cap with PT	FE faced liner			
TC/12046	9998-13	13		288
TC/12048	9998-15	16		288
TC/12050	9998-18	20		192

#### Culture tubes, Pyrex

These screw neck tubes, supplied with phenolic cap having an inert PTFE liner and rubber disc, are ideal for culture work. The caps are resistant to repeated dry heat and steam sterilisation cycles (121°C for two hours).

Cat. No.	Code	OD x length, mm	Approx volume, ml	Cap size, mm	Wall thickness, ± 0.2mm	Pk Qty
TC/11880	1636/24MP	14 x 100	8.6	13	1.5	40
TC/11882	1636/26MP	16 x 100	10.9	15	1.8	40
TC/11884	1636/04MP	16 x 125	13.6	15	1.8	40
TC/11886	1636/30MP	16 x 160	17.4	15	1.8	40
TC/11888	1636/32MP	18 x 100	14.7	18	1.8	40
TC/11890	1636/34MP	18 x 180	26.4	18	1.8	40
TC/11892	1636/36MP	20 x 100	19.1	20	1.8	40
TC/11894	1636/38MP	20 x 200	38.1	20	1.8	40
TC/11896	1636/10MP	22 x 200	47.9	22	1.8	40
TC/11898	1636/42MP	26 x 100	34.3	25	2.0	40
TC/11900	1636/44MP	26 x 200	68.5	25	2.0	40



TC/118

#### Cell Culture Flasks, Corning

Manufactured from optically clear virgin polystyrene and treated for optimal cell attachment. Printed with lot numbers for ease in traceability. 100% integrity tested. Sterilized by gamma radiation and certified non pyrogenic.

Cat. No.	Code	Growth area cm²	Neck Style	Cap Style	Approx volume, ml	Inner Packs	Case Qty
TC/46402	430168	25	Canted	Plug	10	20	500
TC/46404	430372	25	Canted	Phenolic	10	20	500
TC/46132	430639	25	Canted	Vent	10	20	200
TC/46406	430720	40	Canted	Plug	60	5	100
TC/46408	430725	75	Canted	Phenolic	60	5	100
TC/46134	430641	75	Canted	Vent	60	5	100
TC/46136	3276	75	Straight	Vent	60	5	100
TC/46410	430823	150	Canted	Plug	210	5	50
TC/46412	430824	150	Canted	Phenolic	210	5	50
TC/46414	431079	175	Angled	Plug	250	5	50
TC/46416	431085	175	Angled	Phenolic	250	5	50
TC/46138	431080	175	Angled	Vent	250	5	50
TC/46418	431081	225	Angled	Plug	370	5	25
TC/46140	431082	225	Angled	Vent	370	5	25



TC/46134

#### IVF cell culture dish, Corning

Treated for optimal cell attachment. Sterilized by gamma radiation and certified non pyrogenic. For research use only.

20mm diameter centre well holds 3ml of medium, whilst outer well holds 10ml of medium.

Cat. No.	Code	Size	Inner Packs	Case Qty
TC/46002	3260	60 x 15mm	20	500



TC/46002

#### Cell culture dishes, Corning

Manufactured from optically clear virgin polystyrene.

Treated for optimal cell attachment. Sterilized by gamma radiation and certified non pyrogenic. Stacking beads to aid handling. Supplied with vents to provide consistent gas exchange.

Cat. No.	Code	Special Features	Diameter, mm	Inner Packs	Case Qty
TC/46022	430165		35 x 10	20	500
TC/46024	430166		60 x 15	20	500
TC/46028	430167		100 x 20	20	500
TC/46030	430293	6 Pack Carrier	100 x 20	10	480
TC/46032	430599		150 x 25	5	60
TC/46034	431110	Square	500cm <sup>2</sup>	4	16



TC/4603



TC/460

#### 96 Well cell culture clusters, Corning

Non treated cell culture dishes, Corning Manufactured from optically clear virgin polystyrene.

Sterilized by gamma radiation and certified non pyrogenic.

Special

Features

Square Bio Assay

Treated for optimal cell attachment.

Code

430588

430589

430591

430597

431111

Cat. No.

TC/46042

TC/46044

TC/46046

TC/46048

TC/46050

Non reversible lids with condensation rings to reduce contamination, except where indicated. Sterilized by gamma radiation and certified non pyrogenic.

Not treated for optimal cell attachment, for applications where cell attachment is not desired.

Diameter

35 x 10

60 x 15

100 x 20

150 x 25

245mm<sup>2</sup>

x Height, mm

Case

Qty

500

500

500

60

16

Inner

**Packs** 

20

20

20

5

Stacking beads to aid handling. Supplied with vents to provide consistent gas exchange.

Individual alphanumeric codes for well identification.



TC/467

Cat. No.	Code	Special Features	Well Design	Growth area cm²	Inner Packs	Case Qty
TC/46722	3585	Low Evaporation	Flat	0.32	5	50
TC/46726	3595	Low Evaporation	Flat	0.32	1	50
TC/46728	3596		Flat	0.32	1	50
TC/46730	3598		Flat	0.32	5	100
TC/46732	3599		Flat	0.32	1	100
TC/46734	3696		Half Area	0.16	1	50
TC/46738	3799		Round	n/a	1	50
TC/46740	3894		V	0.38	1	50
TC/46742	9102	12 x 1 x 8 Stripwell	Flat	0.32	1	50

#### Tissue culture plates

Tissue culture plates, manufactured in a class 100,000 clean room environment under ISO 9001:9002 quality systems, from 100% USP VI crystal clear virgin polystyrene and high quality PE to ensure the integrity of your cells.

The cells are specially treated with a patented vacuum-gas plasma machine that causes the extremely hydrophobic polystyrene surface to become negatively charged and hydrophilic. This allows the cells to attach more evenly, and consistently, giving you superior attachment and growth.



- Raised well rims of flat bottoms reduce evaporation
- Plates are available in 6, 12, 24 and 96 wells
- To maximize the growth area the well area is extremely smooth
- Optically clear plates allow for easy visualization of cells
- Plates have individual condensation rings and a one-way fit lid to reduce cross contamination
- Compatible with standard equipment
- Alphanumeric notation on each well for easy identification
- Convenient, peel-open packaging
- Lot numbers are printed on the case for easy traceability

Cat. No.	Description
TC/10100	Plate, tissue culture, 6 well, 17ml surface treated
TC/10102	Plate, tissue culture, 12 well, 6.8ml, surface treated
TC/10104	Plate, tissue culture, 24 well, 3.5ml, surface treated
TC/10106	Plate, tissue culture, 96 well, 0.39ml, non-surface treated
TC/10108	Plate, tissue culture, 96 well, 0.39ml, surface treated



TC/10100



TC/4675

#### Attachment plates – ultra low Cell Culture, Corning

Sterilised by gamma radiation, these plates feature a covalently bound hydrogel layer that effectively inhibits cellular attachment. The surface on the 6 and 24 well plates minimizes protein absorption, enzyme activation and cellular activation, is non-cytotoxic, biologically inert and non-degradable. Non reversible lids with condensation rings to reduce contamination. Individual alphanumerical codes for well identification.

Cat. No.	Code	Well diam cm²	No. Wells	Growth area cm²	Inner Packs	Case Qty
TC/46752	3471	34.8	6	9.5	1	24
TC/46754	3473	15.6	24	1.9	1	24
TC/46756	3474	6.4	96	0.32	1	24

#### Culture tubes, Corning

Manufactured from optically clear polystyrene and sterilised by gamma radiation and with plug seal caps preventing leakage.

Cat. No.	Code	Size, mm	Treated	Inner Packs	Case Qty
TC/46062	430172	16 x 125	Yes	50	500
TC/46064	430157	16 x 125	No	25	500

#### Cell scrapers

Sterile cell scrapers are designed to harvest cells from a variety of flasks, dishes and plates. Featuring a pivoting blade that can be turned horizontal or vertical depending on application. The swivel blade design allows the user to access the entire cell culture surface, including difficult to reach corners.

- ABS handle with ribbed grips prevent slippage during use
- Thermo Plastic Elastomer (TPE) blade prevents cell damage
- Available in two sizes 25 cm and 39 cm
- Supplied individually wrapped in paper plastic blister packs
- Sterilized by gamma irradiation

Cat. No.	Description
TC/10000	Cell scraper, sterile, blade 20mm, handle 25cm, pack of 100
TC/10002	Cell scraper, sterile, blade 30mm, handle 39cm, pack of 100



TC/10000

#### Roller bottles, Corning

Roller Bottles are manufactured from virgin polystyrene, the caps from HDPE. Sterilized by gamma radiation and certified non pyrogenic, these bottles are treated for optimal cell attachment. One-piece seamless construction with printed graduations. Printed lot numbers to aid in product traceability. Both resins meet the USP Class VI requirements for plastic containers and closures.

Cat. No.	Code	Surface area cm²	Cap Style	Grads	Inner Packs	Case Qty
TC/46152	430195	490	Plug Seal	No	2	40
TC/46154	430849	850	Easy Grip	Yes	2	40
TC/46156	431198	850	Easy Grip/Vent Cap	Yes	2	40
TC/46158	431133	850	Easy Grip	Yes	20	20
TC/46160	430699	1750	Quick Seal	Yes	5	20



TC/461

#### Roller bottles, expanded surface, Corning

Expanded Surface Roller Bottles are manufactured from virgin polystyrene, the caps from HDPE. The ribbed design provides twice the surface area with the same exterior dimensions. Sterilized by gamma radiation and certified non pyrogenic, these bottles are treated for optimal cell attachment. One-piece seamless construction with printed graduations. Printed lot numbers to aid in product traceability. Both resins meet the USP Class VI requirements for plastic containers and closures.

Cat. No.	Code	Surface area cm²	Cap Style	Grads	Inner Packs	Case Qty
TC/46172	430852	1700	Easy Grip	Yes	2	40
TC/46174	430853	1700	Easy Grip	Yes	5	40
TC/46176	431135	1700	Easy Grip	Yes	20	20



TC/4617

#### Roller bottle caps, Corning

Ergonomic handling. Sterilized by gamma radiation.

Cat. No.	Code	Cap Style	Inner Packs	Case Qty
TC/46182	430698	Easy Grip	1	100



TC/4618



TC/463 Series



TC/466 Series



TC/4680



TC/46846



TC/468

#### Stripette, individual, paper/plastic wrap, Corning

Paper/plastic wrap allows easy opening by either pop-through or peel-apart techniques. It is also ideal for sterile tissue culture applications, especially while wearing latex gloves, as the wrap reduces static cling. Colour coding on paper allows easy size identification.

Cat. No.	Code	Capacity, ml	Grad., ml	Negative Grad., ml	Colour	Inner Packs	Case Qty
TC/46310	4485	1	1/100	0.2	Yellow	50	1000
TC/46312	4486	2	1/100	0.2	Green	50	1000
TC/46318	4487	5	1/10	2.5	Blue	50	200
TC/46328	4488	10	1/10	3	Orange	50	200
TC/46334	4489	25	2/10	10.0	Red	25	200
TC/46340	4490	50	1/1	10.0	Purple	25	100
TC/46346	4491	100	1/1	n/a	Aqua	10	100

#### Stripette, bulk pack, Corning

Bulk pack pipettes are ideal for large scale sterile and non-sterile liquid handling applications.

Cat. No.	Code	Capacity, ml	Grad., ml	Negative Grad. ml	Colour	Inner Packs	Case Qty
TC/46610	4010	1	1/100	0.2	Yellow	50/bag	1000
TC/46612	4020	2	1/100	0.2	Green	25/bag	1000
TC/46618	4050	5	1/10	2.5	Blue	25/bag	500
TC/46628	4100	10	1/10	3.0	Orange	25/bag	500
TC/46634	4250	25	2/10	10.0	Red	20/bag	200
TC/46640	4500	50	1/2	10.0	Purple	20/bag	100

#### Polypropylene container, Corning

Corning flexible polypropylene container with snap-on polythene lid serves as a beaker or storage container. Graduated in both millilitres and ounces. Certified non-pyrogenic. Supplied sterile.

Cat. No.	Code	Description	Capacity, ml	Inner Packs	Case Qty
TC/46802	430179	Container & Lid	250ml	1	100
TC/46804	430180	Container only	250ml	20	500
TC/46806	430181	Lid only	n/a	20	500

#### Graduated cylinder, polystyrene, Corning

Optically clear polystyrene graduated cylinders are designed for sterile, accurate dispensing of culture media or other biological fluids. A polyethylene dust cover is included. Supplied sterile.

Cat. No.	Code	Capacity, ml	Grads., ml	Inner Packs	Case Qty
TC/46846	430182	100	1	1	50

#### Erlenmeyer flask, polycarbonate Corning

Made from optically clear polycarbonate. Ideal for shaker culture applications. Sterilized by gamma radiation and certified non pyrogenic.

Cat. No.	Code	Capacity, ml	Grads., ml	Neck diam.	Inner Packs	Case Qty
Plug seal cap	ο					
TC/46848	430421	125	25	26 mm	1	50
TC/46856	430183	250	25	31 mm	1	50
TC/46866	430422	500	50	43 mm	1	25
TC/46876	431146	1000	50	43 mm	1	25
Vented cap						
TC/46948	431143	125	25	26 mm	1	50
TC/46956	431144	250	25	31 mm	1	50
TC/46966	431145	500	50	43 mm	1	25
TC/46976	431147	1000	50	43 mm	1	25

# **Titrators**

# TitroLine TL5000

TitroLine TL5000, an automatic titrator, is easy to use and does not need special training or previous experience. The full colour display is easily viewed from a distance and the two USB ports and two RS232 ports make it easy to connect additional devices such as storage devises, a balance, PC and additional SI Analytics peripherals.

TitroLine TL7000, a simple easy to use titrator with the facility to store up to 50 user methods, the wireless sensor automatically recognises SI Analytics ID electrodes and stores the data. A built-in amplifier makes this titrator perfect for non-aqueous titrations. The pH stat application allows a given pH to be adjusted and then kept constant during the analysis.

TitroLine TL7500 a high performance Karl Fisher titrator that is the volumetric generalist for a wide range of uses. The on-line display of the measurement curve, measurement drift and titration solvent consumption makes accurate monitoring easy. The sealed, glass vessels used are removeable and come in two sizes for the TL7500, there are also two sizes available for the Trace version with a choice of three or five openings with a very low drift.

TitroLine 7750 titrator measures both volumetric KF and potentiometric titrations by combining the features of both the TL7000 and TL7500 models. The system is expandable via the two USB ports, USB-PC port and two RS232 ports. Items that can be connected for example are a USB keyboard, printer, barcode reader, flash drives, balances, PC and further SI Analytics devices such as piston burettes and sample changers.

As standard the 7750KF comes present ready to run KF titrations, but the internal software and hardware to run potentiometric titrations too.

By adding the exchangeable head and the pH electrode the system will run both options with relative ease all by simply swapping the head and exchanging the electrode.

\*\*Whilst these models offer all that is generally required in the laboratory, they do not cover the entire range. Please contact us with specific requirement details and we will investigate the most suitable model for your purpose. A number of vessels as well as other accessories are available, please enquire.

Cat. No.	Model	Description
KF/45030	TL5000-M2/20	TitroLine 5000 basic unit with magnetic stirrer TM 235 and 20ml exchangeable unit WA20, with stand rod TZ 1510, electrode clamp Z 305 and hand controller TZ 3880. Power supply 100 - 240V
KF/45032	TL7000-M1/20	TitroLine 7000 basic unit with magnetic stirrer TM 235 and 20ml exchangeable unit WA20, with brown glass bottle for titrant, GL 45 and S 40 bottle adapter, tubes, drip tube and titration tip. Power supply 100 - 240V
KF/45002	TL7500 KF 05	Volumetric KF basic titrator exchange unit WA 05, titration stand with integrated stirrer and pump TM 235 KF, titration vessel TZ 1770, micro double platinum electrode KF 1100 and starter kit. Power supply 100 - 240V
KF/45004	TL7500 KF Trace M4	Coulometric KF basic titrator unit, generator electrode TZ 1753, with junction and connector cable titration stand with integrated stirrer and pump TM 235 KF, stand rod, titration vessel TZ 1754 and micro double platinum electrode KF 1150. Power supply 100 - 240V
KF/45006	TL7750 KF 05	TitroLine basic titrator unit with KF accessories, exchange unit WA 05, titration stand with integrated stirrer and pump TM 235 KF, titration vessel TZ 1770, micro double platinum electrode KF 1100 and starter kit. Power supply 100 - 240V

### Accessories

Cat. No.	Code	Description
KF/45028	285130275	Electrode pH combination with sensor recognition
KF/45010	285220320	Exchange unit, 20ml with integrated chip for reagent data
KF/45012	285102030	Titration electrode, micro double Platinum combination
KF/45014	285214721	Drying oven, maximum temperature +300°C
KF/45016	285218115	Accessory set for drying oven
KF/45018	285220480	Thermal printer
KF/45020	285220710	Thermal printer paper
KF/45022	285220440	Printer, uses A4 size paper
KF/45024	285220717	TitriSoft 3.0 for models 7500KF and 7750KF only
KF/45026	285220727	TitriSoft 3.0P, CFR Compliant for models 7500KF and
		7750KF only



KF/45002



TO/94006

# **Tongs**

# Tongs, speciality

Cat. No.	Model	Description
TO/94002	7005	Tongs, beaker, stainless steel, length 356mm
TO/94004	7002	Tongs, flask, stainless steel, length 235mm
TO/94006	5704	Tongs, Ward pattern, stainless steel, length, 590mm
TO/94008	5705	Tongs, Ward pattern, stainless steel, length 740mm

# Tongs, crucible

Cat. No.	Shape	Length, mm	Pk Qty
Mild steel			
TO/94112	Bowed	152	5
TO/94114	Bowed	203	5
TO/94116	Straight	160	5
TO/94118	Straight	210	5
Nickel			
TO/94122	Bowed	203	Each
TO/94124	Straight	203	Each
Stainless steel			
TO/94126	Bowed	160	Each
TO/94128	Bowed	203	Each
TO/94130	Straight	160	Each
TO/94132	Straight	210	Each
TO/94134	Straight	305	Each
TO/94136	Straight	508	Each

Larger sizes of tongs are available please ask for details.

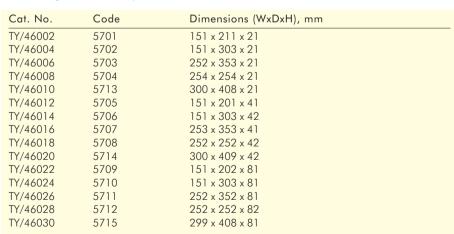


TO/941

# **Trays**

# Trays, ABS

Suitable for general laboratory use.





TY/460



TY/46242

Tray, PP	
A tough 12 litre autoclavable tray	or a variety of uses. Can hold $18 \times 500$ ml or $12 \times 1L$ bottles.

Cat. No.	Code	Capacity, litre	Dimensions (WxDxH), mm
TY/46242	548	12	345 x 510 x 110

Very useful for small objects - rulers, erasers, pencils etc. in desk drawers. Central compartment of five compartment tray can be used for pipettes. Sturdy.

Cat. No.	Code	Compartments	Dimensions (WxDxH), mm
TY/46352	953	12 (90 x 90mm)	403 x 303 x 63
TY/46354	954	4 x (100 x 185mm) 1 x (100 x 385mm)	404 x 304 x 64



TY/4635

# Utility carrier

# **NALGENE**

Rigid utility carrier with sturdy handle and moulded in centre division. Useful for carrying a multitude of lab items. Available in HDPE and Polypropylene. The Polypropylene version can be autoclaved and meets OSHA Standard 29 CFR Part 1910.1030 for use as protection against blood borne pathogens. Overall dimensions (including handle), L x W x H, 378 x 241 x 114mm. Compartment dimensions, L x W x H, 340 x 89 x 111mm.

Cat. No.	Code	Description
BC/36102	7130-0010	Utility carrier HDPE
BC/36204	7134-0010	Utility carrier PP



BC/3610

# **Trolleys**

For gas cylinder trolleys please see page 220.

# Trolley, shelf

General purpose trolley with a grey mild steel frame and removable aluminium shelves. All swivel castors. Overall dimensions; 800 x 550 x 915mm high. Height to top working surface; 770mm. Tray size: 735 x 530mm with 40mm upstand

Cat. No.	Description
TR/94080	Trolley, 2 Tier, clearance between shelves: 560mm
TR/94082	Trolley, 3 Tier, clearance between shelves: 260mm



TR/94080

# Trolley, multi-purpose

Can be used to transport a wide range of items within schools, hospitals or laboratories. Powder coated mild steel frame with 2 removable plastic coated wire baskets. All swivel castors. Basket size: 500 x 388 x 170mm (LxWxD). Overall dimensions: 625 x 442 x 1020mm (LxWxH)

Cat. No.	Description
TR/94090	Multi-purpose trolley with 2 baskets



TR/94090



TR/94102

# Trolleys, stainless steel

A selection of two and three tier trolleys with stainless steel frames, fixed stainless steel pressed shelves and all swivel castors.

Cat. No.	Dimensions (WxDxH), mm
2 tier	
TR/94102	Kingston 1090 X 630 X 1000
TR/94104	Kelvin 900 X 510 X 900
TR/94106	Kelly 600 X 425 X 815
3 tier	
TR/94108	Kingston 1090 X 630 X 1001
TR/94110	Kelvin 900 X 510 X 901
TR/94112	Kelly 600 X 425 X 816



TR/94106



TR/94110



TR/94112



TR/94228

# Multi bin trolley

Three tier multi bin trolley which is useful in a variety of applications. Trolley has a light Grey mild steel frame and swivel castors.

Cat. No.	Description	Dimensions (WxDxH) mm
TR/94228	Multibin trolley 3 tier	990 X 442 X 946

Notes			

# **Tubing**

# Tubing, soda glass

Light wall, lengths of 500mm.

Cat. No.	O.D., mm	Pk Qty	
TU/02002	4	30	
TU/02004	5	30	
TU/02006	6	30	
TU/02008	7	30	
TU/02010	8	30	
TU/02012	10	30	



TU/020

# Tubing, borosilicate glass

Medium wall (1.0mm), lengths of 500mm.

Cat. No.	O.D., mm	Pk Qty	
TU/02104	6	30	
TU/02106	7	30	
TU/02108	8	30	
TU/02110	10	30	



TU/021 Series

# Tubing, borosilicate glass, capillary

Lengths of 500mm.

Cat. No.	O.D., mm	Bore, mm	Pk Qty
TU/02204	5	0.5	10
TU/02206	6	0.8	10
TU/02210	7	1.2	10



TU/4652

# Tubing, PVC, clear, non toxic, flexible, reinforced

Cat. No.	Bore, mm	Metres	Wall thickness max
TU/46524	6.5	30	3
TU/46526	8	30	3
TU/46528	10	30	3
TU/46530	12.5	30	3
TU/46532	16	30	3
TU/46534	19.0	30	4

# Flame retardant bunsen tubing, black nitrile with reinforced ends Supplied Individually.

Cat. No.	Code	Length, mm	
TU/76502	CBT/450	450	
TU/76504	CBT/600	600	
TU/76506	CBT/750	750	
TU/76508	CBT/900	900	



TU/765



TU/761

# Tubing, red rubber, B.S. 2775:1987

Cat. No.	Code	Bore, mm	Wall,mm	Metres	
TU/76102	RT/N03	3.0	0.75	10	
TU/76104	RT/N05	5.0	1.5	10	
TU/76106	RT/N06.5	6.5	1.5	10	
TU/76108	RT/N08	8.0	2	10	
TU/76110	RT/N10	10.0	2	10	
TU/76112	RT/N12.5	12.5	2.25	10	
TU/76114	RT/N16	16.0	3.25	10	
TU/76116	RT/N20	20.0	3.25	10	
TU/76118	RT/N25	25.0	3.25	10	



TU/762

# Tubing, red rubber, heavy wall, pressure, BS2775:1987

Cat. No. Code Bore, mm Wall,	mm Metres
TU/76220 RT/H03 3 3	10
TU/76222 RT/H05 5 4	10
TU/76224 RT/H06.5 6.5 5	10
TU/76226 RT/H08 8 6	10
TU/76228 RT/H10 10 7	10
TU/76230 RT/H12.5 12.5 8.5	10



TU/763

# Tubing, Neoprene, black BS2775

Cat. No.	Code	Bore, mm	Wall,mm	Metres
TU/76342	NT/N03	3.0	0.75	10
TU/76344	NT/N05	5.0	1.5	10
TU/76346	NT/N06.5	6.5	1.5	10
TU/76348	NT/N08	8.0	2.0	10
TU/76350	NT/N10	10.0	2.0	10
TU/76352	NT/N12.5	12.5	2.0	10

# Tubing, translucent silicone

Platinum cured, 60 S.H., medical grade, non-toxic, autoclavable by steam at 130°C. Coil of 10m.

Cat. No.	Bore, mm	Wall, mm	O.D. (mm)
TU/76462	3	0.75	4.5
TU/76464	5	1.5	8
TU/76466	6.5	1.5	9.5
TU/76467	8	2	12
TU/76468	10	2	14
TU/76470	12.5	2.25	17
TU/76472	16	3.25	22.5

# Tubing, Peristaltic pump



EKAL

Micro bore tubing for peristaltic pumps has a reputation for reliable performance. Tubing has been designed to fit many peristaltic pumps and instrumentation which include; Pumps: Ismatec™, Gilson®, Watson-Marlow® and Skalar to name a few.

Instruments: Perkin Elmer $^{\text{TM}}$ , Thermo $^{\text{®}}$  ICP instrumentation, flame photometers and many others. Ideal for research and routine use. A range of raw materials are listed which offer varying degrees of chemical resistance.

#### Accurated PVC tubing

Flow rated and heat treated for increased life. They are suitable for general laboratory use and are resistant to most routine chemicals. Transparency allows for convenient flow monitoring and PVC tubing bends easily, grips connectors firmly and simplifies pump set up. Pack of 12.

Cat. No.	Bridge colour	Nominal OD, mm	Flow cc/min (typical average)
TU/51002	Orange / Red	2.019	0.03
TU/51004	Orange / Blue	2.083	0.05
TU/51006	Orange / Green	2.210	0.10
TU/51008	Orange / Yellow	2.337	0.16
TU/51010	Orange / White	2.464	0.23
TU/51012	Black / Black	2.438	0.32
TU/51014	Orange / Orange	2.565	0.42
TU/51016	White / White	2.692	0.60
TU/51018	Red / Red	2.819	0.80
TU/51020	Grey / Grey	2.972	1.00
TU/51022	Yellow / Yellow	3.099	1.20
TU/51024	Blue / Blue	3.327	1.60
TU/51026	Green / Green	3.531	2.00
TU/51028	Purple / Purple	3.734	2.50
TU/51030	Purple / Black	3.962	2.90
TU/51032	Purple / Orange	4.216	3.40
TU/51034	Purple / White	4.470	3.90
TU/51036	Blue / Yellow	3.200	1.40



TU/510

# Tubing, P.V.C. clear, very flexible

Can be used with peristaltic pumps.

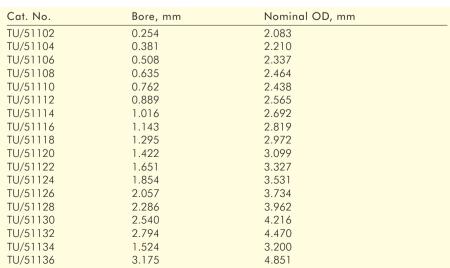
Cat. No.	Bore, mm	Wall, mm	Metres
TU/46502	5	1.5	30
TU/46504	6.5	1.5	30
TU/46505	8	2	30
TU/46506	10	2	30
TU/46508	12.5	2.25	10
TU/46510	16	3.25	10
TU/46512	20	3.25	10

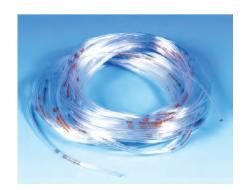


TU/4650

# Tubing, pump, standard PVC

Supplied in 15m roll.





TU/511



TU/9600 and TU/96108

# Tubing, dialysis or visking

Sold in reels of 30 metres.

Cat. No.	Flat width, mm	Inflated dia. mm
TU/96002	24-26	14.3
TU/96004	31-33	19.0
TU/96006	43-45	29.0

Other sizes of Visking tubing available if required.

# Medi clips for Dialysis tubing

Plastic, for closing the end of tubing up to 29mm inflated.

Cat. No.	Pk Qty
TU/96108	10



TH/440

# Tubing clips, screw, Hoffman type, metal, hinged base opening



Cat. No.	Size, mm
TH/44002	13
TH/44004	20
TH/44006	25
TH/44008	32
TH/44010	40



TH/46002

# Tubing clips, bunsen, screw

Hoffman type, plastic

Cat. No.	Size, mm	Pk Qty
TH/46002	14	Each



TH/942

# Tubing hose clips, Hexagon head, metal



Cat. No.	For tubing, mm	Pk Qty	
TH/94202	8-10	5	
TH/94204	9-12	5	
TH/94206	10-14	5	
TH/94208	13-17	5	
TH/94210	15-19	5	
TH/94212	18-22	5	
TH/94214	21-25	5	
TH/94216	23-27	5	
TH/94218	26-30	5	

tubing connectors

# Tubing connectors, 'T' pattern

Polypropylene, with rigid tapered arms. Autoclavable. Good chemical resistance.

Cat. No.	Code	O.D. mm	I.D. mm	Pk Qty
TH/16102	CWH204	4 - 7	2	10
TH/16104	CWH206	6 - 7	4	10
TH/16106	CWH208	8 - 9	7	10
TH/16108	CWH210	10 - 12	9	10



TH/1610

# Tubing connectors, 'Y' pattern

Polypropylene, with rigid tapered arms. Autoclavable. Good chemical resistance.

Cat. No.	Code	O.D. mm	Pk Qty
TH/16202	CWH304	4 - 7	10
TH/16204	CWH306	6 - 7	10
TH/16206	CWH308	8 - 9	10
TH/16208	CWH310	10 - 12	10



TH/1620

# Tubing connectors, straight pattern

Polypropylene with stepped tapered arms. Autoclavable. Good chemical resistance.

Cat. No.	Code	O.D. mm	Pk Qty
TH/16302	CWH600	4-7 and 4-7	10
TH/16304	CWH602	4-7 and 7-12	10
TH/16306	CWH606	4-7 and 10-15	10
TH/16308	CWH604	7-12 and 7-12	10
TH/16310	CWH608	7-12 and 10-15	10
TH/16312	CWH610	10-15 and 10-15	10



Azlon

Azlon



TH/163



TM/35004

# **Turbidity**

# Turbidity meter, portable logging with Fast Tracker™



A portable instrument for measuring Turbidity in the FTU (NTU) scale. Showing impressive accuracy across a wide range, the HI-98713 has been specifically designed to be accurate at low turbidity levels. Reading in three ranges, normal measurement, continuous measurement, or averaging measurement can be selected.

- Complete GLP functions that allow traceability of the calibration conditions can be accessed at the touch of a button.
- 200 measurement log memory which can be reviewed on the instrument or downloaded to PC (optional).
- Fast Tracker™ Tag simplifies data collection.
- Supplied with cuvettes and caps (5), HI-98713-11 calibration cuvettes, silicon oil, tissue, i-button tags (5), batteries, power cable, manual and carry case.

Technical Specifications	
FTU (NTU) Range/Resolution	0.00 to 9.99 x 0.01 NTU
	10.0 to 99.9 x 0.1 NTU
	100 to 1000 x 1 NTU
Accuracy	0.02 NTU
Turbidity Standards	1, 15, 100 and 750 FTU (NTU)
Calibration	2, 3, or 4 points
Log memory	200 records
Power supply	4 x 1.5V batteries or AC adapter. Auto-off after 15 minutes.
Dimensions	224 x 87 x 77mm
Weight	512gm

Cat. No.	Code	Description
TM/35004	HI-98713-02	Portable logging Turbidity meter with Fast Tracker™
Accessories		
TM/35006	HI-98703-11	Turbidity standards kit
TM/35008	HI-93703-50	Cuvette cleaning solution 250ml
TM/35010	HI-93703-60	Caps for cuvettes (4)
TM/35012	HI-731331	Glass cuvettes (4)
TH/35382	HI-92000	Windows® compatible software
PH/35170	HI-920011	RS232 connection cable 5 to 9 pin
TM/35014	HI-920013	USB cable for PC connection

# Turbidity meter, infra-red

# Lovibond

The compact Lovibond® infrared turbidity meter TB 210 IR is designed to allow fast, precise on-site testing. The unit measures the scattered light at an angle of  $90^\circ$ , as stipulated in EN ISO 7027. The wide measuring range from 0.01-1100 TE/F = NTU = FNU makes the instrument suitable for various applications, ranging from drinking water to waste water. As infrared light is used for measurement purposes, the unit can be used to test both coloured and colourless liquids.

The standards required for calibration of the unit are also supplied. A second adjustment mode allows alternative adjustment with user-defined turbidity standards.



TM/80000

Technical Specifications	
Light source	IR LED (860nm)
Display	Backlit LCD
Suitable vials	Round cuvettes 24mm
Internal storage	Ring memory for 16 data sets
Measuring principle	Nephelometric (90° scattered light)
Measuring range	0,01 - 1100 NTU (auto range)
Clock	Real time and date
Environmental conditions	5 - 40°C at 30 - 90% relative humidity (non-condensing)
Dimensions	110 x 55 x 190mm
Weight	400g
Power	9V Block

Cat. No.	Code	Description
TM/80000	266020	Turbidity meter TB210IR, 0.01 - 1100NTU
TM/80020	194150	Standards, set of 4
TM/80022	197655	Vials with lids, set of 12

# Portable Turbidimeter model 2100Q and 2100Q IS

On-screen assisted calibration and verification saves time and ensures accuracy.

With an easy-to-follow interface, complicated manuals are not needed to perform routine calibrations. Single standard RapidCal calibration offers a simplified solution for low level measurements.

Up to 500 measurements are automatically stored in the instrument for easy access and backup. Stored information includes: date and time, operator ID, reading mode, sample ID, sample number, units, calibration time, calibration status, error messages and the result.

Does not require additional software when used with the optional USB+Power module. All data can be transferred to the module and easily downloaded to your computer with a USB connection. The two-detector optical system compensates for colour in the sample, light fluctuation and stray light, enabling analysts to achieve laboratory-grade performance on a wide range of samples, even under difficult site conditions.



TM/55112

# Technical Specifications

Light source
2100Q Tungsten filament lamp

2100Q IS Light-emitting diode (LED) at 860nm

Measuring range 0 - 1000 NTU (FNU)

Accuracy  $\pm$  2% of reading plus stray light from 0 to 1000 NTU Repeatability  $\pm$  1% of reading or 0.01 NTU whichever is greater

Resolution 0.01 NTU on lowest range

Stray light < 0.02 NTU
Signal averaging Selectable on/off

Reading modes Ratio turbidimetric determination using a primary

nephelometric (user selectable) light scatter signal and

transmitted light scatter signal

Data logger 500 records

Power requirement 110-230Vac, 50-60Hz (with Power or USB+Power module)

4 AA alkaline batteries

Operating conditions

Temperature 0 - 50  $^{\circ}$ C

Relative humidity

0 - 90 % non-condensing at 30 °C

0 - 80 % non-condensing at 40 °C

0 - 70 % non-condensing at 50 °C

Sample volume 15 ml

Sample cells 25 mm x 60 mm round (borosilicate glass with screw cap)

 $\begin{array}{ll} \text{Dimensions} & 107 \times 77 \times 229 \text{mm} \\ \text{Weight} & 527 \text{g without batteries} \end{array}$ 



TM/55122

Scope of supply: Instrument, case assembly, 4 AA alkaline batteries, 6 sample cells, STABLCAL ampule kit, silicone oil, oiling cloth, manual.

Cat. No.	Code	Description
TM/55110	2100Q01	2100Q Portable Turbidimeter (EPA)
TM/55112	2100QIS01	2100Q IS Portable Turbidimeter (ISO)
Accessories		
TM/55114	LZV804.99.00001	Power module
TM/55116	LZV813.99.00001	USB+Power module
TM/55120	4397500	Degassing Kit
TM/55122	4397510	Sample Filtration and Degassing Kit
TM/55124	2464105	Gelex Secondary Standards Kit



TM/55124

Notes	

# 72.2"

TM/55020

# Turbidimeters, Hach TL23 series

Turbidity measurement to ISO and EPA standards, in the laboratory and in the field.

Turbidity is an easily obtainable, meaningful parameter and is firmly established in water analysis, quality assurance and process control. The TL23 series turbidimeters combine practical design with standard compliant measurement technology and are available in four different models: two models with tungsten lamp at 460 nm, and two models with LED light source at 860 nm.

These meters offer a wide range of turbidity applications and improved functionality to simplify testing. Features include: a colour touch screen, a USB port for data transfer, self-diagnostics for quality assurance, and single point calibration for measurements under 40 NTU/FNU.

The TL23 Series laboratory turbidimeters blend trusted technology and improved features to simplify testing in the most demanding industrial and wastewater applications.

- A repeatability of  $\pm$  1% of reading or 0.01 NTU, whichever is greater (under reference conditions)
- 2 USB-A ports for USB flash drive, external printer, keyboard and barcode scanner
- 2000 Total logs, includes reading log, verification log and calibration log
- Accepts round cells 95 x 25mm (3.74 x 1 inch) borosilicate glass with rubber-lined screw caps\*
- Sample requirement: 20ml minimum in the 25mm cell, 0 to 70°C (32 to 158°F)
- CE, KC and RCM certified
- \*Note: Smaller sample cells (less than 25mm) can be used with a cell adapter.

Model	TL2300	TL2350	TL2310	TL2360	
Air purge	Dry Nitrogen or instrument grade air				
	(ANSI MC 11.1.1975) 0.05L/s at 69kPa (10psig):				
	138 kPa (20 psig) max				
Hose barb connection		For 1/8 inc			
Data logging	2000 total logs,	includes reading,	verification and co	alibration logs	
Display		17.8mm colour	touch screen		
Interface	2 x US	B-A ports for flash		nter,	
		keyboard and ba	rcode scanner		
Light source	Tungsten filar	ment lamp	LED at 860 $\pm 30$	0nm	
Measurement method		Nephelor	metric		
Measuring range:					
NTU (Ratio on)	0 - 4000	0 - 10000	0 - 1000	0 - 10000	
(	NTU/FNU	auto decimal	NTU/FNU	auto decimo	
NTU (Ratio off)	0 - 40	0 - 40		0 - 40	
EBC (Ratio on)	0 - 980	0 - 2450		0 - 2450	
,		auto decimal		auto decimo	
EBC (Ratio off)	0 - 98	0 - 98		0 - 98	
Absorbance (auto range)		0 - 1.0	0 - 1.0	0 - 2.00	
Transmittance (%)		1.0 - 100	1.0 - 100	1.0 - 100	
Degree (mg/L)		1 - 100	1 - 100	0 - 100	
Operating temperature		0-40°	C		
Power requirements		100-240V ac, 50			
Reading modes		nual (TL2360 only)			
	Rapid	ly Settling Turbidity,	signal averaging	on	
		or off, ratio			
Regulatory	Meets EPA Me	ethod 180.1	Meets ISO 702		
			27027, DIN		
			and NFT 9		
Repeatability	±1% of	reading or 0.01 N		reater	
	0	(under reference	,		
Response time		raging off: 6.8 seco			
	I4 seco	onds (when 10 med		ed to	
6 1 11 11111	D .	calculate the		ele .	
Sample cell compatability		ells 95 x 25mm (3.		ilicate	
S		lass with rubber-lin		) +- 1 E O O E )	
Sample requirements Stabilisation time	Ratio on: 30	e cell, 20ml minimu			
Sidbilisation time	start-up, Ratio o		Immedia	ieiy	
	after st				
			FNU and NTU	NTU, EBC,	
Linita					
Units	NTU and EBO		1110 dild 1110		
Units  Dimensions (HxWxD)/Weight		Abs, %T 153 x 395 x 30		Abs, %T	

<sup>\*\*</sup> Note: Smaller sample cells (Less than 25mm) can be used with a cell adapter.

Cat. No.	Code	Description
TM/55020	LPV444 99 00210	Turbidimeter model TL2300 EPA, 0 - 4000 NTU with Tungsten lamp
TM/55022	LPV444 99 00310	Turbidimeter model TL2350 EPA, 0 - 10000 NTU with Tungsten lamp
TM/55024	LPV444 99 00120	Turbidimeter model TL2310 ISO 0 - 1000 NTU with LED
TM/55026	LPV444 99 00320	Turbidimeter model TL2360 ISO 0 - 10000 NTU with LED
Accessories TM/55016	2084900	Sample cells

These highly accurate suspended polymer standards are approved by the EPA (Environmental Protection Agency) and are suitable for use with most turbidity meters.

All standards are Formazin free (non-carcinogenic) and non-toxic. Each standard is provided with a certificate of analysis. Please stipulate the turbidity value required (NTU) for standardisation.

# Turbidity standards for Ratio instruments

,				
Cat. No.	Code	NTU value	Pk Qty	
TS/61002	CRSR-0-100	0.0	100ml	
TS/61004	CRSR-0.1-100	0.1	100ml	
TS/61006	CRSR-0.5-100	0.5	100ml	
TS/61008	CRSR-1.0-100	1.0	100ml	
TS/61010	CRSR-5.0-100	5.0	100ml	
TS/61012	CRSR-10-100	10.0	100ml	
TS/61014	CRSR-100-100	100	100ml	
TS/61016	CRSR-500-100	500	100ml	
TS/61018	CRSR-1000-100	1000	100ml	
TS/61022	CRSR-4000-100	4000	100ml	



TS/61

Other NTU values are available. We can also supply these standards in  $500 \, \text{ml}$  packs. Please ask for details.

# Turbidity standards for Non-Ratio instruments

Cat. No.	Code	NTU value	Pk Qty
TS/61102	CRS-0.0-100	0.0	100ml
TS/61104	CRS-0.1-100	0.1	100ml
TS/61106	CRS-0.5-100	0.5	100ml
TS/61108	CRS-1.0-100	1.0	100ml
TS/61110	CRS-5.0-100	5.0	100ml
TS/61112	CRS-10-100	10.0	100ml
TS/61114	CRS-100-100	100	100ml
TS/61116	CRS-500-100	500	100ml
TS/61122	CRS-4000-100	4000	100ml

Other NTU values are available. We can also supply these standards in 500ml packs. Please ask for details.

Notes ————————————————————————————————————



# NICKEL - ELECTRO LTD. Manufacturers of the Clifton Range

# Clifton Range®

Leading Products For Today's Scientists...



Water Baths
Boiling, Stirred,
Unstirred, Circulators,
Shaking, Ultrasonic.





Centrifuges Mini, Refrigerated, Universal.





Hotplates
Blockheaters,
Sterilisers, Ovens,
Incubators.





Mixers
Vortex Mixer,
Rotary Mixer.





Metalware Beakers, Crucibles, Spatulas, Spoons, Jugs, Scoops, Tongs.



www.nickel-electro.co.uk

# Ultrasonic baths

# Ultrasonic baths, DU series, heated

# Clifton Range

Comprising of a stainless steel tank housed in a durable paint finished outer case. The addition of heaters on this range ensures that optimum operating temperature for maximum ultrasonic efficiency is reached rapidly. Variable temperature control up to 69°C, clear digital display and easy to clean. Electrical supply 230 Volts. Manufacturers 3 year warranty. Accessory lids have insulated handles.

Technical Specifications				
Code	DU-4	DU-8	DU-14	DU-22
Internal Dims, mm	300x150x150	300x240x150	325x300x150	500x300x150
External Dims, mm	332x185x290	332x270x240	361x332x290	535x537x290
Capacity, litres	4	8	14	22
Power Output	280 Watts	600 Watts	800 Watts	1200 Watts
Modulation Hz	50 – 100	50 – 100	50 – 100	50 – 100
Operating Freq., kHz	30 – 40	30 – 40	30 – 40	30 – 40
Transducers	3 PZT	4 PZT	4 PZT	6 PZT
Power Consumption	300W	550W	600W	900W
Heater, Watts	200W	200W	400W	600W

Cat. No.	Code	Description
UB/85102	DU-4	4 litre heated ultrasonic bath
UB/85104	DU-8	8 litre heated ultrasonic bath
UB/85106	DU-14	14 litre heated ultrasonic bath
UB/85108	DU-22	22 litre heated ultrasonic bath
Accessories		
UB/85110	BSK-4	Stainless steel basket for DU-4
UB/85112	BSK-8	Stainless steel basket for DU-8
UB/85114	BSK-14	Stainless steel basket for DU-14
UB/85116	BSK-22	Stainless steel basket for DU-22
UB/85118	LD-4	Stainless steel basket for DU-4
UB/85120	LD-8	Stainless steel basket for DU-8
UB/85122	LD-14	Stainless steel basket for DU-14
UB/85124	LD-22	Stainless steel basket for DU-22



UB/85106 with UB/85122

# Branson Mechanical and Digital Ultrasonic baths

Ultrasonic baths with the ability to handle a wide variety of applications. This technology uses ultrasonic energy (40 kHz) in the form of sound waves to create millions of microscopic vacuum cavities in the solution. As these cavities collapse, they release high frequency energy, loosening dirt on all surfaces that the solution touches. This activity, called cavitation, occurs thousands of times per second to gently yet thoroughly scrub contamination off the article being cleaned. Typical applications include laboratory glassware, instrument parts, small geological samples, metal and plastic machined parts, small electrical/electronic components, recorder and drafting pens, optical components and jewellery. Electrical supply 230V, 50-60kHz.

#### Ultrasonic bath, model 200

With automatic timer, complete with lid and basket

Technical Specifications	
Model	Bransonic 200
Capacity, litres	0.5
Dimensions, Ext/Int (WxDxH), mm	225 x 115 x 122 / 170 x 90 x 50
Weight, Kg	1.4
Timer, mins	5

Cat. No.	Code	Description
UB/95002	000-001-100	Ultrasonic cleaner Model Bransonic 200
UB/95004	000-019-028	Tank cover, plastic for model 200
UB/95006	000-019-030	Mesh basket, plastic for model 200
UB/95007	000-019-029	Wire mesh basket, stainless steel for model 200
UB/95010	000-019-021	Beaker holder, stainless steel 2 x 250 ml for model 200

## CPX Series Ultrasonic Baths

Branson Ultrasonic baths with mechanical 60-minute timers are available heated (69°C/156.2°F) or unheated. Supplied complete with lid and 40 kHz rugged industrial transducers.

These models can also be supplied with an optional Digital 99-minute timer. Available either heated (69°C/156.2°F) or unheated, with power tracking capabilities to adjust for light or heavy loads. The high/low power control, degassing and sleep mode, makes these baths one of the most versatile systems available.

ĆPXH digital timers can be set up to 99 minutes. Extended time periods allow for "beyond cleaning" applications such as sample preparation, which includes degassing liquids, mixing and homogenization, dissolving solids, cell lysing, and dispersion of particles.



UB/95002 & UB/95004



UB/951



UB/952



UB/953



UB/954



UB/955



Accessories

# CPX Series Ultrasonic Baths (continued)

Technical Specifications					
Model	1800	2800	3800	5800	8800
Tank capacity,					
litres	1.9	2.8	5.7	9.5	20.8
Tank size					
(LxWxD), mm	150x140x100	230x140x100	290x150x150	290x240x150	495x290x150
Overall size,					
(LxWxD), mm	251x304x302	337x304x302	397x317x377	397x401x378	596x466x391
Weight, Kg	7	9	12	14	26
Frequency	40Hz	40Hz	40Hz	40Hz	40Hz
Drain tap	No	No	Yes	Yes	Yes

Drain tap	No	No	Yes	Yes	Yes			
Cat. No.	Code	Description						
Bransonic 18	00, 1.9L capacity	/						
UB/95122	CPX-952-136R		ranson Mode	el M1800-E, med	chanical timer only			
UB/95124	CPX-952-137R	Bath ultrasonic Branson Model M1800H-E, mechanical timer - heater on/ off, 55°C						
UB/95128	CPX-952-139R	Bath ultrasonic B	ranson Mode	el CPX1800-E, d	igital timer only			
UB/95126	CPX-952-138R	adjustable heater	Bath ultrasonic Branson Model CPX1800H-E, digital timer - adjustable heater 20 - 69°C					
UB/95110	100-410-170	Tray, solid, stainle	ess steel 110	x 110 x 70mm				
UB/95112	000-019-129	Wire basket, stair			m			
UB/95114	CPN-246-010	Beaker holder, pl	astic, 1 x 60	0ml				
Bransonic 28	00, 2.8L capacity	/						
UB/95222	CPX-952-236R	Bath ultrasonic B	ranson Mode	el M2800-E, med	chanical timer only			
UB/95224	CPX-952-237R	Bath ultrasonic B heater on/ off, 55		el M2800H-E, m	echanical timer -			
UB/95228	CPX-952-239R	Bath ultrasonic B	ranson Mode	el CPX2800-E, d	igital timer only			
UB/95226	CPX-952-238R	Bath ultrasonic B adjustable heater	r 20 - 69°C		digital timer -			
UB/95210	100-410-172	Tray, solid, stainle	ess steel 190	x 90 x 75mm				
UB/95212	000-019-229	Wire basket, stair	,		m			
UB/95214	CPN-246-011	Beaker holder, pl						
UB/95216	CPN-246-015	Beaker holder, pl	astic, 2 x 60	0ml				
Bransonic 38	00, 5.7L capacity	/						
UB/95322	CPX-952-336R	Bath ultrasonic B	ranson Mode	el M3800-E, med	chanical timer only			
UB/95324	CPX-952-337R	Bath ultrasonic B heater on/ off, 55		el M3800H-E, m	echanical timer -			
UB/95328	CPX-952-339R	Bath ultrasonic B	ranson Mode	el CPX3800-E, d	igital timer only			
UB/95326	CPX-952-338R	Bath ultrasonic B adjustable heater		el CPX3800H-E,	digital timer -			
UB/95310	100-410-174	Tray, solid, stainle	ess steel 220	x 110 x 100mm	1			
UB/95312	000-019-329	Wire basket, stair	nless steel, 2	61 x 119 x 136n	nm			
UB/95314	CPN-246-012	Beaker holder, pl	astic, 3 x 25	0ml				
UB/95316	CPN-246-016	Beaker holder, pl	astic, 2 x 60	0ml				
Bransonic 58	00, 9.5L capacity	/						
UB/95422	CPX-952-536R	Bath ultrasonic B	ranson Mode	el M5800-E, med	chanical timer only			
UB/95424	CPX-952-537R	Bath ultrasonic B heater on/ off, 55		el M5800H-E, m	echanical timer -			
UB/95428	CPX-952-539R	Bath ultrasonic B	ranson Mode	el CPX5800-E, d	igital timer only			
UB/95426	CPX-952-538R	Bath ultrasonic B adjustable heater		el CPX5800H-E,	digital timer -			
UB/95410	100-410-176	Tray, solid, stainle						
UB/95412	000-019-529	Wire basket, stair			nm			
UB/95414	CPN-246-013	Beaker holder, pl	astic, 4 x 60	0ml				
Bransonic 88 UB/95522	00, 20.8L capaci CPX-952-836R		ranson Mode	el M8800-E, me	chanical timer only			
UB/95524	CPX-952-837R	Bath ultrasonic B heater on/ off, 55	ranson Mode					
UB/95528	CPX-952-839R	Bath ultrasonic B		el CPX8800-E, d	igital timer only			
UB/95526	CPX-952-838R	Bath ultrasonic B						
		adjustable heater		,				
UB/95510	100-410-178	Tray, solid, stainle		x 240 x 150mm				
UB/95512	000-019-829	Wire basket, stair						
UB/95514	CPN-246-014	Beaker holder, st						
Accessories fo	or all models							
UB/95516	000-019-226	Glass beaker, 25	i0ml					
UB/95518	000-019-125	Glass beaker, 60						
UB/95520	000-583-700	O ring for 250m						
UB/95530	000-583-710	O ring for 600m						

Either basket, tray or breaker holder should be selected for correct operation.

# Vials

# Vials, screw neck, squat form



Neutral glass vials, squat form, without closure. Polypropylene caps must be ordered separately.

Cat. No.	Nominal capacity, ml	Ht x dia mm	Cap reference	Cap code	Pk Qty
VI/42006	7.0	42 x 20	VC/42208	D	264
VI/42008	14.0	58 x 23.0	VC/42212	F	190
VI/42010	28.25	72 x 27.5	VC/42214	G	140



VI/421

# Vials, screw neck, tall form



Neutral glass vials, tall form, without closure. Polypropylene caps must be ordered separately.

Cat. No.	Nominal capacity, ml	Ht x dia mm	Cap reference	Cap code	Pk Qty
VI/42102	1.75	36 x 11	VC/42202	А	882
VI/42104	3.5	46 x 12.5	VC/42204	В	666
VI/42106	7.0	58 x 17	VC/42206	С	399
VI/42108	10.5	67 x 17	VC/42206	С	399
VI/42110	14.0	72 x 20	VC/42208	D	264
VI/42112	21.25	86 x 21	VC/42210	Е	231
VI/42114	28.25	96 x 23	VC/42212	F	190



VC/422

# Vials, rolled rim



Neutral glass vials without closure. These vials will accept either a polythene push-in plug or a clip on closure which must be ordered separately.

Cat. No.	Nominal capacity, ml	Ht x dia mm	Cap reference	Cap code	Pk Qty
VI/42230	7.0	34 x 23	VC/46102 & 12	Н	190
VI/42232	10.5	46 x 23	VC/46102 & 12	Н	190
VI/42234	14.0	48 x 25.5	VC/46104 & 14	J	162
VI/42236	21.25	66 x 25.5	VC/46104 & 14	J	162
VI/42238	28.25	72 x 27.5	VC/46106 & 16	K	140
Caps For vials			Vial reference		
VC/46102	Clip on cap, poly	thene	VI/42230 & 232	Н	190
VC/46104	Clip on cap, poly	Clip on cap, polythene		J	162
VC/46106	Clip on clap, poly	Clip on clap, polythene		K	140
VC/46112	Push in cap, polyt	thene	VI/42230 & 232	Н	190
VC/46114	Push in cap, polythene		VI/42234 & 236	J	162
VC/46116	Push in cap, polyt	thene	VI/42238	K	140



VI/4223 and VC/461



VI/4234 and VC/4624

# Vials, wide mouth

Neutral glass tall form vials without closure. These vials accept polythene push-in plug closures which must be ordered separately.

Cat. No.	Nominal capacity, ml	Ht x dia mm	Cap reference	Cap code	Pk Qty
VI/42342 VI/42344	1.75 3.5	36 x 11.50 46 x 12.5	VC/46242 VC/46244	882 666	
VI/42346 Caps For vial VC/46242	7.0 Push in cap, polyt	58 x 17.0	VC/46246 VI/42342	399 882	
VC/46244 VC/46246	Push in cap, polyt	hene	VI/42344 VI/42346	666 399	



# Vial, scintillation, 20ml

- Natural polyethylene (HD-PE)
- High precision suitable for use with robotic analytical systems
- Insert tubes with leakproof cap
- Convenient opening and closing

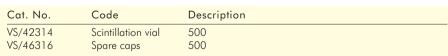
Cat. No.	Description
VS/30000	Vial, scintillation, 20ml, 27 x 60mm, pack of 1000 (with caps)
VS/30002	Spare caps for scintillation vials, box of 1000
VS/30004	Insert tube, 14 x 56mm, with cap, box of 2 x 1000



VS/42314

# Vial, scintillation

Low potassium glass complete with fitted screw cap. 51mm tall x 27mm diameter.



For more vials see Chromatography vials page 106. Also cryogenic vials, page 131.

# Viscosity

# Viscosity baths

'POS TEMP' E270 viscosity bath

- Precision controlled, better than  $\pm$  0.01  $^{\circ}$ C
- $\bullet$  Temperatures from 10 °C below ambient, up to + 120 °C (below/near ambient operation requires external cooling)
- Essential for accurate determination of kinematic viscosity
- Meets the requirements of the "Institute of Petroleum" & "Ámerican Society for Testing and Materials" (IP-7/ASTM D-445)
- High visibility viewing windows allow clear observation of up to 8 viscometers (not supplied)

The 'POS TEMP' Viscosity bath is designed for kinematic viscosity determinations to the stringent requirements of IP & ASTM standards. A specially designed stainless steel support lid holds up to 8 viscometer holders; each one can be independently levelled and checked using the circular spirit level.

For temperatures less than 10°C above ambient a simple water cooling coil or small refrigeration unit can be used. A range of accessories make the 'POS TEMP' Viscosity bath simple to use. Complies with all relevant standards

Technical Specifications	
Model	'POS TEMP' E270
Construction	
- Case	Powder Coated Steel
- Tank	Stainless Steel/Glass
External Dimensions, LxWxH mm	670 x 320 x 610
Height of main case, mm	470
Working Space, LxWxH mm	390 x 255 x 390
Viewing Window, mm	375 x 340
Heaters	Two 1000 watt boost heaters, which can be controlled
	manually or automatically. Permanent load up to 420 watts
	and a 600 watt thermostat controlled heater
Power	Max 3100 watts
Supply	220/240 Volts 50 Hz Single Phase
Temp Range	120°C Maximum, minimum temperature dependent on
	coolant system used
Heating time	40°C - Water filled 1 hour
	100°C - Oil filled 1.25 hours
Temperature control	Better than ±0.01°C

Cat. No.	Code	Description
VB/75002	04400424	'POS TEMP' E270 viscosity bath
Accessories		
VB/75004	04400077	Plain metal lid
VB/75006	04400091	Viscometer lid with 8 holes
VB/75008	04400132	Opal glass diffuser screen
VB/75010	04400118	Fluorescent lighting unit with 2 tubes for
		attachment to the back of the bath
VB/75012	04400101	Cooling coil to use with water
VB/75020	04400149	Universal viscometer holder
VB/75022	68630081	Adaptor ring
VB/75024	04400156	Circular spirit level
VB/75026	04400170	Rubber caps for viscometer holders
VB/75028	04400187	Bench viscometer stand
VB/75030	04900144	Thermometer holder
VB/75032	04400163	Plastic covers with insulation handle
		for vacant viscometer openings

# Viscosity flow cups

Simple efflux type flow cups are used to measure and control the viscosity of paints, lacquers, inks and other viscous products. Note: In the following tables all viscosities and flow times quoted are nominal values at 25°C.

# BS-ISO flow cups

ASTM D5125; EN535 - ISO 2431; DIN 53 211

- $\bullet$  Viscosity range from 8 to 2000mm $^2\!/s$
- Aluminium body with stainless steel jet

Cat. No.	Description	Orifice dia. (mm)	Viscosity range (cSt)
VC/94102	No. 3 Cup	3.0	7 to 42
VC/94104	No. 4 Cup	4.0	35 to 135
VC/94106	No. 5 Cup	5.0	91 to 325
VC/94108	No. 6 Cup	6.0	188 to 684
VC/94110	No. 8* Cup	8.0	600 to 2000
* Cup is not in the	e current BS-ISO series, I	but offered for use with high	viscosity samples.



VB/75002 and accessories



VC/941



# Ford cups

ASTM D1200

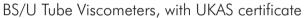
Cat. No.	Description	Orifice dia. (mm)	Viscosity range (cSt)
VC/94202	No. 2 JET	2.8	25 to 120
VC/94204	No. 3 JET	3.4	49 to 220
VC/94206	No. 4 JET	4.1	70 to 370

#### Accessory

Cat. No.	Description
VC/94030	Stand, ring, galvanised steel for viscosity cups
VC/94032	Stand, tripod for viscosity cups, stainless steel with built in spirit level

# Glass Capillary Viscometers

PSL viscometers are constructed from low expansion borosilicate glass and the precision bore tubing used for the capillary section is held to a close tolerance of  $\pm 0.01$  mm. Calibration is carried out in the PSL Calibration Laboratory which has shown that it meets the requirements of ISO 17025, by independent UKAS accreditation. The PSL Calibration Laboratory maintains its own primary viscosity scale, based upon the internationally agreed value of distilled water at 20°C of 1.0034mm²/s. Each calibration performed is one step away from this primary scale, producing very low uncertainties of measurement.



ISO 3104, ISO 3105, ASTM D 445, ASTM D 446, BS 188 Suitable for the measurement of transparent liquids, nominal overall length 300mm, approximate sample size 13-40ml.

Cat. No.	Code	Size	Nominal constant	Viscosity range (mm²/s,cSt)
VT/92050	1619/00	0	0.001	0.3 to 1
VT/92052	1619/01	Α	0.003	0.9 to 3
VT/92054	1619/02	В	0.01	2 to 10
VT/92056	1619/03	С	0.03	6 to 30
VT/92058	1619/04	D	0.1	20 to 100
VT/92060	1619/05	Е	0.3	60 to 300
VT/92062	1619/06	F	1.0	200 to 1,000
VT/92064	1619/07	G	3.0	600 to 3,000
VT/92066	1619/08	Н	10.0	2,000 to 10,000

#### Accessory

Cat. No.	Description
VT/92080	Holder, BS/U-Tube viscometer size O to F
VT/92082	Holder, BS/U-Tube viscometer size G and H



# Cannon-Fenske Routine Viscometers with UKAS certificate

ISO 3104, ISO 3105, ASTM D 445, ASTM D 446, BS 188 Suitable for the measurement of transparent liquids, nominal overall length 250mm, approximate sample size 7ml. Calibration data at 40°C with the constant, C, stated at 40°C and 100°C.

Cat. No.	Code	Size	Nominal constant	Viscosity range (mm²/s,cSt)
VT/92102	1634/01	25	0.002	0.4 to 2
VT/92104	1634/02	50	0.004	0.8 to 4
VT/92106	1634/04	100	0.015	3 to 15
VT/92108	1634/05	150	0.035	7 to 35
VT/92110	1634/06	200	0.1	20 to 100
VT/92112	1634/07	300	0.25	50 to 250
VT/92114	1634/08	350	0.5	100 to 500
VT/92116	1634/09	400	1.2	240 to 1,200
VT/92118	1634/10	450	2.5	500 to 2,500
VT/92120	1634/11	500	8.0	1,600 to 8,000

### Accessory

Cat. No.	Description
VT/92140	Holder, viscometer, Cannon-Fenske routine



# Cannon-Fenske Opaque (Reverse Flow) Viscometers, with UKAS certificate

ISO 3104, ISO 3105, ASTM D 445, ASTM D 446, ASTM D 2170, BS 188

Suitable for measuring transparent and opaque liquids, nominal overall length 295mm, approximate sample size 12ml. Calibration data at 40°C with the constant, C, stated at 40°C and 100°C.

Cat. No.	Code	Size	Nominal constant	Viscosity range (mm²/s,cSt)
VT/92202	1641/01	25	0.002	0.4 to 2
VT/92204	1641/02	50	0.004	0.8 to 4
VT/92206	1641/03	75	0.008	1.6 to 8
VT/92208	1641/04	100	0.015	3 to 15
VT/92210	1641/05	150	0.035	7 to 35
VT/92212	1641/06	200	0.1	20 to 100
VT/92214	1641/07	300	0.25	50 to 250
VT/92216	1641/08	350	0.5	100 to 500
VT/92218	1641/09	400	1.2	240 to 1,200
VT/92220	1641/10	450	2.5	500 to 2,500
VT/92222	1641/11	500	8.0	1,600 to 8,000
VT/92224	1641/12	600	20.0	4,000 to 20,000

# Accessory

Cat. No.	Description
VT/92240	Holder, viscometer, Cannon-Fenske opaque



VT/922

# Ubbelohde Viscometers ASTM, with UKAS certificate

ISO 3104, ISO 3105, ASTM D 445, ASTM D 446, BS 188

Suitable for the measurement of transparent liquids, nominal overall length 283mm, approximate sample size 18ml.

Cat. No.	Code	Size	Nominal constant	Viscosity range (mm²/s,cSt)
VT/92302	1643/04	1	0.01	2 to 10
VT/92304	1643/05	1C	0.03	6 to 30
VT/92306	1643/06	1B	0.05	10 to 50
VT/92308	1643/07	2	0.1	20 to 100
VT/92310	1643/08	2C	0.3	60 to 300
VT/92312	1643/09	2B	0.5	100 to 500
VT/92314	1643/10	3	1.0	200 to 1,000
VT/92316	1643/11	3C	3.0	600 to 3,000
VT/92318	1643/12	3B	5.0	1,000 to 5,000
VT/92320	1643/13	4	10.0	2,000 to 10,000

# Accessory

Cat. No.	Description
VT/92340	Holder, viscometer, Ubbelohde size 0 to 4

All types of glass capillary viscometers are available without certificate of calibration, please ask for details.



VT/923



VM/560

# Viscometer, Rotational

SMART series of rotational viscometers to determine viscosity. Indispensable in QC and R&D laboratories. They are competitively priced and easy to use.

- Touch key board 6 keys.Direct readout on a graphic display.
- Data displayed: Selected speed, selected spindle, viscosity reading, percentage of full scale, sample temperature, shear rate, shear stress, and density.
- 10 working memories.
- Unit converter SI to CGS.
- AUTO-TEST with sound and visual malfunction alarm.
- AUTO-RANGE function.
- User-enabled viscosity and temperature calibration.
- 10 language options.USB interface

Technical Specifications					
Speed (rpm)	0.3 - 100				
Number of speeds	18				
Precision	$\pm$ 1% of full scale.				
Resolution:					
With low viscosity adapter	0.01				
Lower than 10.000cP viscosity	0.1				
Equal to or above 10.000cP viscosity	1				
Repeatability	0.2% Thermometer features				
Temperature range	0°C to +100°C (32°F to 212.0°F)				
Resolution	0.1°C (0.1722 °F)				
Precision	± 0.1°C				
Type of probe	PT100				
Power	100-240V ac, 50/60Hz				

Standard delivery comprises; Viscometer head, adjustable stand, bosshead, standard spindles (set of 4 for model L and set of 6 for R and H models), PT100 probe spindle protector, spindle rack, power supply cable, datalogger software, USB cable, carrying case, calibration certificate and operating manual.

Cat. No.	Model	Measuring Range			
VM/56012	SMART L with temperature probe PT100	20 - 2,000			
VM/56014	SMART R with temperature probe PT100	100 - 13,000			
VM/56016	SMART H with temperature probe PT100	200 - 106,000			
Accessories					
VM/56034	Set of special spindles (TL5, TL6, TL7) for use with mod	del L			
VM/56036 Set of special spindles (TR8, TR9, TR10, TR11) for use with models R and H					
VM/56042	High viscosity adapter (for models R and H only)				

Notes	

# Viscosity standards

# Viscosity standards, dynamic/kinematic

Traceable, UKAS certified, Viscosity Standards to suit most applications including:

psl

- Automated Viscometer Systems
- Glass Capillary Viscometers
- Rotational/Cone & Plate Viscometers
- Cold Cranking Simulators
- Flow Cups

All standards are supplied in 500ml bottles complete with a certificate of calibration. The PSL calibration laboratory meets the requirements of ISO 17025.

Cat. No.	Code	Туре	Dynami	c Viscosity	y in cP Te	mperatu	re (°C)	
			20.00	25.00	40.00	50.00	80.00	100.00
VS/91102	2700-V01	N4	0.31	0.29	0.26	-	-	-
VS/91104	2700-V02	N8	0.73	0.68	0.56	-	-	-
VS/91106	2700-V03	N1.0	1.0	0.93	0.76	0.71	-	-
VS/91108	2700-V04	S3	3.9	3.3	2.4	1.9	1.2	0.9
VS/91110	2700-V05	S6	9.1	7.6	4.8	3.7	2	1.4
VS/91112	2700-V06	N10	18	15	8.8	6.2	3	2.2
VS/91114	2700-V07	S20	39	31	16	11	5	3.2
VS/91116	2700-V08	N35	76	57	27	18	7	4.3
VS/91118	2700-V09	S60	140	100	46	30	10	6.0
VS/91120	2700-V10	N100	290	210	84	50	17	9.0
VS/91122	2700-V11	S200	580	400	150	90	25	13
VS/91124	2700-V12	N350	1100	750	270	150	37	19
VS/91126	2700-V13	S600	2100	1400	450	240	54	28
VS/91128	2700-V14	N1000	4080	2630	810	415	85	39
VS/91130	2700-V15	S2000	7600	4900	1500	770	135	62
VS/91132	2700-V16	N4000	17000	11000	2900	1400	238	100
VS/91134	2700-V17	\$8000	33000	20000	5900	2800	490	200
VS/91136	2700-V18	N15000	68000	41000	11000	5400	770	300
VS/91138	2700-V19	\$30000	-	80000	21000	9500	1387	540
Dynamic vis	cosity values s	stated are no	minal valu	es stated in	mPa.s (cP	)		



VS/911

# Rotational viscosity standards

Silicone rotational standards, dual UKAS certified to the International Standards BS EN ISO / IEC 17025 and ISO Guide 34. Supplied in convenient 600mL 'use from pack' format.

Cat. No.	Code	Dynamic Viscosity (mPa.s) 20°C	Dynamic Viscosity (mPa.s) 25°C
VS/91150	VIS-RT5-600	5.395	4.934
VS/91152	VIS-RT10-600	11.03	10.03
VS/91154	VIS-RT50-600	54.53	49.42
VS/91156	VIS-RT75-600	83.45	75.67
VS/91158	VIS-RT100-600	107	96.44
VS/91160	VIS-RT250-600	279.2	253
VS/91162	VIS-RT350-600	390.5	353.7
VS/91164	VIS-RT500-600	551.6	499.5
VS/91166	VIS-RT1K-600	1099	995.2
VS/91168	VIS-RT5K-600	5564	5017
VS/91170	VIS-RT10K-600	11084	9994
VS/91172	VIS-RT12K-600	13996	12638
VS/91174	VIS-RT30K-600	33204	29936
VS/91176	VIS-RT60K-600	65759	59284
VS/91178	VIS-RT100K-600	110829	99916

Other types of standards are available, please ask.

Please note: Values stated are nominal



Silicone viscosity standard

WG/9200

# Watch glasses

# Watch glasses, glass

Manufactured from soda glass with ground edges.

Cat. No.	Diameter mm	Pk Qty
WG/92002	40	10
WG/92004	50	10
WG/92006	60	10
WG/92008	70	10
WG/92010	80	10
WG/92012	90	10
WG/92014	100	10
WG/92016	130	10
WG/92018	150	10



WG/120

# Watch glasses, Pyrex

**PYREX**<sup>®</sup>

For evaporation work and covering heated beakers. Fire-polished edges to reduce chipping and breakage.

Cat. No.	Item Code	Nominal diameter mm
WG/12002	1060/04D	40
WG/12004	1060/06D	50
WG/12006	1060/09D	60
WG/12008	1060/10D	80
WG/12010	1060/14D	100
WG/12012	1060/18D	125
WG/12014	1060/20D	150
WG/12016	1060/21D	200
WG/12018	1060/24D	250



WG/462

# Watch glasses, PP



Polypropylene watch glasses with moulded base for stability. Can with stand temperatures up to  $120^{\circ}\text{C}$ .

Cat. No.	Code	Diameter mm	Height mm	
WG/46206	452	60	10	
WG/46210	454	80	12	
WG/46214	455	100	14	
WG/46215	456	120	18	

Notes	

water stills

# Water stills

# Water still, Budget

This still is a basic low cost unit, with an easy drain facility. Mounted on a stove enamelled metal chassis it will produce four litres per hour of distillate but still retains a safety thermostatic cut-out and high quality glassware.

Technical Specifications		
Output	4 litres/hr	
рН	5.5 - 6.5	
Conductivity $\mu$ S/cm	<2.5	
Resistivity megohm/cm	0.4	
Temperature	<35°C	
Minimum supply pressure	5 psi	
Power	220/240V	
Wattage	3kW	

Cat. No.	Description
WP/51010	Budget water still 4L/hr



WP/51010

# Water still, Quickfit® QWS4

QUICKFIT® The QWS4 is the only water still to feature an original Pyrex glass boiler and condenser, all of the main components can be supplied as spare parts. Suitable for use in a wide range of laboratories that require pyrogen-free water to ISO and ASTM type 4 standards. The output is 4 litres per hour and the Pyrex glass coil condenser ensures that the distillate is cooled ready for use. Glass and plastic 20 litre capacity aspirator bottles are available for the collection and storage of the distilled water. The still is protected from overheating should the water supply fail, by two independent re-settable thermostats. Supplied complete with instruction manual.

- Can be wall or bench mounted
- Easy cleaning, no need to dismantle glassware
- Distillate pH 5.0 6.5
- Distillate conductivity 3.0 5.0 μS/cm

Cat. No.	Code	Description
WP/13004	QWS4	Water still, Quickfit, single distillation, 4L/hour



WP/13004

# Water still, Merit, W4000



Safety features include two independent safety thermostats to prevent over heating in the event of failure of the water supply. Built in acid addition funnel and drain stopcock allow easy de-scaling without dismantling the glassware. The stand is pre-drilled to facilitate wall mounting.

- Economical price
- Glass construction with long life metal heating element
- Two independent safety thermostats
- Wall mountable

Technical Specifications	
Output	4 litres/hr, single distilled
рН	5.0 – 6.5
Conductivity, µScm <sup>-1</sup>	3.0 - 4.0
Resistivity, mOhm/cm	0.25 - 0.3
Temperature	25 - 35°C
Pyrogen content *	Pyrogen free
Water supply	1 litre/min
	3 – 100psi (20-700kPa)
Electricity supply	240V, 50-60Hz, single phase
Power requirement	3kW
Dimensions, (WxDxH)	500 x 150 x 450mm
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\*Care is required to produce pyrogen free water and the output should be tested before use.

Cat. No.	Code	Description
WP/13002	W4000	Merit water still, 240V



WP/13002



WP/13014

# Water still, Distinction, D4000



All glass construction with silica sheathed heaters ensures top purity distillate at an economical price. Fitted with a control device to turn off the heater when the collecting reservoir is full. Prevents overflow if the still is inadvertently left switched on when unattended. With two independent safety thermostats to prevent over heating in the event of an interruption to the water supply. Built in acid addition funnel and drain stopcock allow easy de-scaling without dismantling the glassware. The stand is pre-drilled to facilitate wall mounting.

- All glass construction
- Two independent safety thermostats
- Safety reservoir full shut off
- Wall mountable
- Silica sheathed heaters

Technical Specifications		
Output	4 litres/hr, single distilled	
рН	5.0 – 6.5	
Conductivity, µScm <sup>-1</sup>	1.0 – 2.0	
Resistivity, mOhm/cm	0.5 – 1.0	
Temperature	25 - 35°C	
Pyrogen content *	Pyrogen free	
Water supply	1 litre/min	
	3 – 100psi (20-700kPa)	
Electricity supply	240V, 50-60Hz, single phase	
Power requirement	3kW	
Dimensions (WxDxH)	540 x 160 x 410mm	

<sup>\*</sup>Care is required to produce pyrogen free water and the output should be tested before use.

Cat. No.	Model	Description
WP/13014	D4000	Distinction water still



WP/51020

# Water still, cabinet

This water still is durable and efficient with low maintenance. Will provide outstanding service for many years. Used throughout the world in commercial, research and education laboratories. Meets all the current UK safety regulations; providing failsafe operation even without supervision. High purity silica sheathed elements or optional lower cost metal heaters are available. Stove enamelled casing incorporates hinged perspex front cover for easy access. Features a 12V circuit board to ensure complete operator safety. Solenoid valve shuts off water supply to still if electrical supply fails. Can be bench or wall mounted.

Technical Specifications	
Output	4 litres/hr
рН	5.5 - 6.5
Conductivity, µScm <sup>-1</sup>	<2.5
Resistivity megohm/cm	0.4
Temperature	<35°C
Minimum supply pressure	5 psi
Power	220/240V
Dimensions (WxDxH) mm	400 x 590 x 240

Cat. No.	Description
WP/51020	Water still 4L/hr, with 2 x 1.5kW silica heaters
WP/51022	Water still 4L/hr, with 1 x 3kW metal heater

1	Notes
-	
-	

# Water stills, Aquatron®, A4000, A8000 & A4000D



Three models are available giving outputs of 4 or 8 litres/hour single or 4 litres/hour double distilled water. The high quality borosilicate glassware coupled with silica sheathed heaters gives pyrogen free distillate of the highest purity from virtually any raw water supply.

All glass construction allows rapid descaling using strong mineral acids. A built in "clean" function and integral acid addition funnel make the cleaning operation simple and safe with no need to dismantle any of the glassware. A large bore stopcock with PTFE key is fitted for easy draining of chemicals after cleaning.

A flow sensing device will detect any reduction in the flow of cooling water to below the required level and will turn off the still before it can overheat. Sensing the flow of cooling water rather than its pressure is safer and allows the still to run normally on low pressure supplies down to 3psi (20kPa). As a fail-safe device there is an over-temperature thermostat mounted in the boiling chamber.

The Aquatron® is very easy and safe to assemble and maintain. Both the acrylic safety screen and the cabinet lid are removable giving unrivalled access to the glassware components.

Every Aquatron® water still is supplied with a reservoir level control; a simple and effective system which can be fitted to virtually any type of reservoir vessel. It will turn the still off when the reservoir is full and restart it when the level in the reservoir drops as distilled water is removed for use making it a full automatic water purification system.

- Fully automatic operation
- High purity pyrogen free output
- Low temperature distillate
- Operates from any raw water supply
- Reservoir level control
- Simple conversion to pre-treated feed
- Supplied with wall mounting bracket
- Safety features allow unattended operation
- Simple to clean

#### Aquatron® models

A4000

Produces 4 litres/hour single distilled water. Can operate standing on the laboratory bench or be wall mounted. Supplied with easy to fit wall mounting bracket.

A8000

Produces 8 litres/hour single distilled water, ideal for the larger laboratory. Glassware is enclosed in the same cabinet as the A4000 so it can operate standing on the laboratory bench or be wall mounted. Supplied with easy to fit wall mounting bracket.

#### A4000D

Produces 4 litres/hour double distilled water for higher purity levels. The first stage distillation is carried out in a glassware set mounted at the front of the cabinet allowing easy access for descaling. The distilled water is fed to a second set of glassware mounted at the rear and distilled a second time. The rear glassware is fitted with a level sensor to ensure the heater is only activated when there is sufficient water in the boiler.

Technical Specifications			
	A4000	A8000	A4000D
Output, I/hr	4, single	8, single	4, double
рН	5.0 - 6.5	5.0 - 6.5	5.0 - 6.5
Conductivity, µScm <sup>-1</sup>	1.0 - 2.0	1.0 - 2.0	1.0 – 1.5
Resistivity, mOhm/cm	0.5 - 1.0	0.5 - 1.0	0.7 - 1.0
Temperature, °C	25 - 35	25 - 35	25 - 35
Pyrogen content*	Pyrogen free	Pyrogen free	Pyrogen free
Water supply	1 I/min	2 l/min	2 l/min
	3-100psi	3-100psi	3-100psi
	(20-700kPa)	(20-700kPa)	(20-700kPa)
Electrical supply	220 or 2	40V, 50-60Hz, single	phase
Max. power, kW	3	6	6
Dimensions (WxDxH) mm	550x240x410	550x240x410	550x240x410

<sup>\*</sup> Care is required to produce pyrogen free water and the output should be tested before use.

Cat. No.	Code	Description
WP/13102	A4000	Aquatron water still, 4 l/hr, single distilled, 240V
WP/13104	A8000	Aquatron water still, 8 l/hr, single distilled, 240V
WP/13106	A4000D	Aquatron water still, 4 l/hr, double distilled, 240V



WP/13102



WP/13102



WP/13110

# Aguatron® conversion to pre-treated feed



The A4000/WCK and the A4000D/WCK are simple conversion kits available so that the Aquatron® water still can be operated from a pre-treated feed. The A4000/WCK is the water conversion kit required for the A4000, whereas the A4000D/WCK is suitable for both the A4000D and the A8000 models. Suitable sources of pre-treated water can be obtained from almost any model deioniser or reverse osmosis unit or a piped supply of treated water.

The pre-treated water is fed directly to the boiler and cooling water is supplied to the condenser separately. The controls ensure that pre-treated water is supplied to the boiler automatically as required, preventing overflow and costly waste. A safety device is incorporated to protect the still in the event of failure of the pretreated supply.

The conversion kit can be fitted easily in a few minutes to any existing Aquatron® model should the need arise

- Eliminates descaling
- Improves distillate purity
- Use with any pre-treated water source.
- No loss of treated water

WP/13110 A4000/WCK Conversion kit for pre-treated feed for model A4000 only WP/13112 A4000D/WCK Conversion kit for pre-treated feed for model A4000D and A8000 only	Cat. No.	Code	Description
	,	/	,



WP/13240

# Deioniser, Aquatron®



A simple, portable deioniser giving good quality water at an affordable price.

The disposable ion exchange cartridges slowly change colour from green to blue as they are exhausted giving at a glance indication of the resin condition. Supplied complete with flexible hose for connection to a tap and a stopcock to control the flow rate.

Can be linked in series with the Aquatron® filter either by a flexible hose or the rigid coupling (ALC) available as an accessory. Ideal as a pre-treatment for Aquatron® water stills. Housing and ion exchange cartridges must be ordered separately.

- Output up to 60 litres/hour
- Low cost disposable cartridges
- Colour change indicates resin condition at a glance
- Free standing or wall mountable
- Ideal as pre-treatment for Aquatron® water stills



WP/13242

# Technical Specifications Maximum flow rate, I/hr 60 Maximum water temperature, °C 40 Maximum water pressure, psi (kPa) 100 (700) Output conductivity, μScm<sup>-1</sup> <15 Dimensions, mm 130 x 315

Cat. No.	Code	Description
WP/13240	ADHSINGLE	Cartridge housing, deioniser, single
WP/13242	ADHDOUBLE	Cartridge housing, deioniser, double
WP/13244	ADICART	Cartridge, Ion exchange for single and double housing
WP/13246	ADHSIBKT	Wall bracket, plastic, for single housing
WP/13248	ADHDOBKT	Wall bracket, plastic, for double housing

# Distilled water storage system

Bibby Scientific offer a purpose designed reservoir system for the collection of distilled water from your Aquatron still. This comprises of a reservoir complete with Rotaflo stop-cock and special lid and a stand, these are supplied separately.

Cat. No.	Code	Description
WP/13230	WR20	Pyrex 20 litre glass reservoir with side arm and vent with bacteriological filter
WP/13232	WS20	Reservoir stand, 43cm high for use with WR20



WP/13230 & WP/13232

# Water still, with storage tank

These models have automatic operation to supply either two, four, eight or twelve litres of distillate per hour. The built-in distillate storage tank accepts twice the hourly capacity of the water still. All models are well proven for every-day routine laboratory use. For bench and wall mounting.



- Good distillate quality, conductivity approx. 2.3µS/cm at 25°C
- Heating element made of stainless steel
- Thermostatic low water cut-off, protects the heating element in case of low water
- Energy-saving by distillation of the heated cooling water

Technical Specifications	3			
Model	2002	2004	2008	2012
Capacity. L/hr	2	4	8	12
Storage capacity, L	4	8	16	24
Cooling water L/hr	30	48	72	198
External dimensions, mm	540x290x420	620x330x460	780x410x540	780x410x670
Power	1.5kW	3.0kW	6.0kW	9.0kW
Nett weight, Kg	15.4	20.2	30.7	43

Cat. No.	Description
WP/92002	Water still 2L/hour model 2002 230V, 50/60Hz
WP/92004	Water still 4L/hour model 2004 230V, 50/60Hz
WP/92008	Water still 8L/hour model 2008 400V, 3 phase, 50/60Hz
WP/92012	Water still 12L/hour model 2012 400V, 3 phase, 50/60Hz



WP/92004

# Water still, cabinet

Due to the extremely low metal ion content of the distillate, these glass water stills are among the high-end models available on the market. With a range of five fully automatic models, three produce single distilled water of either two, four or eight litres/hour. For double distilled, there are two models with capacities of either two or four litres/hour. Suitable for bench or wall mounting.



- $\bullet$  Excellent distillate quality, conductivity of mono-distillate approx. 2.2 $\mu$ S/cm at 25 $^{\circ}$ C; conductivity of bi-distillate approx. 1.6µS/cm at 25°C
- $\bullet$  Water supply through built-in solenoid valve with connection for water pressure hose % inch
- Energy-saving by distillation of the heated cooling water
- Heating element with quartz sheathing

Technical Specifications					
Model	2202	2204	2208	2302	2304
Capacity. L/hr	2	4	8	2 (Double)	4 (double)
Cooling water L/hr	48	96	144	96	144
External dim., mm	650x200x390	650x200x390	650x365x390	650x365x390	650x365x390
Power	1.5kW	3.0kW	6.0kW	2.9kW	5.8kW
Nett weight, Kg	16	17	24	24	24

Cat. No.	Description
WP/92202	Water still 2L/hour single, model 2202 230V, 50/60Hz
WP/92204	Water still 4L/hour single, model 2204 230V, 50/60Hz
WP/92208	Water still 8L/hour single, model 2208 400V, 3 phase, 50/60Hz
WP/92302	Water still 2L/hour double, model 2302 400V, 3 phase, 50/60Hz
WP/92304	Water still 4L/hour double, model 2304 230V, 50/60Hz



WP/92202

# Hose kits for GFL Stills

Cat. No.	Code	Description
WP/92330	2941	Hose kit consisting of 1.5 meter long water inlet and outlet hoses and fixing clips. Fits catalogue numbers WP/92002 to WP/92012
WP/92332	2943	Hose kit consisting of 1.5 meter long water inlet and 1.0 meter long outlet hoses, 0.5 meter long distillate withdrawal hose and fixing clips. Fits catalogue numbers WP/92202 to WP/92208
WP/92334	2944	Hose kit consisting of 1.5 meter long water inlet and 1.0 meter long outlet hoses, 0.5 meter long distillate withdrawal hose and fixing clips.  Fits catalogue numbers WP/92302 and WP/92304



WP/92334



WP/43910 & WP/43912





WP/43920



WP/440

# Water purification

# Deionisers, wall mounted

The Elga range of wall mounted deionisation systems produces from 30 to 90 litres of high purity water per hour. These cost effective stand-alone systems provide low to medium volumes of primary or deionised grade water which is easy to monitor with built in meters, or colour change indicators. B114 has disposable cartridges for quick and clean replacement when resin is exhausted. The colour coded resistivity indicator displays treated water quality.

Vision 125 and 250 both have colour change windows indicating two resin exhaustion levels to enable users to monitor both the capacity status, and the cartridge replacement requirements. Micromeg has disposable cartridges for quick and clean replacement when resin is exhausted. The colour coded resistivity indicator displays treated water quality.

# Typical to all models:

- Conductivity, 1 0.1µS/cm
- Resistivity, 1 10 MO/cm
- Silica, < 0.05 mg/l
- Carbon Dioxide, <0.5 mg/l
- Trace dissolved metals, < 0.001 mg/l
- Residual solids, <0.5 mg/l
- Average pH, neutral

Technical Specifications				
Model	B114	Vision 125	Vision 250	Micromeg
Maximum flow, litres per hour	30	60	60	90
Maximum operating pressure	10psi (0.7bar)	90psi (6.2bar)	90psi (6.2bar)	50psi (3.4bar)
Maximum operating temperature	35°C	40°C	40°C	35°C

Cat. No.	Code	Description
WP/43910	B114/A	B114, wall mounted deioniser, 380h x 180w x 152d (mm)
WP/43912	C114/4	Replacement cartridge for B114 deioniser, pack of 4
WP/43914	VISION 125	Vision 125, wall mounted deioniser, 385h x 92w x 110d (mm)
WP/43918	VC125	Replacement disposable cartridge for Vision 125 deioniser,
WP/43916	SP404	Dispense Gun and Line for Vision 125 and 250
WP/43920	VISION 250	Vision 250, wall mounted deioniser, 660h x 92w x 110d (mm)
WP/43924	VC250	Replacement disposable cartridge for Vision 250 deioniser,
WP/43926	M/M/DS/A	Micromeg, wall mounted deioniser, complete with 2 x MC:DS cartridges
WP/43928	MC:DS4	Replacement cartridge for Micromeg deioniser, pack of 4

# Deioniser, Micra 8 litre per hour

The Micra deioniser is a cost effective system producing continuous and uninterrupted general laboratory grade water of single distilled purity or better. A highly efficient and reliable alternative for any laboratory using traditional water stills or bottled water. Both the running costs and essential maintenance associated with the still are significantly reduced, however, the system produces a consistent supply of high purity water.

- Delivers single distilled purity or better from a potable mains water supply
- Provides up to 25 litres of general laboratory use pure water per day
- Autofill reservoir function ensures a continual supply
- Long life, cost-effective consumables are easy to change
- User selectable status/alarm indicator monitors purity accurately and easily
- Low energy consumption, typically 90% lower than a standard water still
- No quartz glassware or heating element to clean or replace
- Provides an efficient alternative to buying and storing bottled water
- Connects to any size reservoir with a suitable 1" BSP threaded connection
- Dual voltage: 100-240V ac, 50-60Hz

Cat. No.	Code	Description
WP/44056	MICXXXXM1	Micra deioniser, 8 litres per hour, supplied with LC226 consumables pack, operator's manual, power lead, level control and 6 meters of 1/4 OD tube.
WP/44058	MICTANKM1	Micra deioniser with reservoir., supplied with LC226 consumables pack, operator's manual, power lead, level control and 6 meters of 1/4 OD tube.
WP/44060	LC226	Consumables kit comprising of 10 $\mu$ depth filter, 5 $\mu$ Carbon filter and purification cartridge.
WP/44062 WP/44064	LC229 PUDPCS201485	Reverse Osmosis Membrane RO Boost Pump

# Deionisers, PURELAB®, Water Purification Systems for every Lab



In order to build a CHORUS system that will best fit your needs, there are 4 questions to answer:

- First select required water grade
- Second select volume required
- Third select reservoir capacity required
- Lastly select dispensing system

#### General Type 3 water

When general laboratory grade water is all you need, then PURELAB Chorus 3 is the reliable solution with the flexibility to suit your requirements. Ideally suited for: Buffer Preparation, Washing / Rinsing, Autoclaves, General Chemistry, Hydroponics, Steam Generators, Sterilizer Feed, Feed to Type I polishers

Technical Specifications				
Dispense flow-rate, litre/ hour	10	20	30	
Inorganics (resistivity @ 25°C)		>95% rejection		
Organics (TOC)		<50 ppb		
Bacteria		<50 CFU/ml		
рН		Effectively neutral		
Particles		>99% rejection		
Daily usage (Max)	240	480	720	
Daily usage (Min)		10		

Cat. No.	Code	Description
WP/44100	RO310XXM2	Deioniser PURELAB Chorus 3 RO 10L/Hr
WP/44102	RO310BPM2	Deioniser PURELAB Chorus 3 RO 10L/Hr, with Boost Pump
WP/44104	RO320XXM2	Deioniser PURELAB Chorus 3 RO 20L/Hr
WP/44106	RO320BPM2	Deioniser PURELAB Chorus 3 RO 20L/Hr, with Boost Pump
WP/44108	RO330XXM2	Deioniser PURELAB Chorus 3 RO 30L/Hr
WP/44110	RO330BPM2	Deioniser PURELAB Chorus 3 RO 30L/Hr, with Boost Pump
Each CHORU	S 3 is supplied with 1	set of consumables as standard (LC240 & LC241)

# Deionisers, PURELAB®, Type 1 water for Life Sciences & Analytical Research



When you require the ultimate in water purity, PURELAB Chorus 1 provides the perfect solution. Consistently delivering water purity of 18.2 M $\Omega$ .cm (Type 1 $^+$ /I) and underpinned by the advanced PureSure® deionization system, the PURELAB Chorus 1 enables you to focus on attaining accurate results.

- Chorus 1 systems include
- Fully Recirculating ensuring microbial purity and guaranteeing pure water at the point-of-use.
- Real-time TOC Monitoring provides complete confidence in organic purity.
- Integrated Filtration: Ultrafiltration or microfiltration filters out endotoxins, proteins, nucleases, and particulates.
- Full Spectrum UV Treatment
- Data Capture via USB for system performance validation and software updates.

Technical Specifications	Life Sciences	Analytical Research	General Sciences	
Dispense flow-rate, litre/min	Up to 2.0	Up to 2.0***	Up to 2.0	
Inorganics (resistivity @ 25°C)	18.2 MΩ/cm	18.2 MΩ/cm	18.2 MΩ/cm	
Organics (TOC)	1.3 ppb	1.3 ppb*	1.3 ppb	
Bacteria	<0.001 CFU/ml	<0.001 CFU/ml**	<0.001 CFU/ml	
Bacterial endotoxin	<0.001 EU/ml	<0.001 EU/ml	<0.001 EU/ml	
рН	Effectively neutral	Effectively neutral	Effectively neutral	
Particles	$<$ 0.01 $\mu$ m	$<$ 0.05 $\mu$ m	$0.2\mu m$	
Dnase	<5 pg/ml	<5 pg/ml	<5 pg/ml	
Rnase	<1 pg/ml	<1 pg/ml	<1 pg/ml	
Daily usage (Max)	120 Litres	120 Litres	120 Litres	
Daily usage (Min)	1 Litre	1 Litre	1 Litre	
* Dependant on feed water - recommended feed <50 ppb TOC.				
** With POU filter fitted.	** With POU filter fitted.			
*** When connected to Halo, A	*** When connected to Halo, Advanced or flexible			

Cat. No.	Code	Description
WP/44130	PC110COXXM1	Deioniser PURELAB Chorus 1 Complete 10 L/Hr System
WP/44132	PC110COBPM1	Deioniser PURELAB Chorus 1 Complete 10 L/Hr System with
		Boost Pump
WP/44134	PC120COXXM1	Deioniser PURELAB Chorus 1 Complete 20 L/Hr System
WP/44133	PC120COBPM1	Deioniser PURELAB Chorus 1 Complete 20 L/Hr System with
		Boost Pump

Each CHORUS 1 is supplied with start-up kit consisting of: Appropriate quantity LC240, 1 x LC241, 1 x LC275, 1 x LC272, 1 x LC210, MANU40932 Operator Manual, GUID39864 Light Guide, LA762 Basic installation Kit



WP/44100



WP/44130



# WP/44100 & WP/44152



WP/44154

# PURELAB®, chorus Reservoirs



Select a storage reservoir designed to maintain the optimum purity of stored purified water in a choice of 15, 30, 60 and 100 liter capacities.

Cat. No.	Code	Description	
WP/44150	LA757	Reservoir, 15 litres	
WP/44152	LA758	Reservoir, 30 litres	
WP/44154	LA759	Reservoir, 60 litres	
WP/44156	LA760	Reservoir, 100 litres	
Each reservoir supplied with LA773 Installation Kit & LC216 Composite Vent Filter			

#### Consumables

Cat. No.	Code	Description	
WP/44170	LC216	Composite vent filter	
WP/44172	LC275	Purification pack	
WP/44174	LC210	Lamp, UV	
**It is recommended that the filter is changed every 6 months, the purification pack every			
6 months and the UV lamp every 12 to 18 months			

#### Accessories

Cat. No.	Code	Description
WP/44180	LA770	Wall Mounting Kit 15/30 L Reservoir
WP/44182	LA771	Wall Mounting Kit 60/100 L Reservoir



WP/44200

# PURELAB®, CHORUS HALO dispensers



The modular nature of PURELAB Chorus means that your dispense solutions sit independently from the unit. You can even have the Halo Dispenser installed in an adjacent laboratory.

HALO	Dispense	Advanced	Flexible
Fixed handset	✓	√	
Flexible handset			✓
Variable flow rate dispense	✓	✓	✓
Drop-by-drop control	✓	✓	✓
Locked dispense	✓	✓	✓
Purity monitoring to point-of-use		✓	✓
Auto volume dispense		✓	✓

Cat. No.	Code	Description
WP/44200	LA754	Dispenser, Halo
WP/44202	LA755	Dispenser, Advanced, Halo
WP/44204	LA756	Dispenser, Flexible, Halo
Each dispense	is supplied with GU	JID40007 or GUID40006 Quick Reference Guide, INST40011
or INST40013	Quick Start Guide,	LA774 Installation Kit (plus for LA756: MANU40002 Operator
manual)		

# Accessories

Cat. No.	Code	Description
WP/44210	LA768	Mounting Kit, remote, for all Models

# Consumables

Cat. No.	Code	Description
WP/44220	LC145	Filter, point of use
WP/44222	LC197	Biofilter point of use
It is recommend	ded that the filters a	re changed every 3 months



WP/44204

# Spares, consumables and installation

# Consumables for Purelab 1 and 3

Cat. No.	Code	Description
WP/44240	LC241	Pre-treatment pack
WP/44242	LC240	Reverse Osmosis module, 10 litres an hour
** It is recommended that the pre-treatment pack is changed every 6 months and the		
Reverse Osmo	osis module e	very 2-3 years

# Optional consumable

Cat. No.	Code	Description
WP/44250	LC181	E-Cartridge, requires degassing kit
WP/44252	LA775	Degassing kit for Chorus 3 (RO) and 2 (RO/DI)
**It is recomi	mended that th	e E-cartridge is changed every 3 years, a degassing kit is required
to do this		

# Installation kits and accessories

Cat. No.	Code	Description
WP/44260	LA762	Installation kit, basic, tubing and bends
WP/44262	LA779	Installation kit, remote mount
WP/44264	LA795	Mounting kit, wall, integrated
WP/44266	LA776	Tool kit
WP/43970	LA512	Pressure regulator
WP/44268	LC233	Bypass block
WP/44270	LA732	Foot switch

Notes	
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WT/46002 & WT/46004

# Water testing

# Sedimentation cones, Imhoff, styrene-acrylonitrile



Crystal clear Imhoff cone. Permanent moulded in graduations. Easy draining via polypropylene screw plug in the base. Back flush cleaning easily effected. 1000ml capacity.

Graduations in:

- 0.1 ml increments to 2 ml
- 0.5ml increments to 10ml
- 1.0ml increments to 40ml
- 2.0ml increments to 100ml
- 50.0ml increments to 1000ml

Cat. No.	Code	Description	
WT/46002	1055	1000ml Imhoff cone	

# Sedimentation cones, Imhoff, support stand, Perspex

Two place support stand 150mm x 300mm x 294mm high. Designed for WT/46002.

Cat. No.	Code	Description	
WT/46004	1056	Support stand	

# Spectrophotometer, VIS / UV-VIS, for water testing applications



- Economic system solution consisting of premium spectrophotometer and barcoded reagents
- Direct method selection via barcode recognition
- Versatile application via 150 pre-programmed, ready to use methods
- Spectral scan and kinetics analysis



WT/85120

Technical Specifications				
	XD 7000	XD 7500		
Wavelength range	320 – 1100 nm (scan range)	190 – 1100 nm (scan range)		
Spectral scope	4nm +/- 1nm			
Light source	Tungsten-halogen-lamp	Xenon flash lamp (500 million		
		flashes possible)		
Optical system	Grid monochromator with reference beam and beam splitter after exit slit			
Measurement	Concentration, single and multi-wavelength measurement of absorbance and % transmission, kinetics, spectra			
Supported cuvettes	Round: 13 with adaptor, 16 and 24mm round cuvettes and 10, 20 and			
	50mm rectangular cuvette			
Power supply	Backup batteries (4 x AA), power supply with connection cable			
Keyboard	1 x ethernet RJ45, 1 x USB A for	external memory, keyboard, mouse,		
	barcode-scanner and 1x USB B fo	or PC and PCL compatible printer		

Cat. No.	Code	Description
WT/85120	71307000	Spectrophotometer XD 7000 (VIS)
WT/85122	71307500	Spectrophotometer XD 7500 (UV-VIS)
WT/85130	71310000	Replacement lamp
Spares and a	ccessories	
WT/85132	71310010	Transport case
WT/85134	71310030	Barcode scanner, USB
WT/85136	197635	Cleaning cloth for cuvettes
WT/85490	2444482	USB cable, 5 meters long
BA/93006	174-762	Battery, Duracell AA, 1.5V pk4
WT/85138	197620	Cuvette, 24mm dia, round with lid
WT/85140	197665	Cuvette, 90mm height x 16mm diameter, round with lid
WT/85142	711161	Standard set, secondary, VIS with UV, with DAkkS calibration
WT/85144	215663	Standard kit, verification

# Bottles, water sampling PET

Water test bottles PET, available plain or dosed with Sodium Thiosulphate to inhibit the action of Chlorine, Bromine and Ozone dissolved in water, filled to the requirement of ISO 19458 at 20mg per litre.

All the bottles carry a printed label, have a tamper evident white screw cap and have been sterilised by gamma irradiation at between 25-40 kgy.

Cat. No.	Description	Pk Qty
Undosed		
BO/80000	Bottle PET, water sampling, labelled, sterile, undosed, 330ml	54
BO/80002	Bottle PET, water sampling, labelled, sterile, undosed, 500ml	40
BO/80004	Bottle PET, water sampling, labelled, sterile, undosed, 1000ml	18
Dosed with So	odium Thiosulphate	
BO/80020	Bottle PET, water sampling, labelled, sterile, dosed, 330ml	54
BO/80022	Bottle PET, water sampling, labelled, sterile, dosed, 500ml	40
BO/80024	Bottle PET, water sampling, labelled, sterile, dosed, 1000ml	18
	· -	



BO/80000

-Pstuart

# Flocculators, water testing

#### Flocculator, SW6

For flocculation (jar) tests on water and effluent samples. The SW6 accommodates up to six samples and is specially designed for repeatable conditions between samples and from run to run

A digital display clearly indicates the speed of the rotational stainless steel paddles, which can be varied from 25 to 250rpm. The digital timer can be set to count down from 1 to 99 minutes

After count down, the paddles stop and an alert sounds. The timer then counts up in minutes in order to measure settling time. Two pre-set programs allow routine speed and time parameters to be input and then selected by simply pressing one button. Parameters are stored in the memory and can be recalled or altered at any time. The intuitive touch sensitive keypad is totally flat for easy cleaning. Sample monitoring is assisted by diffused base illumination and black background.

A simultaneous coagulant doser is available as an accessory.

- Accepts six samples
- Digital indication of speed and time
- Two pre-set programs
- Built in illumination for easy viewing of samples

# Flocculator, SW5

A mini version of the SW6 that accepts two samples (without timer function). The case incorporates a handle for easy transportation.

Technical Specification	s	
	SW5	SW6
No. of samples	2	6
Speed range	25 to 250rpm	25 to 250rpm
Timer	No	0 to 99 minutes
Pre-set programs	2	2
Controls keypad	Dial	Touch sensitive
Digital displays	LCD	LED
Dimensions (WxDxH)	320 x 210 x 500mm	750 x 210 x 460mm
Net weight	8.6kg	17kg
Power	230V, 50Hz, 100W	230V, 50Hz, 100W

Cat. No.	Code	Description
WT/15002	SW6	Flocculator with 6 rotators (without beakers)
WT/15004	SW5	Flocculator with 2 rotators (without beakers)
WT/15006	SW6/2	Simultaneous coagulant doser (SW6 only)
BE/12276	1015/22D	Pyrex® glass beakers, 1000ml, pack of 10



WT/15002



WT/15004



WT/55110

# Spectral Photometer, DR 3900 with RFID\* technology

Pre-programmed with all HACH analysis methods, for the analysis of waste water, drinking water and cooling/boiler water.

#### Traceability starts with sampling

Reduce errors. Use RFID\* technology and trace samples back to the sample location. All important information, such as the sample location, sample taker, date and time are saved on an RFID\* tag on the sample bottle. This data can be transferred to the laboratory in seconds using RFID\* in the DR3900.

### Rapid data updates

Programming of methods into a spectrophotometer has never been so easy. Simply hold the cuvette test box in front of the DR3900 RFID\* module, wait for the signal tone and it's done. Measurement begins straight away with accurate evaluation data for an accurate result.

#### Data transfer is simple via USB or Ethernet

Transfer measurement data easily via a USB stick or an Ethernet connection. The same applies for software updates. The DR3900 can install the most up-to-date device software from the Hach website via Ethernet, so your photometer always has the latest update.

#### Quality assurance made easy with AQA+

QA procedures can now be easily defined and documented within the instrument without additional software. Current batch certificates (for the purpose of GMP/GLP results documentation) can be found on the RFID\* tag on the cuvette box. Thanks to this RFID\* technology, all batch-specific information can be retrieved immediately on the DR3900 and printed out.

#### Alignment of laboratory and process analysis

Compare the process result with the laboratory reference value in the photometer via the LINK2SC connection between the SC controller and the DR3900. Data can be exchanged via Ethernet bi-directionally, eg, matrix corrections from process probes can be sent directly from the laboratory.

#### IBR+ increases the reliability of your measurement values

Lot number and expiry date information is now included on the 2D barcode, this additional information is transferred to the instrument and documented with the measurement value.

Display mode	Transmission (%), absorbance and concentration, scan	
Light source	Halogen lamp	
Beam projection	Spectral reference beam technology	
Wavelength range	320 to 1100nm	
Wavelength accuracy	$\pm 1.5$ nm (Wavelength range from 340 to 900nm) Wave	length
reproducibility	$\pm 0.1$ nm	
Wavelength resolution	1 nm Wavelength calibration and selection Au	utomatic
Spectral bandwidth	5nm	
Photometric measurement range	$\pm 3.0$ Abs (wavelength range from 340 to 900nm) Photo	ometric
accuracy	5 mAbs at 0.0 to 0.5 Abs, 1% at 0.5 to 2.0 Abs	
Photometric linearity	<0.5% to 2 Abs, 1% at $>$ 2 Abs with neutral glass at 54	6nm
Scattered light	0.1% at 340nm with NaNO <sub>2</sub>	
Display	7 TFT WVGA colour touchscreen (800 $ imes$ 480 pixels)	
Data storage	2000 measurement data (result, date, time, sample ID,	user ID)
Preprogrammable methods	>220	
User programme	100	
Cuvette compatibility	13mm round cell, 1cm and 5cm rectangular cell, 1-inch	h round
	cell, 1-inch rectangular cell	
Dimensions ( $H \times W \times D$ )	151x 350 x 255mm	
Weight	4200g	
Operating conditions	-10 to 40°C, max. 80% relative humidity (non-condensity	ng)
Storage conditions	-30 to 60°C, max. 80% relative humidity (non-condensity	ng)
Enclosure rating	IP30	
Power supply	Table power supply, 110 to 240V; 50/60Hz	
Interfaces	USB type A (2), USB type B, Ethernet, RFID* module	

Cat. No.	Description
WT/55110	DR 3900 spectral photometer with RFID* technology
	Product contents: Adapter A for 1 round and ACCUVAC/1cm rectangular cells,
	basic handbook, CD with handbook and work processes in 5 languages (GB, D,
	F, I, E) in PDF format, EU power pack, user RFID* tag
Accessories	
WT/55118	1 square sample cells, 10ml. Matched pk/2
WT/55120	SIP 10 sipper module
WT/55122	SIP 10 tube kit, Lagoprene + Tygon
WT/55124	2m Ethernet cable
WT/55126	USB memory stick

# Digital electrochemistry, HQD meters

The ultimate meter/probe system offering flexibility and ease of use with interchangeable probes. Ideal for multiple users and testing methods. Perfect for laboratory and outdoor use.

The mix and match of electrodes and meters ensures reliability and flexibility. Calibration data is securely stored in the electrode, ensuring correct values at all times. The LDO method of oxygen measurement gives enormous handling benefits. The HQD technology and INTELLICAL® electrodes are backed up by substantial experience.

• Digital INTELLICAL® electrodes are recognised automatically

Stable, ready-to-use INTELLICAL® oxygen sensor with luminescence (LDO) technology

• Reliable O2 results - without calibrating or replacing the electrolyte

Rugged outdoor electrodes with cables up to 30m long, without interferences thanks to digital technology

- Reliable results from inaccessible measurement locations and over long distances, even for pH
- Reliable, error-free measurement in all conditions



WT/55140

Technical Specifications				
Model	HQ 11D	HQ 14D	HQ 30D FLEXI	HQ 40D MULTI
Electrode				
connectors	1 (pH)	1	1 (pH, Cond.,	2 (pH, Cond.,
		(Conductivity)	DO, ISE)	DO, ISE)
Dissolved oxygen (LDO)			✓	✓
Range		0.00 .	20.0 mg/l; 0 . 200 %, ±0	0.1% of the measuring range
oH/ORP	✓		✓	✓
Range	$0-14/\pm0.002/\pm1500~\text{mV}$		$0-14/\pm0.002/$	±1500 mV
lon concentration (ISE)			✓	✓
Temperature	✓	✓	✓	✓
Range/Accuracy	$-10 \text{ to } +110^{\circ}\text{C/}\pm0.3$	3°C	-10 to +110°C	C/±0.3°C
Conductivity		✓	✓	✓
Range/Accuracy	0.01 µS/cm - 200 mS/cm	/±0.5%	0.01 µS/cm - 400 i	mS/cm/±0.5%
Resistivity	·	✓	✓	✓
Range/Accuracy		$2.5 \text{ cm} - 49 \text{ M cm}/\pm 0.5\%$	2.5 cm - 49 M	cm/±0.5%
TDS		✓	✓	✓
Range/Accuracy		0.0 - 50,000 mg/l/±0.5%	0.0 - 50,000 m	g/l/±0.5%
Salinity				
Range/Accuracy		0 - 42 (g/kg, o/oo, no unit)	0 - 42 (g/kg, o/	oo, no unit)
·		$\pm 0.1 \text{ mg/l at} < 8 \text{ mg/l}$	$\pm 0.1$ mg/l at	< 8 mg/l
Automatic buffer recognition	า		v	-
Conductivity: Demal (1 D; 0.	1 D; 0.01 D)	NaCl (0.05%; 25µ S/cm; 1	000μ S/cm; 18 mS/cm)	
	$O_2$		1 point	
	ISE max.		,	5 points
Data memory	500 red	adings; data can be saved mo	inually or automatically	·
Battery operation	4 AA batte	ries or rechargeable batteries	(battery charger is needed	

Cat. No.	Description
WT/55140	HQ11D portable pH meter
WT/55142	HQ14D portable conductivity meter
WT/55144	HQ30D Multi parameter portable meter with 1 channel for pH, cond. or DO
WT/55146	HQ40D Multi portable meter, 2 channels pH or cond. or DO
Accessory pro	bes
WT/55150	IntelliCAL™ Standard Luminescent Dissolved Oxygen (LDO) Probe, 1 meter cable
WT/55152	IntelliCAL™ Rugged Luminescent Dissolved Oxygen (LDO) Probe, 5 meter cable
WT/55154	IntelliCAL™ Standard Gel Filled pH Electrode, 1 meter cable
WT/55156	IntelliCAL™ Rugged Gel Filled pH Electrode, 5 meter cable
WT/55158	IntelliCAL™ Standard Conductivity Probe, 1 meter cable
WT/55160	IntelliCAL™ Rugged Conductivity Probe, 5 meter cable

Further probes available, please ask for details.



WT/55146



WT/95020



WT/95024



# Multi-Parameter meter, WTW MultiLine® IDS

The new multi-parameter systems with intelligent, digital sensors for pH, dissolved oxygen (DO) and conductivity measurement revolutionize multi-parameter measurement:

The signal processing is completely located in the sensor, and the measuring signal is transmitted to the meter without interference and in a clearly identifiable manner via thin, high strength cables. A wide range of sensors are available for virtually every application.

- High resolution colour graphic display
- Single or Dual Channel options (Multi 3510/3620 IDS)
- Data logging with Safe data transmission to USB stick
- NEW: now ready for turbidity measurement VisoTurb® 900-P
- NEW: now ready for wireless measurements

#### **Technical Specifications**

D.O. measurement (optical), Concentration/Saturation D.O. (optical), Partial pressure /

Temperature pH/mV

Conductivity ( $K = 0.1 \text{ cm}^{-1}$ )

Conductivity, Spec. resistivity /Salinity

Conductivity, (TDS)

0.00 - 20.00 mg/l / 0.0 - 200.0 %

0 - 400.0 hPa / 0.0 - 50.0 °C

 $-2.000 - 20.000 \text{ pH} \pm 2000 / \pm 1250.0$ 0.0 - 2000 mS/cm  $0.00 - 19.99 \mu\text{S/cm}$  $0.00 - 20 \text{ M}\Omega \text{ cm} / 0.0 - 70.0 (acc. IOT)$ 

0 - 1999 mg/l - / 0 - 199.9 g/l

#### Kit Contents

Multi 3620 IDS SET C meter, dual channel including IDS sensors: digital pH electrode SenTix® 940, digital conductivity 4-electrode cell TetraCon® 925, QSC Kit, short instruction manual, stand, beaker, CD-ROM, driver software for USB, rechargeable batteries, cable, universal power supply, armoring SM Pro.

Multi 3510 IDS SET 4 Meter, for IDS electrodes, meter in case set including FDO® 925 with short instruction manual, CD-ROM including software, batteries, USB cable.

IDS WLM Kit Wireless connection kit (one for probe/meter & Necessary chargers)

A 925-P/K Armor designed for TetraCon® 925-P, SensoLyt® 900-P, SensoLyt® ORP 900-P, FDO® 925-P, VisoTurb® 900-P, material: POM. (or Stainless steel)

D 3Sen Flow-through vessel for up to three pH, ORP, D.O. or conductivity sensors (also IDS). With tube adapter for commercially available garden hoses inner diameter 19 mm (3/4"). Including clamp also for mast mounting.

NOTE other sets/accessories available, please enquire.

Cat. No.	Code	Description
WT/95020	2FD56C	Multi 3620 IDS SET C
WT/95022	2FD354	Multi 3510 IDS SET 4
WT/95024	108144	IDS WLM Kit
WT/95026	903839	A 925-P/K Armor material: POM.
WT/95028	903840	A 925-P/S Armor Stainless steel.
WT/95030	903842	D 3Sen Flow-through vessel
WT/95032	301710	TetraCon® 925 4-electrode-IDS conductivity cell 1.5m fixed cable
WT/95034	103740	SenTix® 940 IDS pH combination electrode 1.5m fixed cable
WT/95036	201300	FDO® 925 Optical IDS DO sensor 1.5 m fixed cable

Notes			

water testing

A 6-place BOD testing system for measurements of up to 4000 mg/l. Provides precise measurements of BOD, based on the manometric principle, where no water dilution is needed. Each of the 6 positions can be started, run and measured independently. The measurement period can be selected by the user between 1 and 28 days to suit the application. The system is easy to use with no awkward tubing and can be set up in approximately 10 minutes.

The Lovibond® BD 600 features a large display for clear on-screen measurement review and graphical representation. Data is stored conveniently on an SD card and can be transferred to PC easily via USB connection. Samples can be assigned alpha-numeric IDs using the keypad whilst shortcut keys allow fast access to measurement, start and real-time BOD values.

- Direct Sample selection
- On screen Graphical and Numeric representation of results
- Accurate and direct display of BOD values in mg/l
- Live measurement display
- No sample dilution required up to 4000 mg/l
- User-selectable measurement period from 1 to 28 days
- Automatic Data Storage with date / time / optional sample ID
- Easy data export to USB / PC / SD card
- Easy to navigate menus

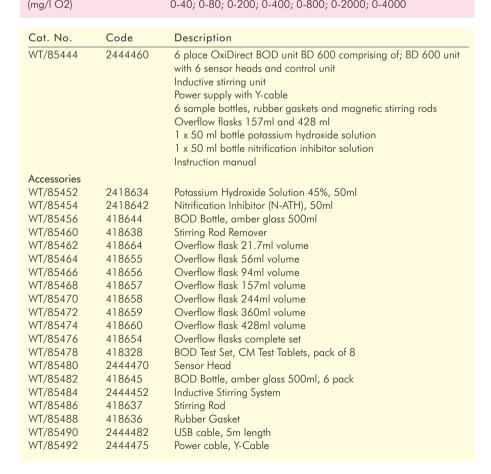
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- Shortcut keys for quick start-up / result review
- Auto start function after temperature equalisation
- Mercury-free, environmentally friendly



WT/85444

Technical Specifications			
Measurement Principle	Manometric; Mercury-free; electronic pressure sensor		
Accuracy	0.5% full scale at 20°C		
Display	128 x 240 pixel, 45 x 84 mm; backlit		
Measurement Period	User selectable between 1 and 28 days		
Auto Result Storage	Up to 672 results depending on measurement period		
Storage Interval	Hourly (1-day BOD); 2-Hourly (2-Day BOD); Daily (3-28 days)		
Automatic Start Function	After temperature equalisation of samples; selectable		
Power Supply	Unit Batteries (included) or Mains Power; Stirring unit Mains only		
Interface	USB; SD card; Bluetooth (optional)		
Clock	Real time clock		
Protection Class	IP54 (sensor head)		
Dimensions	375 x 181 x 230 mm (including stirring unit		
Weight	4100g unit with bottles and batteries; 5775g including stirring unit		
Housing	ABS		
Measurement ranges			
(ma/1 02)	0.40+0.80+0.200+0.400+0.800+0.2000+0.4000		





Accessories



IN/85000

## **BOD** incubator

Lovibond

The Lovibond® TC 135 S cooled incubator is ideal for use with the Lovibond® BD 600 BOD measurement system. It has a capacity of 135 litres and will accommodate up to 3 BD 600 instruments with stirrers. Designed for incubation from 2 to 40°C, they are suitable for use throughout the environmental industry. Convenient internal power sockets allow stirring units or other electrical equipment to be used without opening the door and compromising the temperature. The digital temperature control unit is adjustable to 0.1°C and has a backlit display for ease of use.

Technical Sp	Technical Specifications					
Racks Internal Sockets		3 + 1 bottom grid 4				
Consumption Approx. Internal Dimensions		1.35 kW h/24 hour 441 x 513 x 702mm (DxWxH) 135L				
Approx. net capacity Overall Dimensions		600 x 600 x 850mm (DxWxH) with work top 600 x 600 x 819mm (DxWxH) without work top				
Weight		39kg				
Cat. No.	Code	Description				
IN/85000	2438200	TC135S Cooled BOD incubator, 135 litres				

# COD VARIO Setup, Lovibond®

## Lovibond

The chemical oxygen demand, ST-COD value (ST = small scale sealed tube), of water as determined by the dichromate method can be considered as an estimate of the theoretical oxygen demand, i.e. the amount of oxygen consumed in total chemical oxidation of the organic constituents present in the water.

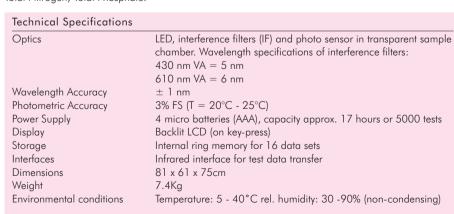
The Lovibond® COD VARIO setup allows highly sensitive and precise COD testing with minimum effort. After adding the sample to a Lovibond® COD VARIO tube test, it is heated in the RD 125 COD reactor and then analysed in the MD 100 COD Vario photometer. COD Vials are available to cover all applications from final, treated, raw and trade effluent.

#### COD Setup Delivery Content:

- MD 100 COD VARIO Instrument in carrying case
- 4 batteries (AAA)
- Adapter for round vials ø 16 mm
- 2 sets of tube tests 0-150 mg/l, 0-1500 mg/l (LR, MR according to ISO 15705:2002)
- RD 125 COD Reactor
- Test Tube stand
- 1 ml and 2 ml syringe

The MD 100 COD Vario Photometer measures all three ranges of COD Vial. It has an easy to use four button keypad. It is water and splash resistant and has a backlit screen for accurate result reading.

The RD125 COD reactor is a 24 position heating block for reacting Lovibond® Vario COD Vials. Capable of heating at 100, 120 and 150°C, and with variable time settings for 30, 60 and 120 minutes, the RD125 photometer can also be used for COD; TOC; Total Chromium; Total Nitrogen; Total Phosphate.



Cat. No.	Code	Description
WT/85570	276130	COD Vario set-up complete



WT/85570

water testing

Lovibond

Lovibond® COD® VARIO tube tests are available for the measuring ranges 0-150 mg/l O2, 0-1500 mg/l O2 and 0-15000 mg/l O2. Their chemical properties and a 16mm tube diameter are also suitable for use with Hach® devices.

The standard solutions have a defined concentration and are provided to check the operation methods and devices of the cuvette tests, as well as the condition of optical filters and the instrument.

#### Reagents:

Cat. No.	Code	Description
WT/85572	2420720	COD Vario 0-150 mg/l, pack of 25
WT/85574	2420710	COD Vario 0-150 mg/l Mercury Free, pack of 25
WT/85576	2420721	COD Vario 0-1500 mg/l, pack of 25
WT/85578	2420711	COD Vario 0-1500 mg/l Mercury Free, pack of 25
WT/85580	2420722	COD Vario 0-15000 mg/l, pack of 25
WT/85582	2420712	COD Vario 0-15000 mg/l Mercury Free, pack of 25
WT/85584	2420803	COD Vario Standard Solution 100 mg/l, 30ml
WT/85586	2420804	COD Vario Standard Solution 500 mg/l, 30ml
WT/85588	2420805	COD Vario Standard Solution 5000 mg/l, 10ml



WT/85584

#### Accessories:

Cat. No.	Code	Description
WT/85590	366110	Syringe plastic 1 ml, single
WT/85592	366070	Syringe Plastic 2 ml, single
WT/85594	418952	Cuvette stand
WT/85596	366150	Membrane Filter set. 25 tests
WT/85598	2418940	RD 125 Heating Block



WT/85594

# Water analysis, The Lovibond Comparator System 2000 +

The Lovibond Comparator 2000+ is a high quality instrument for visually matching the intensity of a sample colour with Lovibond glass filters. It includes an adjustable cell compartment for samples in cells of up to 40mm path length.

The Nessleriser system is used for the matching of samples using a longer path length in a Nessleriser cylinder. Again, Lovibond glass filters are used, and the instrument is designed for measuring concentrations that are below the sensitivity of the Comparator 2000+.

Both instruments include the facility to compensate for water samples that are turbid or tinted. They also include an integrated prism which causes the sample and comparison fields to overlap, allowing enhanced colour discrimination and matching. The prism is ultrasonically sealed to prevent contamination of the optics.

For more than 60 years, the Lovibond Comparator System has been widely used for the chemical analysis of water. Today, it remains a popular choice for water analysis in all environments, offering a simple and flexible approach which gives reliable results in both laboratory and field testing.

- · Compact, easily portable and robust for field testing
- Reagents mostly available in convenient tablet form
- Includes stable-coloured glass filters which can be certified under an ISO 9001:2000QA procedure

The Comparator 2000+ can be purchased as a complete test kit in a carry case. Kits can be customised by adding extra discs, reagents and accessories. All items can also be purchased individually as replacements or to produce a bespoke test kit.

#### What you need

- Comparator instrument (Comparator 2000+ or appropriate Nessleriser System)
- Lovibond® test disc
- Reagents specific to the test
- Sample container of the required path length
- Lighting Unit (optional) to ensure constant viewing conditions

## Lovibond® 2000+

Cat. No.	Code	Description	
CO/85102	142000	Comparator 2000+	
CO/85104	142050	Portable Daylight Unit	
WT/85232	171020	Nessleriser Daylight Unit	
WT/85234	323270	1209 Nessleriser Body	



CO/85102

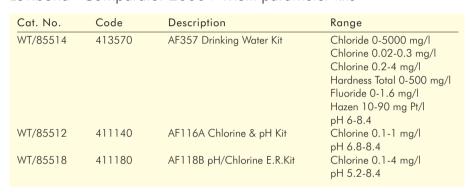


Nesslerisers



# Nesslerisers

# Lovibond® Comparator 2000+ Multi parameter kits



Lovibond® Comparator 2000+ Single Parameter kits, supplied in a carry case with Comparator

Range

0.01-1.0 mg/l N

5.0-50 mg/l

0-1 mg/l

0.2-4 mg/l 0.02-0.3 mg/l

2.0-10 mg/l

0.1-2 mg/l

0.5-6 mg/l

0-4 mg/l

0-70 mg Pt/l 0.1-1 mg/l

0.1-1.0 mg/l N

 $0.05-0.5 \, \text{mg/l N}$ 

Description

Ammonia AF158

Hazen Scale AF327

Manganese 3/169

Iron AF378

Nitrate 3/124

Nitrite 3/103

Chlorine (total) AF102 3/2ARP

Chlorine (free and total) AF112A

Chlorine (free and total) AF112B

Chlorine (free and total) AF112E

Chlorine (free and total) AF112J

Chlorine (free and total) AF112K

Chlorine (free and total) AF112 HN

2000+ test disc, reagents for 100 tests, accessories and instructions.



Comparator 2000+ kit

# Lovibond® Comparator 2000+ Discs

Lovibond® 2000+ Kits

Code

411590

418881

411120

411130

411250

411123

411125

422570

433270

413780

56K015601

56K016001

56K016201

Cat. No.

WT/85500

WT/85508

WT/85504

WT/85506

WT/85550

WT/85552

WT/85554

WT/85556

WT/85558

WT/85560

WT/85562

WT/85564

WT/85566

A wide range of test discs containing a series of graded glass filters, which have been precalibrated to give direct test readings. The unique feature of Lovibond® test discs is that they incorporate coloured glass filters which are stable and fade free, and are not affected by UV light or extreme environmental conditions.

The most widely used discs are listed below. A full range of over 200 water testing discs is available on reauest.

Discs are supplied in a protective plastic case with instruction sheet.



Comparator discs

Cat. No.	Code	Description	Range	Reagent required
WT/85416	230070	Ammonia 3/113	0-1 mg/l	517612BT
WT/85366	232070	Chlorine (total) 3/2ARP	5.0-50 mg/l	517722BT
WT/85418	234010	Chlorine (free and total) 3/40A	0-1 mg/l	511050BT;
				511080BT
WT/85420	234020	Chlorine (free and total) 3/40B	0.2-4 mg/l	511050BT;
				511080BT
WT/85370	234060	Chlorine (free and total) 3/40E	0.02-0.3 mg/l	511050BT;
V. (T. (0.50.7.)	00 4001#		0.0.10 //	511080BT
WT/85374	234081*	Chlorine (free and total) 3/40HN	2.0-10 mg/l	511050BT;
WT (05077	004140		0.1.0 //	511080BT
WT/85376	234140	Chlorine (free and total) 3/40J	0.1-2 mg/l	511050BT;
W/T/05270	233930	Chloring (for a good total) 2/40K	0 E //l	511080BT
WT/85378	233930	Chlorine (free and total) 3/40K	0.5-6 mg/l	511050BT; 511080BT
WT/85422	283970**	Hazen Scale 1209/1	0-30 mg Pt/l	none required
WT/85424	283980**	Hazen Scale 1209/2	30-70 mg Pt/l	none required
WT/85336	230100	Iron 3/116	0.1-1 mg/l	515370BT;
111700000	200100	11011 0, 110	0.1 1 mg/1	515420
WT/85426	230690	Manganese 3/169	0-4 mg/l	517622BT
WT/85340	230170	Nitrate 3/124	0-1 mg/l	56R016090
WT/85328	230030	Nitrite 3/103	0.05-5 mg/l	512310
WT/85428	221100	pH Bromocresol Purple 2/1G	pH 5.2-6.8	511730
WT/85430	221110	pH Bromothymol Blue 2/1H	pH 6.0-7.6	511640BT
WT/85320	221140	pH Cresol Red 2/1K	pH 7.2-8.8	511600
WT/85432	221080	pH Methyl Red 2/1E	pH 4.4-6.0	451631
WT/85318	221130	pH Phenol Red 2/1J	pH 6.8-8.4	511750BT
* Requires 5mm	cell WT/853	208		

<sup>\*</sup> Requires, 5mm cell WT/85208

<sup>\*\*</sup> Please note: The Hazen scale disc can only be used with the Nessleriser body WT/85234, cylinders WT/85230 and Daylight unit WT/85232

# Lovibond® 2000+ Reagents

Most Lovibond $^{\$}$  reagents are supplied in tablet form in blister foil packs to ensure quality, consistency and ease of use and have a minimum shelf life of 5 years.

Cat. No.	Code	Description	Pk Qty
WT/81110	517612BT	Ammonia No1, No2 tablets combi pack	250
WT/81112	517722BT	Chlorine KI + Acidifying GP combi pack	250
WT/81138	511051BT	DPD No 1 tablets	250
WT/81052	511081BT	DPD No 3 tablets	250
WT/81066	515371BT	Iron LR PPST tablets	250
WT/81140	515421BT	Iron II LR tablets	250
WT/81122	517622BT	Manganese LRNo1, No2 combi pack	250
WT/81124	56R016090	Nitrate 0.1 - 1.0mg/l, No 3	100
WT/81086	512311BT	Nitrile LR tablets	250
WT/81142	511731BT	Bromocresol Purple tablets	250
WT/81144	511641BT	Bromothymol Blue tablets	250
WT/81024	511601BT	Cresol Red tablets	250
WT/81134	451631	Methyl Red solution	100ml
WT/81146	511751BT	Phenol Red comparator tablets	250



# Lovibond® 2000+ Accessories

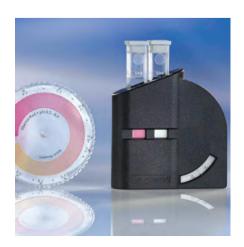
Cat. No.	Code	Description
WT/85200	145505	Cell, square, 13.5mm pathlength, plastic, Checkit, 10ml with cap, pack of 5
WT/85202	354243	Cell, square 13.5mm pathlength, 10ml, moulded plastic DBD424, pack of 5
CO/85208	606790	5 mm cell W680/5
WT/85224	364120	Crushing / Stirring Rods pack of 10
WT/85226	385130	Dilution / Shaker Tube
WT/85228	380230	Test Tube Brush
WT/85230	354230	Nessler Cylinders pack of 2 (288mm length)



The CHECKIT unit functions as both sample container and comparator in a compact unit so no test tubes are required. Lovibond tablet reagents are added to a measured sample of water in the unit and the resulting sample colour indicates the concentration of the parameter under test. Lovibond CHECKITs are available for a wide range of water tests:

Cat. No.	Code	Description
WT/85702	155410	CHECKIT Alkalinity, Total (0 - 250 mg/l)
WT/85704	155200	CHECKIT Aluminium (0 - 0.5 mg/l)
WT/85706	155210	CHECKIT Ammonia (0 - 0.8 mg/l N)
WT/85708	155300	CHECKIT Chlorine, Free, Combined, Total (0.2 - 8mg/l)
WT/85710	155360	CHECKIT Chlorine, Total (10 - 160 mg/l)
WT/85712	155220	CHECKIT Copper, Free (0 - 4 mg/l)
WT/85714	155420	CHECKIT Copper, Free & Total (0 - 0.5 mg/l)
WT/85716	155230	CHECKIT Copper (Free) / pH (0.1 - 0.9 mg/l Cu; 6.8 - 7.8 pH)
WT/85718	155330	CHECKIT Hydrogen Peroxide (0.2 - 20 mg/l)
WT/85720	155240	CHECKIT Iron (0 -10 mg/l)
WT/85722	155390	CHECKIT Nitrate (10 - 70 mg/l NO <sub>3</sub> )
WT/85724	155260	CHECKIT Nitrite (0.05 - 0.5 mg/l)
WT/85726	155280	CHECKIT pH Value (6.0 to 9.2)
WT/85728	155400	CHECKIT Phosphate (0.5 - 4 mg/l PO <sub>4</sub> )
WT/85730	155270	CHECKIT Phosphate (0 - 80 mg/l PO <sub>4</sub> )
WT/85732	155350	CHECKIT Zinc (0 - 4 mg/l)







WT/95150



WT/95164



WT/95166



WT/95168

# Lovibond® Potable (Water Check) Test Kit

Lovibond

The Lovibond® potable water check test kit enables an effective screen of water supplies for key indicators of faecal and agricultural contamination to help in the assessment of general quality and potability, enables compliance to WHO guidelines.

- Easy to follow methods for in-field analysis
- Supplied in handy carry case for easy transport
- Includes all reagents and accessories required for testing

Cat. No.	Code	Description
WT/95150	56K002601	Lovibond® Potable (Water Check) Test Kit
Accessories		
WT/95152	56S002105	Arsenic test strips, pack of 5
WT/95154	56B002125	Coliform / E.coli test set, pack of 25
WT/95156	56B001601	UV Lamp (battery operated)
WT/95158	56S000950	Total hardness test strips, pack of 50
WT/95160	56S001090	pH Test strips, pack of 100
WT/95162	56S001890	Nitrate / Nitrite test strips, pack of 100
WT/95164	56M000501	TDS pen meter

# Lovibond® Coliform / E.coli Test Kit

Lovibond

Safe potable water secures good health, but water can also contain hazardous microbes that cause disease or food poisoning. WHO guidelines on potable water quality state that zero Colony Forming Units (CFU) of coliforms and E.coli should be present per 100ml of water sample. The Lovibond® system uses a simple, reliable technique and will indicate the presence of just one CFU/100ml. A powder reagent sachet is added to 100ml of water sample. If a specific colour change is observed within 24 hours it indicates the presence of Total Coliforms. E.coli can be subsequently detected in the presence of UV light.

- Early Identification of bacterial contamination
- Simple test procedure
- 100 ml sample
- Detects to 1 CFU / 100 ml

Cat. No.	Code	Description							
WT/95166	56K009701	Lovibond® Coliform / E.coli Test Kit							
Accessories and reagents									
WT/95154	56B002125	Coliforms / E.coli test reagents, pack of 25							
WT/95156	56B001601	UV lamp (battery operated)							
WT/95168	56B000701	DI 10 Dipslide incubator							

# Digital Dipslide Incubator, model DI 10

Lovibond

Dipslides provide a crucial part in a water treatment testing program when used regularly as part of a planned regime, week on week. The incubation period and the incubation temperature should be the same each time the test is performed so that bacteria growth is controlled.

The DI 10 incubator enables effective microbiological monitoring of cooling water in accordance with the many European and National guidelines. It is equally suited for incubation applications on-site, in a laboratory or in a vehicle in the field.

- Robust Design
- Programmable incubation periods
- Wide Temperature range
- Fan assisted for uniform temperature
- Push button keypad and digital display

246 x 215 x 162 mm
1.7 kg
12V
12V / 110V / 240V
5 - 40°C
0.5°C
1 x 16 bit Backlit LCD
12 dipslides / 10 quanti-discs

Cat. No.	Code	Description
WT/95168	56B000701	DT10 Dipslide incubator, 12V / 120V / 240V
Accessories WT/95208 WT/95210	56B000801 56B000901	Dipslide Holder Quanti-disc Holder

# **Dipslides**

A full range of dipslides are available for semi-quantitative determination of aerobic and anaerobic bacteria populations in industrial and recreational waters. Dipslide accuracy is limited due to the small sample size, but if used correctly and incubated at a constant temperature using the Lovibond® dipslide incubator, they are excellent for trend analysis and can give an early indication of bacteria proliferation.

- Determine aerobic and anaerobic bacteria levels
- Early indication of bacteria proliferation
- Results in 48 hours
- Inexpensive and easy-to-use
- Excellent for trend analysis
- Working shelf life of 6-9 months
- Results quantified by comparison to standard density chart (included)

Dipslides, supplied in a carton of 10

Cat. No.	Code	Description
WT/95212	56B010810	Sulphate Reducing Bacteria
WT/95214	56B010910	Denitrifying Bacteria, Nitrite Reducing
WT/95176	56B010110	TTC / BT2 - Anaerobic Bacteria
WT/95216	56B010310	COMBI / RBS - Aerobic, Yeast/Fungi
WT/95218	56B010710	TP / PT - Aerobic Bacteria / Pseudomonas



WT/95

# Lovibond® Legionella Prevention Kit

Legionella is the causative agent of Legionnaire's disease, a potentially fatal form of pneumonia. Guidelines exist across the world for the control of Legionella. The Lovibond® Legionella "L8" Test Kits contain the recommended tests for both weekly and monthly monitoring to comply with the Health and Safety Executive L8 Guidelines 2002.

Lovibond

## Weekly Test Kit

- Includes Carry Case with accessories and reagents for all tests:
- Chlorine 0-4 mg/l Checkit Comparator Kit
- Dipslides Aerobic Bacteria BT2 (incubator not included)
- pH test strips, pH 4.5-10
- SD70 Handheld Temperature / Conductivity Meter, 0-60°C; 0-20000  $\mu$ S/cm

### Monthly Test Kit

- Includes all weekly tests plus carry case, accessories and reagents for all following tests:
- M Alkalinity 50-600 mg/l Drop Test
- Bromine 0-5 mg/l Checkit Comparator disc
- Chloride 20-400 mg/l Drop Test
- Hardness, Calcium and Total Drop Test
- Iron LR 0-1 mg/l Checkit Comparator disc
- SD50 Handheld pH Meter, pH 0-14

Cat. No.	Code	Description
WT/95170	56K000801	Lovibond Legionella prevention kit, weekly
WT/95172	56K000901	Lovibond Legionella prevention kit, monthly
Reagents		
WT/95174	511310BT	DPD No1 Rapid reagents, pack of 100
WT/95160	56S001090	pH Test Strips pack, pack of 100
WT/95176	56B000310	Dipslides BT2, pack of 10
WT/95178	56R003790	M Alkalinity Drop Test reagents, pack of 100
WT/95180	56R005090	Chloride Drop Test reagents, pack of 100
WT/95182	56R006290	Hardness (Calcium) Drop Test Reagents, pack of 100
WT/95184	56R006690	Hardness (Total) Drop Test Reagents, pack of 100
WT/95186	56R020790	Iron LR Reagent Pack, pack of 100
Accessories		
WT/95188	145000	Lovibond CHECKIT Comparator
WT/95190	145509	Plastic Vial 10ml with Lid
WT/95192	145860	Plastic Box for Reagents
WT/95194	146020	Checkit Disc Chlorine DPD
WT/95196	146220	Checkit Disc Iron LR
WT/95198	146280	Checkit Disc Bromine
WT/85226	385130	Dilution/Shaker Tube - 100ml
WT/95200	385132	Shaker Tube Plastic 30ml
WT/95202	56A006501	Syringe Plastic, 20ml
WT/95204	56A006601	Stirring Rod & Powder Scoop
WT/95206	56A008501	Syringe Plastic, 5ml
WT/95168	56B000701	DI 10 Dipslide Incubator



WT/95170



WT/95176

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Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page
280MC	355	AC/96144	15	BA/21120	23	BA/40630	20	BA/96450	17	BB/94708	90
46MC	355	AC/97002	14	BA/21122	23	BA/40632	20	BA/96454	17	BB/94710	90
		AF/94006	205	BA/21130	23	BA/40634	20	BA/96456	17	BB/94712	90
A		AN/95006	8	BA/21132	23	BA/40636	20	BA/96458	17	BB/94714	90
AC/14002	14	AN/95010	8	BA/21134	23	BA/40638	20	BA/96470	17	BB/94716	90
AC/14004	14	AN/95012	8	BA/21140	23	BA/40640	20	BA/96472	17	BB/94718	90
AC/14004 AC/16102	14	AN/95014	8	BA/21142	23, 25	BA/40642	20	BA/96474	17	BB/98002	90
AC/16104	14	AN/95016	8	BA/21212	25	BA/40650	20	BA/96476	17	BB/98004	90
AC/16104 AC/16106	14	AN/95020	8	BA/21214	25	BA/40652	20	BA/96478	17	BB/98006	90
AC/16108	14	AN/95022	8	BA/21220	25	BA/40654	20	BA/96480	17	BB/98008	90
AC/16106 AC/16110	14	AN/95030	8	BA/21260	25	BA/40818	22, 24	BA/96482	17	BB/98010	90
AC/16110 AC/16202	14	AN/95032	8	BA/21270	25	BA/40912	26	BA/96484	17	BC/12002	29
AC/16202 AC/16204	14	AS/12002	9	BA/21274	25	BA/40916	26	BA/96486	17	BC/12004	29
AC/16204 AC/16206	14	AS/12002 AS/12004	9	BA/36010	322	BA/40920	26	BA/96488	17	BC/12006	29
-,	14	AS/12004 AS/12006	9	BA/36012	322	BA/40930	26	BA/96490	17	BC/12008	29
AC/16208	14	AS/12008	9	BA/36012	322	BA/40932	26	BA/99102	31	BC/12010	29
AC/16210		AS/12000 AS/12010	9	BA/40116	20, 24, 26	BA/40932	26	BA/99104	31	BC/12012	29
AC/16300	14,401 14,401	AS/12010 AS/12012	9	BA/40172	18	BA/40934	26	BA/99106	31	BC/36102	469
AC/16302		AS/16201	10	BA/40174	18	BA/41016	311	BA/99108	31	BC/36204	469
AC/16304	14,401	AS/16204	10	BA/40174	18	BA/50114	21	BA/99110	31	BC/56102	83
AC/16306	14,401	AS/16205	10	BA/40178	18	BA/50116	21	BA/99122	31	BC/62002	29
AC/17002	14	AS/16203 AS/16210	10	BA/40180	18	BA/50118	21	BA/99124	31	BC/62004	29
AC/25040	14	AS/36304	9	BA/40184	18	BA/50120	21	BA/99126	31	BC/62006	29
AC/25104	13	AS/36310	9	BA/40302	19	BA/50122	21	BA/99128	31	BC/62008	29
AC/25112	13	AS/36320	9	BA/40304	19	BA/50124	21	BB/16642	28	BC/62010	29
AC/25114	13	AS/36325	9	BA/40304	19	BA/50126	21	BB/16644	28	BC/62012	29
AC/25116	13 13	AS/36350	9	BA/40308	19	BA/50418	20	BB/16646	28	BC/62014	29
AC/25118	13 13	AS/56101	9	BA/40350	24	BA/50410	20	BB/16648	28	BC/62014 BC/62016	29
AC/25120		AS/56101 AS/56102	9	BA/40350 BA/40352	24	BA/50420	20	BB/16650	28	BC/62102	29
AC/25122 AC/25126	13 13	AS/56102 AS/56103	9	BA/40354	24	BA/50424	20	BB/16652	28	BC/62104	29
	13	AS/56105	9	BA/40354	24	BA/50426	20	BB/16662	28	BC/62106	29
AC/25410		AS/56110	9	BA/40360	24	BA/50428	20	BB/16664	28	BC/62108	29
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AC/80010	14	BA/21010	19	BA/40598	26	BA/96436	17	BB/93716	84	BE/12176	55
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BE/62162         56         BH/65508         61         BO/12904         66         BO/16910         81         BO/36208         79         BO/56324         72           BE/62170         56         BH/65510         61         BO/12906         66         BO/16920         81         BO/36210         79         BO/56326         72           BE/62176         56         BH/65518         61         BO/12908         66         BO/22004         65         BO/36214         79         BO/62104         67           BE/62180         56         BH/65520         63         BO/16002         67         BO/22006         65         BO/36214         79         BO/62104         67           BE/62184         56         BH/65522         63         BO/16006         67         BO/22008         65         BO/36218         79         BO/62106         67           BE/62202         30         BH/65524         63         BO/16006         67         BO/22010         65         BO/36222         80         BO/62108         67           BE/62204         30         BH/65526         63         BO/16010         67         BO/22012         65         BO/36222         80         BO/66310         <							· ·	82				
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BE/62176 56 BH/65518 61 BO/16002 67 BO/22004 65 BO/36214 79 BO/62104 67 BE/62180 56 BH/65520 63 BO/16004 67 BO/22006 65 BO/36216 79 BO/62106 67 BE/62184 56 BH/65522 63 BO/16006 67 BO/22008 65 BO/36218 79 BO/62108 67 BE/62202 30 BH/65524 63 BO/16008 67 BO/22010 65 BO/36220 80 BO/62108 67 BE/62204 30 BH/65526 63 BO/16010 67 BO/22012 65 BO/36222 80 BO/66310 73 BE/62206 30 BH/65528 63 BO/16012 67 BO/22014 65 BO/36224 80 BO/66315 73 BE/62208 30 BH/65530 63 BO/16014 67 BO/22014 65 BO/36224 80 BO/66315 73 BE/93202 30 BH/65540 62 BO/16016 67 BO/22018 65 BO/36226 80 BO/66320 73 BE/93204 30 BH/65544 62 BO/16018 67 BO/22018 65 BO/36228 80 BO/66325 73 BE/93210 30 BH/65544 62 BO/16018 67 BO/22022 65 BO/36232 81 BO/80000 82, 501 BE/93210 30 BH/65548 62 BO/16022 68 BO/22022 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65548 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65550 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65554 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65554 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65554 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65554 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80002 82, 501 BE/93216 30 BH/65554 62 BO/16024 68 BO/22022 65 BO/36234 81 BO/80002 82, 501 BE/93216 30 BH/65554 62 BO/16026 68 BO/22022 65 BO/36234 81 BO/80002 82, 501 BE/93216 30 BH/65554 62 BO/16026 68 BO/22023 65 BO/36234 81 BO/80002 82, 501 BE/93304 30 BH/65556 62 BO/16104 76 BO/22230 65 BO/36244 81 BO/80002 82, 501 BE/93304 30 BH/65556 62 BO/16104 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65558 62 BO/16106 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65558 62 BO/16104 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16106 76 BO/22234 65 BO/36304 76 BO/82104 70 BE/93304 30 BH/65560 62 BO/16110 76 BO/22234 65 BO/36304 76 BO/82104 70 BE/93308 30 BH/65560 62 BO/16112 76 BO/22238 65 BO/36304 76 BO/82108 70												
BE/62180 56 BH/65520 63 BO/16004 67 BO/22006 65 BO/36216 79 BO/62106 67 BE/62184 56 BH/65522 63 BO/16006 67 BO/22008 65 BO/36218 79 BO/62108 67 BE/62202 30 BH/65524 63 BO/16008 67 BO/22010 65 BO/36220 80 BO/62110 67 BE/62204 30 BH/65526 63 BO/16010 67 BO/22012 65 BO/36222 80 BO/6310 73 BE/62206 30 BH/65528 63 BO/16012 67 BO/22014 65 BO/36224 80 BO/66315 73 BE/62208 30 BH/65530 63 BO/16014 67 BO/22016 65 BO/36226 80 BO/66315 73 BE/93202 30 BH/65540 62 BO/16016 67 BO/22018 65 BO/36228 80 BO/66320 73 BE/93204 30 BH/65542 62 BO/16018 67 BO/22018 65 BO/36238 80 BO/66325 73 BE/93206 30 BH/65546 62 BO/16020 68 BO/22022 65 BO/36232 81 BO/80000 82, 501 BE/93212 30 BH/65548 62 BO/16022 68 BO/22222 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65554 62 BO/16024 68 BO/22222 65 BO/36234 81 BO/80000 82, 501 BE/93214 30 BH/65554 62 BO/16024 68 BO/22222 65 BO/36238 81 BO/80002 82, 501 BE/93214 30 BH/65555 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93216 30 BH/65555 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93218 30 BH/65555 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93304 30 BH/65556 62 BO/16104 76 BO/22238 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16104 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16104 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16104 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16108 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16108 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93306 30 BH/65556 62 BO/16108 76 BO/22234 65 BO/36244 81 BO/80104 70 BE/93306 30 BH/65556 62 BO/16108 76 BO/22234 65 BO/36204 81 BO/80104 70 BE/93306 30 BH/65550 62 BO/16110 76 BO/22234 65 BO/36304 76 BO/82108 70 BE/93308 30 BH/65560 62 BO/16110 76 BO/22238 65 BO/36304 76 BO/82108 70												
BE/62184 56 BH/65522 63 BO/16006 67 BO/22008 65 BO/36218 79 BO/62108 67 BE/62202 30 BH/65524 63 BO/16010 67 BO/22010 65 BO/36220 80 BO/62110 67 BE/62204 30 BH/65526 63 BO/16010 67 BO/22012 65 BO/36222 80 BO/66310 73 BE/62208 30 BH/65528 63 BO/16012 67 BO/22014 65 BO/36224 80 BO/66315 73 BE/62208 30 BH/65530 63 BO/16014 67 BO/22016 65 BO/36226 80 BO/66315 73 BE/93202 30 BH/65540 62 BO/16016 67 BO/22016 65 BO/36228 80 BO/66325 73 BE/93204 30 BH/65542 62 BO/16018 67 BO/22020 65 BO/36230 80 BO/66350 73 BE/93206 30 BH/65544 62 BO/16020 68 BO/22022 65 BO/36232 81 BO/80000 82, 501 BE/93210 30 BH/65546 62 BO/16022 68 BO/22222 65 BO/36234 81 BO/80000 82, 501 BE/93212 30 BH/65546 62 BO/16024 68 BO/22224 65 BO/36236 81 BO/80002 82, 501 BE/93214 30 BH/65550 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93216 30 BH/65554 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93216 30 BH/65554 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93216 30 BH/65554 62 BO/16024 68 BO/22224 65 BO/36238 81 BO/80002 82, 501 BE/93218 30 BH/65554 62 BO/16026 68 BO/22224 65 BO/36240 81 BO/80004 82, 501 BE/93218 30 BH/65554 62 BO/16026 68 BO/22224 65 BO/36244 81 BO/80004 82, 501 BE/93218 30 BH/65555 62 BO/16026 68 BO/22228 65 BO/36240 81 BO/80022 82, 501 BE/93218 30 BH/65556 62 BO/16102 76 BO/22238 65 BO/36242 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16106 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16106 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16106 76 BO/22234 65 BO/36244 81 BO/80024 82, 501 BE/93304 30 BH/65556 62 BO/16108 76 BO/22234 65 BO/36302 76 BO/82104 70 BE/93306 30 BH/65556 62 BO/16108 76 BO/22234 65 BO/36302 76 BO/82106 70 BE/93308 30 BH/65560 62 BO/16110 76 BO/22238 65 BO/36304 76 BO/82106 70 BE/93308 30 BH/65562 62 BO/16110 76 BO/22238 65 BO/36304 76 BO/82106 70												
BE/62202         30         BH/65524         63         BO/16008         67         BO/22010         65         BO/36220         80         BO/62110         67           BE/62204         30         BH/65526         63         BO/16010         67         BO/22012         65         BO/36222         80         BO/66310         73           BE/62206         30         BH/65528         63         BO/16012         67         BO/22014         65         BO/36224         80         BO/66315         73           BE/93202         30         BH/65530         63         BO/16014         67         BO/22016         65         BO/36226         80         BO/66325         73           BE/93202         30         BH/65540         62         BO/16016         67         BO/220218         65         BO/36228         80         BO/66325         73           BE/93204         30         BH/65542         62         BO/16018         67         BO/22020         65         BO/36230         80         BO/66325         73           BE/93210         30         BH/65546         62         BO/16020         68         BO/22022         65         BO/36233         81         BO/80000												
BE/62204         30         BH/65526         63         BO/16010         67         BO/22012         65         BO/36222         80         BO/66310         73           BE/62206         30         BH/65528         63         BO/16012         67         BO/22014         65         BO/36224         80         BO/66315         73           BE/93202         30         BH/65530         63         BO/16014         67         BO/22016         65         BO/36226         80         BO/66320         73           BE/93202         30         BH/65540         62         BO/16018         67         BO/22018         65         BO/36228         80         BO/66325         73           BE/93204         30         BH/65542         62         BO/16018         67         BO/22020         65         BO/36230         80         BO/66350         73           BE/93210         30         BH/65544         62         BO/16020         68         BO/22022         65         BO/36234         81         BO/80000         82, 501           BE/93212         30         BH/65548         62         BO/16024         68         BO/22224         65         BO/36234         81         BO/80000												
BE/62206         30         BH/65528         63         BO/16012         67         BO/22014         65         BO/36224         80         BO/66315         73           BE/62208         30         BH/65530         63         BO/16014         67         BO/22016         65         BO/36226         80         BO/66320         73           BE/93202         30         BH/65540         62         BO/16016         67         BO/22018         65         BO/36228         80         BO/66325         73           BE/93204         30         BH/65542         62         BO/16018         67         BO/22020         65         BO/36230         80         BO/66350         73           BE/93206         30         BH/65544         62         BO/16020         68         BO/22022         65         BO/36232         81         BO/80000         82,501           BE/93210         30         BH/65546         62         BO/16022         68         BO/22222         65         BO/36234         81         BO/80002         82,501           BE/93214         30         BH/65548         62         BO/16024         68         BO/22224         65         BO/36236         81         BO/80000												
BE/93202 30 BH/65540 62 BO/16016 67 BO/22018 65 BO/36228 80 BO/66325 73 BE/93204 30 BH/65542 62 BO/16018 67 BO/22020 65 BO/36230 80 BO/66350 73 BE/93206 30 BH/65544 62 BO/16020 68 BO/22022 65 BO/36232 81 BO/80000 82,501 BE/93210 30 BH/65546 62 BO/16022 68 BO/22222 65 BO/36234 81 BO/80002 82,501 BE/93212 30 BH/65548 62 BO/16024 68 BO/22224 65 BO/36236 81 BO/80004 82,501 BE/93214 30 BH/65550 62 BO/16026 68 BO/22226 65 BO/36236 81 BO/80004 82,501 BE/93216 30 BH/65552 62 BO/16026 68 BO/22226 65 BO/36238 81 BO/80002 82,501 BE/93218 30 BH/65554 62 BO/16102 76 BO/22238 65 BO/36240 81 BO/80024 82,501 BE/93302 30 BH/65556 62 BO/16104 76 BO/22230 65 BO/36244 81 BO/80024 82,501 BE/93302 30 BH/65556 62 BO/16106 76 BO/22232 65 BO/36244 81 BO/80024 82,501 BE/93304 30 BH/65558 62 BO/16108 76 BO/22232 65 BO/36246 81 BO/8014 70 BE/93306 30 BH/65556 62 BO/16110 76 BO/22236 65 BO/36302 76 BO/82106 70 BE/93308 30 BH/65560 62 BO/16110 76 BO/22236 65 BO/36302 76 BO/82106 70 BE/93308 30 BH/65562 62 BO/16112 76 BO/22238 65 BO/36304 76 BO/82108 70					BO/16012	67	BO/22014	65				
BE/93204 30 BH/65542 62 BO/16018 67 BO/22020 65 BO/36230 80 BO/66350 73 BE/93206 30 BH/65544 62 BO/16020 68 BO/22022 65 BO/36232 81 BO/80000 82,501 BE/93210 30 BH/65546 62 BO/16022 68 BO/22222 65 BO/36234 81 BO/80002 82,501 BE/93212 30 BH/65548 62 BO/16024 68 BO/22224 65 BO/36236 81 BO/80004 82,501 BE/93214 30 BH/65550 62 BO/16026 68 BO/22226 65 BO/36238 81 BO/80004 82,501 BE/93216 30 BH/65552 62 BO/16026 68 BO/22228 65 BO/36238 81 BO/80020 82,501 BE/93218 30 BH/65554 62 BO/16102 76 BO/22228 65 BO/36240 81 BO/80022 82,501 BE/93302 30 BH/65556 62 BO/16104 76 BO/22230 65 BO/36242 81 BO/8024 82,501 BE/93302 30 BH/65556 62 BO/16106 76 BO/22230 65 BO/36244 81 BO/8024 82,501 BE/93304 30 BH/65558 62 BO/16108 76 BO/22234 65 BO/36246 81 BO/82102 70 BE/93306 30 BH/65550 62 BO/16110 76 BO/22234 65 BO/36302 76 BO/82104 70 BE/93308 30 BH/65560 62 BO/16110 76 BO/22236 65 BO/36302 76 BO/82106 70 BE/93308 30 BH/65560 62 BO/16110 76 BO/22238 65 BO/36304 76 BO/82108 70												
BE/93206         30         BH/65544         62         BO/16020         68         BO/22022         65         BO/36232         81         BO/80000         82, 501           BE/93210         30         BH/65546         62         BO/16022         68         BO/22222         65         BO/36234         81         BO/80002         82, 501           BE/93212         30         BH/65548         62         BO/16024         68         BO/22224         65         BO/36236         81         BO/80004         82, 501           BE/93214         30         BH/65550         62         BO/16026         68         BO/22226         65         BO/36238         81         BO/80004         82, 501           BE/93216         30         BH/65552         62         BO/16102         76         BO/22228         65         BO/36240         81         BO/80022         82, 501           BE/93218         30         BH/65554         62         BO/16104         76         BO/22230         65         BO/36240         81         BO/80022         82, 501           BE/93302         30         BH/65556         62         BO/16106         76         BO/22232         65         BO/36244         81												
BE/93210 30 BH/65546 62 BO/16022 68 BO/22222 65 BO/36234 81 BO/80002 82,501 BE/93212 30 BH/65548 62 BO/16024 68 BO/22224 65 BO/36236 81 BO/80004 82,501 BE/93214 30 BH/65550 62 BO/16026 68 BO/22226 65 BO/36238 81 BO/80020 82,501 BE/93216 30 BH/65552 62 BO/16102 76 BO/22228 65 BO/36240 81 BO/80022 82,501 BE/93218 30 BH/65554 62 BO/16104 76 BO/22230 65 BO/36242 81 BO/80024 82,501 BE/93302 30 BH/65556 62 BO/16106 76 BO/2232 65 BO/36244 81 BO/82102 70 BE/93304 30 BH/65558 62 BO/16108 76 BO/22234 65 BO/36244 81 BO/82102 70 BE/93304 30 BH/65560 62 BO/16110 76 BO/22234 65 BO/36244 81 BO/82104 70 BE/93306 30 BH/65560 62 BO/16110 76 BO/22234 65 BO/36302 76 BO/82104 70 BE/93308 30 BH/65560 62 BO/16110 76 BO/22236 65 BO/36304 76 BO/82108 70												
BE/93212         30         BH/65548         62         BO/16024         68         BO/22224         65         BO/36236         81         BO/80004         82, 501           BE/93214         30         BH/65550         62         BO/16026         68         BO/22226         65         BO/36238         81         BO/80020         82, 501           BE/93216         30         BH/65552         62         BO/16102         76         BO/22228         65         BO/36240         81         BO/80022         82, 501           BE/93218         30         BH/65554         62         BO/16104         76         BO/22230         65         BO/36242         81         BO/80024         82, 501           BE/93302         30         BH/65556         62         BO/16106         76         BO/22232         65         BO/36244         81         BO/82102         70           BE/93304         30         BH/65558         62         BO/16108         76         BO/22234         65         BO/36246         81         BO/82104         70           BE/93306         30         BH/65560         62         BO/16110         76         BO/22236         65         BO/36302         76         BO/												
BE/93214         30         BH/65550         62         BO/16026         68         BO/22226         65         BO/36238         81         BO/80020         82,501           BE/93216         30         BH/65552         62         BO/16102         76         BO/22228         65         BO/36240         81         BO/80022         82,501           BE/93218         30         BH/65554         62         BO/16104         76         BO/22230         65         BO/36242         81         BO/80024         82,501           BE/93302         30         BH/65556         62         BO/16106         76         BO/22232         65         BO/36244         81         BO/82102         70           BE/93304         30         BH/65558         62         BO/16108         76         BO/22234         65         BO/36246         81         BO/82104         70           BE/93306         30         BH/65560         62         BO/16110         76         BO/22236         65         BO/36302         76         BO/82106         70           BE/93308         30         BH/65562         62         BO/16112         76         BO/22238         65         BO/36304         76         BO/82108 <td></td>												
BE/93216         30         BH/65552         62         BO/16102         76         BO/22228         65         BO/36240         81         BO/80022         82,501           BE/93218         30         BH/65554         62         BO/16104         76         BO/22230         65         BO/36242         81         BO/80024         82,501           BE/93302         30         BH/65556         62         BO/16106         76         BO/22232         65         BO/36244         81         BO/82102         70           BE/93304         30         BH/65558         62         BO/16108         76         BO/22234         65         BO/36246         81         BO/82102         70           BE/93306         30         BH/65560         62         BO/16110         76         BO/22236         65         BO/36302         76         BO/82106         70           BE/93308         30         BH/65562         62         BO/16112         76         BO/22238         65         BO/36304         76         BO/82108         70												
BE/93218         30         BH/65554         62         BO/16104         76         BO/22230         65         BO/36242         81         BO/80024         82,501           BE/93302         30         BH/65556         62         BO/16106         76         BO/22232         65         BO/36244         81         BO/82102         70           BE/93304         30         BH/65558         62         BO/16108         76         BO/22234         65         BO/36246         81         BO/82104         70           BE/93306         30         BH/65560         62         BO/16110         76         BO/22236         65         BO/36302         76         BO/82106         70           BE/93308         30         BH/65562         62         BO/16112         76         BO/22238         65         BO/36304         76         BO/82108         70												
BE/93302         30         BH/65556         62         BO/16106         76         BO/22232         65         BO/36244         81         BO/82102         70           BE/93304         30         BH/65558         62         BO/16108         76         BO/22234         65         BO/36246         81         BO/82104         70           BE/93306         30         BH/65560         62         BO/16110         76         BO/22236         65         BO/36302         76         BO/82106         70           BE/93308         30         BH/65562         62         BO/16112         76         BO/22238         65         BO/36304         76         BO/82108         70												
BE/93306 30 BH/65560 62 BO/16110 76 BO/22236 65 BO/36302 76 BO/82106 70 BE/93308 30 BH/65562 62 BO/16112 76 BO/22238 65 BO/36304 76 BO/82108 70					BO/16106	76	BO/22232	65	BO/36244	81		70
BE/93308 30 BH/65562 62 BO/16112 76 BO/22238 65 BO/36304 76 BO/82108 70	BE/93304	30										
27,0000												
DE/Y3331U 3U BM/05504 02 BU/10114 /0 BU/2224U 05 BU/303U0 /0 BU/8211U /U												
	DE/YJJIU	30	в⊓/65564	62	DU/10114	/0	DU/2224U	00	DO/30300	70	50/02110	70

INDLA											
Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page
BO/82112	-	BU/12006	88	DW//1/4/0	-	BW/65648	41	BW/85094	38	C3/22/SC	347
	70 70	· ·		BW/16462 BW/16464	74	. ,		BW/85094	38	C3/23/SC	347
BO/82202		BU/12008	88 88	,	74 74	BW/65650	41	BW/85150	38	C3/24/SC	347
BO/82204	70 70	BU/12010 BU/12012	88	BW/16466	74 74	BW/65652 BW/65654	41 41	BW/85150	38	C5/11/SC	347
BO/82206 BO/82208	70	BU/12012	88	BW/16468 BW/16469	74 74	BW/65660	43	BW/85154	38	C5/11/3C C5/12/SC	347
BO/82212	70	BU/12016	88	BW/16470	74 74	BW/65662	43	BW/85156	38	C5/13/SC	347
BO/82212 BO/82214	70	BU/12020 BU/12022	oo 88	BW/16470	74 74	BW/65664	43 43	BW/85158	38	C5/13/3C C5/22/SC	347
		BU/12022 BU/12202	87			BW/65666	43 43	BW/85160	38	C5/23/SC	347
BO/82302 BO/82304	71	BU/12204	87	BW/16474	74 74	BW/65670	43	BW/85162	38	C5/24/SC	347
	71 71	BU/12204 BU/12206	87	BW/16476 BW/16478	74 74			BW/85166	38	CA/95002	91
BO/82308	71	BU/12208	87	BW/16480	74 74	BW/65672 BW/65674	43 43	BW/85172	38	CA/95016	91
BO/82310	70	BU/12302	86		74 74	BW/65704	43	BW/85172	38	CC/15010	110
BO/82402 BO/82404	70	BU/12302	86	BW/16482	74 74	BW/65706	44	BW/85174 BW/85176	38	CC/15010	110
BO/82404 BO/82408	70	BU/12304 BU/12306	86	BW/16484 BW/16486	74 74	BW/65708	44	BW/85178	38	CC/15014 CC/15016	110
BO/82406 BO/82410	70	BU/12308	86	BW/16488	74	BW/65710	44	BW/85250	363	CC/15018	110
BO/82410 BO/82412	70	BU/12320	86	BW/16490	74	BW/65712	44	BW/85252	363	CC/15010	110
BO/82412 BO/82416	70	BU/12322	86	BW/16492	74	BW/65714	44	BW/85254	363	CC/15020	110
BO/82502	70	BU/12324	86	BW/16494	74	BW/84002	31	BW/85256	363	CC/15100	110
BO/82502 BO/82504	70	BU/12324 BU/12326	86	BW/16496	74	BW/84100	27	BW/85258	363	CC/15100	110
	70	BU/12328	86	BW/16498	74 74	BW/84100	27	BW/85260	40	CC/15102 CC/15104	110
BO/82506 BO/82508	70	BU/12402	87	BW/56430	74 74	BW/84104	27	BW/85262	37	CC/47000	109
BO/82512	70	BU/12404	87		74		27	BW/85264	39	CC/47000 CC/47022	109
BO/82602		BU/12404 BU/12406	87	BW/56432		BW/84106 BW/84108	27	BW/85266	39	CC/47022 CC/47030	108
BO/82604	70	BU/12408	87	BW/56434	74	BW/84110	27	BW/85268	39	CC/47034	108
BO/82604 BO/82606	70 70	BU/12412	87	BW/65010 BW/65012	44 44	BW/84112	27	BW/85272	37	CC/47060	108
								BW/85602		CC/47062	108
BO/82610	70 70	BU/12414 BU/12416	87 87	BW/65014	44	BW/84114 BW/84116	27 27	BW/85602 BW/85604	33 33	CC/47062 CC/47064	108
BO/82612	70 70	BU/12418	87 87	BW/65026 BW/65028	42	BW/84116 BW/84118	27	BW/85604 BW/85606	33	CC/47064 CC/47070	109
BO/82614 BO/92002	70 71	BU/12418 BU/16102	87 85	BW/65028 BW/65030	42 42	BW/84118 BW/84120	27	BW/85608	33	CC/47070 CC/47072	109
BO/92002 BO/92004	71	BU/16104	85 85	BW/65040	42	BW/84120 BW/84122	27	BW/85620	33	CD/10000	107
BO/92004 BO/92006	71	BU/16104	85	BW/65040	42	BW/84124	27	BW/85620	32	CD/12000	107
BO/92006 BO/92008	71	BU/16108	85	BW/65042	42	BW/84126	27	BW/85623	32	CD/12000 CD/16602	124
BO/92006 BO/92102	69	BU/16122	85	BW/65050	42	BW/84128	27	BW/85624	32	CD/16604	124
BO/92102 BO/92104	69	BU/16124	85	BW/65120	44	BW/84130	27	BW/85625	32	CD/16612	124
BO/92104 BO/92108	69	BU/16126	85	BW/65122	44	BW/84132	27	BW/85626	32	CD/16614	124
BO/92106 BO/92202	65	BU/16128	85	BW/65124	44	BW/84134	27	BW/85628	32	CD/16616	124
BO/92202 BO/92204	65	BU/32022	86	BW/65126	44	BW/84200	27	BW/85629	32	CD/16620	124
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FG/63808	218	FP/12010	186	FP/17308	183	FP/21010	196	FP/97418	180	FR1L/3S/2A	351
FH/15808	194	FP/12012	186	FP/17310	183	FP/21012	196	FP/97506	181	FR1L/3UM	350
FH/15810	194	FP/12014	186	FP/17312	183	FP/21014	196	FP/97508	181	FR1L/4S/22A	351
FH/15812	194	FP/12022	186	FP/17314	183	FP/21016	196	FP/97510	181	FR1L/4S/22P	351
FH/15814	194	FP/12024	186	FP/17316	183	FP/21018	196	FP/97512	181	FR1L/4S/44A	351
FH/15816	194	FP/12026	186	FP/17318	183	FP/21020	196	FP/97514	181	FR1L/5S	179
FH/16002	195	FP/12028	186	FP/17356	185	FP/21022	196	FP/97516	181	FR1L/5S	349
FH/16004	195	FP/12104	186	FP/17358	185	FP/25006	196	FP/97518	181	FR1L/5S/22A	351
FH/16006	195	FP/12106	186	FP/17360	185	FP/25008	196	FP/97606	181	FR1L/5S/22P	351
FH/16008	195	FP/12108	186	FP/17362	185	FP/25018	196	FP/97608	181	FR1L/5S/33P	351
FH/46220	421	FP/12110	186	FP/17364	185	FP/25020	196	FP/97610	181	FR1L/7S	349
FH/46222	421	FP/12112	186	FP/17366	185	FP/25022	196	FP/97612	181	FR1LF	353
FH/46224	421	FP/12114	186	FP/17368	185	FP/25024	196	FP/97614	181	FR20LF	353
FH/64002	195	FP/12124	186	FP/17402	183	FP/25026	196	FP/97616	181	FR25/1S	349
FH/64004	195	FP/12126	186	FP/17404	183	FP/25028	196	FP/97618	181	FR25/1S/11A	351
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FH/64008	195	FP/12204	186	FP/17408	183	FP/25032	196 196	FP/97708 FP/97710	181	FR25/15/3EP FR25/2S	349
FH/64010	195	FP/12206	186	FP/17410	183	FP/25034 FP/25102	196 196	FP/97710 FP/97712	181	FR25/2S/11A	349
FI/46002	205	FP/12208	186	FP/17412	183	FP/25102 FP/25104	196	FP/97712 FP/97714	181	FR25/3S	349
FIB250/3	352	FP/12210	186	FP/17414	183	FP/25104 FP/31002	196	FP/97714 FP/97716	181	FR250/1S	349
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FM/27008	187	FP/12424	186		183	FP/35034 FP/35036	197	FP/98104 FP/98106	182	FR2L/3US/22P	351
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FM/27026	187	FP/13002 FP/13004	195	FP/17556 FP/17558	184	FP/35038 FP/35040	197	FP/98112	182	FR2L/4S/22P	351
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Figure   F						IINL	JEX					
PROPERTY   SIGN   PAPERTY   PAPERT	Cat No	Page	Cat No	Pago	Cat No	Pago	Cat No	Paga	Cat No	Paga	Cat No	Paga
Prince   196		-		-						-		
Principology   1988			· ·		1							
Per		349	· ·									
File		351		188								
Proc.   Proc	FR2L/5S/22P	351	FU/10018	188		205		355				
PROFESSOR   1988	FR2L/5S/2A	351	FU/10020	188	FV/16846	205	GC29	355	HJ/52004	235	HY/35018	
Page	FR2L/5S/33P	351	FU/10022	188	FV/16856	205	GC34	355	HJ/52006	235	HY/35020	
### ### ### ### ### ### ### ### ### ##	FR2L/7S/44P	351	FU/10024	188	FV/16866	205	GC40	355	HJ/52008	235	HY/35022	234
### ### ### ### ### ### ### ### ### ##	FR2LF	353	FU/10026	188	FV/32018	204	GC45	355	HM/25140	225	HY/35024	234
### ### ### ### ### ### ### ### ### ##	FR3L/3S	349	FU/10028	188	FV/32028	204	GD/45472	222	HM/25146	225	HY/35052	233
### ### ### ### ### ### ### ### ### ##	FR3L/5S	349	FU/10030	188	FV/32032	204	GD/45474	222	HM/25156	225	HY/35054	233
BALLEGIEP   201	FR3L/5S/22A	351	FU/10032	188	FV/32034	204	GD/45476	222	HM/25166	225	HY/35056	233
			FU/10034	188	FV/32040	204	GD/45478	222	HM/25176	225	HY/35058	233
REAL   1833							GD/45480	222	HM/25180	225	HY/35106	233
REALTY   1947   1942-1955   1942-1956   1942-1956   1944-1957   1942-1957					FV/32054	204	GD/45482	222	HM/25184	225	HY/35108	233
FRAFFINAM					FV/32056	204	GD/45484	222	HM/25188	225	HY/35110	233
Fig.   1985					1				HM/25240	225	HY/35112	233
Fig. 15												
FRATE   1989							The state of the s					
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FISCOLOGY   949									· ·			
FESQUISA  9.49							The state of the s					
FESTION: S   140   FLYSSIOR   217   FLYSSI212   204   G0.770031   221   HM/ZS318   226   H7/S3150   236   FRSONSYITA   351   FLYSSI310   217   FLYSSI214   204   G0.770031   221   HM/ZS414   226   H7/S302   238   FRSONSYITA   351   FLYSSI310   217   FLYSSI310   224   GH/ZS002   220   HM/ZS414   226   H7/SS02   238   FRSONSYITA   351   FLYSSI314   217   FLYSSI316   224   GH/ZS002   229   HM/ZS414   226   H7/SS02   238   FRSONSYITA   351   FLYSSI314   217   FLYSSI315   224   GM/ZS02   219   HM/ZS416   225   H7/SS016   238   FRSONSYITA   351   FLYSSI316   217   FLYSSI311   224   GM/ZS02   219   HM/ZS416   225   H7/SS016   238   FRSONSYITA   351   FLYSSI316   217   FLYSSI315   224   GM/ZS02   219   HM/ZS416   225   H7/SS016   238   FRSONSYITA   23												
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FRESONS   1	FR500/3S	349										
FISSONS-127-2-3-51	FR500/3S/11A	351	FU/35308	217	FV/32214	204	GD/70032		HM/25402	226		
FISSON_2012   SI	FR500/3S/1A	351	FU/35310	217	FV/32216	204	GH/93002	220	HM/25404	226	HY/35202	
FESTION	FR500/3S/22A	351	FU/35312	217	FV/32218	204	GH/93004	220	HM/25412	226	HY/35204	233
FRSDON_SCIZAL   SI	FR500/3S/2A	351	FU/35314	217	FV/32310	204	GR/93030	219	HM/25414	226	HY/35206	233
PASOUALY-27P   351	FR500/3U	350	FU/35316	217	FV/32312	204	GR/93032	219	HM/25540	225	HY/35208	233
PRODUC\$   349	FR500/4S/22A	351	FU/35318	217	FV/32314	204	GR/93034	219	HM/25546	225	HY/35210	233
FRODOT   353   FUJASI 38   792   FWJASI 48   205   GR/9304G   219   HMV25560   225   HVJASZ 18   233   FRSURIS   349   FUJASI 48   792   FWJASZ 28   205   GR/9304G   219   HMV25560   225   HVJASZ 28   233   FRSURIS   349   FUJASI 48   792   FWJASZ 44   205   GR/9304G   219   HMV2564G   225   HVJASZ 28   233   FRSURIS   348   351   FUJASI 48   792   FWJASZ 44   205   GR/9304G   219   HMV2564G   225   HVJASZ 28   233   FRSURIS   349   FUJASZ 28   792   FWJASZ 44   205   GR/9304G   219   HMV2564G   225   HVJASZ 28   233   FRSURIS   349   FUJASZ 28   792   FWJASZ 48   205   GR/9304G   219   HMV2566G   225   HVJASZ 28   233   FRSURIS   349   FUJASZ 28   792   FWJASZ 48   205   GR/9304G   219   HMV2566G   225   HVJASZ 28   233   FRSURIS   349   FUJASZ 48   792   FWJASZ 48   205   GT/1400G   220   HMV2566G   225   HVJASZ 28   233   FRSURIS   345   FWJASZ 48   205   GT/1400G   220   HMV2566   225   HVJASZ 28   233   FRSURIS   345   FWJASZ 28   233   FWJASZ 28   FWJASZ 28   233   FWJASZ 28   FW	FR500/4S/22P	351	FU/36132	192	FV/32316	204	GR/93036	219	HM/25556	225	HY/35212	233
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FRSU-SIS   349   FU-36140   192   FV/32424   205   GR/93044   219   HM/25580   225   HY/35220   233   FRSU-SISS   349   FU-36144   192   FV/32464   205   GR/93046   219   HM/25646   225   HY/35222   233   FRSU-SISS   349   FU-36222   192   FV/32464   205   GR/93046   219   HM/25646   225   HY/35222   233   FRSU-SISS   349   FU-36222   192   FV/32464   205   GR/93046   219   HM/25646   225   HY/35222   233   FRSU-SISS   349   FU-36222   192   FV/32465   205   GT/14000   220   HM/25646   225   HY/35222   233   FRSU-SISS   349   FU-36224   233   FRSU-SISS   349   FRSU-SISS									HM/25576	225	HY/35216	233
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FS/12028   214   FU/36504   190   FV/32040   202   HA/13008   223   HM/46702   228   HY/35306   234   FS/12030   214   FU/36506   190   FV/52046   202   HA/13010   223   HM/46704   228   HY/35310   234   FS/22972   193   FU/36512   190   FV/52056   202   HA/13014   223   HM/46706   228   HY/35312   234   FS/22974   193   FU/36516   190   FV/52056   202   HA/13014   223   HM/46706   228   HY/35312   234   FS/22976   193   FU/36516   190   FV/52056   202   HA/13018   223   HM/46708   228   HY/35314   234   FS/22976   193   FU/36516   190   FV/52076   202   HA/13018   223   HM/46712   228   HY/35316   234   FS/22978   193   FU/36518   190   FV/52080   202   HA/13020   223   HM/46712   228   HY/35318   234   FS/22980   193   FV/12028   202   FV/52088   202   HA/13020   223   HM/46712   228   HY/35318   234   FS/22982   193   FV/12028   202   FV/52018   203   HA/13024   223   HM/46724   228   HY/35404   225   FS/22984   193   FV/12034   202   FV/52132   203   HA/13024   223   HM/46724   228   HY/35404   225   FS/22988   193   FV/12034   202   FV/52132   203   HA/13020   223   HM/46728   228   HY/35404   225   FS/22999   193   FV/12040   202   FV/52134   203   HA/13020   223   HM/46730   228   HY/35404   225   FS/22999   193   FV/12044   202   FV/52134   203   HA/13030   223   HM/46732   228   HY/35408   235   FS/22999   193   FV/12064   202   FV/52134   203   HA/13030   223   HM/46732   228   HY/35408   235   FS/22999   193   FV/12064   202   FV/52134   203   HA/130304   223   HM/46732   228   HY/35408   235   FS/22999   193   FV/12064   202   FV/52134   203   HA/13034   223   HM/46732   228   HY/35408   235   FS/22999   193   FV/12064   202   FV/52134   203   HA/13034   223   HP/1800   229   HY/35408   235   FS/22999   193   FV/12064   202   FV/52134   203   HA/130304   223   HP/1800   229   HY/35414   235   FS/22996   193   FV/12066   202   FV/52136   203   HA/130304   224   273   HP/15004   230   HY/35408   235   FS/22998   193   FV/12066   202   FV/52136   203   HA/130304   224   273   HP/15004   230   HY/3540		214	FU/36418	191			HA/13004	223				
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Fy/22976   193	FS/22972	193	FU/36512	190	FV/52056	202	HA/13014	223	HM/46706	228	HY/35312	234
FS/22978	FS/22974	193	FU/36514	190	FV/52066	202	HA/13016	223	HM/46708	228	HY/35314	234
FS/22980	FS/22976	193	FU/36516	190	FV/52076	202	HA/13018	223	HM/46710	228	HY/35316	234
FS/22980									HM/46712	228	HY/35318	234
FS/22982   193									HM/46722		HY/35320	234
FS/22984   193									HM/46724		HY/35402	235
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PO/45224 334 PP/35714 325 PS/16140 330 PT/37323 328 PJL45268 341 RF/45684 369 PO/45228 334 PP/35718 325 PS/16140 330 PT/37323 328 PJL45270 341 RF/45686 369 PO/45228 334 PP/35718 325 PS/16218 320 PT/37323 328 PJL45270 341 RF/45686 369 PD/15422 329 PP/35730 325 PS/16312 320 PT/37252 328 PJL45274 341 RF/45680 369 PD/15422 329 PP/35734 325 PS/16312 320 PT/37252 328 PJL45274 341 RF/45692 369 PD/15424 329 PP/35734 325 PS/16312 320 PT/37252 328 PJL45278 341 RF/45020 366 PD/16110 316 PP/35744 325 PS/16318 320 PT/37254 328 PJL45278 341 RF/45020 366 PD/16112 316 PP/35744 325 PS/16310 320 PT/37256 328 PJL45526 340 RF/55004 366 PD/16112 316 PP/35744 325 PS/16510 320 PT/37256 328 PJL45504 340 RF/55004 366 PD/16112 316 PP/35744 325 PS/16612 330 PT/37260 328 PJL45504 340 RF/55003 366 PD/16118 316 PP/37000 326 PS/16618 320 PT/37260 328 PJL45510 340 RF/55012 372 PD/16132 316 PP/37004 326 PS/16628 320 PT/37264 328 PJL45510 340 RF/55112 372 PD/16132 316 PP/37004 326 PS/16634 320 PT/37264 328 PJL45510 340 RF/55112 372 PD/16132 316 PP/37008 326 PS/16540 320 PT/37004 331 PJU49104 335 RF/55116 372 PD/16140 316 PP/37008 326 PS/16540 320 PT/37004 331 PJU49104 335 RF/55116 372 PD/16140 316 PP/37008 326 PS/16540 320 PT/37004 331 PJU49104 335 RF/55116 372 PD/16140 316 PP/37008 326 PS/16540 320 PT/37004 331 PJU49004 335 RF/55116 372 PD/16140 316 PP/37006 326 PS/16540 320 PT/37004 331 PJU49004 335 RF/55118 372 PD/16304 318 PJU49004 335 RF/55118 372 PD/16304 318 PJU49004 335 RF/55180 372 PD/16304 331 PJU49004 335 RF/55180 372 PD/16304 331 PJU49004 335 RF/55180 372 PD/16304 331 PJU49004 335 RF/55180 372 PD/16304 336 PJU49004 335 RF/55180 372 PD/16304 331 PJU49004 335 RF/55180 372 PD/16304 331 PJU49004 335 RF/55180 372 PD/16304 331 PJU49004 335 RF/55180 373 PD/16304 336 PJU49004 335 RF/5580 373 PD/16304 336 PJU49004 335 RF/5580 373 PD/16304 336 PJU49004 335 RF/55808 373 PD/16304 336 PJU49004 335 RF/55808 373 PD/16304 336 PJU4900												
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PP/16110	PP/15422	329	PP/35732	325	PS/16312	320		328				
PP/16118	PP/15424	329	PP/35734	325	PS/16318	320	PT/37254	328		341		
PP/16118   316	PP/16110	316	PP/35740	325	PS/16428	320	PT/37256	328	PU/45502	340		366
PP/16128 316 PP/37000 326 PS/16518 320 PT/37262 328 PU/45510 340 RF/75112 372 PP/16130 316 PP/37002 326 PS/16528 320 PT/37264 328 PU/4512 340 RF/75114 372 PP/16134 316 PP/37004 326 PS/16534 320 PT/76002 331 PU/94102 335 RF/75116 372 PP/16134 316 PP/37006 326 PS/16534 320 PT/76004 331 PU/94104 335 RF/75118 372 PP/16146 316 PP/37010 326 PS/76008 321 PT/76004 331 PU/96002 335 RF/75118 372 PP/16146 316 PP/37010 326 PS/70000 327 PT/76022 331 PU/96004 335 RF/75118 372 PP/16252 318 PP/37012 326 PS/70000 327 PT/76022 331 PU/96004 335 RF/75182 373 PP/16252 318 PP/37014 326 PS/70004 327 PT/76024 331 PU/96004 335 RF/75182 373 PP/16252 318 PP/37014 326 PS/70004 327 PT/76034 331 PU/96004 335 RF/75182 373 PP/16310 316 PP/37016 326 PS/70006 327 PT/76034 331 PV/96324 322 RF/75202 372 PP/16310 316 PP/37016 326 PS/70006 327 PT/76038 331 PV/96344 322 RF/75216 372 PP/16318 316 PP/37000 326 PS/76008 327 PT/76042 331 PV/96334 322 RF/75216 372 PP/16318 316 PP/37000 326 PS/96110 320 PT/76042 331 PV/96330 322 RF/75308 374 PP/16332 316 PP/37000 326 PS/96118 320 PT/76110 332 PV/96330 322 RF/75308 374 PP/16332 316 PP/37000 326 PS/96118 320 PT/76110 332 R RF/75510 374 PP/16332 316 PP/37000 326 PS/96118 320 PT/76110 332 R RF/75510 374 PP/16330 316 PP/3700 326 PS/96138 320 PT/76110 332 R RF/75510 374 PP/16340 316 PP/37102 319 PS/96318 320 PT/76110 332 R RF/75510 374 PP/16340 316 PP/37102 319 PS/96318 320 PT/76110 332 R RF/75510 374 PP/16340 316 PP/37102 319 PS/96318 320 PT/76110 332 R RF/75888 374 PP/16340 316 PP/37102 319 PS/96318 320 PT/76114 332 RA1/11 345 RF/75808 370 PP/16340 316 PP/37102 319 PS/96318 320 PT/76110 332 RA1/11 345 RF/75808 370 PP/16340 316 PP/37102 319 PS/96310 330 PT/76110 332 RA1/12 345 RF/75808 373 PP/32110 316 PP/37102 319 PS/96310 330 PT/76114 332 RA1/12 345 RF/75808 373 PP/32110 316 PP/37102 319 PS/96310 330 PT/76114 332 RA1/13 345 RF/75808 373 PP/32110 316 PP/37102 319 PT/16004 330 PT/76114 332 RA1/13 345 RF/75808 373 PP/32110 316 PP/37102 319 PT/16004 330 PT/76103 320 PT/76114 331 RA1/13 345 RF/75808 373 PP/32110	PP/16112	316	PP/35742	325	PS/16510	320	PT/37258	328		340		
PP/16130   316   PP/37002   326   PS/16528   320   PT/37264   328   PU/45512   340   RF/5114   372   PP/16132   316   PP/37004   326   PS/16540   320   PT/76004   331   PU/94102   335   RF/5118   372   PP/16140   316   PP/37008   326   PS/16540   320   PT/76004   331   PU/94002   335   RF/7518   372   PP/16140   316   PP/37008   326   PS/16500   327   PT/76004   331   PU/96002   335   RF/75182   373   PP/16250   318   PP/37012   326   PS/70000   327   PT/76024   331   PU/96004   335   RF/75182   373   PP/16252   318   PP/37014   326   PS/70004   327   PT/76024   331   PU/96006   335   RF/75182   373   PP/16252   318   PP/37014   326   PS/70004   327   PT/76038   331   PU/96006   335   RF/75184   373   PP/16312   316   PP/37016   326   PS/70006   327   PT/76038   331   PW/46324   322   RF/75202   372   PP/16312   316   PP/37018   326   PS/70008   327   PT/76042   331   PW/46324   322   RF/75216   372   PP/16312   316   PP/37020   326   PS/96110   320   PT/76042   331   PW/46326   322   RF/75308   374   PP/16328   316   PP/37022   326   PS/96118   320   PT/76042   331   PW/46326   322   RF/75308   374   PP/16330   316   PP/37022   326   PS/9618   320   PT/76108   332   PW/46320   322   RF/75308   374   PP/16334   316   PP/37024   326   PS/96134   320   PT/76112   332   R   RF/75500   374   PP/16334   316   PP/37100   319   PS/96318   320   PT/76112   332   R   RF/75500   374   PP/16334   316   PP/37120   319   PS/96318   320   PT/76112   332   RA/9010   359   RF/75804   370   PP/32110   316   PP/37120   319   PS/96318   320   PT/76120   332   RA/101   345   RF/75806   370   PP/32114   316   PP/37120   319   PT/16000   330   PT/76120   332   RA/101   345   RF/75806   370   PP/32114   316   PP/37120   319   PT/16008   330   PT/76120   332   RA/101   345   RF/75806   370   PP/32114   316   PP/37120   319   PT/16008   330   PT/76120   332   RA/101   345   RF/75806   370   PP/32114   316   PP/37100   329   PT/16008   330   PT/76120   332   RA/101   345   RF/75806   373   PP/32114   316   PP/37000   327   PT/16024	PP/16118	316	PP/35744	325	PS/16512	320	PT/37260	328	PU/45506	340		
PP/16132   316	PP/16128	316	PP/37000	326	PS/16518	320	PT/37262	328	PU/45510	340	RF/75112	372
PP/16134 316 PP/37006 326 PS/16540 320 PT/76004 331 PU/96002 335 RF/75118 372 PP/16140 316 PP/37008 326 PS/70000 327 PT/76022 331 PU/96004 335 RF/75120 372 PP/16250 318 PP/37012 326 PS/70000 327 PT/76022 331 PU/96004 335 RF/75182 373 PP/16250 318 PP/37012 326 PS/70000 327 PT/76024 331 PU/96004 335 RF/75184 373 PP/16250 318 PP/37014 326 PS/70004 327 PT/76034 331 PU/96006 335 RF/75184 373 PP/16310 316 PP/37016 326 PS/70006 327 PT/76034 331 PW/46322 322 RF/75202 372 PP/16310 316 PP/37016 326 PS/70006 327 PT/76034 331 PW/46324 322 RF/75202 372 PP/16312 316 PP/37018 326 PS/70008 327 PT/76042 331 PW/46324 322 RF/75218 372 PP/16328 316 PP/37022 326 PS/96110 320 PT/76042 331 PW/46326 322 RF/75208 374 PP/16328 316 PP/37022 326 PS/96118 320 PT/76108 332 PW/46330 322 RF/75508 374 PP/16330 316 PP/37024 326 PS/96128 320 PT/76110 332 R RF/75508 374 PP/16334 316 PP/37024 326 PS/96138 320 PT/76112 332 R RF/75508 374 PP/16334 316 PP/37100 319 PS/96228 320 PT/76112 332 R RF/75508 374 PP/16334 316 PP/37100 319 PS/96228 320 PT/76114 332 RA/90010 359 RF/75502 374 PP/16346 316 PP/37100 319 PS/96318 320 PT/76116 332 RA/90010 359 RF/75802 370 PP/16314 316 PP/37120 319 PS/96318 320 PT/76116 332 RA/101 345 RF/75806 370 PP/32110 316 PP/37120 319 PS/96318 320 PT/76116 332 RA/101 345 RF/75808 370 PP/32110 316 PP/37120 319 PS/96318 320 PT/76116 332 RA/101 345 RF/75808 370 PP/32110 316 PP/37120 319 PT/16004 330 PT/76122 332 RA/103 345 RF/75808 370 PP/32110 316 PP/37120 319 PT/16006 330 PT/76122 332 RA/101 345 RF/75808 373 PP/32113 316 PP/37120 319 PT/16006 330 PT/76124 332 RA/101 345 RF/75808 373 PP/32113 316 PP/37120 319 PT/16006 330 PT/76124 332 RA/101 345 RF/75808 373 PP/32113 316 PP/37120 319 PT/16006 330 PT/76122 332 RA/101 345 RF/75808 373 PP/32113 316 PP/37120 319 PT/16006 330 PT/76122 332 RA/101 345 RF/75808 373 PP/32113 316 PP/37120 319 PT/16006 330 PT/76122 332 RA/101 345 RF/75806 373 PP/32113 316 PP/37120 328 PT/16008 330 PT/76122 332 RA/101 345 RF/76000 375 PP/32113 316 PP/37000 327 PT/16424 329 PT/80000 319 RA/211 345 RF/76000 3	PP/16130	316	PP/37002	326	PS/16528	320	PT/37264	328	PU/45512	340	RF/75114	372
PP/16140 316 PP/37008 326 PS/46208 321 PT/76006 331 PU/96002 335 RF/75120 372 PP/16146 316 PP/37010 326 PS/70000 327 PT/76022 331 PU/96004 335 RF/75182 373 PP/16250 318 PP/37012 326 PS/70000 327 PT/76024 331 PU/96006 335 RF/75184 373 PP/16252 318 PP/37014 326 PS/70004 327 PT/76024 331 PU/96006 335 RF/75184 373 PP/16252 318 PP/37016 326 PS/70006 327 PT/76034 331 PW/46322 322 RF/75202 372 PP/16310 316 PP/37016 326 PS/70006 327 PT/76038 331 PW/46324 322 RF/75216 372 PP/16318 316 PP/37020 326 PS/70008 327 PT/76040 331 PW/46324 322 RF/75216 372 PP/16318 316 PP/37020 326 PS/96118 320 PT/76108 332 PW/46328 322 RF/75308 374 PP/16330 316 PP/37024 326 PS/96118 320 PT/76108 332 PW/46330 322 RF/75502 374 PP/16330 316 PP/37024 326 PS/96128 320 PT/76110 332 PW/46330 322 RF/75508 374 PP/16332 316 PP/37050 326 PS/96128 320 PT/76110 332 RF/75508 374 PP/16332 316 PP/37100 319 PS/96228 320 PT/76114 332 R/90010 359 RF/75802 374 PP/16340 316 PP/37102 319 PS/96310 320 PT/76114 332 RA/90010 359 RF/75804 370 PP/16346 316 PP/37120 319 PS/96318 320 PT/76114 332 RA/90010 359 RF/75806 370 PP/32110 316 PP/37122 319 PT/16004 330 PT/76120 332 RA1/02 345 RF/75806 370 PP/32112 316 PP/37120 319 PT/16004 330 PT/76122 332 RA1/03 345 RF/75806 370 PP/32114 316 PP/37142 319 PT/16004 330 PT/76124 332 RA1/11 345 RF/75808 373 PP/32114 316 PP/37142 319 PT/16004 330 PT/76124 332 RA1/11 345 RF/75866 373 PP/32114 316 PP/37140 319 PT/16004 330 PT/76124 332 RA1/13 345 RF/75866 373 PP/32114 316 PP/37140 319 PT/16004 330 PT/76124 332 RA1/13 345 RF/75866 373 PP/32114 316 PP/37140 319 PT/16004 330 PT/76124 332 RA1/13 345 RF/75860 373 PP/32114 316 PP/37140 319 PT/16004 330 PT/76124 332 RA1/13 345 RF/75866 373 PP/32114 316 PP/37000 328 PT/16004 330 PT/76124 331 RA1/12 345 RF/75860 373 PP/32114 316 PP/37000 328 PT/16004 330 PT/76124 331 RA1/13 345 RF/75860 373 PP/32114 316 PP/37000 328 PT/16004 330 PT/76124 331 RA1/13 345 RF/75860 373 PP/32114 316 PP/37000 327 PT/16424 329 PT/160000 319 RA4/22 344 RF/76000 375 PP/32130 316 PP/30000 327 PT/16424 329 PT/16000 319 RA4	PP/16132	316	PP/37004	326	PS/16534	320	PT/76002	331	PU/94102	335	RF/75116	372
PP/16146         316         PP/37010         326         PS/70000         327         PT/76022         331         PU/96004         335         RF/75182         373           PP/16250         318         PP/37012         326         PS/70002         327         PT/76034         331         PU/96006         335         RF/75184         373           PP/16310         316         PP/37016         326         PS/70006         327         PT/76038         331         PU/46324         322         RF/75216         372           PP/16312         316         PP/37018         326         PS/70006         327         PT/76040         331         PW/46324         322         RF/75216         372           PP/16313         316         PP/37018         326         PS/76018         327         PT/76042         331         PW/46324         322         RF/75218         372           PP/16328         316         PP/37022         326         PS/96118         320         PT/76108         332         PW/46330         322         RF/75500         374           PP/16330         316         PP/37024         326         PS/9618         320         PT/76110         332         R         RF/75508 <td>PP/16134</td> <td>316</td> <td>PP/37006</td> <td>326</td> <td>PS/16540</td> <td>320</td> <td>PT/76004</td> <td>331</td> <td>PU/94104</td> <td>335</td> <td>RF/75118</td> <td>372</td>	PP/16134	316	PP/37006	326	PS/16540	320	PT/76004	331	PU/94104	335	RF/75118	372
PP/16250 318 PP/37012 326 PS/70002 327 PT/76024 331 PU/96006 335 RF/75184 373 PP/16252 318 PP/37014 326 PS/70004 327 PT/76034 331 PW/46322 322 RF/75202 372 PP/16310 316 PP/37016 326 PS/70006 327 PT/76038 331 PW/46324 322 RF/752016 372 PP/16312 316 PP/37018 326 PS/70008 327 PT/76042 331 PW/46324 322 RF/75218 372 PP/16318 316 PP/37020 326 PS/96110 320 PT/76042 331 PW/46328 322 RF/75218 372 PP/16330 316 PP/37022 326 PS/96118 320 PT/76108 332 PW/46328 322 RF/75308 374 PP/16330 316 PP/37020 326 PS/96128 320 PT/76110 332 PW/46330 322 RF/75500 374 PP/16330 316 PP/37020 326 PS/96134 320 PT/76112 332 RF/75500 374 PP/16330 316 PP/37100 319 PS/96228 320 PT/76112 332 RA/90010 359 RF/75802 370 PP/16340 316 PP/37102 319 PS/96318 320 PT/76114 332 RA/90010 359 RF/75802 370 PP/16340 316 PP/37120 319 PS/96318 320 PT/76120 332 RA/101 345 RF/75800 370 PP/32110 316 PP/37122 319 PT/16002 330 PT/76122 332 RA/101 345 RF/75806 370 PP/32110 316 PP/37122 319 PT/16002 330 PT/76122 332 RA/101 345 RF/75806 370 PP/32110 316 PP/37142 319 PT/16004 330 PT/76122 332 RA/101 345 RF/75808 370 PP/32110 316 PP/37142 319 PT/16004 330 PT/76122 332 RA/101 345 RF/75808 370 PP/32110 316 PP/37142 319 PT/16004 330 PT/76122 332 RA/101 345 RF/75808 373 PP/32118 316 PP/37142 319 PT/16008 330 PT/76122 331 RA/111 345 RF/75860 373 PP/32118 316 PP/37200 328 PT/16008 330 PT/76122 331 RA/111 345 RF/75860 373 PP/32118 316 PP/37000 318 PT/16004 330 PT/76122 331 RA/123 344 RF/75860 373 PP/32118 316 PP/55004 317 PT/16004 330 PT/76122 331 RA/123 344 SF/75860 373 PP/32130 316 PP/55002 317 PT/16004 330 PT/76122 331 RA/123 344 SF/76860 373 PP/32130 316 PP/55004 317 PT/16042 329 PT/80000 319 RA/22 344, 355 RF/75860 373 PP/32130 316 PP/55002 317 PT/16042 329 PT/80000 319 RA/22 344, 355 RF/76000 375 PP/32130 316 PP/55004 317 PT/16420 329 PT/80000 319 RA/22 344, 355 RF/76000 375 PP/32130 316 PP/55004 317 PT/16420 329 PT/80000 319 RA/22 344, 355 RF/76000 375 PP/32130 316 PP/50006 327 PT/16424 329 PT/80000 319 RA/22 345 RF/76000 375 PP/32146 316 PP/70000 327 PT/16428 329 PU/15110	PP/16140	316	PP/37008	326	PS/46208	321	PT/76006	331	PU/96002	335	RF/75120	372
PP/16252         318         PP/37014         326         PS/70004         327         PT/76034         331         PW/46322         322         RF/75202         372           PP/16310         316         PP/37018         326         PS/70006         327         PT/76038         331         PW/46324         322         RF/75216         372           PP/16318         316         PP/37018         326         PS/70008         327         PT/76040         331         PW/46326         322         RF/75216         372           PP/16328         316         PP/37020         326         PS/96118         320         PT/76042         331         PW/46328         322         RF/75508         374           PP/16328         316         PP/37020         326         PS/96118         320         PT/76110         332         PW/46330         322         RF/75502         374           PP/16330         316         PP/37020         326         PS/96134         320         PT/76112         332         R         RF/75502         374           PP/16340         316         PP/37100         319         PS/96218         320         PT/76112         332         RA/90010         359         RF/75802 </td <td>PP/16146</td> <td>316</td> <td>PP/37010</td> <td>326</td> <td>PS/70000</td> <td>327</td> <td>PT/76022</td> <td>331</td> <td>PU/96004</td> <td>335</td> <td>RF/75182</td> <td>373</td>	PP/16146	316	PP/37010	326	PS/70000	327	PT/76022	331	PU/96004	335	RF/75182	373
PP/16252         318         PP/37014         326         PS/70004         327         PT/76034         331         PW/46322         322         RF/75202         372           PP/16310         316         PP/37016         326         PS/70006         327         PT/76038         331         PW/46324         322         RF/75216         372           PP/16318         316         PP/37020         326         PS/96110         320         PT/76042         331         PW/46328         322         RF/75208         374           PP/16328         316         PP/37022         326         PS/96118         320         PT/76108         332         PW/46328         322         RF/75508         374           PP/16328         316         PP/37020         326         PS/96118         320         PT/76110         332         PW/46330         322         RF/75502         374           PP/16330         316         PP/37020         326         PS/96134         320         PT/76112         332         R         RF/75502         374           PP/16340         316         PP/37100         319         PS/96228         320         PT/76112         332         RA/90010         359         RF/75802 </td <td></td> <td></td> <td></td> <td></td> <td>PS/70002</td> <td>327</td> <td>PT/76024</td> <td>331</td> <td>PU/96006</td> <td>335</td> <td>RF/75184</td> <td>373</td>					PS/70002	327	PT/76024	331	PU/96006	335	RF/75184	373
PP/16310         316         PP/37016         326         PS/70006         327         PT/76038         331         PPW/46324         322         RF/75216         372           PP/16312         316         PP/37018         326         PS/70008         327         PT/76040         331         PW/46326         322         RF/75218         372           PP/16328         316         PP/37022         326         PS/96118         320         PT/76108         332         PW/46328         322         RF/75502         374           PP/16330         316         PP/37024         326         PS/96128         320         PT/76110         332         PW/46330         322         RF/75508         374           PP/16332         316         PP/37020         326         PS/96128         320         PT/76110         332         R         RF/75508         374           PP/16334         316         PP/37100         319         PS/96228         320         PT/76114         332         RA/90010         359         RF/75802         370           PP/16340         316         PP/37102         319         PS/96318         320         PT/76120         332         RA1/01         345         RF/75804 <td></td> <td></td> <td>PP/37014</td> <td>326</td> <td>PS/70004</td> <td>327</td> <td>PT/76034</td> <td>331</td> <td>PW/46322</td> <td>322</td> <td>RF/75202</td> <td>372</td>			PP/37014	326	PS/70004	327	PT/76034	331	PW/46322	322	RF/75202	372
PP/16312         316         PP/37018         326         PS/70008         327         PT/76040         331         PPW/46326         322         RF/75218         372           PP/16318         316         PP/37020         326         PS/96110         320         PT/76042         331         PW/46328         322         RF/75308         374           PP/16330         316         PP/37024         326         PS/96128         320         PT/76110         332         PW/46330         322         RF/75508         374           PP/16332         316         PP/37050         326         PS/96128         320         PT/76110         332         R         RF/75508         374           PP/16334         316         PP/37100         319         PS/96228         320         PT/76112         332         R         RF/75804         370           PP/16340         316         PP/37120         319         PS/96318         320         PT/76120         332         RA1/01         345         RF/75804         370           PP/32110         316         PP/37122         319         PT/16002         330         PT/76120         332         RA1/03         345         RF/75806         373 </td <td></td> <td></td> <td>PP/37016</td> <td>326</td> <td>PS/70006</td> <td>327</td> <td>PT/76038</td> <td>331</td> <td>PW/46324</td> <td>322</td> <td>RF/75216</td> <td>372</td>			PP/37016	326	PS/70006	327	PT/76038	331	PW/46324	322	RF/75216	372
PP/16318         316         PP/37020         326         PS/96110         320         PT/76042         331         PW/46328         322         RF/75308         374           PP/16328         316         PP/37022         326         PS/96118         320         PT/76108         332         PW/46330         322         RF/75502         374           PP/16330         316         PP/37050         326         PS/96128         320         PT/76110         332         R         RF/75508         374           PP/16334         316         PP/37100         319         PS/96228         320         PT/76114         332         RA/90010         359         RF/75802         370           PP/16340         316         PP/37120         319         PS/96310         320         PT/76116         332         RA/001         345         RF/75802         370           PP/16340         316         PP/37120         319         PS/96318         320         PT/76116         332         RAI/02         345         RF/75804         370           PP/32110         316         PP/37122         319         PT/16002         330         PT/76120         332         RAI/03         345         RF/75806					PS/70008	327	PT/76040	331	PW/46326	322	RF/75218	372
PP/16328         316         PP/37022         326         PS/96118         320         PT/76108         332         PW/46330         322         RF/75502         374           PP/16330         316         PP/37024         326         PS/96128         320         PT/76110         332         R         RF/75502         374           PP/16334         316         PP/37100         319         PS/96228         320         PT/76114         332         RA/90010         359         RF/75802         370           PP/16340         316         PP/37102         319         PS/96310         320         PT/76116         332         RA1/01         345         RF/75804         370           PP/16346         316         PP/37120         319         PS/96318         320         PT/76120         332         RA1/02         345         RF/75804         370           PP/32110         316         PP/37122         319         PT/16002         330         PT/76120         332         RA1/03         345         RF/75808         370           PP/32112         316         PP/37140         319         PT/16004         330         PT/76124         332         RA1/11         345         RF/75858											RF/75308	374
PP/16330 316 PP/37024 326 PS/96128 320 PT/76110 332 R PP/16332 316 PP/37050 326 PS/96134 320 PT/76112 332 R PP/16334 316 PP/37100 319 PS/9628 320 PT/76114 332 RA/90010 359 RF/75802 370 PP/16340 316 PP/37102 319 PS/96310 320 PT/76116 332 RA1/01 345 RF/75804 370 PP/16346 316 PP/37120 319 PS/96318 320 PT/76110 332 RA1/01 345 RF/75804 370 PP/32110 316 PP/37122 319 PT/16002 330 PT/76120 332 RA1/03 345 RF/75808 370 PP/32112 316 PP/37142 319 PT/16004 330 PT/76124 332 RA1/03 345 RF/75856 373 PP/32114 316 PP/37142 319 PT/16006 330 PT/76124 332 RA1/11 345 RF/75856 373 PP/32116 316 PP/37200 328 PT/16008 330 PT/76212 331 RA1/12 345 RF/75856 373 PP/32118 316 PP/55000 317 PT/16016 330 PT/76212 331 RA1/13 345 RF/75860 373 PP/32128 316 PP/55000 317 PT/16024 330 PT/76214 331 RA1/22 344, 355 RF/75862 373 PP/32128 316 PP/55000 317 PT/16024 330 PT/76214 331 RA1/23 344 RF/76000 375 PP/32130 316 PP/55004 317 PT/16024 330 PT/80000 319 RA1/23 344 RF/76000 375 PP/32131 316 PP/55004 317 PT/16106 330 PT/80000 319 RA2/22 344 RF/76000 375 PP/32131 316 PP/55006 317 PT/16106 330 PT/80000 319 RA2/21 345 RF/76004 375 PP/32132 316 PP/55006 317 PT/16420 329 PT/80000 319 RA2/23 345 RF/76004 375 PP/32134 316 PP/50000 327 PT/16420 329 PT/80006 319 RA2/23 345 RF/76006 375 PP/32134 316 PP/70000 327 PT/16424 329 PT/80008 319 RA2/23 345 RF/76006 375 PP/32146 316 PP/70000 327 PT/16424 329 PT/80008 319 RA2/23 344 RF/76000 375 PP/32146 316 PP/70004 327 PT/16428 329 PT/80008 319 RA4/11 344 RF/76000 375 PP/32140 316 PP/70004 327 PT/16428 329 PT/80008 319 RA4/11 345 RF/76010 375 PP/32140 316 PP/70008 327 PT/16428 329 PT/80008 319 RA4/12 344 RF/76010 375 PP/32140 316 PP/70008 327 PT/16428 329 PT/80008 319 RA4/22 344 RF/76010 375 PP/32140 316 PP/70008 327 PT/16432 329 PT/80008 319 RA4/23 345 RG/92204 376 PP/32214 316 PP/70008 327 PT/16432 329 PT/80010 319 RA4/23 345 RG/92204 376 PP/32214 316 PP/70008 327 PT/16434 329 PT/80008 319 RA9/23 345 RG/92204 376											RF/75502	374
PP/16332         316         PP/37050         326         PS/96134         320         PT/76112         332         R         RF/75510         374           PP/16334         316         PP/37100         319         PS/96228         320         PT/76114         332         RA/90010         359         RF/75802         370           PP/16340         316         PP/37102         319         PS/96318         320         PT/76120         332         RA1/01         345         RF/75804         370           PP/32110         316         PP/37122         319         PT/16002         330         PT/76122         332         RA1/03         345         RF/75806         370           PP/32112         316         PP/37140         319         PT/16004         330         PT/76124         332         RA1/03         345         RF/75806         373           PP/32114         316         PP/37142         319         PT/16006         330         PT/76124         332         RA1/11         345         RF/75866         373           PP/32116         316         PP/37102         328         PT/16008         330         PT/76124         331         RA1/13         345         RF/75862											RF/75508	374
PP/16334 316 PP/37100 319 PS/96228 320 PT/76114 332 RA/90010 359 RF/75802 370 PP/16340 316 PP/37102 319 PS/96310 320 PT/76116 332 RA1/01 345 RF/75804 370 PP/16346 316 PP/37120 319 PS/96318 320 PT/76120 332 RA1/02 345 RF/75806 370 PP/32110 316 PP/37122 319 PT/16002 330 PT/76122 332 RA1/03 345 RF/75808 370 PP/32112 316 PP/37140 319 PT/16004 330 PT/76124 332 RA1/03 345 RF/75868 370 PP/32114 316 PP/37142 319 PT/16006 330 PT/76124 332 RA1/11 345 RF/75858 373 PP/32116 316 PP/37200 328 PT/16008 330 PT/76124 331 RA1/12 345 RF/75860 373 PP/32118 316 PP/55000 317 PT/16016 330 PT/76212 331 RA1/13 345 RF/75862 373 PP/32128 316 PP/55000 317 PT/16016 330 PT/76214 331 RA1/22 344, 355 RF/75862 373 PP/32128 316 PP/55000 317 PT/16016 330 PT/80000 319 RA1/23 344 RF/76000 375 PP/32130 316 PP/55004 317 PT/16106 330 PT/80000 319 RA1/23 344 RF/76000 375 PP/32132 316 PP/55004 317 PT/16420 329 PT/80004 319 RA2/22 345 RF/76004 375 PP/32134 316 PP/70000 327 PT/16424 329 PT/80006 319 RA2/22 345 RF/76006 375 PP/32140 316 PP/70000 327 PT/16424 329 PT/80006 319 RA2/23 345 RF/76006 375 PP/32140 316 PP/70000 327 PT/16424 329 PT/80006 319 RA2/23 345 RF/76006 375 PP/32140 316 PP/70000 327 PT/16424 329 PT/80006 319 RA2/22 344 RF/76008 375 PP/32140 316 PP/70000 327 PT/16426 329 PT/80006 319 RA2/22 344 RF/76008 375 PP/32140 316 PP/70000 327 PT/16428 329 PT/80010 319 RA2/22 344 RF/76008 375 PP/32140 316 PP/70006 327 PT/16428 329 PT/80010 319 RA2/22 344 RF/76010 375 PP/32120 316 PP/70006 327 PT/16428 329 PU/15110 339 RA9/21 345 RF/76012 375 PP/3212 316 PP/70006 327 PT/16428 329 PU/15110 339 RA9/22 345 RF/76012 375 PP/32140 316 PP/70006 327 PT/16428 329 PU/15112 339 RA9/22 345 RF/76012 375 PP/3214 316 PP/70001 327 PT/16432 329 PU/15112 339 RA9/23 345 RG/92204 376 PP/32216 316 PP/70010 327 PT/16434 329 PU/15102 339 RA9/23 345 RG/92204 376									R			
PP/16340         316         PP/37102         319         PS/96310         320         PT/76116         332         RA1/01         345         RF/75804         370           PP/16346         316         PP/37120         319         PS/96318         320         PT/76120         332         RA1/02         345         RF/75806         370           PP/32110         316         PP/37122         319         PT/16002         330         PT/76122         332         RA1/03         345         RF/75808         370           PP/32112         316         PP/37140         319         PT/16004         330         PT/76124         332         RA1/11         345         RF/75856         373           PP/32114         316         PP/37142         319         PT/16004         330         PT/76150         326, 332         RA1/13         345         RF/75856         373           PP/32116         316         PP/37200         328         PT/16008         330         PT/76212         331         RA1/13         345         RF/75860         373           PP/32118         316         PP/55000         317         PT/16016         330         PT/76214         331         RA1/22         344, 355 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>359</td> <td>RF/75802</td> <td>370</td>										359	RF/75802	370
PP/16346         316         PP/37120         319         PS/96318         320         PT/76120         332         RA1/02         345         RF/75806         370           PP/32110         316         PP/37122         319         PT/16002         330         PT/76122         332         RA1/03         345         RF/75808         370           PP/32112         316         PP/37140         319         PT/16004         330         PT/76124         332         RA1/11         345         RF/75856         373           PP/32114         316         PP/37142         319         PT/16006         330         PT/76150         326, 332         RA1/12         345         RF/75856         373           PP/32116         316         PP/37200         328         PT/16008         330         PT/76212         331         RA1/12         345         RF/75860         373           PP/32118         316         PP/55000         317         PT/16016         330         PT/76214         331         RA1/22         344, 355         RF/75862         373           PP/32128         316         PP/55002         317         PT/16016         330         PT/80000         319         RA1/23         344 <td></td>												
PP/32110         316         PP/37122         319         PT/16002         330         PT/76122         332         RA1/03         345         RF/75808         370           PP/32112         316         PP/37140         319         PT/16004         330         PT/76124         332         RA1/11         345         RF/75856         373           PP/32114         316         PP/37142         319         PT/16006         330         PT/76150         326, 332         RA1/12         345         RF/75868         373           PP/32116         316         PP/37200         328         PT/16008         330         PT/76212         331         RA1/13         345         RF/75860         373           PP/32118         316         PP/55000         317         PT/16016         330         PT/76214         331         RA1/22         344, 355         RF/75862         373           PP/32128         316         PP/55002         317         PT/16016         330         PT/80000         319         RA1/23         344         RF/76002         375           PP/32130         316         PP/55004         317         PT/16406         330         PT/80002         319         RA2/11         345 <td></td>												
PP/32112         316         PP/37140         319         PT/16004         330         PT/76124         332         RAI/11         345         RF/75856         373           PP/32114         316         PP/37142         319         PT/16006         330         PT/76150         326, 332         RAI/12         345         RF/75858         373           PP/32116         316         PP/37200         328         PT/16008         330         PT/76212         331         RAI/13         345         RF/75860         373           PP/32118         316         PP/55000         317         PT/16016         330         PT/76214         331         RAI/22         344, 355         RF/75862         373           PP/32128         316         PP/55002         317         PT/16024         330         PT/80000         319         RAI/23         344         RF/76000         375           PP/32130         316         PP/55004         317         PT/16106         330         PT/80002         319         RA2/11         345         RF/76002         375           PP/32132         316         PP/55006         317         PT/16420         329         PT/80004         319         RA2/23         345 <td></td>												
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PP/32116         316         PP/37200         328         PT/16008         330         PT/76212         331         RAI/13         345         RF/75860         373           PP/32118         316         PP/55000         317         PT/16016         330         PT/76214         331         RAI/22         344,355         RF/75862         373           PP/32128         316         PP/55002         317         PT/16024         330         PT/80000         319         RAI/23         344         RF/76000         375           PP/32130         316         PP/55004         317         PT/16106         330         PT/80002         319         RA2/11         345         RF/76002         375           PP/32132         316         PP/55006         317         PT/16420         329         PT/80004         319         RA2/21         345         RF/76002         375           PP/32134         316         PP/70000         327         PT/16422         329         PT/80006         319         RA2/23         345         RF/76006         375           PP/32140         316         PP/70002         327         PT/16424         329         PT/80008         319         RA4/11         344												
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PP/32140         316         PP/70002         327         PT/16424         329         PT/80008         319         RA4/11         344         RF/76008         375           PP/32146         316         PP/70004         327         PT/16426         329         PT/80010         319         RA4/22         344         RF/76010         375           PP/32210         316         PP/70006         327         PT/16428         329         PU/15110         339         RA9/11         345         RF/76012         375           PP/32212         316         PP/70008         327         PT/16430         329         PU/15112         339         RA9/22         345         RF/76014         375           PP/32214         316         PP/70010         327         PT/16432         329         PU/15114         339         RA9/23         345         RG/92202         376           PP/32216         316         PP/70012         327         PT/16434         329         PU/15502         338         RA9/33         345         RG/92204         376												
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SP/25286	414	SR/76068	432	SR/76330	433	ST/94522	420	SV/54366	410	SW/13258	434
SP/25290	416	SR/76070	432	SR/76332	433	ST/94524	420	SV/54368	410	SW/13372	435
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