



# APPLICATIONS & SOLUTIONS SERIES:

## WATER ANALYSIS

# Complete solutions for water analysis

**The lack of clean drinking water and rise in environmental water pollution are a growing global concern.**

Every aspect of human society is intertwined with water. From natural water resources such as streams, rivers, lakes and seas, to water used for industrial purposes, such as electrical power and smelting to water used for injection or drinking water for everyday life. We provide the consumables, equipment, chemicals and bioreagents necessary to analyse the quality from drinking, waste, surface and ground water, to properly monitor water quality and purification so that you can make the right decisions for your analysis needs.

We cover a range of analysis and testing processes, including sample collection, preservation, sample transfer, preparation and instrument analysis.

Our outstanding products provide accurate, reliable results for lab, field, and industrial processes. Professionals throughout the water industry, from electrical power production to petrochemical manufacturing and municipal wastewater treatment rely on our products for general physical and chemical indicators of water quality. Fisher Scientific has the products and services to aid your needs in the lab, in the field and on the production floor for the complete water analysis workflow.





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# Sample Collection

**General advice on sampling are given in ISO Standards and in WHO guidelines. Results of physicochemical analysis are of no value if the samples tested are not properly collected and stored.**

**Samples must be taken from locations that are representative of the water source, treatment plant, storage facilities, distribution network, points at which water is delivered to the consumer and points of use. In selecting sampling points, each locality should be considered individually; however, the following general criteria are usually applicable:**

-  Sampling points should be selected such that the samples taken are representative of the different sources from which water is obtained by the public or enters the system
-  These points should include those that yield samples representative of the conditions at the most unfavorable sources or places in the supply system, particularly points of possible contamination such as unprotected sources, loops, reservoirs, low-pressure zones, ends of the system, etc
-  Sampling points should be uniformly distributed throughout a piped distribution system, taking population distribution into account; the number of sampling points should be proportional to the number of links or branches
-  The points chosen should generally yield samples that are representative of the system as a whole and of its main components
-  Sampling points should be located in such a way that water can be sampled from reserve tanks and reservoirs, etc
-  In systems with more than one water source, the locations of the sampling points should take account of the number of inhabitants served by each source
-  There should be at least one sampling point directly after the clean water outlet from each treatment plant

## Fisherbrand™

### Sampling scoop

- White polypropylene



Cat No.	Length, mm	Pack qty
11597852	260	1
11507862	315	1
11517862	385	1

## Storage and transport for physicochemical analysis

This has important consequences for sampling regimes, sampling procedures, and methods of sample preservation and storage. In general, the time between sampling and analysis should be kept to a minimum. Timeliness and cleanliness are extremely important to prevent false results. Storage in glass or polyethylene bottles at a low temperature (e.g., 4°C) in the dark is recommended. Sample bottles must be clean but need not be sterile. Special preservatives may be required for some analytes. Residual chlorine, pH and turbidity should be tested immediately after sampling as they will change during storage and transport.

## For microbiological analysis

Although recommendations vary, the time between sample collection and analysis should, in general, not exceed 6 hours, and 24 hours is considered the absolute maximum. It is assumed that the samples are immediately placed in a lightproof insulated box containing melting ice or ice packs with water to ensure rapid cooling. If ice is not available, the transportation time must not exceed 2 hours.

It is imperative that samples are kept in the dark and that cooling is rapid. If these conditions are not met, the samples should be discarded. When water that contains or may contain even traces of chlorine is sampled, the chlorine must be inactivated. If it is not, microbes may be killed during transit and an erroneous result will be obtained. The bottles in which the samples are placed should therefore contain sodium thiosulfate to neutralise any chlorine present.

## GOSSELIN™

A Corning Brand



## Gosselin PET octagonal bottles for water sampling

- Polyethylene terephthalate bottles
- Unbreakable
- Transparent as glass
- Molded graduations
- Label for traceability
- Tamper-evident, leak proof screw cap
- With or without Sodium Thiosulfate
- Sterile SAL 10<sup>-3</sup>

Cat. No.	Product Description
HP250B-51	H135 Ø31, 30 mg Sodium Thiosulfate, 1/bag
HP500B-51	H170 Ø31, 60 mg Sodium Thiosulfate, 12/filmed pack
HP1000B-51	H214 Ø31, 120 mg Sodium Thiosulfate, 12/filmed pack
P250B-51	H135 Ø31, 12/filmed pack
P500B-51	H170 Ø31, 24/filmed pack
P1000B-51	H214 Ø31, 12/filmed pack



CORNING | AXYGEN | GOSSELIN

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### Sampling beakers, TeleScoop

- TeleScoop - a versatile system with exchangeable sampling tools
- For a wide range of applications including industry and water treatment



Pendulum beaker, swings to horizontal position, ideal for accessing deep and narrow shafts (diameter 150mm)

Cat No.	Description	Pack qty
10461183	Pendulum beaker, PP, for telescopic rod, 600mL capacity	1
10222371	Pendulum beaker, PP, for telescopic rod, 1.000mL capacity	1
10272461	Pendulum beaker, PP, for telescopic rod, 2.000mL capacity	1

### TeleScoop accessories



1 Beaker, ideal for powder, granules and mud

Cat No.	Description	Pack qty
10575922	Beaker, stainless steel, with scraper, 1.000mL capacity	1

2 Angular beaker, adapts to different container shapes by adjustable angle setting up to 90°

Cat No.	Description	Pack qty
10383771	Angular beaker, PP for telescopic rod, 600mL capacity	1
10140141	Angular beaker, PP for telescopic rod, 1.000mL capacity	1
10451183	Angular beaker, PP for telescopic rod, 2.000mL capacity	1

3 Bottle holder with quick tighten strap for plastic, glass or metal sample bottles to 88mm dia.

Cat No.	Description	Pack qty
10333921	Bottle and holder, PP/PA, for telescopic rod, 750mL capacity	1

### Sampling, catch nets for TeleScoop telescopic rod

For industry and water treatment.

Surface catch net:

- Blue PVC/PA
- Dimensions 310mm length x 280mm width
- Mesh width 2 to 5mm

Deep catch net

- Blue PP/PA
- Length 190mm x width 430mm
- Net depth 250mm
- Mesh width 2 to 5mm



Cat No.	Description	Pack qty
5 10126254	Surface catch net	1
6 10014804	Deep catch net	1

### 4 Telescopic rod for TeleScoop sampler containers

Different tools (angular beaker, pendulum beaker, bottle holder, stainless steel beaker, catch net) can be attached to the telescopic rod (snap-in joint). The individual rods have been provided with an end stop. This means that one rod cannot accidentally slip out of another rod.

Cat No.	Description	Pack qty
10396242	Telescopic rod, 650 to 1.200m length	1
10040822	Telescopic rod, 1.150 to 3.000mm length	1
10182412	Telescopic rod, 1.650 to 4.500mm length	1
10244992	Telescopic rod, 1.750 to 6.000mm length	1
15376297	Telescopic rod, 700 to 1.800mm length	1
10530053	Telescopic rod, 1.250 to 2.500mm length	1
10376292	Telescopic rod, 950 to 2.800mm length	1



### Samplers, AquaSampler

- FEP/PTFE ultra pure, anti adhesive surface
- Without cable
- For use with manually-operated polypropylene drum reel

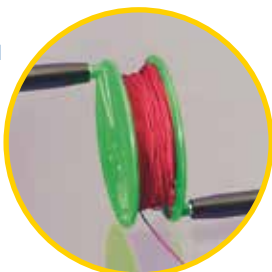


Cat No.	Description	Pack qty
10207472	Sampler, AquaSampler, capacity 350mL, length 400mm	1
10571065	Sampler, AquaSampler, capacity 700mL, length 760mm	1
10188701	Sampler, AquaSampler, capacity 1.050mL, length 1.070mm	1

Available as accessories:

Manually-operated reels

The manually-operated drum reels are used to lower dipping bottles and immersion cylinders safely to the required depth in shafts, wells and tanks and then to pull them up again. The manually-operated drum reels can be equipped with various cables or chains.



Cat No.	Description	Pack qty
10749032	Manually operated reel PP	1
10152462	Manually operated reel PA	1

Accessories:Transport case

Ideal for carrying and storing sampling equipment

Cat No.	Description	Pack qty
10474982	Transport case, 1.210mm x 225mm x 110mm	1



### Samplers, dipping vessels

These dipping vessels are used for taking all-layer liquid samples from tanks, tank wagons, water courses, and water purification plants.

- With Easy-Flow, the flow optimised flow valve
- High weight (2.1kg) for faster lowering
- Contents 1000mL
- Height with handles 427mm
- Made of non-spark producing brass for Ex-area
- Please order the appropriate lowering cable and manually-operated reel separately
- Tested for use in the Ex protection zone 0
- Explosion Categories IIA, IIB and IIC



Cat No.	Description	Pack qty
10791211	Dipping vessel brass 1L	1
10697671	Dipping vessel V2A stainless steel 1L	1



### Sampler, Mini immersion cylinder

For sampling liquids in narrow places where access is difficult. Can also be used in curved dipping tubes and barrels with narrow openings.



- 50mL contents
- Height 180mm
- Weight 350g
- Screw-off top enables easy cleaning
- Select appropriate lowering cable accessories
- Tested for use in Ex protection zone 0
- Explosion Categories II1 and II B

Cat No.	Description	Pack qty
10605453	Mini immersion cylinder V2A stainless steel 50mL	1

### Accessories

Common accessories for all the samplers presented on this page

Cat No.	Description	Pack qty
10084800	Lowering cable, for dipping samplers, stainless steel, PTFE-coated 10m	1
10779972	Lowering cable, for dipping samplers, stainless steel, PTFE-coated 25m	1
10381132	Lowering cable, for dipping samplers, stainless steel, PTFE-coated 50m	1



**Sampler, MiniSampler**

- Complete with a handy transport case

Contents: vacuum pump, 10 PE bottles, 100mL, 10m PE suction hose 6mm x 8mm, 1 hose cutter, 1 stainless steel hose weight made of V2A (1.4301), and 20 Seal-it bottle seals.



Cat No.	Description	Pack qty
10268460	MiniSampler kit, with transport case	1

Accessories : Tubing Polyethylene

Cat No.	Description	Pack qty
11847952	Transparent tubing, PE, 100m length, 6mm I.D. x 8mm O.D.	1
11852303	Transparent tubing, PE, 10m length, 6mm I.D. x 8mm O.D.	1



**Sampler, Vampire, with transport case**

Ideal for sampling from barrels, tanks, wells, water separators and sewage and purification systems. Vampire is packed in a handy transport case with a drive unit (12V), two re-chargeable batteries, battery charger, bottle holder, an LDPE 250mL bottle, hose pump and 5m hose made of PE.



- Easy cleaning, liquid is only in contact with the hose
- Independent of mains power with re-chargeable batteries and charger, including replacement battery
- Sampling directly into the original sample bottle
- Suction height up to 5m
- Also suitable for contaminated substances or media containing particles
- Good chemical resistance
- Good delivery rate up to 2.0L/min

Cat No.	Description	Pack qty
10749222	Sampler, Vampire, with transport case	1



**Liquid sampler, autoclavable**

- For single handed operation
- For very fluid to viscous liquids
- Autoclavable V4A (1.4404) stainless steel
- With outlet funnel for easy flask filling
- Container O.D. 32mm



Cat No.	Capacity, mL	Length, mm
Liquid sampler, open with thumb		
10546094	50	460
11992468	100	540
Liquid sampler, place onto bottle		
10397685	50	435
10226203	100	535



**Spatulas, metal**



- Spatulas, stainless steel, Chattaway, 3.6mm barrel
- Microspatulas, nickel, 1.6mm barrel

Cat No.	Description	Pack qty
11513472	Spatula 2312, stainless steel, Chattaway, 150mm x 10mm	5
11523472	Spatula 2313, stainless steel, Chattaway, 180mm x 10mm	5
11573482	Spatula 2314, stainless steel, Chattaway, 200mm x 10mm	5
11533472	Spatula 2315, stainless steel, Chattaway, 230mm x 10mm	5
11523502	Spatula, stainless steel, Chattaway, 300mm x 10mm	5
11533502	Spatula, stainless steel, Chattaway, 350mm x 10mm	5
11563482	Spatula 2303, stainless steel, Chattaway, 150mm x 8mm	5
11716567	Spatula SP/92, stainless steel, Chattaway 120mm x 14mm	1
11726567	Spatula 2002, nickel, double, spoon one end, 150mm x 17mm	1
11736567	Spatula 2003, nickel, double, spoon one end, 180mm x 17mm	1
11746567	Spatula 2004, nickel, double, spoon one end, 210mm x 18mm	1
11706447	Nickel, microspatula, 100mm x 4mm	5
11593472	Spatula 2251, nickel, microspatula, 130mm x 4mm	5
11503482	Spatula 2252, nickel, microspatula, 150mm x 4mm	5
11513482	Spatula 2254, nickel, microspatula, 200mm x 4mm	5

## Fisherbrand

### Containers, polyethylene with LDPE lid, specimen

- Moulded, autoclavable high quality HDPE, with thick walls
- Inert to most chemicals including formaldehyde, weak acids and all bases
- Resist freezing and boiling
- Easy to write on with pen or pencil
- Stackable for compact storage
- Come with LDPE lid (non-autoclavable)



Cat No.	Capacity, mL	Colour	Pack qty
12089977	473	Translucent	100
11994375	473	White	100
12089947	1.000	Translucent	100
12009967	1.900	White	50
12039957	2.500	Translucent	25
12069967	2.500	White	25
12099957	5.086	Translucent	10
12089967	5.086	White	10

## Thermo SCIENTIFIC

### Bottles, HDPE, translucent, wide neck

- Suitable for shipping liquids
- Polypropylene screw closure
- Leakproof
- Excellent durability and sample protection
- More rigid than LDPE
- Wide mouth, easy to fill with dry materials or liquids
- Excellent chemical resistance to most acids, bases and alcohols
- Good for freezer use up to -100°C



Clear

Cat No.	Capacity, L	Neck I.D, mm	Height, mm	O.D, mm	Closure size, mm	Pack qty
10353501	30	23	63	36	28	12
10559831	60	20	86	38	28	12
10569831	125	31	99	51	38	12
10623141	250	33	131	61	43	12
10633141	500	43	168	74	53	12
10547341	1.000	53	199	91	63	6
10074810	2.000	89	234	119	100	1
10176590	4.000	89	279	152	100	1

## Fisherbrand

### Bottles, HDPE, wide neck

- With polypropylene screw cap
- For sample storage
- Leak proof



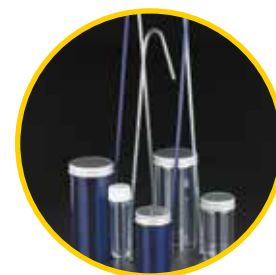
Cat No.	Capacity, mL	Dia. x H, mm	Pack qty
11775243	30	36 x 64	72
11785243	50	32 x 86	72
11795253	250	62 x 132	72
11775253	500	74 x 168	48
11745253	1.000	81 x 201	24

## Thermo SCIENTIFIC

### Sterilin™ Dipper

Sample dippers, polystyrene, sterile, with caps, Thermo Scientific Sterilin™ Dipper

- Irradiated
- Individually wrapped
- Polystyrene metal cap



Cat No.	Description	Handle length, mm	Capacity, mL	Pack qty
11729352	Sample dippers, clear	200	30	50
11788848	Sample dippers, clear	385	100	100
11748938	Sample dippers, clear	330	250	50
11738938	Sample dippers, blue	200	30	50
11798848	Sample dippers, blue	385	100	100
11758938	Sample dippers, blue	330	250	150

## burkle

### Buckets, for packaging, transport and storage

- Polypropylene, white
- Air-tight closure
- Complete with lid



Cat No.	Description	Pack qty
11831091	Bucket, PP, 1L	5
11841091	Bucket, PP, 2L	5
11851091	Bucket, PP, 3L	5
11861091	Bucket, PP, 5L	5
11871101	Bucket, PP, 10L	5





**Label printer, hand-held, Printer Blister Pack, BMP™21-LAB**

- Continuous tape, all-in-one labeller
- Labels designed to stick and stay stuck in autoclaves, liquid nitrogen, freezers, hot baths and are unaffected by common laboratory chemicals
- Prints durable true-sized 0.25 to 0.75 inch wide identification to maximise amount of data
- Adjustable length labels using high performance continuous materials
- Easy to use
- For all label types, visit [www.eu.fishersci.com](http://www.eu.fishersci.com)



Cat No.	Description	Pack qty
15208957	Label printer	1



**Bottles, HDPE, wide neck, square, aseptic**

- Certified free of heavy metals
- Food grade
- Polyethylene (HDPE)
- 128 EAN bar code for product traceability



Raw materials are compliant with European directives, especially the absence of heavy metals (CE N°1935/2004), food compatibility (94/62/EC)

Cat No.	Vol, mL	Neck I.D., mm	L x D x H, mm	Pack qty
<b>Bottles with screw cap and stopper</b>				
11793024	150	37	50 x 50 x 95	300
11763054	250	37	58 x 58 x 100	210
11773064	500	58	76 x 76 x 145	175
11728643	1.000	58	96 x 76 x 185	90
11743044	2.000	58	109 x 96 x 230	50
<b>Bottles with screw cap with wad</b>				
11703034	150	37	50 x 50 x 95	300
11703064	250	37	58 x 58 x 110	210
11713074	500	58	76 x 76 x 145	175
11748653	1.000	58	96 x 76 x 185	90
11783044	2.000	58	109 x 96 x 230	50



**Bottles, PET, octagonal**

- Graduated
- Lightweight, break resistant PET
- Sterile to SAL 10<sup>-3</sup>
- Label for traceability
- Compliant with ISO5667-3 and 19458
- Tamper evident screw cap



Cat No.	Description	Pack qty
15307067	Octagonal bottle, 250mL, sodium thiosulfate 120mg/L, labelled	144
15397057	Octagonal bottle, 500mL, sodium thiosulfate 120mg/L, labelled	120
15183917	Octagonal bottle, 1L, sodium thiosulfate 120mg/L, labelled	48
15248043	Octagonal bottle, 250mL, water sampling, labelled	144
15238043	Octagonal bottle, 500mL, water sampling, labelled	120
15143927	Octagonal bottle, 1L, water sampling, labelled	48



**Bottles, polypropylene, carboys, squat form**

- Square shape saves space on the bench
- Push-in water tight stopcock options
- 5L version features moulded handles for safe transportation
- Larger sizes have a carry handle



Polypropylene

Cat No.	Closure size, mm	Capacity, L	Height, mm	Width, mm	Pack qty
11373494	45	5	270	220	1
11383494	90	10	360	280	1
11393494	90	20	420	350	1

HDPE, with push-in water tight stopcock

Cat No.	Capacity, L	Height, mm	Width, mm	Pack qty
12585007	5	325	165	1
12515017	10	365	210	1
12505017	20	465	262	1
12595007	30	525	305	1

# Technical note:

## Chlorine residual

The disinfection of drinking water supplies constitutes an important barrier against water borne diseases. Although various disinfectants may be used, chlorine in one form or another is the principal disinfecting agent employed. Chlorine has a number of advantages as a disinfectant, including its relative cheapness, efficacy and ease of measurement, both in labs and in the field.

An important additional advantage over some other disinfectants is that chlorine leaves a disinfectant residual that assists in preventing recontamination during distribution, transport, and household storage of water. Three types of chlorine residual may be measured: free chlorine (most reactive species i.e. hypochlorous acid and the hypochlorite ion); combined chlorine (less reactive but more persistent formed by the reaction of free chlorine species with organic material and ammonia); and the total chlorine (sum of the free and combined chlorine residuals).

Free chlorine is unstable in aqueous solutions, and the chlorine content of water samples may decrease rapidly, particularly at warm temperatures.

Exposure to strong light or agitation will accelerate the rate of loss of free chlorine.

Water samples should therefore be analysed for free chlorine immediately on sampling and not stored for later testing.



### UV lamp, mini, pocket size

- Battery operated 4 watt lamp with lightweight, pocket-size design
- Features impact resistant plastic housing with attached nylon strap
- Models available with 254nm or 365nm UV or combination of both
- Applications include fluorescence and inspection for field use
- Dimensions 159mm x 25mm



Cat No.	Description	Pack qty
10015274	UV lamp, mini, 365nm	1

### Dye tracer

- Determine water flow in closed circuits or open channels
- Biodegradable and non-toxic
- Easy to see fluorescent yellow/green dye



Cat No.	Description	Pack qty
11787947	Dye tracer, yellow/green, 1 pint (568mL)	1



## Bottles with sodium thiosulphate, HDPE, graduated, square

- Compliant with ISO5667-3 and ISO19458
- Sterile SAL 10<sup>-3</sup>
- Tamper evident caps, except for 11703114
- Labelled



Cat No.	Volume, mL	Thiosulphate sodium (mg/L)	Closure type	Packaging Type	L x D x H, mm	Neck I.D., mm	Pack qty
11703114	500	20	Screw cap with wad	Filmed pack	70 x 70 x 146	37	100
11783104	500	20	Hinged cap with inner lip and safety ring	Filmed pack	70 x 70 x 148	29	100
11724644	500	120	Hinged cap with inner lip and safety ring	Filmed pack	70 x 70 x 148	29	100
11793104	500	20	Hinged cap with inner lip and safety ring	Individually packed	70 x 70 x 148	29	100
11871731	500	120	Hinged cap with inner lip and safety ring	Individually packed	70 x 70 x 148	29	100
11753104	500	20	Screw cap with shaped seal	Filmed pack	70 x 70 x 160	22	100
11763104	500	20	Screw cap with shaped seal	Individually packed	70 x 70 x 160	22	100
11773104	500	120	Screw cap with shaped seal	Filmed pack	70 x 70 x 160	22	100
11727849	500	120	Screw cap with shaped seal	Individually packed	70 x 70 x 160	22	100
11749495	500	20	Screw cap with wad	Filmed pack	75 x 75 x 128	55	140
11748633	1.000	120	Screw cap with wad	Filmed pack	92 x 77 x 187	55	85

## Fisherbrand

### Pump, tubing, compact

#### Easy to maintain

- Simple, fast tubing changes
- Fixed occlusion eliminates adjustment after tubing changes and assures operation against pressure up to 30PSIG



#### Easy to use

- Contamination free pumping - fluid contacts only the tubing material
- Controls are mounted on front panel with a separate single-turn speed control
- Flow direction switch with centre «OFF» position
- **Prime** button runs pump at maximum speed to rapidly prime or flush tubing
- Reversible pump direction permits purging of tubing prior to use

#### Diverse performance range

- Flow rates less than 2µL/min to 105mL/min
- Pressure up to 2.5bar (30PSIG)
- Accurate and repeatable flow delivery
- Address a wide range of critical applications with tubing materials that comply to USP Class VI, FDA and NSF standards

#### Ergonomic design

- Space efficient - low profile, stackable design
- Remote capability - actuate unit with a foot switch or contact closure

Technical specifications:

Number of Channels	1
Flow Capacity (mL/min)	0.017 to 11
RPM	13 to 80
Electrical voltage (50/60Hz)	90-130 or 160-260 V AC (auto selected)
Motor/Control type	PMDC/PWM
Operating temperature	0 to 40°C
Housing materials	Powder-coated steel
IP rating	IP22
Dimensions	7.0 x 5.25 x 4.5 in. (17.8 x 13.4 x 11.4 cm)

Cat. No.	Description
15337527	Compact Tubing Pump



### Connectors, PP L-shape hose

- Polypropylene
- Temperature resistant up to +135°C max.
- Sterilisable



Cat No.	Description	Pack qty
10799592	Connector L 3 to 5mm	10
10219170	Connector L 5 to 7 mm	10
10665991	Connector L 6 to 8 mm	10
11846583	Connector L 7 to 9 mm	10
10229120	Connector L 11 to 13 mm	10
11826603	Connector L 13 to 15 mm	10

### Pump, peristaltic, FH100

- Easy to use and maintain
- Stackable, ergonomic design
- Flow capacity 0.5 to 4L/min
- 4 to 400rpm
- Reversible
- Pump Open Lockout or door sensor



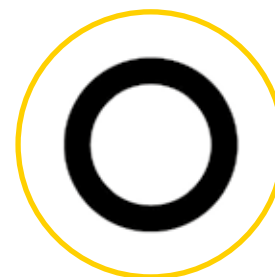
Cat No.	Description	Pack qty
15377547	Peristaltic pump, 0.5 to 4L/min	1

## MASTERFLEX®

### Tubing, Norprene Food, L/S

Ideal for the food, dairy, and beverage industries.

- Heat, ozone, and UV light resistant; nonaging; non-oxidising; superior acid and alkali resistance
- Opaque beige
- Temperature range: -10°C to +135°C
- Autoclavable



Cat No.	Description	Pack qty
11806694	Tubing L/S 13, 2.7bar, 0.8mm I.D. x 15m length	1
11826694	Tubing L/S 14, 2.7bar, 1.6mm I.D. x 15m length	1
11821435	Tubing L/S 16, 2.7bar, 3.1mm I.D. x 15m length	1
11851435	Tubing L/S 18, 1.0bar, 7.9mm I.D. x 15m length	1
11715108	Tubing L/S 25, 1.38bar, 4.8mm I.D. x15m length	1



### Connectors, for tubing

- Polypropylene connectors, autoclavable
- Straight, with conical nozzle
- Fit various hose sizes

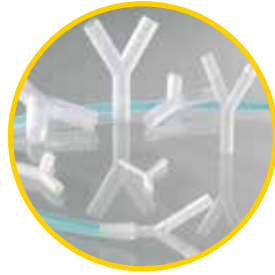


Cat No.	Description	Pack qty
10249391	Connector for 4mm to 6mm tubing	10
10620143	Connector for 5mm to 7mm tubing	10
10198251	Connector for 7mm to 10mm tubing	10
10289341	Connector for 10mm to 12mm tubing	10
10138161	Connector for 11mm to 14mm tubing	10
10486891	Connector for 14mm to 16mm tubing	10



**Connectors, PP, cylindrical Y-shape hose**

- Resistant up to +135°C max.
- Sterilisable



Cat No.	Description	Pack qty
10789592	Connector Y 3 to 5 mm	10
10617721	Connector Y 5 to 7 mm	10
10076241	Connector Y 6 to 8 mm	10
11836583	Connector Y 7 to 9 mm	10
10567312	Connector Y 9 to 11 mm	10
10014930	Connector Y 11 to 13 mm	10
11846603	Connector Y 13 to 15 mm	10



**Traceable™ Thermometer, Lollipop, Stainless Steel**

Featherweight, wide-range lab partner covers 99% of routine temperature measurement needs

- Shock/waterproof unit delivers reading updates every second
- One-key operation recalls MIN/MAX temperature results, °C or °F switchable
- Supplied with battery, probe, probe cover with pocket clip, Traceable™ Certificate



Cat No.	Range	Resolution	Accuracy
11785853	-50 to 300°C	(-58 to 572°F)	0.1° from -20 to 200°C; or 1°C elsewhere ±1°C



**Traceable™ Refrigerator/Freezer Thermometer**

- High-impact, chemical-resistant ABS plastic case: 70mm x 108mm x 19mm, weight 113g
- Supplied with stand, 3m micro cable, wall mounting, Velcro™, magnetic strips, Traceable™ Certificate
- Range: -50 to 70°C (-58 to 158°F)
- Probe: 5mm diameter and 19mm long



Cat No.	Resolution	Pack qty
11873460	Thermometer, 1° resolution, ±1°C accuracy	1
11705853	Thermometer, 0.1° resolution, ±0.5°C (±0.9°F) accuracy	1



**Thermometer, gun design, Traceable™**

- Traceable to NIST/A2LA
- Temperature range -20°C to 400°C, ±3%
- Resolution 0.1°
- With 7:1 field of view (similar to flashlight)
- Includes laser
- MIN/MAX readings
- Hold function
- Trigger grip



Cat No.	Description	Pack qty
11749785	Thermometer, gun design	1



BEL-ART PRODUCTS

**Thermometer, liquid filled, biodegradable, Enviro-Safe™**

- Temperature range -20°C to +150°C
- Resolution and Accuracy: ±1°C
- Non-toxic, non-hazardous
- Environmentally friendly, lead free glass
- Accuracy traceable to NIST and DKD (statement of accuracy included)
- 76mm immersion, 305mm length



Cat No.	Description	Pack qty
11737093	Thermometer, glass, -20°C to +150°C	1



**Incubators, thermostatically controlled, glass door**

- Ideal for BOD determination at 20°C
- Temperature range 2°C to 40°C
- Lockable glass door
- Lower power consumption
- Illuminated LED display
- Power sockets inside the incubator



Cat No.	Description	Pack qty
15297918	Incubator, 3 metal racks, 1 bottom grid, 4 sockets, 140L volume	1
15227928	Incubator, 4 metal racks, 1 bottom grid, 7 sockets, 255L volume	1

# Sample Preparation

**A large proportion of work activity and operating cost is devoted to sample preparation for analytical analysis.**

**The goal of sample preparation is to remove interferences and concentrate the analytes of interest, thereby improving analytical results.**

**Sample preparation can involve dilution, homogenisation, centrifugation, filtration and extraction.**

**To get accurate and reliable results, Fisher Scientific provides a comprehensive selection of sample preparation products that can be used in all types of analysis including photometry, spectroscopy, chromatography etc.**

## Fisherbrand<sup>®</sup> Cylinders, borosilicate glass

- Graduated in blue ceramic markings
- Individual reorder code on each item
- DIN 12680, BS 604, ISO 4788
- Pouring spout



Cat No.	Capacity, mL	Graduations, mL	Pack qty
<b>Class A</b>			
11517832	10	0.2	2
11527832	25	0.5	2
11537832	50	1.0	2
11547832	100	1.0	2
11557832	250	2.0	2
11567832	500	5.0	2
11577832	1.000	10.0	2
<b>Class B</b>			
11507702	5	0.1	2
11517702	10	0.2	2
11527702	25	0.5	2
11537702	50	1.0	2
11547702	100	1.0	2
11557702	250	2.0	2
11567702	500	5.0	2
11577702	1.000	10.0	2
11587702	2.000	20.0	1

## Fisherbrand<sup>®</sup>

### Beakers, tri-cornered, polypropylene

- Suitable for use with commonly used acids, alkalis and solvents
- Each beaker has three drip-free pouring spouts
- Moulded graduations, stackable



Cat. No	Capacity, mL	Sub-divisions, mL	Height, mm	O.D., mm	Pack qty
11759398	100	10	72	58	100
11769398	250	10	90	76	100
11799398	1.000	50	145	115	100

## burkle

### Beakers, polypropylene, with handle

- Graduated with blue scale
- Autoclavable
- With handle and pouring spout

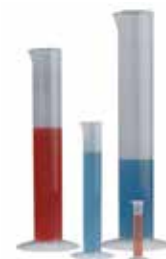


Cat No.	Description	Pack qty
10468711	PP beaker, 1.000mL capacity	1
10200422	PP beaker, 2.000mL capacity	1

## Fisherbrand<sup>®</sup>

### Cylinders, graduated

Cat No.	Capacity, mL	Graduations, mL	Dia x h, mm	Pack qty
<b>PPCO graduated cylinder</b>				
11947884	10	0.2	34 x 98	12
11957884	25	0.5	46 x 140	12
11967884	50	1	59 x 178	12
11997874	100	1	75 x 229	8
11907884	250	2	102 x 295	8
11967874	500	10	119 x 363	8
11937874	1.000	10	136 x 432	4
11927874	2.000	20	191 x 607	2
<b>PMP graduated cylinder</b>				
11907894	25	0.5	46 x 140	18
11917894	50	1	59 x 178	18
11977884	100	1	75 x 229	12
11987884	250	2	102 x 295	12
11917884	500	10	119 x 363	8
11977874	1.000	10	136 x 432	6
11947874	2.000	20	191 x 607	4



**Fisherbrand**

**Volumetric flasks, borosilicate glass, Class A**

- ISO 1042, DIN 12664
- One mark graduation
- Interchangeable polyethylene stopper
- Details on each flask include confirmation of compliance to International Standards as well as an individual reorder code



Cat No.	Capacity, mL	Tolerance, mL	Stopper dia., mm	Neck O.D. mm	Pack qty
Flasks, clear, white markings					
11576923	5	0.04	10/19	13	5
11586923	10	0.04	10/19	13	5
11596923	20	0.04	10/19	13	5
11506933	25	0.04	10/19	13	5
11516933	50	0.06	12/21	15	5
11526933	100	0.10	12/21	15	5
11536933	200	0.20	14/23	17	2
11546933	250	0.30	14/23	17	2
11556933	500	0.25	19/24	22	2
11566933	1.000	0.40	24/29	28	2
11576933	2.000	0.60	29/32	28	1
Flasks, amber, white markings					
11379433	10	0.025	10/19	13	5
11389433	20	0.04	10/19	13	5
11399433	25	0.04	10/19	13	5
11309443	50	0.06	12/21	15	5
11319443	100	0.08	12/21	15	5
11329443	200	0.10	14/23	17	2
11339443	250	0.12	14/23	17	2
11349443	500	0.20	19/24	22	2
11359443	1.000	0.30	24/29	28	2

**Fisherbrand**

**Funnels, borosilicate glass, separating**

- PTFE stopcock, interchangeable
- ISO 4800



Cat No.	Capacity, mL	Stopper size	Pack qty
11562782	50	19/26	100
11572782	100	19/26	100
11582782	250	24/29	100
11592782	500	24/29	100
11502792	1.000	29/32	100

**Fisherbrand**

**Funnels, analytical, polypropylene**

- Inside ribbed surface slopes for a quick filtration
- Autoclavable at 121°C



Cat No.	Volume, mL	Top diameter, mm	Stem length, mm	Pack qty
11947914	12	6	52	36
11957914	23	7	50	36
11967914	37	7	61	36
11977914	50	7	65	36
11987914	100	7	80	36
11977904	150	9	99	24
11987904	225	14	151	24

**Fisherbrand**

**Funnels, polypropylene**

- Autoclavable
- External ribbing prevents vapour lock



Cat No.	Top dia., mm	Capacity, mL	Stem dia. x L, mm	Pack qty
11997914	65	50	16 x 22	36
11907924	79	100	16 x 29	36
11997904	104	225	21 x 33	24
11907914	147	750	27 x 30	24

**Fisherbrand**

**Funnels, soda lime glass**

- Short stem



Cat No.	Top diameter, mm	Stem length, mm	Pack qty
10124352	55	55	10
10082242	75	75	10
10123682	100	100	10

# Attention *Attention* Achtung Atención

precision jet tip for fine control

wide mouth for easy filling

chemical names in four languages

new GHS hazard warning pictograms

unique Driplok two-way valve

colour coded for easy identification of solvents

The Azlon® multi-lingual wash bottle is now available in three new ranges that give you chemical names and safety instructions in a wider range of languages including:

- Norwegian, Swedish and Danish
- Russian and Polish
- Arabic and French

**new multi-lingual wash bottles now in 10 languages**

The Azlon designs reflect the Global Harmonised System (GHS) of labelling legislation including new hazard warning pictograms.

Our unique Driplok® vapour venting technology lets vapour escape when pressure builds up and stops air getting into the liquid.

The result - no more hazardous drips or dribbles and an accurate, continuous dispensing stream.

To find out more about the Azlon multi-lingual wash bottle visit [www.scilabware.com](http://www.scilabware.com)

@scilabware

*Azlon* SciLabware  
AZLON® MBL® PYREX® QUICKFIT®

## Azlon

### Wash bottles, LDPE, multi-lingual, venting

- Multi-lingual wide neck wash bottles
- Indelibly printed in multiple languages
- Choice of three water or five solvent labels with new Globally Harmonised Symbols, NFPA diamond, risk phrases and safety information
- Colour coded one-piece PP closures with precision jet-tip aperture



Cat No.	Description	Capacity, mL	Closure colour	Pack qty
Capacity 250mL				
11383514	Methanol	250	Green	5
12196220	Isopropanol	250	Blue	5
12116230	I.M.S	250	Yellow	5
12126230	Ethanol	250	Orange	5
Capacity 500mL				
12550456	Methanol	500	Green	5
11303524	Isopropanol	500	Blue	5
11393514	I.M.S	500	Yellow	5
11349643	Ethanol	500	Orange	5
11329643	Acetone	500	Red	5

## Azlon

### Wash bottles, LDPE, with blank write-on panel

- Wide neck
- Blank write-on label
- Indelibly printed in English, French and German



Cat No.	Capacity, mL	Pack qty
12510066	Wash bottle, 250mL	5
12520066	Wash bottle, 500mL	5
12530066	Wash bottle, 1.000mL	5



**Bottles, dropper, LDPE, polyethylene**

- Dispense in small amounts, drop by drop or as a fine jet
- Cut off dropper tip before first use
- Can be reclosed using the captive cap provided
- Captive cap and dropper cap PE



Cat No.	Dia. x h, mm	Volume, mL	Pack qty
10267512	34 x 98	30	10
15306368	39 x 120	50	10
11846413	46 x 135	100	10
11856413	61 x 180	250	10

**Fisherbrand**

**Bottles, polyethylene, wash, narrow neck**

- Narrow neck, natural closure
- Precision-acute angled dispensing jet
- Good chemical resistance

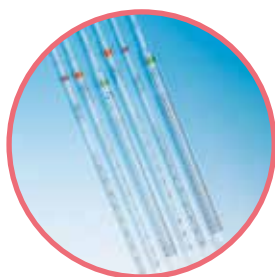


Cat No.	Capacity, mL	Pack qty
11532463	250	6
11542463	550	6
11938485	1.000	4

**Fisherbrand**

**Pipettes, straight, Class B**

- BS 700 ISO 835, Class B
- Soda lime glass
- Blue ceramic graduations



Cat No.	Capacity, mL	Graduations, mL	Tolerance, mL	Pack qty
Type 1 calibrated to deliver from zero to any graduation line				
11992168	1	0.01	±0.01	5
11902178	5	0.05	±0.05	5
11912178	10	0.01	±0.10	5
11922178	25	0.2	±0.20	5
Type 2 calibrated to deliver from any graduation line to jet				
11932178	5	0.05	±0.05	5
11942178	10	0.01	±0.10	5
11952178	25	0.02	±0.20	5

**Fisherbrand**

**Wash bottles, HDPE**

- Labelled and colour coded for most commonly used solvents
- Translucent with coloured closure
- Comes with vented 38mm closure to prevent solvent drips



Cat No.	Description	Pack qty
11745233	Wash bottle, 500mL, Acetone	6
11755233	Wash bottle, 500mL, Bleach	6
11765243	Wash bottle, 500mL, Cleaning	6
11765233	Wash bottle, 500mL, Deionised water	6
11775233	Wash bottle, 500mL, Distilled water	6
11785233	Wash bottle, 500mL, Ethanol	6
11795233	Wash bottle, 500mL, Isopropanol	6
11705243	Wash bottle, 500mL, Methanol	6
11715243	Wash bottle, 500mL, Saline	6
11725243	Wash bottle, 500mL, Soap	6
11735243	Wash bottle, 500mL, Universal	6
11745243	Wash bottle, 500mL, Water solvent	6

**Fisherbrand**

**Pipettes, plastic, transfer**

- LDPE, Low-density polyethylene



Cat No.	Capacity, mL	Drop per mL	Sterile, Y/N	Length, mm	Pack qty
1 13469118	1	33µL	N	104	400
2 13439108	3	40µL	N	150	500
3 13449108	7	50µL	N	300	100
4 13449118	10	56µL	N	170	200

**Fisherbrand**

**Pipette fillers, bulb**

- Capacity 60mL
- No metal parts to corrode and can be used for all liquids compatible with rubber
- Three glass ball valves to control by finger pressure



Cat No.	Description	Pack qty
11890950	Pipette filler bulb rubber red	1





**Pipette pumps**

- Effortless one-handed operation
- Thumbwheel for precision operation
- Effortless disassembly for cleaning
- Acid and alkali resistant
- Colour coded by size (yellow, blue, green, red)



Cat No.	Description	Pack qty
11707924	Pipette pump for 0.2mL pipettes, yellow	1
11717924	Pipette pump for 2mL pipettes, blue	1
11727924	Pipette pump for 10mL pipettes, green	1
11727854	Pipette pump for 25mL pipettes, red	1



**Pipette filler, RF1000**

- Unique one handed operation
- Accurate dispensing and aspirating control
- Blow out bulb to expel any remaining liquid if required
- Lightweight and always ready to use
- Autoclavable nozzle and replaceable 0.45µm filter (standard Whatman filter)



Cat No.	Description	Dimensions, mm	Pack qty
11821920	Pipette filler, RF1000	180 x 45 x 120	1

- Spare part

Cat No.	Description	Pack qty
11304035	Filter, 0.45µm	5



**Pipette controller RF3000™ UV**

- Volume 1 to 100mL
- UV resistant plastic
- Long life Li-Ion battery allows 20 hours of continuous use

Includes:

Five nose cones, wall holder, charging stand, Three replacement filters and adapter for 1mL pipettes.



100-240V 50/60Hz, 152mm x 152mm x 41mm

Cat No.	Description	Pack Qty
12904417	Pipette controller RF3000 UV	1

Spare part

Cat No.	Description	Pack qty
11304035	Filter, 0.45µm	5

**Fisherbrand®**

**Pipettors, single channel, variable volume, Elite**

- Soft-touch tip ejector
- Optimal fit to SureOne™ pipettor tips
- Fully autoclavable
- Comfortable, lightweight handle with finger rest
- Extremely low plunger forces



Cat No.	Description	Volume, µL	Pack qty
11825762	Elite Pipettor, single channel	0.5 to 5	1
11835762	Elite Pipettor, single channel	1 to 10	1
11845762	Elite Pipettor, single channel	2 to 20	1
11855762	Elite Pipettor, single channel	5 to 50	1
11865762	Elite Pipettor, single channel	10 to 100	1
11875762	Elite Pipettor, single channel	20 to 200	1
11885762	Elite Pipettor, single channel	100 to 1.000	1
11895762	Elite Pipettor, single channel	500 to 5.000	1
11805772	Elite Pipettor, single channel	1.000 to 10.000	1
15268638	Four popular pipettor sizes (2, 20, 200, 1.000µL) plus stand		1



Focus on Fisherbrand  
for all your **Liquid handling** needs

Providing the complete solution for your lab

- Pipettors
- Pipettor tips
- Reagent reservoirs
- Transfer pipettes



For the full range visit  
[www.eu.fishersci.com/fisherbrand](http://www.eu.fishersci.com/fisherbrand)



**Fisherbrand**

**Sealing Film, Parafilm™ M**

- Semi-transparent, flexible, thermoplastic film with two-way stretch
- Will stretch and adhere to irregular shapes and surfaces to provide a secure seal
- Available in a roll, interleaved with paper to prevent sticking



Cat No.	Dimensions	Pack Qty
11762644	50mm x 75m	1
11772644	100mm x 38m	1

**Fisherbrand**

**Dispensers, Parafilm**

- Stores, dispenses and cuts Parafilm™ tape and labels

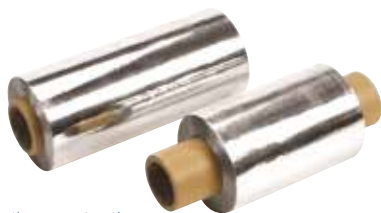


Cat No.	Description	Pack Qty
11937994	Dispenser, Parafilm, acrylic, clear, 119mm x 168mm x 175mm	1
11350040	Dispenser, Parafilm, ABS, blue, 171mm x 120mm x 144mm	1
11865993	Dispenser, Parafilm, ABS, green, with cutter	1
11875993	Dispenser, Parafilm, ABS, red, with cutter	1

**Fisherbrand**

**Aluminium foil**

- For autoclaving, freezing, incubating, protecting laboratory ware, lining, sealing and general storage



Cat No.	Description	Pack Qty
11967994	Aluminium foil, disposable roll, 102mm x 153m	1
11977994	Aluminium foil, disposable roll, 153mm x 153m	1



# Technical note:

## Filtration

When filtering difficult samples, using a syringe prefilter in addition to the primary filtration membrane will help you to process larger sample volumes overall

**Fisherbrand**

**Filter paper, glass microfibre, MF 200**

- High loading capacity
- Made from 100% borosilicate glass
- Compatible with many solvents and reagents
- Contain no binder
- Not affected by humidity
- Suitable for use at and up to 500°C
- Mainly used for water analysis, suspended solids in natural, industrial and potable waters



Cat No.	Description	Pack Qty
11512083	MF 200 filter paper, 25mm dia.	100
11704083	MF 200 filter paper, 47mm dia.	100
11532083	MF 200 filter paper, 70mm dia.	100
11714083	MF 200 filter paper, 90mm dia.	100
11724083	MF 200 filter paper, 110mm dia.	100
11734083	MF 200 filter paper, 125mm dia.	100
11744083	MF 200 filter paper, 150mm dia.	100



Distributor  
GE Healthcare

**Filter, membrane holder, glass 47mm**

- With borosilicate glass funnel and base, anodised aluminium clamp, sintered glass support, and silicone rubber on outlet for fitting into filter flask
- 47mm holders have No. 8 stopper
- Reservoir capacity 300mL



Cat No.	Description	Pack Qty
10614292	Membrane with glass support, 47mm	1



**Filter holder, Pyrex**

- For membrane dia. 47mm
- Glass membrane holder
- Supplied complete with borosilicate glass funnel and base, coarse-frit glass filter support, anodised aluminium spring clamp, and neoprene stopper

Cat No.	Description
10462691	Pyrex filter holder, 300mL
10094440	Vacuum filtering flask, 1L

**PYREX®**

**Filtration system, 47mm**

- All glass filtration system for use with 47mm diameter membranes
- Borosilicate glass porosity grade 3 sintered disc to support membrane
- Fully autoclavable
- Ideal for microbiology and preparation of HPLC solvents
- Complete assembly comprises of four components
  - Funnel 300mL capacity
  - Support base with sintered disc and vacuum connection with 40/38 socket
  - 1000mL conical flask suitable for use under vacuum with 40/38 cone
  - Metal retaining clip



Cat No.	Description	Pack qty
15115284	Filtration system, 47mm	1

**PYREX®**

**Flasks, vacuum, filtration**

- Vacuum filter flasks with side arm
- Side arm accepts 9mm O.D. vacuum tubing
- Erlenmeyer shape
- ISO 6556, USP Standard
- Autoclavable



Cat No.	Description	Pack qty
11931548	Filter flask with side arm, 100mL	10
11941548	Filter flask with side arm, 250mL	10
11951548	Filter flask with side arm, 500mL	10
12693182	Filter flask with side arm, 1.000mL	5
12089897	Filter flask with side arm, 2.000mL	1



**Pump, transfer, Microsart™ e.jet**

Designed to pump both gas and liquids, meaning no loss of efficiency or malfunctions from water drawn-into the pump head.

- Ideal for sample filtration in microbiology
- Achieves a trans membrane pressure of 600mbar and a flow rate of >4.0L/min
- Constant flow rates
- Defined maximum vacuum
- Ideal accessory for 3-branch, 2-branch, and 1-branch manifolds reducing operating complexity
- No need of suction flasks and water traps
- Saves 70% working space



Cat No.	Description	Pack qty
11721426	Transfer vacuum pump, 40L/min	1



**Filter holders, membrane holder, manifold, CombiSart™**



CombiSart™ manifolds

Cat No.	Description	Pack qty
10659602	3 branch manifold without funnels	1
10479511	6 branch manifold without funnels	1

Stainless steel funnels - for colony or particle counting, autoclavable

Cat No.	Capacity, mL	Pack qty
10113751	100	1
10446741	500	1



**Funnel support, Microsart™ base**

- Filter support with frit for 47mm membranes
- Accommodates all funnel types for microbiological applications
- High grade stainless steel
- For Microsart™, Combi.jet or Combisart™ manifolds
- Stainless steel frit ensures uniform distribution on membrane filter



Cat No.	Description	Pack qty
11723859	Microsart base, 47mm	1

**Fisherbrand**

**Pump, vacuum and pressure, oil free**

Oil free piston pump designed for general duty laboratory applications requiring only a rough vacuum and moderate pressure.

- Tough, lightweight, plastic housing with integral carrying handle
- Water jet or aspirator replacement for general duties
- Lightweight, compact, portable, standard-duty operation
- Applications include vacuum filtration, aeration, aspiration, gas sampling
- Not recommended for organic, basic and acidic vapours
- Dimensions (w x d x h), mm: 114 x 194 x 191



Cat No.	Description	Pack Qty
11533485	Vacuum, 2.3mbar 9L/min	1

**Fisherbrand**

**Pump, standard vacuum, membrane**

- Vacuum down to 100mbar
- Vacuum rate 15L/min
- Compatible with solvents and 100% non-corrosive gases

Applications: filtration, vacuum and pressure, glass filtration assemblies



Cat No.	Description	Pack Qty
12695326	Vacuum pump, 100mbar 15L/min, aluminium / PTFE, Max temperature 40°C, IP54	1

**Fisherbrand**

**Tubing, natural red rubber, heavy wall, BS 2775:1987**

- Higher resilience than most other polymers
- Temperature range: -40°C to +70°C
- Light and flexible, for transferring liquids, gases and dilute acids
- Heavy wall recommended for vacuum use
- Not suitable for use with petroleum oils and hydrocarbon solvents



Cat No.	Bore size, mm	Wall Thickness, mm	Length, m	Pack qty
11587562	6.5	10	10	1
11597562	8.0	12	10	1

**Fisherbrand**

**Labtool II™/ Mini-Labtool II™**

- Stainless steel with aluminium handle
- Labtool II™ is 90mm long, the mini version is 65mm long



Cat No.	Description	Pack Qty
11873172	Labtool II™: 14 tools - pliers/grippers, wire stripper, wire cutter, ruler, small knife, large knife, serrated knife, punch, flat head screwdriver, Phillips™ screwdriver, bottle opener, needle, saw and serrated stripper	1
11883172	Mini-Labtool™: 13 tools - pliers/grippers, wire stripper, wire cutter, knife, flat head screwdriver, Phillips™ screwdriver, scissors, file, saw, bottle opener and can opener with key chain	1

**Fisherbrand**

**Hotplate stirrer**

- Hotplate stirrer with coated aluminium heating plate
- Excellent resistance to chemicals
- Analogue controls
- Max temperature 370°C
- Stirring speed up to 1.500rpm
- IP42 protected from liquid spills
- Dimensions, mm (w x d x h): 165 x 280 x 115



Cat No.	Description	Pack Qty
15349654	Hotplate stirrer 15L	1
15369664	Hotplate stirrer 20L with connection for VTF contact thermometer	1

Essential accessories:

Cat No.	Description	Pack Qty
12365097	Thermoregulator, digital programmable from 50°C to 250°C	1
11747303	Support rod for thermoregulator 12365097	1

**Fisherbrand**

**Magnetic followers, set, PTFE**

- Each set is comprised of the following: 2 x 10mm x 5mm, 2 x 15mm x 6mm, 2 x 25mm x 10mm, 2 x 30mm x 10mm, 2 x 35mm x 13mm, 1 x 50mm x 17mm, 1 x 70mm x 27mm



Cat No.	Description	Pack Qty
11703319	Magnetic followers, set, PTFE	12



**Balances, analytical, Adventurer™**

- Stability, accuracy, and fast operation ensure optimal weighing results. This trio of characteristics ensures the most important aspects of routine laboratory weighing are covered: accurate results you can count on extremely quickly
- Colour touchscreen and connectivity options power a modern weighing experience. The wide viewing angle colour touchscreen provides quick access to all of Adventurer's applications, while dual USB ports with GLP/GMP tracking capabilities assist in the monitoring and reporting of data
- Space-saving draft shield improves user experience and accessibility – The two piece, top-mounted draft shield doors open wide on both sides, providing ample room for sample placement, and also reduce the footprint of the draft shield in the rear of the balance when open



Cat No.	Capacity	Readability	Calibration
15305043	120g	0.1mg	External
15335043	220g	0.1mg	External
15385043	220g	1mg	External
15315053	420g	1mg	External
15345053	520g	1mg	External
15375053	620g	10mg	External
15395053	1.5kg	0.01g	External
15325063	2kg	0.01g	External
15355063	4kg	0.01g	External
15395033	120g	0.1mg	Internal
15325043	220g	0.1mg	Internal
15355043	320g	0.1mg	Internal
15375043	220g	1mg	Internal
15305053	420g	1mg	Internal
15335053	520g	1mg	Internal
15365053	620g	10mg	Internal
15385053	1.5kg	0.01g	Internal
15315063	2kg	0.01g	Internal
15345063	4kg	0.01g	Internal
15375063	5kg	0.01g	Internal

**Fisherbrand**

**Balance, precision**

- Weighing modes include weighing, parts counting and percentage weighing
- Draft shield with three sliding doors (on 1mg models only)
- a.c. adapter (included), balance power input 8 to 14.5V a.c., 50/60Hz 4VA or 8 to 20V d.c., 4W
- Two year warranty
- GLP with optional printer

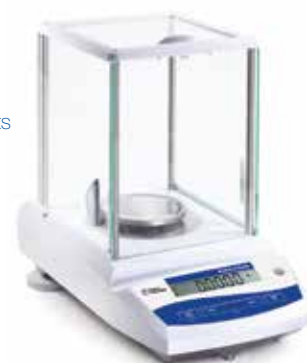


Cat No.	Capacity, g	Readability, g	Calibration
15325113	210	0.001	External
15335113	410	0.001	External
15345113	410	0.001	Internal
15355113	2.100	0.01	External
15385113	2.100	0.01	Internal
15365113	4.100	0.01	External
15395113	4.100	0.01	Internal
15375113	4.100	0.1	External

**Fisherbrand**

**Balance, analytical**

- Weighing modes include weighing, parts counting and percentage weighing
- Large draft shield with sliding top and side doors
- RS 232 interface
- Dimensions (w x d x h): 196mm x 320mm x 287mm
- Readability: 0.1mg
- Linearity: 0.2mg
- Repeatability: 0.1mg
- Two year warranty







Cat No.	Capacity, g	Readability, mg	Calibration
15305113	210	0.1	External
15395103	65	0.1	Internal
15315113	210	0.1	Internal

# Technical note:

## Centrifugation - best practice and tips for safety

To prolong the life of your rotors, protect your equipment and samples and maximise your investment, here are some best practices to follow:

-  Regular visual inspection of the centrifuge and rotor condition for signs of physical wear or damage
-  Use the appropriate tubes with the appropriate adapters
-  Make sure you have equal volumes within the tubes and the tubes are balanced. After placing the rotor into the centrifuge ensure it is securely closed and locked before use
-  Choose the correct time and speed that is suitable for your tubes

### Thermo SCIENTIFIC

#### Centrifuge package, general purpose

- Fibrelite™ carbon fibre rotor
- Ergonomics and capacity with certified biocontainment

**Package includes:**

- TX-400 swinging bucket rotor
- Adapters: 4 x 50mL conical (set of 4)
- 400mL round buckets (set of 4)
- Adapters: 9 x 15mL conical (set of 4)
- TX-400 ClickSeal biocontainment lids (set of 4)
- 76 x 5mL up to 4.700xg



Cat No.	Description	Pack Qty
11890153	Centrifuge package, Centri SL16 TX400 R&D. 76 x 5mL tubes up to 4.700xg	1

### Thermo SCIENTIFIC

#### Centrifuge package, high throughput

- Fibrelite™ carbon fibre rotor
- 108 x 5mL up to 4.816xg

**Package includes:**

- TX-750 swinging bucket
- Adapters: 7 x 50mL conical (set of 4)
- Rotor with slide coat
- Adapters: 14 x 15mL conical (set of 4)
- TX-750 buckets (set of 4)
- TX-750 ClickSeal biocontainment lids (set of 4)



Cat No.	Description	Pack Qty
11810163	Centrifuge package, SL40 TX750, 108 x 5mL tubes up to 4.810xg	1



Discover our new filtration solutions for the protection of laboratory personnel designed to be **Simpler Safer**



**Captair Smart**  
Ductless filtering fume hoods



**Captair Smart**  
Ductless filtering chemical storage cabinets



**Halo**  
Laboratory air filtration system



Require the best of filtration quality



Powerful communication interface by light



Connect your units and benefit from remote control access via our mobile solutions.

### memmert

#### Ovens, universal, with single display

The Memmert 'U' universal oven range offers unparalleled precise, even and gentle temperature control for a diverse range of applications such as materials testing, computer chip ageing, complex experiments with highly sensitive loads, drying or tempering electronic components, hardening plastic resin or heating plasticine.



- Precise and homogenous temperature control independent of chamber volume and load
- Temperature range up to +300°C
- Augmented functionality with convenient, approved and tested accessories
- Working chamber and housing constructed almost exclusively from high quality, corrosion resistant and easily cleanable stainless steel
- Three year guarantee for appliances except parts wear and tear
- The temperature values of all universal ovens are measured according to DIN 12880: 2007-05
- Each universal oven is safety tested and carries 'CE' symbol

Cat No.	Description	Max. number of grids/shelves
12676977	Oven UN30, UN30, 32L volume, 1 grid/shelf	3
12686977	Oven, UN55, 53L volume, 1 grid/shelf	4
12666987	Oven, UN75, 74L volume, 2 grids/shelves	6
12686987	Oven, UN110, 108L volume, 2 grids/shelves	5



**Water purification systems,  
Type 1 and Type 2,  
Smart2Pure™**

Smart2Pure™ is a compact complete system that produces 3L, 6L or 12L of ultrapure water per hour.

The Smart2Pure™ is a compact system which converts tap water into both ASTM Type 1 and Type 2 water. The Smart2Pure™ 3 and 6 feature a built in 6L reservoir to store the Type 2 water. The Smart2Pure™ 12 offers the choice of a 30L or 60L reservoir for customisable storage capacity.

**Powerful performance**

- Based on your requirements, choose from capacities of 3L/hr, 6L/hr or 12L/hr

**Lasting economy**

- Water purification progresses through independent cartridges with Aquastop quick connects for fast replacement
- Module 1: combination of pretreatment and the reverse osmosis membrane
- Module 2: polishing cartridge contains high quality ultrapure resin for consistent purity and long cartridge life

**Easy to operate**

- Dispensing is easy and features variable speed to control flow
- The display can be tilted for optimal reading
- Optional UV bulb and UF ultrafilter to customise ultrapure water

**Placement options**

- Position on laboratory bench
- Mount it on the wall

**Smart integrated 6L reservoir for the Smart2Pure™ 3 and 6**

- Constructed with pigment free materials
- Conical bottom outlet allows for complete draining and efficient cleaning and disinfection



**Smart2Pure™ 12 offers reservoir options, either 30L or 60L**

- Large opening for easy and effective cleaning by hand
- Sterile venting filter and reservoir overflow protect against contamination by microorganisms
- Optional CO2 absorber prevents TOC value increases from drawn-in CO2
- Polyethylene reservoir is opaque to light
- Recirculation pump protects the high purity water from bacterial growth during standstills and maintains the low conductivity value
- Wall mount optional for simple space savings
- Conical bottom outlet allows for complete draining and efficient cleaning and disinfection

**Accessories**

Cat No.	Description
11307021	Smart2Pure 3L/hr, with 6L integrated tank
11317021	Smart2Pure 3L/hr, with ultrafiltration membrane and 6L integrated tank
11327021	Smart2Pure 3L/hr, with UV oxidation and 6L integrated tank
11337021	Smart2Pure 3L/hr, with UV oxidation, ultrafiltration membrane and 6L integrated tank
11347021	Smart2Pure 6L/hr, with 6L integrated tank
11357021	Smart2Pure 6L/hr, with ultrafiltration membrane and 6L integrated tank
11367021	Smart2Pure 6L/hr, with UV oxidation and 6L integrated tank
13237449	Smart2Pure 6L/hr, with UV oxidation, ultrafiltration membrane and 6L integrated tank
11387021	Smart2Pure 12L/hr
11397021	Smart2Pure 12L/hr, with ultrafiltration membrane
11307031	Smart2Pure 12L/hr, with UV oxidation
13121444	Smart2Pure 12L/hr, with UV oxidation and ultrafiltration membrane

Cat No.	Description
11367151	Pre-treatment, required to prolong cartridge life, with filter housing and 1µm filter
11307151	Wall mounting bracket
11317091	Storage tank (30L) with level display and recirculation pump
11377091	Storage tank (60L) with level display and recirculation pump
11327151	Pre-treatment complete with a 5µm filter with activated carbon cartridge and a hardness stabiliser cartridge
11377131	RO membrane with integrated pretreatment for 3L/hr unit only
11327141	RO membrane with integrated pretreatment for 6L/hr unit only
11347141	RO membrane with integrated pretreatment for 12L/hr unit only



# Thermo Scientific Water Purification Technologies

**To make pure and ultrapure water, the impurities must be efficiently and effectively removed.**

**Barnstead water purification systems employ multiple technologies, some synergistically, to remove impurities and give you consistently PURE water.**

Water purification is a step-by-step process often requiring a combination of technologies, each of which varies in the ability to remove specific contaminants.

	Distillation	Reverse Osmosis	Deionization	Electro-deionization	Filtration	Ultrafiltration (UF)	Adsorption	Ultraviolet (UV) Oxidation	Combination UV/UF
Inorganic ions	Excellent	Good	Excellent	Excellent	Good	Good	Good	Good	Good
Dissolved gasses	Good	Good	Excellent	Excellent	Good	Good	Good	Good	Good
Organics	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Excellent
Particles	Excellent	Excellent	Good	Good	Excellent	Excellent	Good	Good	Excellent
Bacteria	Excellent	Excellent	Good	Good	Excellent	Excellent	Good	Excellent	Excellent
Pyrogens	Excellent	Excellent	Good	Good	Good	Excellent	Good	Good	Excellent
Nucleases	Good	Good	Good	Good	Good	Good	Good	Good	Excellent



The table illustrates which impurities are removed by each technology.

## What Type of Water Do You Need?

When designing your water system, we suggest you take time to evaluate the applications and interest areas of the lab now and in the future. Take a look at the table opposite to determine what type(s) of water you need.

Application and interest areas	Type of Water			
	Ultrapure Type 1	Pure Type 2	RO	Cartridge and filter systems
<b>General Lab Purpose</b>				
Autoclave		✓	✓	✓
Humidification		✓	✓	✓
Glassware washing/rinsing		✓	✓	✓
General lab equipment (water baths, incubators, etc.)		✓	✓	✓
Feed water to Type 1 systems	✓			
Media prep	✓			
Buffer prep	✓			
Chemical and biochemical reagent prep	✓			
<b>Analytical</b>				
High performance liquid chromatography (HPLC)	✓			
Gas chromatography (GC)	✓			
Ion chromatography (IC)	✓			
Inductively coupled plasma spectroscopy (ICP)	✓			
Mass spectroscopy (MS)	✓			
Atomic absorption (AA)	✓			
Total organic carbon (TOC)	✓			
<b>Life Sciences</b>				
Genomics (eg. PCR, mutagenesis)	✓			
Proteomics (eg. crystallography, electrophoresis)	✓			
Immunology (eg. monoclonal antibody production, blots)	✓			
Pharmacology	✓			
Cell and tissue culture	✓			
Drug discovery	✓			
Molecular biology	✓			
Microbiology	✓			



# In-field Testing

**Ideally, the sample should be returned to a central or regional laboratory within a few hours of being taken, but this is not always possible and it may be necessary to rely on a relatively small number of simple tests in-field to analyse the critical parameters first (such as chemical or faecal contaminations). The minimum level of analysis should therefore include testing for indicators of faecal pollution, turbidity and chlorine residual and pH (if the water is disinfected with chlorine).**

**Fisher Scientific provides you with the necessary equipment and consumables to ensure sample collection for in-field analysis.**

## Storage and transport for physicochemical analysis

This has important consequences for sampling regimes, sampling procedures, and methods of sample preservation and storage. In general, the time between sampling and analysis should be kept to a minimum. Timeliness and cleanliness are extremely important to prevent false results. Storage in glass or polyethylene bottles at a low temperature (e.g., 4°C) in the dark is recommended. Sample bottles must be clean but need not be sterile. Special preservatives may be required for some analytes. Residual chlorine, pH and turbidity should be tested immediately after sampling as they will change during storage and transport.

## For microbiological analysis

Although recommendations vary, the time between sample collection and analysis should, in general, not exceed 6 hours, and 24 hours is considered the absolute maximum. It is assumed that the samples are immediately placed in a lightproof insulated box containing melting ice or ice packs with water to ensure rapid cooling. If ice is not available, the transportation time must not exceed 2 hours.

It is imperative that samples are kept in the dark and that cooling is rapid. If these conditions are not met, the samples should be discarded. When water that contains or may contain even traces of chlorine is sampled, the chlorine must be inactivated. If it is not, microbes may be killed during transit and an erroneous result will be obtained. The bottles in which the samples are placed should therefore contain sodium thiosulfate to neutralise any chlorine present.

# Technical note:

## pH

It is important to measure pH at the same time as chlorine residual since the efficacy of disinfection with chlorine is highly pH-dependent; where the pH exceeds 8.0, disinfection is less effective.

Simple in-field tests may be conducted using comparators such as used for chlorine residual. Alternatively, portable pH electrodes and meters are available. These should be calibrated with pH standards immediately before each test.

### Fisherbrand®

#### Indicator paper, Tritest pH 1 to 11

- Three indicators on one strip
- Paper reel 5m x 10mm (l x w)



Cat No.	Description
10433151	Indicator paper, pH 1 to 11

### Fisherbrand®

#### Indicator paper, pH 1 to 14

- Dispenser reels each 5m x 7mm (l x w)



Cat No.	Description	Pack qty
10482341	Indicator paper, pH 1 to 14	4

### Fisherbrand®

#### pH indicator paper, reels

- Dispenser reels each 5m x 7mm (l x w), except 10433151 which is 5m x 10mm (l x w).



Cat. No	Description	Pack qty
11507392	Indicator paper, pH 1.0 to 11.0	4
11517392	Indicator paper, pH 0.5 to 5.5	4
11527392	Indicator paper, pH 4.0 to 7.0	4
11537392	Indicator paper, pH 6.4 to 8.0	4
11547392	Indicator paper, pH 8.0 to 10.0	4
11557392	Indicator paper, pH 9.0 to 13.0	4
11567392	Indicator paper, pH 12.0 to 14.0	4

**Fisherbrand®**

**pH test strips**

- 85mm x 6mm sticks with different indicator panels sealed onto each test strip
- Provides outstanding measurements safely over the designated pH range
- Colour scale on the test strip box allows exact comparison with the colour developing on the test strip pad
- Indicator is covalently bonded on the pads and does not bleed into the sample – can be left in sample for an indefinite time without contamination
- Hydrophobic plastic handle protects user from sample and allows pH testing in narrow and deep vessels
- Available in a flat box so they fit into your pocket
- An economic and easy standard in a variety of environments such as: chemical laboratories, industry, dairies, production facilities, universities, schools and food processing



Cat No.	Description	Pack qty
10642751	Test strip, pH 0.0 to 14.0	100
10333501	Test strip, pH 4.5 to 10.0	100
10018080	Test strip, pH 0.0 to 6.0	100
10271751	Test strip, pH 7.0 to 14.0	100
10353641	Test strip, pH 3.6 to 6.1	100
11316454	Test strip, pH 2.0 to 9.0	100
11396454	Test strip, pH 7.5 to 9.5	100
11386454	Test strip, pH 6.0 to 7.7	100
11376454	Test strip, pH 5.1 to 7.2	100
11306464	Test strip, pH 7.9 to 9.8	100
11346454	Test strip, pH 0.3 to 2.3	100
10017950	Test strip, pH 1.7 to 3.8	100

# Technical note:

## Colour

Colour in drinking water may be due to the presence of coloured organic matter (humic substances), metals such as iron and manganese, or highly coloured industrial waste. Drinking water should be colourless, therefore changes in the colour of water and the appearance of new colours serve as indicators that further investigation is needed.

## Colorimetry

Easy to use and compact, colour-stable over a long period of time and guaranteed reliable for reproducible measurement results, the colorimetry comparators are the answer to all your water treatment, pools, laboratory and field testing requirements.



## METTLER TOLEDO

### Provides Precision Instruments for Professional Use

At METTLER TOLEDO our focus is on high quality, accurate products combined with simple, intuitive operation and ergonomic design.

Our comprehensive analytical instrument portfolio covers the most varied electrochemical applications, from simple routine measurements to complex applications subject to regulatory control.



**METTLER TOLEDO**



**Comparator kits, CHECKIT™**

- Compact, handy colorimetric unit which is suitable both for mobile and stationary analysis work
- Large path lengths
- The mirror optics makes use of the view through the entire length of the cell
- Easy operation
- Exact reagent dosing
- Tablet reagents with a minimum guaranteed shelf life of 5/10 years

Applications:  
 Water treatment (e.g. drinking water)  
 Pools  
 Laboratory and field testing  
 Special applications

Includes CHECKIT™ discs, cells, stirring rods and reagents for 30 tests.

The operating instructions provide a step-by-step explanation of how to conduct the water test ensuring that even "non-chemists" can achieve reliable and accurate measurements in the minimum of time.

Cat No.	Comparator	Range (accuracy ±5% F.S.)	Cat No.	Reagents 1	Pack qty	Cat No.	Reagents 2	Pack qty	Cat No.	Reagents 3	Pack qty
11735468	Aluminium	0 to 0.3mg/L Al	11759169	Aluminium No. 1	100	11769169	Aluminium No. 2	100			
11745468	Ammonia	0 to 1mg/L N	11789169	Ammonia No. 2	100	12160930	Ammonia No. 3	100			
11744639	Bromine	0 to 5mg/L Br	11795468	DPD No. 1 rapid tablet	100						
11715458	Chlorine (DPD) free, combined, total	0.02 to 0.3mg/L Cl <sub>2</sub>	11795468	DPD No. 1 rapid tablet	100	11705478	DPD No. 3 rapid tablet	100	11715478	DPD No. 4 rapid tablet	100
11725458	Chlorine (free, combined, total)	0 to 1mg/L Cl <sub>2</sub>	11795468	DPD No. 1 rapid tablet	100	11705478	DPD No. 3 rapid tablet	100	11715478	DPD No. 4 rapid tablet	100
11775458	Chlorine (free, combined, total)	0 to 2mg/L Cl <sub>2</sub>	11795468	DPD No. 1 rapid tablet	100	11705478	DPD No. 3 rapid tablet	100	11715478	DPD No. 4 rapid tablet	100
11745458	Chlorine (free, combined, total)	0 to 4mg/L Cl <sub>2</sub>	11795468	DPD No. 1 rapid tablet	100	11705478	DPD No. 3 rapid tablet	100	11715478	DPD No. 4 rapid tablet	100
11765458	Chlorine KI total only	10 to 300mg/L Cl <sub>2</sub>	12170930	Chlorine HR (KI)	100	11789179	Acidifying GP	100			
11795518	Chlorine dioxide	0.01 to 0.2mg/L ClO <sub>2</sub>	11719009	DPD No. 1	100	11749558	DPD glycine	100			
11765468	Copper, free (Cu <sup>2+</sup> )	0 to 1mg/L Cu	11739189	Copper/Zinc LR	100						
11715528	Copper HR, free and total	0 to 5mg/L Cu	11709189	Copper No. 1	100	11719189	Copper No. 2	100			
11735528	Copper LR, free and total	0 to 1mg/L Cu	11709189	Copper No. 1	100	11719189	Copper No. 2	100			
11705538	DEHA	0 to 0.5mg/L DEHA	11749548	DEHA	100	11739548	DEHA solution	100			
11755468	Iron LR	0 to 1mg/L Fe	11799189	Iron LR	100	11709199	Iron (II) LR	100			
11765538	Iron HR	1 to 10mg/L Fe	11715568	Iron HR	100						
11715548	Molybdate HR	0 to 100mg/L MoO <sub>4</sub>	11729558	Molybdate No. 1 HR	100	12150930	Molybdate No. 2 HR	100			
11735548	Nitrite LR	0 to 0.5mg/L N	11729199	Nitrite LR	100						
11755548	Ozone (DPD) in the presence of chlorine	0 to 1.0mg/L O <sub>3</sub>	11715478	DPD No. 4 rapid reagent tablet	100	11749558	DPD glycine	100			
11705468	pH	5.2 to 6.8 pH	11725478	Bromocresol purple	100						
11715468	pH	6.0 to 7.6 pH	11735478	Bromothymol blue	100						
11795458	pH	6.5 to 8.4 pH	11745478	Phenol red rapid tablet	100						
11725468	pH universal	4 - 10 pH	11755478	pH Universal	100						
11785468	Phosphate HR	0 to 80mg/L PO <sub>4</sub>	11745478	Phenol red rapid tablet	100						
11775468	Phosphate LR	0 to 4mg/L PO <sub>4</sub>	11789199	Phosphate No. 1	100	11799199	Phosphate No. 2	100			
11775548	Silica LR	0.25 to 4mg/L SiO <sub>2</sub>	11719209	Silica No. 1	100	11729209	Silica No. 2	100	11739209	Silica PR	100
11795548	Silica VLR	0 to 1mg/L SiO <sub>2</sub>	11719209	Silica No. 1	100	11729209	Silica No. 2	100	11739209	Silica PR	100
11715558	Sulfite LR	0.5 to 10mg/L SO <sub>3</sub> <sup>(2-)</sup>	11709568	Sulfite LR	100						
11768989	Total alkalinity	20 to 240mg/L CaCO <sub>3</sub>	11778989	Alkacheck	100						
11735558	Zinc LR	0 to 1mg/L Zn	11739189	Copper/zinc LR	100	11749189	Dechlor	100	11759189	EDTA	100

Test-Kit 2 in 1

Cat No.	Comparator	Range (accuracy ±5% F.S.)
11735458	Chlorine pH value	0 to 1.0mg/L Cl <sub>2</sub> , 6.5 to 8.4 pH
11785458	Chlorine pH value	0.1 to 2.0mg/L Cl <sub>2</sub> , 6.5 to 8.4 pH
11755458	Chlorine pH value	0 to 4.0mg/L Cl <sub>2</sub> , 6.5 to 8.4 pH

Test-Kit 2 in 1

Cat No.	Reagents 1	Pack qty
11795468	DPD No. 1 rapid tablet	100
11745478	Phenol red rapid tablet	100
11795468	DPD No. 1 rapid tablet	100
11745478	Phenol red rapid tablet	100
11795468	DPD No. 1 rapid tablet	100
11745478	Phenol red rapid tablet	100

Test-Kit 2 in 1

Cat No.	Reagents 2	Pack qty
11705478	DPD No. 3 rapid tablet	100
11705478	DPD No. 3 rapid tablet	100
11705478	DPD No. 3 rapid tablet	100

Test-Kit 2 in 1

Cat No.	Reagents 3	Pack qty
11715478	DPD No. 4 rapid tablet	100
11715478	DPD No. 4 rapid tablet	100
11715478	DPD No. 4 rapid tablet	100

Test-Kit 5 in 1

Cat No.	Comparator	Range (accuracy ±5% F.S.)
11788989	Chlorine	0 to 4.0mg/L Cl <sub>2</sub>
	pH value	6.5 to 8.4 pH
	Stabiliser (turbidity method)	20 to 200mg/L Cyanuric acid
	Calcium hardness (speed-test)	20 to 800mg/L CaCO <sub>3</sub>
	Total alkalinity (M) (speed-test)	20 to 800mg/L CaCO <sub>3</sub>

Test-Kit 5 in 1

Cat No.	Reagents 1	Pack qty
11795468	DPD No. 1 rapid tablet	100
11745478	Phenol red rapid tablet	100
11749009	Cyanuric acid	100
11778989	Alkacheck	100

Test-Kit 5 in 1

Cat No.	Reagents 2	Pack qty
11705478	DPD No. 3 rapid tablet	100
11709179	Calccheck	100

Test-Kit 5 in 1

Cat No.	Reagents 3	Pack qty
11715478	DPD No. 4 rapid tablet	100



**Photometers, MD 100**

The MD 100 uses high quality interference filters with long-life LEDs as a light source without any moving parts in a transparent sample chamber. The units supply accurate, reproducible results very quickly. Other major advantages include ease of operation, ergonomic design, compact dimensions and safe handling.

The calibration and software-based adjustment options mean that the MD 100 is also suitable for use as a testing instrument. The tests are conducted using either Lovibond tablet reagents with long term stability and a guaranteed minimum five or 10 year shelf life, VARIO powder reagents or using liquid reagents.

- Waterproof (as defined in IP 68, 1 hour at 0.1 meter)
- Automatic switch-off
- Real-time clock and Date Calibration Mode
- Backlit display
- Storage function
- Suitable for use as a testing instrument
- Dimensions 155mm x 75mm x 35 mm (l x w x h)
- Wavelength accuracy ±1nm
- Photometric accuracy 3% FS (T = 20°C to 25°C)

**Contents:**

- Instrument supplied in a carrying case
- Batteries supplied - 4 x AAA
- Three round vials (glass) with lids
- One stirring rod and one brush
- Tablet reagents and/or liquid reagents or VARIO powder reagent
- Warranty information
- Certificate of compliance
- Instruction manual

**Reagents**

Each tablet is hermetically sealed within an individual aluminium foil pocket, protecting against challenging environmental conditions. This packaging keeps each tablet in perfect condition, right up until the time it is needed by the user. Test tablets remain the most consistent and reliable reagent format available, consistently outperforming other reagent formats, and delivering maximum accuracy for the user.

The aluminium foil blister packaging brings added convenience to the tradition of protection achieved in the Lovibond™ long established tablet production technology. With the blister strip, the user just pushes the tablet through the protective foil, straight into the sample. Simple, time-saving and practical. This type of packaging, long established in pharmaceutical applications, combines all the advantages of protective foil, with convenience for the user. There are no safety risks if the tablets are used in line with the instructions supplied. Safety data sheets are available for all reagents.

**Specifications and Certificate of Analysis**

To express the high quality standard of Lovibond™ tablet reagents, specifications for each type of tablet as well as a 'Certificate of Analysis' for each lot is available in the download area at [www.lovibond.com](http://www.lovibond.com).

**Tube tests**

Lovibond™ tube tests enable the user to easily perform highly sensitive and precise water testing. When using tube tests measurement is considerably faster and easier, particularly in the case of standard and serial tests. The tube tests contain a precisely measured amount of reagent, thereby avoiding the presence of superfluous chemicals and optimising test safety. Up to six different measuring ranges are available for the various tests. The tubes are made of special optical glass with a 16mm diameter.

They are supplied in a storage and dispatch box together with the digestion or auxiliary reagents.

This packaging unit contains 24 or 25 reaction vials and up to two zero vials for photometer system calibration.

Cat No.	Photometers, multi-parameter	Range	Reagent format	Cat No.	Reagents 1	Pack qty	Cat No.	Reagents 2	Pack qty	
<b>2 in 1</b>										
15267529	MD 100 chlorine and pH	0.01 to 6.0mg/L Cl <sub>2</sub> / 0.1 to 10mg/L Cl <sub>2</sub> , 6.5 to 8.4pH	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100	
				11312530	Phenol red, tablets	100				
15217539	MD 100 chlorine and pH	0.02 to 2.0mg/L Cl <sub>2</sub> / 0.1 to 8.0mg/L Cl <sub>2</sub> , 6.5 to 8.4pH	Powder for chlorine	10426303	Vario chlorine free DPD/F10 powder, 10mL	100	10402345	Vario chlorine total-DPD /F10 powder, 10mL	100	
				11312530	Phenol red, tablets	100				
<b>3 in 1</b>										
15227539	MD100 chlorine, pH, cyanuric acid	0.01 to 6.0mg/L Cl <sub>2</sub> / 0.1 to 10mg/L Cl <sub>2</sub> , 6.5 to 8.4pH	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100	
				11312530	Phenol red, tablets	100				
				0 to 160mg/L cyanuric acid	11342530	CyA test, tablets	100			
15237539	MD100 chlorine, pH, alkalinity-M	0.01 to 6.0mg/L Cl <sub>2</sub> / 0.1 to 10mg/L Cl <sub>2</sub> , 6.5 to 8.4pH	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100	
				11312530	Phenol red, tablets	100				
				5 to 200mg/L CaCO <sub>3</sub> (TA)	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100
15247539	MD100 chlorine LR, chlorine HR and chlorine dioxide	0.01 to 6.0mg/L Cl <sub>2</sub> , 5 to 200mg/L Cl <sub>2</sub>	Tablets	15331775	Chlorine E HR (K), tablets	100	15319880	Acidifying GP, tablets	100	
				12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100	
				0.02 to 11mg/L ClO <sub>2</sub>	15311875	Hardcheck P, tablets	100			
<b>4 in 1</b>										
15257539	MD100 chlorine LR, chlorine HR and chlorine dioxide	0.02 to 6.0mg/L Cl <sub>2</sub> / 0.1 to 10mg/L Cl <sub>2</sub> , 6.5 to 8.4pH	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100	
				11312530	Phenol red, tablets	100				
				0 to 160mg/L cyanuric acid	11342530	CyA test, tablets	100			
				5 to 200mg/L CaCO <sub>3</sub> (TA)	15311875	Hardcheck P, tablets	100			
<b>5 in 1</b>										
15267539	MD100 chlorine, pH, cyanuric acid, alkalinity-M, calcium hardness	0.02 to 6.0mg/L Cl <sub>2</sub> / 0.1 to 10mg/L Cl <sub>2</sub> , 6.5 to 8.4pH	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100	
				11312530	Phenol red, tablets	100				
				0 to 160mg/L cyanuric acid	11342530	CyA test, tablets	100			
				5 to 200mg/L CaCO <sub>3</sub> (TA)	15311875	Hardcheck P, tablets	100			
				0 to 500mg/L CaCO <sub>3</sub> (CaH)	15301935	Calcio pack H No.1/ No. 2, tablets	100			

Cat No.	Photometers, single-parameter	Range	Reagent format	Cat No.	Reagents 1	Pack qty	Cat No.	Reagents 2	Pack qty
12601705	MD100 aluminium	0.01 to 0.3mg/L Al	Tablets	15391845	Aluminium No. 1, tablets	100	13161076	Aluminium No. 2, tablets	100
12611705	MD100 aluminium	0.01 to 0.25mg/L Al	Powder	10160823	Vario powder set, 100 tests	1			
12621705	MD100 ammonia	0.02 to 1.0mg/L N	Tablets	15331755	Ammonia No. 1, tablets	100	15351755	Ammonia No. 2, tablets	100
12631705	MD100 ammonia	0.01 to 0.8mg/L N	Powder	10464763	Vario set, 10mL, ammonia salicylate and cyanurate, powder, 100 tests	1			
12692005	MD100 ammonia free and monochloramine	0.01 to 0.5mg/L N and monochloramine 0.04 to 4.5mg/L Cl <sub>2</sub>	Powder	15381695	Vario set, free ammonia and Vario monochlor F RGT, 50 tests	1			
12641705	MD100 chlorine	0.01 to 6.0mg/L Cl <sub>2</sub> / 0.1 to 10mg/L Cl <sub>2</sub> (OTZ)	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100
12681705	MD100 chlorine DUO	0.02 to 2.0mg/L Cl <sub>2</sub> (diameter 24mm glass vial/ 0.1 to 8.0mg/L Cl <sub>2</sub> (diameter 10mm multi vial to 2)	Powder	10426303	Vario chlorine free DPD/F10 powder, 10mL	100	10402345	Vario chlorine total-DPD/F10 powder, 10mL	100
12691705	MD100 chlorine HR (potassium iodide)	5 to 200mg/L Cl <sub>2</sub> (diameter 16mm round vial and adapter)	Tablets	15331775	Chlorine HR (KI), tablets	100	15319880	Acidifying GP, tablets	100
12611995	MD100 chlorine dioxide	0.02 to 11mg/L ClO <sub>2</sub>	Tablets	12828241	DPD No. 1, tablets	100	11302530	DPD No. 3, tablets	100
12621995	MD100 chlorine dioxide	0.04 to 3.8mg/L ClO <sub>2</sub>	Powder	10426303	Vario chlorine free DPD/F10 powder, 10mL	100			
12691995	MD100 copper	0.05 to 5.0mg/L Cu	Tablets	15371825	Copper No. 1, tablets	100	15351805	Copper No. 2, tablets	100
12612005	MD100 copper	0.05 to 5.0mg/L Cu	Powder	11719029	Vario Cu 1 F10 powder, 10mL	100			
12671735	MD100 COD	0 to 150mg/L O <sub>2</sub> , 0 to 1.500mg/L O <sub>2</sub> , 0 to 15.000mg/L O <sub>2</sub>	Test tube	10301292	Reaction tube, 0 to 150mg/L O <sub>2</sub>	25			
				13407458	Reaction tube, 0 to 150mg/L O <sub>2</sub> , mercury free	25			
				10062262	Reaction tube, 0 to 1.500mg/L O <sub>2</sub>	25			
				15322055	Reaction tube, 0 to 1.500mg/L O <sub>2</sub> , mercury free	25			
				10285842	Reaction tube, 0 to 15.000mg/L O <sub>2</sub>	25			
				15332055	Reaction tube, 0 to 15.000mg/L O <sub>2</sub> , mercury free	25			
12681995	MD100 hardness total	2 to 50mg/L CaCO <sub>3</sub> , 20 to 500mg/L CaCO <sub>3</sub> (by dilution)	Tablets	15311875	Hardcheck P, tablets	100			
12602005	MD100 hazen	0 to 500mg/L Pt to Co	No reagent required						
12641995	MD100 iron	0.02 to 1.0mg/L Fe	Tablets	10680561	Iron LR (Fe <sup>2+</sup> and Fe <sup>3+</sup> ), tablets	100	15311845	Iron (II) LR (Fe <sup>2+</sup> ), tablets	100
12651995	MD100 iron TPTZ	0.02 to 1.8mg/L Fe	Powder	11798999	Vario iron TPTZ F10 powder, 10mL	100			
12661995	MD100 iron	0.02 to 3.0mg/L Fe	Powder	10691694	Vario iron F10 powder, 10mL	100			
12671995	MD100 fluoride	0.05 to 2.0mg/L F	Without reagent	10171003	SPADNS, solution	250	11769548	Fluoride standard	30
12622005	MD100 manganese LR	0.2 to 4.0mg/L Mn	Tablets	15301905	Manganese LR 1, tablets	100	15321905	Manganese LR 2, tablets	100
12632005	MD100 manganese LR	0.01 to 0.7mg/L Mn	Powder	11698318	Vario set, includes 100mL ascorbic acid, 60mL alkaline cyanide, 60mL PAN indicator	1	15361665	Rochelle salt solution (additionally required for samples with hardness values above 300mg/L CaCO <sub>3</sub> )	30
12642005	MD100 manganese HR	0.1 to 18mg/L Mn	Powder	11779039	Vario set, manganese citrate buffer F10 and sodium periodate F10 powder, 100 tests	1			
12562005	MD100 molybdenum LR	0.03 to 3.0mg/L Mo (mixing cylinder required/not included)	Powder and solution	15301695	Vario set, (100mL molybdenum 1 LR F20 and 50mL molybdenum 2 LR)	1			
12602015	MD100 phosphate	0.05 to 4.0mg/L PO <sub>4</sub>	Tablet	10211602	Phosphate No. 1 LR, tablets	100	15361775	Phosphate No. 2 LR, tablets	100
12612015	MD100 phosphate	0.06 to 2.5mg/L PO <sub>4</sub>	Powder	15311675	Vario phosphate reagent, F10	100			
12601715	MD100 silica	0.05 to 4.0mg/L SiO <sub>2</sub>	Tablets	10747693	Silica No. 1, tablets	100	10552055	Silica No. 2, tablets	100
12611715	MD100 silica LR	0.1 to 1.6mg/L SiO <sub>2</sub>	Powder	11759019	Vario set, 100mL amino acid F10, 200mL citric acid F10 and 2 x 50mL molybdate 3	1			
12621715	MD100 silica HR	1 to 90mg/L SiO <sub>2</sub>	Powder	11719049	Vario set, silica HR (molybdate F10, acid reagent F10, citric acid F10), 100 tests	1			
12631715	MD100 suspended solids	0 to 750mg/L TSS	No reagent required						

# Lovibond® Water Testing

## Tintometer® Group



130 Years of Water Testing

Instruments and Reagents for Today's Water Analysis

[www.lovibond.com](http://www.lovibond.com)



# Water Analysis

## Sampling

- Thiosulfate lab bottle Thermo Scientific, Gosselin
- Manual sampler Bürkle
- Automatic sampler, peristaltic pump Fisherbrand
- Scoops Fisherbrand, Bürkle
- Bags, cylinders, HDPE & PP lab bottles Fisherbrand, Thermo Scientific, Gosselin, Azlon



## Field analysis

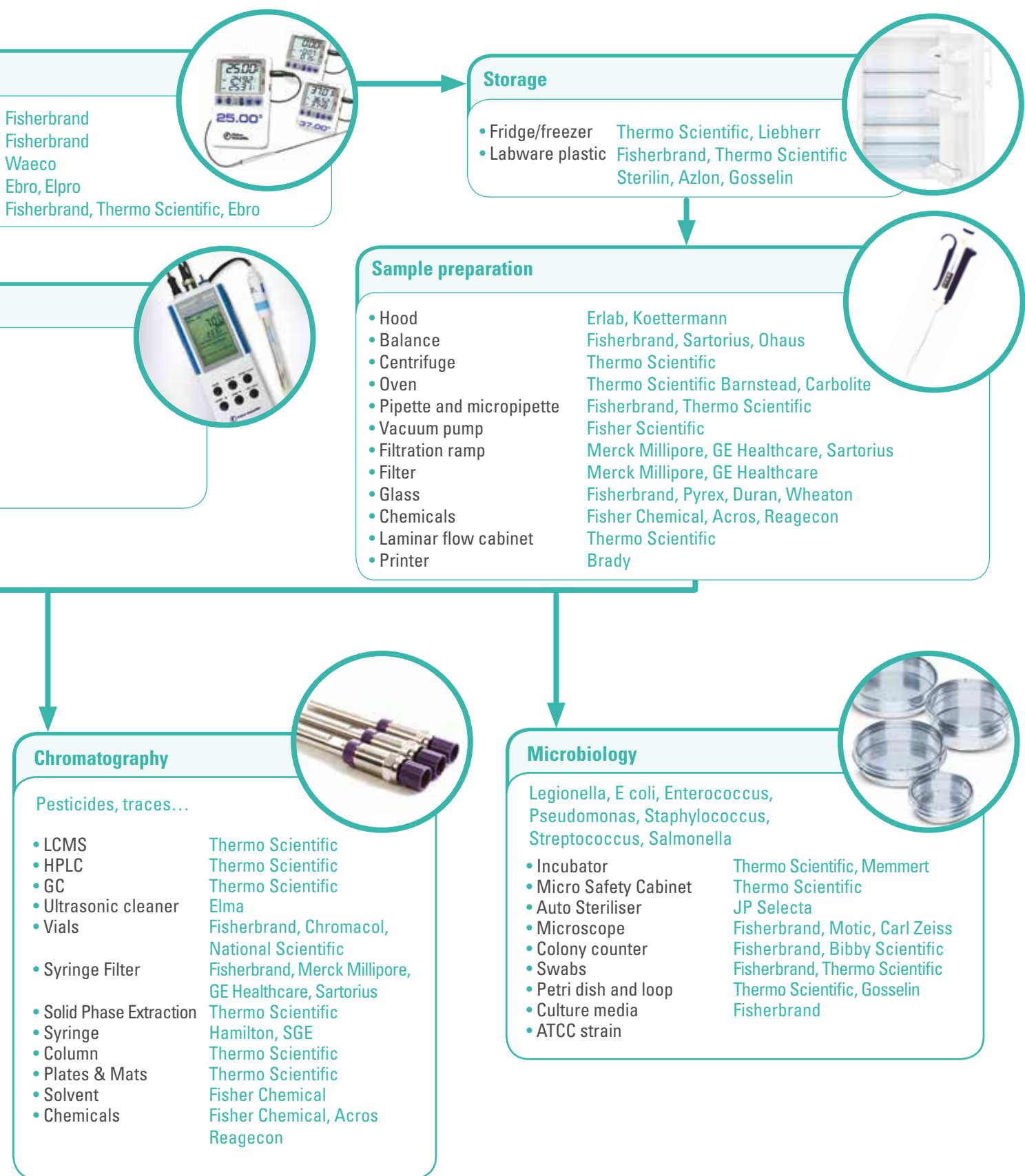
- pH Buffers Fisher Chemical, Reagecon
- pH Strip Fisherbrand, Macherey Nagel
- Colorimeter Thermo Scientific, Chemetrics
- Handheld Photometer Lovibond Tintometer, WTW, Palintest
- Secchi disc Lovibond Tintometer, Thermo Scientific, WTW
- Turbidimeter Thermo Scientific
- Dip slide Thermo Scientific, Ebro
- Thermometer Lovibond Tintometer
- Fluorimeter Fisherbrand
- Handheld jar test Fisherbrand, Thermo Scientific
- Timers Fisherbrand, Thermo Scientific, WTW
- Handheld pH-meter Fisherbrand, Thermo Scientific, WTW
- Handheld Conductimeter Fisherbrand, Thermo Scientific, WTW, YSI
- Handheld Oxymeter Thermo Scientific, WTW, Horiba, YSI

## Physical chemistry analysis

COD, BOD, turbidity, pH, conductimetry, salinity, heavy metals, parameters as chlorine, MES, nitrogen...



Parameter	Method	Equipment	Supplier	Norm
COD (Chemical Oxygen Demand)	Normalized	Photometer	Lovibond Tintometer	ISO 6060
		Thermo Reactor	Palintest, WTW	
		Balance	Fisherbrand, Sartorius, Ohaus	
		Muffle Furnace	Thermo Scientific, Carbolite, Nabertherm	
BOD (Biochemical Oxygen Demand)	Normalized	Drying Oven	Thermo Scientific, Memmert	ISO 5815
		Chemicals	Fisher Chemical	
		Oxymeter	Fisherbrand, Thermo Scientific	
		Magnetic Stirrer	Thermo Scientific, Sartorius	
Turbidimetry	Normalized	Water Purification	Lovibond Tintometer, Velp Scientifica	SM 5210 D
		Incubator	WTW, Lovibond Tintometer, Velp Scientifica	
pH	Normalized	BOD System	Velp Scientifica	ISO 7027
		Turbidimeter	Fisherbrand, Thermo Scientific, WTW, Mettler, Knick	
Conductivity	Normalized	pH Meter	Fisher Chemical, Reagecon	ISO 10523
		Standard Buffers	Fisherbrand, WTW, Mettler, Knick	
DO (Dissolved Oxygen)	Normalized	Conductivity Meter	Fisher Chemical, Reagecon	ISO 7888
		Standard Buffers	Thermo Scientific, WTW, Mettler, Knick, Horiba	
ORP	Normalized	Oxy Meter	Thermo Scientific, WTW, Mettler, Knick	ISO 58134, ISO 17289
		Ion Meter	Thermo Scientific, WTW, Mettler, Knick	
Water hardness	Normalized	Chromatography	ion Chromatography	ISO 10304
		Rapid	Tintometer, Macherey Nagel	
Nitrogen-Kjeldhal	Normalized	Tests Strips	Thermo Scientific, WTW, Tintometer	ISO 5663
		Photometer	Thermo Scientific, WTW, Tintometer	
Heavy metal	Normalized	Digestion Units	Velp Scientifica	ISO 8288, ISO 9174, ISO 12846
		Atomic Absorption	Thermo Scientific, Jenway	
Phosphorus	Normalized	Mineralisation System	Velp Scientifica	ISO 6878
		Photometer	WTW, Tintometer Lovibond	
Phenol	Normalized	Spectrophotometer	Thermo Scientific, Jenway	ISO 6439
		Spectrophotometer	Thermo Scientific, WTW, Lovibond Tintometer, Jenway	
Chlorine	Normalized	Spectrophotometer	Thermo Scientific, WTW, Lovibond Tintometer, Jenway	ISO 7393
		Rapid	Fisherbrand, Sartorius	
Suspended solids by filtration	Normalized	Moisture Analyser	Fisherbrand, Thermo Scientific	ISO 11923
		Centrifuge	Thermo Scientific, Millipore, Sartorius	
TOC	Normalized	Filtration Glass Fibre Filters	Thermo Scientific, Millipore, Sartorius	ISO 872
		Oven	Thermo Scientific, Heratherm, Memmert	
		Balance	Fisherbrand, Sartorius, Ohaus	
		Freeze Dryer	Labconco	
		FTIR Spectroscopy	Thermo Scientific	ISO 1484



# Lab Analysis

**Our portfolio consists of a broad range of applications including standard physical and chemical indicators of water quality as well as methods to test for microorganisms, organic/inorganic chemical contaminants and toxicity.**

**Fisher Scientific offers an outstanding range of products to provide accurate, reliable results for lab, field and industrial processes.**

## Fisherbrand®

### pH test strips

- 85mm x 6mm sticks with different indicator panels sealed onto each test strip
- Provides outstanding measurements safely over the designated pH range
- Colour scale on the test strip box allows exact comparison with the colour developing on the test strip pad
- Indicator is covalently bonded on the pads and does not bleed into the sample – can be left in sample for an indefinite time without contamination
- Hydrophobic plastic handle protects user from sample and allows pH testing in narrow and deep vessels
- Available in a flat box so they fit into your pocket
- An economic and easy standard in a variety of environments such as: chemical laboratories, industry, dairies, production facilities, universities, schools and food processing



# Technical note:

## Standard buffer solutions for pH meter calibration

Find the pH buffer and standard solutions on page 51

Next to temperature and mass, pH is the third most common laboratory measurement, and buffer solutions (such as phosphate buffered saline, PBS) are frequently used as a means of keeping pH at a nearly constant value in a wide variety of chemicals and biochemical applications. For example, many enzymes only work under very precise conditions so it is very important that the buffer maintains the correct pH; if the pH moves outside of a narrow range, the enzyme may stop working and denature. Industrially, buffers are used in fermentation processes and in setting the correct conditions for dyes used in colouring fabrics.

For such very precise work it is important that pH meters are calibrated before each measurement. Standard buffer solutions, of known pH value, allow calibration of the meter/electrode system to ensure that accurate measurements are taken subsequently. Certified accurate buffers are available from Fisher Chemical as ready to use colour coded solutions, concentrated solutions, capsules and prepackaged salts. All have the special characteristic of resisting pH change in the event of dilution or acid/base contamination. It is generally recommended to use a minimum of two-point standardisation; first with a buffer value close to the electrode systems zero potential (typically pH 7); and also with an additional acid or base buffer whose values encompasses the expected pH value of the sample. For best accuracy, the calibration should be performed with ATC at the same temperature as the expected samples.

In this section you will discover that Fisher Chemical have all the standard buffers you need. Manufactured to exacting standards and packaged for convenience, you'll find a buffer to meet virtually every laboratory or field application.

### pH Buffers

NIST Certified Standard Solution & Concentrate  
A full range to discover on page 51  
[www.eu.fishersci.com](http://www.eu.fishersci.com)



Cat No.	Description	Pack qty
10642751	Test strip, pH 0.0 to 14.0	100
10333501	Test strip, pH 4.5 to 10.0	100
10018080	Test strip, pH 0.0 to 6.0	100
10271751	Test strip, pH 7.0 to 14.0	100
10353641	Test strip, pH 3.6 to 6.1	100
11316454	Test strip, pH 2.0 to 9.0	100
11396454	Test strip, pH 7.5 to 9.5	100
11386454	Test strip, pH 6.0 to 7.7	100
11376454	Test strip, pH 5.1 to 7.2	100
11306464	Test strip, pH 7.9 to 9.8	100
11346454	Test strip, pH 0.3 to 2.3	100
10017950	Test strip, pH 1.7 to 3.8	100



**Fisherbrand®**

**Multiparameter, AB250**

Versatile BNC connection for pH, redox/ORP, or ion selective measurements

Technical Specification

<b>pH</b>	
Range	..... -2.000 to 20.000pH
Resolution	..... 0.1/0.01/0.001pH
Accuracy	..... ±0.002pH + 1LSD
Buffer Sets	..... USA: 2.000, 4.010, 6.997, 10.013, 12.000
	..... NIST: 1.678, 4.010, 6.865, 9.184, 12.460
	..... DIN: 1.090, 3.060, 4.650, 6.790, 9.230, 12.750
	..... FSCI: 1.000, 3.000, 6.000, 8.000, 10.000, 13.000
	..... CUSTOM: Any 2 to 5 values, ≥1.0pH unit apart
Slope Display	..... Yes, up to 5 different slopes with offset
Temp Compensation	..... Automatic or manual (0 to 100°C / 32 to 212°F)
<b>mV Mode</b>	
Range	..... ±2000.0 mV
Resolution	..... 0.1 mV
Accuracy	..... ±0.2 mV
Offset Adjustment	..... Up to ±150mV
<b>Ion Mode</b>	
Range	..... 0.001 to 19,999 (±2,000mV)
Resolution	..... 0.001/0.01/0.1/1 (automatic)
Units	..... ppm, mg/L, molar
Accuracy	..... 0.5% full scale (monovalent ion)
	..... 1% full scale (divalent ion)



Cal Points	..... 2 to 6 points from one of following groups
	..... 0.001, 0.01, 0.1, 1, 10, 100
	..... 0.01, 0.1, 1, 10, 100, 1,000
	..... 0.02, 0.2, 2, 20, 200, 2,000
	..... 0.1, 1, 10, 100, 1,000, 10,000
	..... 0.05, 0.5, 5, 50, 500, 5,000
<b>Temperature Mode</b>	
Resolution	..... 0.1°C / 0.1°F
Accuracy	..... ±0.3°C / ±0.5°F
Calibration	..... Offset in 0.1° increments; offset range: ±5°C / 9°F
Output	..... RS 232 (phono plug), mini-B USB, stirrer
Language Selection	..... English, French, Spanish, German, Italian, Chinese, Korean and Portuguese
Memory	..... 500 data sets, viewable
Data Logging	..... Manual, timed (selectable every 3 to 3,600 seconds)
	..... Printer or CSV format

Cat. No	Description
12850633	AB250 Meter. Includes electrode arm, RS 232 and USB cables, 100/240V power supply, and manual
12860633	AB250 Kit. Includes TRIS compatible pH/ATC electrode (Cat. No 11500194), electrode arm, RS 232 and USB cables, 100/240V power supply, and manual

**Fisherbrand®**

**Multiparameter, XL150**

Simple yet powerful, large full-colour touch screen for easy operation.

- Colour touch screen
- Two stirring probe ports
- Three position electrode holder
- Upgradeable software
- USB and RS 232 connectivity

Technical Specification

<b>pH</b>	
Range	..... -2.000 to 20.000pH
Resolution	..... 0.1/0.01/0.001pH
Accuracy	..... ±0.1 / 0.01 / 0.002 ±1LSD
Buffer Sets	..... USA: 2.00, 4.01, 7.00, 10.01, 12.00
	..... NIST: 1.68, 4.01, 6.86, 9.18, 12.46
	..... DIN 19267: 1.09, 3.06, 4.65, 6.79, 9.23, 12.75
	..... FSCI: 1.00, 3.00, 6.00, 8.00, 10.00, 13.00
	..... Pure Water: 4.10, 6.97, 9.15
	..... CUSTOM: 2 to 5 points; any values ≥1.0pH units apart
<b>mV Mode</b>	
Range	..... ±2.000mV / Rel mV
Resolution	..... 0.1
Accuracy	..... ±0.2



<b>Temperature Mode</b>	
Resolution	..... -5.0 to 105.0°C
Accuracy	..... 0.1°C (0.1°F)
Calibration	..... ±0.2°C (±0.3°F)
Output	..... RJ45, RS 232, USB-A, mini-B USB, two stirrer ports
Language Selection	..... English, French, Spanish, German, Italian, Chinese, Korean and Portuguese
Data Logging	..... 2,000- reading data log capability

Cat. No	Description
12890633	XL150 Meter. Includes electrode arm, RS 232 and USB cables, 100/240V power supply, and manual
12820643	XL150 Kit. Includes TRIS compatible accuTupH pH electrode (Cat. No 11550174), ATC probe (Cat. No 10236064), electrode arm, RS 232 and USB cables, 110/220V power supply, and manual

**Fisherbrand®**

**Multiparameter, XL250**

Multiple BNC ports allow flexibility.

Technical Specification

<b>pH</b>	
Range	.....-2.000 to 20.000pH
Resolution	..... 0.1/0.01/0.001pH
Accuracy	.....±0.1 / 0.01 / 0.002 ±1LSD
Auto Buffer Recognition	.....5 preset buffer groups + custom
<b>mV Mode</b>	
Range	..... ±2.000mV / Rel mV
Resolution	..... 0.1
Accuracy	..... ±0.2
<b>Temperature Mode</b>	
Resolution	.....-5.0 to 105.0°C
Accuracy	..... 0.1°C (0.1°F)
Calibration	.....±0.2°C (±0.3°F)

<b>Ion Mode</b>	
Range	..... 1 x 10 <sup>-6</sup> to 9.99 x 10 <sup>10</sup>
Resolution	..... 0.1/0.01/0.001
Accuracy	..... ±0.5% full scale (monovalent ion) ..... 1% full scale (divalent ion)
<b>Output</b>	RJ45, RS 232, USB-A, mini-B USB, two stirrer ports
<b>Language Selection</b>	English, French, Spanish, German, Italian, Chinese, .....Korean and Portuguese



Cat. No	Description
12850643	XL250 Meter. Includes electrode arm, RS 232 and USB cables, 100/240V power supply, and manual
12860643	XL250 Kit. Includes TRIS compatible accuTupH pH electrode (Cat. No 11550174) , ATC probe (Cat. No 10236064), electrode arm, RS 232 and USB cables, 110/220V power supply, and manual
12890643	XL250 Ammonia Kit. Includes ammonia electrode (Cat. No 11510134), TRIS compatible accuTupH pH electrode (Cat. No 11550174), ATC probe (Cat. No 10236064), electrode arm, RS 232 and USB cables, 110/220V power supply, and manual

**Fisherbrand®**

**Multiparameter, XL600**

A complete lab in one instrument.

Technical Specification

<b>pH</b>	
Range	.....-2.000 to 20.000pH
Resolution	.....0.1/0.01/0.001 selectable
Accuracy	.....±0.1/0.01/0.002 ±1LSD
Cal. Points	.....Up to 6 preset or 5 custom
Buffer Sets	..... USA: 2.000, 4.010, 6.997, 10.013, 12.000 ..... NIST: 1.678, 4.010, 6.865, 9.184, 12.460 ..... DIN: 1.090, 3.060, 4.650, 6.790, 9.230, 12.750 ..... FSCI: 1.000, 3.000, 6.000, 8.000, 10.000, 13.000 ..... CUSTOM: Any 2 to 5 values, ≥1.0pH unit apart
Slope Display	..... Yes, with offset
Multiple Slope Display	..... Yes, up to 5 different slopes
Temp Compensation	Automatic or manual (0 to 100°C / 32 to 212°F)
Temp Range (Meter)	0.0 to 100.0°C / 32.0 to 212.0°F
Inputs	..... BNC, ATC
<b>mV Mode</b>	
Range	.....±2.000.0mV
Rel. mV Range	.....±2.000.0mV
Resolution	..... 0.1
Accuracy	.....±0.2mV or ±0.05% whichever is greater
Offset Adjustment	..... Up to ±150mV
<b>Temperature Mode</b>	
Resolution	.....0.1°C / 0.1°F
Accuracy	.....±0.3°C / ±0.5°F
Calibration	Offset in 0.1° increments; Offset range: ±5°C / 9°F Ion Mode
Range	..... 0.001 to 19.999 (±2000mV)
Resolution	..... 0.001/0.01/0.1/1 (automatic)
Units	.....ppm, mg/L, molar
Accuracy	..... 0.5% full scale (monovalent ion) ..... 1% full scale (divalent ion)
Cal Points	..... 0.001, 0.01, 0.1, 1, 10, 100 ..... 0.01, 0.1, 1, 10, 100, 1.000 ..... 0.02, 0.2, 2, 20, 200, 2.000 ..... 0.1, 1, 10, 100, 1.000, 10.000 ..... 0.05, 0.5, 5, 50, 500, 5.000

<b>Conductivity</b>	
Range	.....00.00µS to 500.0mS
Resolution	..... 0.01 / 0.1µS; 0.001 / 0.01 / 0.1mS
Accuracy	.....±1% full scale
Cal. Points	..... Automatic (4 points); maximum 1 per range ..... Manual (5 points); maximum 1 per range
Cell Constant	..... 0.010 to 10.000
Cell Types	..... 2 or 4 cell with ATC
Coefficient (Per °C)	.....Linear & pure; adjustable 0.000 to 10.000 %
Normalisation	..... 15.0 to 30.0°C / 59.0 to 86.0°F
Compensation	..... Automatic with supplied cell or manual
Temp Compensation	..... 0.0 to 100°C / 32.0 to 212.0°F .....(0.0 to 80°C / 32.0 to 176.0°F with supplied cell)
<b>Output</b>	RJ45, RS 232, USB-A, mini-B USB, two stirrer ports
<b>Language selection</b>	English, French, Spanish, German, Italian, Chinese, Korean and Portuguese
<b>Datalogging</b> (24hours)	Manual, timed selectable every 3 to 86.400 sec.
<b>TDS</b>	
Range	.....0.00ppm to 500ppt (@ TDS factor 1.00)
Resolution	..... 0.01 / 0.1ppm; 0.001 / 0.01 / 0.1ppt
Accuracy	.....±1 % full scale
Cal. Points	.....Up to 5
TDS Factor	..... 0.400 to 1.000



Cat. No	Description
12820653	XL600 Meter. Includes electrode arm, RS 232 and USB cables, 100/240V power supply, and manual
12810653	XL600 Kit. Includes TRIS compatible accuTupH pH electrode (Cat. No 11550174), ATC probe (Cat. No 10236064), conductivity/ temp probe (Cat. No 11550164), electrode arm, RS 232 and USB cables, 100/240V power supply, and manual



**pH/TDS tester, leakproof, PTTTest35**

- No need to change sensor every time you switch parameters – One tester measures five parameters (measures pH, TDS, and temperature)
- Full pH range measurement at up to two decimal places
- Low, medium and high TDS ranges – tester measures pure water!
- Up to 5 point pH calibration and 3 point TDS calibration
- Adjustable TDS factor (0.40 to 1.00)
- Temperature sensor housed within unique dome-shaped casing for faster ATC response and faster measurements.
- ATC/ MTC option
- Scroll-menu with four buttons control for stress-free navigation
- Longest-lasting tester in the market! No tools required to replace sensor
- One-press 'Parameter Toggle': Switching parameters is just a press of the button
- Certified IP67 Waterproof – Lightweight tester even floats for easy retrieval



pH	Range	0.0 to 14.0
	Accuracy	0.01
Temperature	Range, °C	0.0 to 50.0
	Accuracy, °C	0.5
TDS	Range, ppt	0.0 to 10.0
	Accuracy, %	1
General	Calibration points	1 to 5
	Temperature display	Yes

Cat No.	Description
11599104	Leakproof multi-parameter tester



**Conductivity meter, Ecoscan CON6+**

- Waterproof to IP54
- Automatic temperature compensation
- Shockproof, splashproof ABS construction
- Supplied with conductivity cell and carrying case



**Model CON6+**

Conductivity	Range, $\mu\text{S}/\text{cm}$	0 to 19.99, 199.9, 1999; 19.99, 199.9
	Resolution, $\mu\text{S}/\text{cm}$	0.01, 0.1, 1 and 0.01, 0.1
	Accuracy	$\pm 1\%$ Full Scale + 1 LSD
Temperature	Range, °C	0 to 100.0 (meter)
	Resolution, °C	0.1
	Accuracy, °C	$\pm 0.5$

Cat No.	Description
11569204	Conductivity meter CON6+, kit



**Conductivity/TDS/Salinity meter kit, 150**

For measurement of conductivity/total dissolved solids/salinity/temperature. This backlit, rugged waterproof meter is ideal for any environment. Kit includes meter, conductivity cell (K=1.0), Grip-Clip™, two AA batteries, hard carry case, USB cable and calibration solutions.



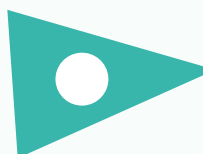
- Durable waterproof and dust proof design with IP67 rating
- Large, backlit custom display - view measurement with temperature and cell efficiency
- Grip-Clip™ quickly and easily secures the probe to your beaker or container
- Calibrate using automatically recognised standards or manually; to a single point across all ranges or to multiple points (one calibration point per each conductivity range)
- Selectable cell constant 0.10, 1.00, or 10.0
- Adjustable temperature coefficient from 0.00 to 10.00% per °C. Set to 0.0% to meet USP methods for non-compensated measurements
- Adjustable conductivity-to-TDS factor, adjustable 0.4 to 1.0
- Selectable °C/°F - choose units to best fit your application
- Includes our easy to clean conductivity cell
- Ready indicator, manual or automatic measurement hold feature and optional automatic shut off function
- Store up to 500 data sets with data
- Use USB or RS 232 output with optional data cable to send data to your software or our free communication software
- Built-in real-time clock stamps stored data and calibration data with time and date meeting standards for GLP (Good Laboratory Practices)
- Built-in stand with wall mount allows for easy bench top measurement or storage

**Model 150**

Conductivity	Range	0 to 200mS
	Resolution	0.01 $\mu\text{S}$ to 0.1mS
TDS	Range	0 to 200ppt (TDS factor 1.0)
	Resolution	0.01ppm to 0.1ppt
Salinity	Range	0 to 50ppt
	Resolution	0.01
Temperature	Range, °C	-10.0 to 110.0 (14.0 to 230.0°F)
	Resolution, °C	0.1°C/°F

Cat No.	Description
15397053	Conductivity meter kit 150, portable

Looking for electrodes?



refer to pages 48-50

# Conductivity FAQ

**Equipment selection, improper temperature compensation settings and sample mishandling are just a few key issues.**

## Q Is the conductivity meter measuring conductivity or conductance?

A Conductivity is the measurement of the electrolytes in a solution. It is defined as the conductance in a given volume of sample. Conductance is the ability of the solution to conduct electric current. Conductivity = Conductance x Probes cell constant (K), OR Conductivity = Electrical Current/Voltage x Distance/Area.

## Q How does temperature affect conductivity readings?

A The effect of temperature on conductivity readings depends on the solution being measured. The effect is greatest in low ionic strength (low conductivity) solutions. As a general rule to follow, there will be a 2% change (increase) per degree C. This rule can be followed for most aqueous solutions, however if you require a high degree of accuracy, you should consult a chart for the particular solution you are measuring.

## Q Can conductivity be measured in aqueous solutions only?

A No, all substances possess some conductive properties. Generally organic compounds (such as benzene, alcohols, and petroleum products) have very low conductivities, while metals have very high conductivities. Measuring the conductivity of highly flammable liquids is very risky.

## Q How are conductivity and TDS related?

A Salts, minerals, and even dissolved gases contribute uniformly to the conductivity of a solution. This means that the conductivity can be used as an indicator of the amount of dissolved materials in a solution. TDS can be used fairly accurately when determining the concentration of a single salt, such as NaCl, but error can arise when trying to compare two different types of solutions. It is necessary to calibrate the meter using the same dissolved materials that are in the test solution.

## Q What is the difference between conductivity and salinity?

A The probe is the same for conductivity and salinity, but for salinity readings a correction factor is applied to the conductivity value. The correction factor takes the conductivity reading and converts it to ppm of NaCl.

## Q What is a cell constant K and why are there probes with different values of K?

A The cell constant, K, is equal to the distance in cm between the probe's electrodes divided by the surface area of the electrodes in cm<sup>2</sup>. For solutions with low conductivities the electrodes can be placed closer together or made larger so that the cell constant is less than one. This has the effect of raising the conductance to produce a value more easily interpreted by the meter. The reverse also applies, in high conductivity solutions, the electrodes are placed further apart or made smaller to reduce the conductance of the sample. By using the appropriate probe, K=0.1 for low conductivity solutions, K=1 for normal solutions and K=10 for high conductivity solutions, accurate measurements across the full range of conductivity values can be made.

## Q How do I find the correct temperature coefficient when not working with water?

A For water, the correction factor is set at a default value of 1.91% per degree C. Check the conductivity of the sample at 25°C, then using the same sample, find the conductivity at another temperature to see what the percent change is. This will give you the temperature correction factor.

## Q How should conductivity probes be cleaned?

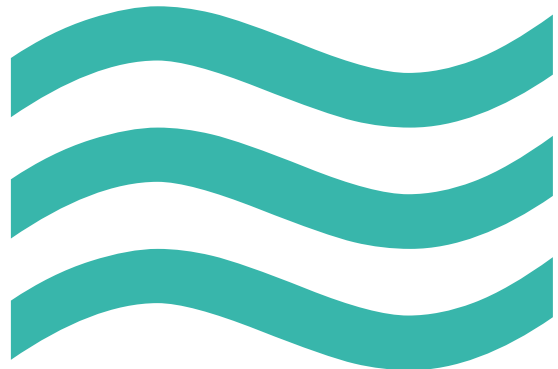
A Clean cells with mild liquid detergent and/or dilute nitric acid (1% wt) by dipping or filling the cell with solution and agitating for two to three minutes. Dilute HCl (hydrochloric acid) or H<sub>2</sub>SO<sub>4</sub> (sulfuric acid) may also be used. When stronger cleaning is needed, try concentrated HCl mixed into 50% isopropanol (rubbing alcohol). Rinse the cell several times with distilled or deionised water and recalibrate before use.

## Q How should conductivity probes be stored?

A Rinse it in distilled/deionised water when you are finished using it. You can store your electrode either wet or dry. If it is stored dry you will need to recondition the electrode before use.

## Q How should a meter for TDS be calibrated if the dissolved solids are not the same as those in the calibration solution?

A Making your own standard will yield the most accurate results. This is done by formulating a mixture of salts in relative proportions to those that simulate the solution being tested, then dissolving the mixture into distilled water. This should be done according to the following formula: 1mg salt mixture/litre of distilled water = 1ppm TDS, or, Xppm TDS = X mg of salts + 1 litre of distilled water.





# TOP 10 common mistakes to avoid when measuring conductivity

**Equipment selection, improper temperature compensation settings and sample mishandling are just a few of the factors that can lead to reading errors in conductivity measurement. Conductivity measurements are a useful indicator of the amount of dissolved ions present in a water sample and can serve as a measure of water quality. Although conductivity measurements are generally simple and easy to take, mistakes can still affect the validity of the data generated. By understanding and avoiding the most common measurement mistakes, you can help ensure that your readings are accurate and reproducible.**

**When measuring conductivity with meter and sensor, it is important to carefully follow the user manual for proper equipment use procedures. Here are the ten most common mistakes that are made when measuring conductivity:**

- 1** Using an unsuitable conductivity sensor. Sample composition, whether the sensor needs to be durable for field use, and the purity of the water sample will all affect the conductivity sensor you choose.
- 2** Not understanding the effects of temperature. Conductivity measurements are strongly affected by the temperature of the sample.
- 3** Misunderstanding the temperature compensation (TC) function. TC will calculate and display the conductivity at the chosen reference temperature. If TC is off, the displayed value is the actual conductivity at that temperature.
- 4** Improper temperature compensation settings. Whether to apply a TC or not, or what type of TC selected can affect the accuracy of your readings.
- 5** Taking a conductivity reading before achieving temperature equilibrium. Conductivity is temperature-dependent, so time must be allowed for the conductivity sensor to equilibrate to the same temperature as the sample.
- 6** Using elaborate multi-point calibrations. According to ASTM, a one-point calibration of the cell constant at a representative conductivity is sufficient for accurate conductivity readings. If the samples cover a large range of conductivities, one or more points can be made.
- 7** Mishandling low-level conductivity samples. The stability and purity of the sample and how it is handled will limit the accuracy of the sample reading. Low level samples can be easily effected by contamination, CO<sub>2</sub> absorption and degassing.
- 8** Using calibration standards that are too low. Low level standards are prone to contamination and difficult to use successfully. Tighter accuracy is achieved by calibrating at 100µS/cm or above.
- 9** Improper storage and maintenance of the conductivity sensor. Improper long-term and short-term storage of conductivity sensors can change the surface and adversely affect their performance.
- 10** Not understanding the Total Dissolved Solids (TDS) factor. Conductivity readings can be used to determine an estimate of the TDS in a sample by applying a TDS factor through the meter setup. This TDS value is an estimate, since the true TDS is determined by gravimetric testing.

**Thermo**  
SCIENTIFIC

## pH/ORP meter, bench top, Eutech, ION 700

Education: Useful for most laboratories, ecological studies and other applications.

Laboratory: Environmental studies, chemical labs, titrations and quality assurance testing. For use in all types of food processing



- Large, comprehensive screen that displays readings, calibration points and electrode indicator
- Ready indicator alerts when readings are stable
- Up to 5 point calibration with auto buffer recognition
- Non-volatile memory holds up to 100 data points
- Integral electrode holder

		Model ION 700
pH	Range	-2.00 to 16.00
	Resolution	0.01
	Accuracy	±0.1
	Calibration points	Up to 5
ORP	Range, mV	2.000
	Rel. mV range	±2.000
	Resolution, mV	0.1 (±199.9) / 1 (beyond)
	Accuracy, mV	±0.2 (±199.9) / ±2 (beyond)
Temperature	Range (meter), °C	0.0 to 100.0 ( 32.0 to 212.0°F)
	Resolution, °C	0.1 (0.1°F)
	Accuracy, °C	±0.3 (±0.5°F) (0 to 70°C)
	Compensation	ATC / MTC (0 to 100°C) (pH only)
	Calibration	Offset in 0.1° increments; offset range: ±5.0°C (±9.0°F)
Ion	Range	0.01 to 2.000ppm
	Accuracy	+/-0.5% Full scale (monovalent)/ +/-1% Full scale (divalent)

Cat No.	Description
11523855	ION 700 meter. Includes integral electrode holder and 100-240V a.c. adapter



**Conductivity/TDS/meter, portable, Orion Star A122**

- Robust housing, waterproof to IP67
- Three-point calibration with automatic recognition of calibration solutions
- Supplied in a case with conductivity cell, storage and calibration solution, protective shell with electrode holder



**Model A122**

Conductivity	Range	0.01µS/cm to 200.0mS/cm
	Resolution, µS	0.01µS minimum, auto ranging up to 3 significant digits
	Accuracy	0.5% of reading ±1 digit
	Calibration points	1
TDS	Range, mg/L	1 to 19.999
	Resolution, mg/L	1
	Accuracy	0.5% of reading ±1 digit
	Factor range	Linear (0.02 to 9.99)
Temperature	Range, °C	-5.0 to 105.0 (22.0 to 221.0°F)
	Resolution, °C	0.1 (0.1°F)
	Accuracy, °C	±0.1
	Compensation	Linear
	Reference (Metric), °C; Calibration, conductivity and temperature	20, 25
	Temperature selection	Manual or automatic with ATC temperature probe
General	Compatible probes	2 cell or 4 cell conductivity sensors with built-in temperature

Cat No.	Description	Includes
11631449	Star™ A122 conductivity meter	4 AA batteries, literature CD, printed quick start guide and meter test certificate



**Conductivity/TDS/Salinity/Resistivity meters, portable, Orion™ Star™ A222**

- Easy to use with plain language screen prompts and soft keys
- AUTO-READ™ locks in the stable reading on your screen and ready indicator alerts when readings are stable
- Selectable cell constant allows for use with 2 or 4 cell conductivity cells
- Selectable reading reference temperatures of 15°C, 20°C or 25°C with linear or non-linear curve options
- Includes the standard practical salinity curve for salinity readings
- Linear or ISO/EN 27888 curves for TDS
- Easily transfer data and keep meter software up to date with USB and RS232 ports and complimentary data analysis software
- Portable and waterproof with a IP67-rated protective housing
- Three year meter warranty



**Model A222**

Conductivity	Range	0.001µS/cm to 3.000mS/cm
	Resolution, µS	0.001µS minimum, auto ranging up to 4 significant digits
	Accuracy	0.5% of reading ±1 digit >3µS; 0.5% of reading ±0.01 µS ≤3µS
	Calibration points	Up to 5
TDS	Range, ppm	0.001 to 200.0
	Resolution, ppm	0.001 minimum, auto ranging up to 4 significant digits
	Accuracy	0.5% of reading ±1 digit TDS Factor Range Linear (0.02 to 9.99)
Salinity	Range	0.06 to 80.00psu, 0.05 to 42.00ppt
	Resolution	0.01psu or 0.01ppt minimum, auto ranging
	Accuracy	0.5% of reading ±1 digit
Resistivity	Range	2Ω to 100.0meg-Ω
	Resolution	1Ω or 0.1 meg-Ω, auto ranging
	Accuracy	0.5% of reading ±1 digit
Temperature	Range, °C	-5.0 to 105.0 (22.0 to 221.0°F)
	Resolution, °C	0.1 (0.1°F)
	Accuracy, °C	±0.1
	Compensation	Linear, nLFn (non-linear ultra pure water) or off
	Reference (Metric), °C; Calibration, conductivity and temperature	15, 20, 25
General	Compatible probes	2 cell or 4 cell conductivity sensors with built-in temperature

Cat No.	Description	Includes
11661469	Star A222 conductivity meter kit, portable	Includes batteries, DuraProbe 4-cell conductivity sensor, solutions, meter armour and field case



**Conductivity/TDS/meter, bench top, Orion™ Star™ A112**

- Large, informative screen clearly shows the main information, including conductivity or TDS reading, temperature in °C or °F, meter mode and power source
- AUTO-READ™ locks in the stable reading on your screen and ready indicator alerts when readings are stable
- Selectable cell constant
- Selectable reading reference temperatures of 20°C or 25°C for an accurate result
- Included electrode arm and redesigned holder make it easier to maintain and place probes into samples
- The IP54-rated housing can handle splashes and can be wall mounted if table space is a problem
- Three year meter warranty



**Conductivity/TDS/Salinity/Resistivity meter, bench top, Orion™ Star™ A212**

- Selectable cell constant allows for use with 2 or 4 cell conductivity cells
- Selectable reading reference temperatures of 5, 10, 15, 20 or 25°C with linear, non-linear, nLFu or EP curve options for accurate results
- Choice of practical salinity or natural sea water curves for salinity readings
- Linear or ISO/EN 27888 curves for TDS
- Included electrode arm and newly-designed probe holder to easily maintain and place probes into samples
- Wall mountable to save valuable bench space



**Model A112**

Conductivity	Range	0.01µS/cm to 200.0mS/cm
	Resolution	0.01µS minimum, auto ranging up to 3 significant digits
	Accuracy	0.5% of reading ±1 digit
TDS	Range, mg/L	1 to 19.999
	Resolution, mg/L	1
	Accuracy	0.5% of reading ±1 digit
	Factor range	Linear (0.02 to 9.99)
Temperature	Range, °C	-5.0 to 105.0 (22.0 to 221.0°F)
	Resolution, °C	0.1 (0.1°F)
	Accuracy, °C	±0.1
	Compensation	Linear
	Reference (Metric), °C; Calibration, conductivity and temperature	20, 25
	Temperature selection	Manual or automatic with ATC temperature probe
General	Compatible probes	2 cell or 4 cell conductivity sensors with built-in temperature
	Cell Constant	0.001 to 10cm <sup>-1</sup>

Cat No.	Description	Includes
11671439	Star™ A112 conductivity bench top meter kit	Meter, conductivity cell, K=1.0, conductivity standard, 1.413µS/cm, 5mL x 60mL, electrode arm with redesigned holder and universal power adapter

**Model A212**

Conductivity	Range	0.001µS/cm to 3.000mS/cm
	Resolution	0.001µS minimum, auto ranging up to 4 significant digits
	Accuracy	0.5% of reading ±1 digit >3 µS; 0.5% of reading ±0.01 µS ≤3µS
TDS	Range, ppm	0.001 to 200.0
	Resolution, ppm	0.001 minimum, auto ranging up to 4 significant digits
	Accuracy	0.5% of reading ±1 digit
	Factor range	Linear (0.02 to 9.99)
Salinity	Range	0.06 to 80.00psu, 0.05 to 42.00ppt
	Resolution	0.01psu or 0.01ppt minimum, auto ranging
	Accuracy	0.5% of reading ±1 digit
	Measurement modes	Practical salinity (psu) or natural sea water (ppt)
Resistivity	Range	2 ohm to 100.0 meg-ohm
	Resolution	1 ohm or 0.1 meg-ohm, auto ranging
	Accuracy	0.5% of reading ±1 digit
Temperature	Range, °C	-5.0 to 105.0 (22.0° to 221.0°F)
	Resolution, °C	0.1 (0.1°F)
	Accuracy, °C	±0.1
	Compensation	Linear, nLFn (non-linear ultra pure water), nLFu (non-linear ultra pure degassed water), EP (off with warning) or off
	Reference (Metric), °C; Calibration conductivity with calibration editing option and temperature	5, 10, 15, 20, 25
	Temperature selection	Manual or automatic with ATC temperature probe
General	Probe calibration	1 point temperature offset calibration
	Probe calibration	1 point temperature offset calibration

Cat No.	Description	Includes
11691449	Star™ A212 conductivity bench top meter	Meter, electrode arm with redesigned holder and universal power adapter



**pH/mV/ISE/temperature meter, Orion DUAL STAR**

- Dual channel with simultaneous displayed measurements
- Calibration graph with slope data for viewing or printing
- Meter prompts and shortcut keys
- Five language choices: English, Spanish, French, German and Italian
- 10 methods stored per channel, no need for a switchbox to retain calibrations when using multiple electrodes
- Known addition and subtraction incremental methods
- Autosampler compatibility

Functions available: Linear point to point, non-linear selectable auto-blank, incremental techniques including single known addition and subtraction, double known addition and subtraction



pH	Range	-2.00 to 19.999
	Resolution	0.1, 0.01, 0.001
	Accuracy	±0.002
	Calibration points	2 to 6
mV	Range	±1.999.9
	Resolution	±0.2mV or ±0.05% of reading whichever is greater
	Accuracy	0.1
ISE	Range	0 to 19.999 in ppm, M, %, ppb or unitless
	Resolution	Up to 3 significant digits
Temperature	Accuracy	±0.2mV or ±0.05 of reading, whichever is greater
	Range (metric), °C	-5 to 105
	Operating (metric), °C	5 to 45
	Resolution, °C	0.1
Humidity	Accuracy, °C	±0.1
	Range	5 to 85%, non-condensing
Calibration	Type	pH, ORP, relative mV, ISE
General	Display type	Backlit LCD
	Data points	1.000
	Inputs	2 BNC (pH or ISE), 2 x 8 pin Mini-DIN (temperature), 2 reference pin-tip, stirrer input
	Outputs	USB, RS 232
	Certifications	IP-54
	Power supply	Universal 90-260V a.c. (included), 50/60Hz
	Warranty	3 year

Cat No.	Description
12003293	pH/mV/ISE/temperature meter. Includes electrode stand; universal power adapter; 927007MD stainless steel ATC probe, RS 232



**pH/ORP/Conductivity/TDS meter, PC 700**

The multi-parameter PC 700 measures pH, ORP, conductivity and temperature with a single meter.

- Large screen in a compact footprint
- Meter accepts pH and Redox electrodes, in addition to conductivity/TDS – it's like having four meters in one!
- Non-volatile memory holds up to 100 data points
- Integral electrode holder

pH	Range	-2.00 to 16.00
	Resolution	0.01
	Accuracy	0.01
	Calibration points	Up to 5
ORP	Range, mV	±2.000
	Rel. mV range	±2.000
	Resolution, mV	0.1 (±199.9) / 1 (beyond)
	Accuracy, mV	±0.2 (±199.9) / ±2 (beyond)
Conductivity	Range	0.0µS to 200.0mS
	Resolution	0.01 / 0.1 / 1µS ; 0.01 / 0.1mS
	Accuracy	±1% full scale
	Calibration points	Automatic (8 µS, 1,413µS, 12.88 mS, 111.8mS); maximum 1 per range; manual (5 points); maximum 1 per range
TDS	Range	Up to 100.0ppt @ 0.5 fact (200.0ppt @ 1 factor)
	Resolution	0.01 / 0.1 / 1ppm ; 0.01 / 0.1ppt
	Accuracy	±1% full scale
	Calibration points	Manual (5 points); maximum 1 per range
	TDS factor	0.40 to 1.00 (adjustable)
Temperature	Range (meter), °C	0.0 to 100.0 (32.0 to 212.0°F)
	Resolution, °C	0.1 (0.1°F)
	Accuracy, °C	±0.5 (±0.9°F)

Cat No.	Description
11874383	PC 700 multiparameter meter





**pH/mV meters, portable, Seven2Go S2 range**

- Robust design
- Optimised for one handed use
- Intuitive menu structure
- Ideally suited for a wide range of applications and samples, including:
  - Measurements on the go
  - Emulsions and suspensions
  - Solid/semi-solid samples
  - Academic and education purposes
- pH measuring range -2.00 to 20.00 (except S2 light kit 2.00 to 20.00)
- pH resolution/accuracy 0.01/±0.01
- Five calibration points
- Four pre-defined buffer groups

Cat No.	Description
15395063	pH/mV S2-Meter only
15305073	pH/mV S2-Standard kit with InLab Export Pro-ISM-IP67 sensor
15315073	pH/mV S2-Field kit with InLab Expert Pro-ISM-IP67 sensor and uGo™ carrying case
15325073	pH/mV S2-Food kit with InLab Solids Pro-IP67 sensor and uGo carrying case
15335073	pH/mV S2-Light kit with InLab Versatile Pro sensor

**Conductivity meters, portable, Seven2Go S3 and S7 ranges**

- Simple and reliable
- Robust design and durability
- One handed operation with intuitive menu
- Ideal for mobile applications in the lab, at-line or outdoors, including:
  - Aqueous sample with mid to high conductivity
  - Bioethanol and biofuels (S3)
  - Ultra-pure water and low conductivity samples (S7)
- Measuring range:
  - S3: 0.010µS/cm to 500µS/cm
  - S7: 0.010µS/cm to 1.000µS/cm
- Resolution/accuracy 0.001/±0.5%
- Supports TDS, specific resistance and salinity
- Temperature range -5.0°C to 105.0°C

Cat No.	Description
<b>S3 range</b>	
15345073	pH/mV S3-Meter only
15355073	pH/mV S3-Standard kit with InLab Export Pro-ISM-IP67 sensor
15365073	pH/mV S3-Field kit with InLab Expert Pro-ISM-IP67 sensor and uGo™ carrying case
15375073	pH/mV S3-bioethanol kit with InLab Solids Pro-IP67 sensor and uGo carrying case
<b>S7 range</b>	
15315083	Conductivity S7-Meter only
15325083	Conductivity S7-Standard kit with InLab 738-ISM-IP67 sensor
15335083	Conductivity S7-Field kit with InLab 738-ISM-IP67 sensor and uGo carrying case
15345083	Conductivity S7-USP/EP kit with InLab 742-ISM-IP67 sensor and uGo carrying case



METTLER TOLEDO

**Dissolved oxygen (DO) meters, portable, Seven2Go S4 and S9 ranges**

- Attractive, robust design
- Simple and reliable meters
- Suited to mobile applications, including:
  - Aqueous samples, alcoholic and non-alcoholic beverages
  - Measurement on the go, in the lab or at-line
  - BOD measurement in all types of water samples (S9)
- Measurement range (DO):
  - S4: 0.00 to 99.9mg/L
  - S9: 0.00 to 50.0mg/L
- Resolution/accuracy (DO):
  - S4: 0.01±0.2mg/L
  - S9: 0.01±0.1mg/L
- Temperature measuring range:
  - S4: 0.0°C to 60.0°C
  - S9: 0.0°C to 50.0°C
- Two calibration points
- Automatic/manual pressure compensation



METTLER TOLEDO

**pH/Ion meters, portable, Seven2Go S8 range**

- Robust design, optimised for one handed use
- Intuitive menu
- Ideal for a wide range of applications and samples, including:
  - Measurements on the go
  - Emulsions and suspensions
  - Harsh chemicals
  - Aqueous samples, tooth paste and mouth wash
- pH measuring range -2.00 to 20.00
- pH resolution/accuracy 0.001±0.002
- Measuring range (rel. mV) -2.000 to 2.000
- Resolution/accuracy (rel. mV) 0.1±0.1
- Five calibration points
- Eight pre-defined buffer groups



Cat No.	Description
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**S4 range - Polarographic DO**

15385073	Dissolved oxygen S4-Meter only
15395073	Dissolved oxygen S4-Standard kit with InLab 605-ISM-IP67 sensor
15305083	Dissolved oxygen S4-Field kit with InLab 605-ISM-IP67 sensor and uGo™ carrying case

**S9 range - Optical DO**

15305093	Dissolved oxygen S9-Meter only
15315093	Dissolved oxygen S9-Standard kit with InLab OptiOx-ISM-IP67 sensor
15325093	Dissolved oxygen S9-Field kit with InLab OptiOx-ISM-IP67 sensor and uGo carrying case
15335093	Dissolved oxygen S9-BOD kit with InLab OptiOx-ISM-IP67 sensor, BOD adapter and uGo carrying case

Cat No.	Description
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15355083	pH/Ion S8-Meter only
15365083	pH/Ion S8-Standard kit with InLab Expert Pro-ISM-IP67 sensor
15375083	pH/Ion S8-Field kit with InLab Expert Pro-ISM-IP67 sensor and uGo™ carrying case
15385083	pH/Ion S8-Biotech kit with InLab Routine Pro-ISM-IP67 sensor
15395083	pH/Ion S8-Fluoride kit with perfectION™ Fluoride sensor and uGo carrying case



**Conductivity/Salinity meter, portable, 3110**

- Housing and probe connector waterproof to IP67
- BPL compliant calibration



**Model 3110**

Conductivity	Range	0µS to 1.000mS
	Resolution, mS	0.001, 0.01, 0.1
	Accuracy	±0.5% Full scale ±1 LSD
Salinity	Range, ppt	0 to 70
	Resolution, ppt	0.1
	Accuracy	±0.2% Full scale
Temperature	Range, °C	-5 to 105
	Resolution, °C	0.1
	Accuracy, °C	±0.1
	Compensation	Automatic
General	Calibration points	1, 2, 3
	Electrical supply	4 x 1.5V AA or 4 x 1.2V NiMH rechargeable batteries

Cat No.	Description	Includes
10414885	Portable conductivity meter 3110	Carry case with 4-electrode conductivity cell TetraCon™ 325, standard solution 1413µS/cm at 25°C, stand, beaker, short

**Accessories:**

10009110	Anti-impact rubber case
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**Multiparameter meters, portable, MultiLine™ IDS**

- Single channel meters for pH, conductivity and dissolved oxygen measurement
- Intelligent sensor IDS
- Graphical display of measured value and calibrated range for continuous control
- One, two or three outputs to three selectable parameters
- Rugged, waterproof



**Models 3410 / 3420**

DO measurement (optical)	Concentration, mg/L	0.00 to 20.00
	Saturation, %	0.0 to 200.0
	Partial pressure, hPa	0 to 400.0
	Temperature, °C	0.0 to 50.0
pH	Range	-2.0 to 20.0
		-2.00 to 20.00
		-2.000 to 20.000
mV	Range	±2.000
		±1.250.0
pH/mV, Temperature, °C	Range	-5.0 to 105.0
Conductivity	mS/cm	0.00 to 20.00
	Additionally	0.00 to 19.99µS/cm, K = 0.1 cm <sup>-1</sup>
	Spec. resistivity	0.00 to 20meg-Ω cm
	Salinity	0.0 to 70.0 (acc. IOT)
	TDS	0 to 1.999mg/L 0 to 199.9g/L
	Temperature, °C	-5 to 105.0

Cat. No	Description
11785184	Multi 3410 Set 5, includes: DO case set with optical IDS DO probe FDO™ 925-3 (Cat.No. 11785174), short instruction manual, stand, beaker, CD-ROM, driver software for USB, rechargeable batteries, cable, universal power supply and accessories
11775194	Multi 3410 Set E, includes: Multi case set with IDS sensors: digital pH electrode SenTix™ 980 (Cat. No.10805371), digital conductivity two-electrode cell LR 925/01, QSC kit, short instruction manual, stand, beaker, CD-ROM, driver software for USB, rechargeable batteries, cable, universal power supply and accessories
11745204	Multi 3420 Set G, includes: Multi case set with IDS sensors: digital pH electrode SenTix™ 940-3 (Cat.No. 11725184), digital conductivity cell TetraCon™ 925-3 (Cat.No.11725184), optical DO probe FDO™ 925-3 (Cat.No. 11785174), QSC kit, short instruction manual, stand, beaker, CD-ROM, driver software for USB, rechargeable batteries, cable, universal power supply and accessories
10448124	Multi 3430 Set G, includes: Large multi case set with IDS sensors: digital pH electrode SenTix™ 940-3 (Cat. No. 11715174), digital conductivity cell TetraCon™ 925-3 (Cat.No.11725184), optical DO probe FDO™ 925-3 (Cat.No. 11785174), QSC kit, short instruction manual, stand, beaker, CD-ROM, driver software for USB, rechargeable batteries, cable, universal power supply and accessories
11755204	Multi 3420 Set H, includes: Multi case set with IDS sensors: digital pH electrode SenTix™ 950 (Cat.No. 10552858), digital conductivity four-electrode cell TetraCon™ 925 (Cat.No.11715184), QSC kit, short instruction manual, stand, beaker, CD-ROM, driver software for USB, rechargeable batteries, cable, universal power supply and accessories



**pH/mV meter, inoLab™  
Multi 9310 IDS, Multi 9420 IDS and Multi 9430 IDS**

- Single channel multi-parameter for IDS sensors
- Digital sensor recognition
- Optional built-in printer

**Documentation according to GLP/AQA**

- Automatic digital recording of sensor data for definite traceability of all values
- Optional user administration for access control and documentation
- Transfer of all data as .csv format via USB interface to a PC, Excel add-in for formatted input into spreadsheet (Included in delivery or as download)
- Output via optional built-in printer

**The IDS sensors combine proven technology with new advantages**

- Premium, enhanced sensor technology combined with most advanced measurement electronics
- IDS sensors store serial numbers and calibration history – ready for immediate operation
- Current rating of sensor quality with IDS pH electrodes by QSC (Quality Sensor Control)
- IDS conductivity measurement: Two sensors for covering almost all applications



	inoLab™ Multi 9310 IDS	inoLab™ Multi 9420 IDS	inoLab™ Multi 9430 IDS
Parameters	pH, mV, saturation, concentration, partial pressure, conductivity, specific resistance, salinity, TDS, temperature	pH, mV, saturation, concentration, partial pressure, conductivity, specific resistance, salinity, TDS, temperature	
Digital/IDS sensor	Yes	Yes	
Sensor channels	1 universal channel	2 universal channels	3 universal channels
Analogue pH/Redox sensors	ADA S7/IDS (optional)	ADA 94 pH/IDS DIN or BNC	
Temperature compensation	All except ORP	All except ORP	
Calibration points pH	1 to 5	1 to 5	
ISE		2 to 7 adapter required	
DO	1	1	
Conductivity	1	1	
Calibration memory	Max. 10	Max. 10	
Calibration timer	1 to 999 days	1 to 999 days	
Memory	Manual: 500 data sets Automatic: 5.000 data sets	Manual: 500 data sets Automatic: 10.000 data sets	
Logger	Yes	Yes	
Interface	Mini USB-B	USB-A, Mini USB-B	
GLP/AQS support	Yes	Yes	
Display	Black and white graphic display	Colour graphic display	
Optional printer	Yes	External	
Others	CMC, QSC	Anti-bacterial keyboard, QSC, CMC, exchangeable firmware	
Power supply	Universal power supply, batteries (4 x 1.5V/AA)	Universal power supply	

Cat. No	Description	
13593940	inoLab Multi 9310 IDS	Digital multiparameter bench top meter for IDS sensors, for measurements/documentation according GLP/AQA, with single channel input for pH/mV, DO and conductivity, with universal power supply, stand and operation manual, software and USB cable
13503950	inoLab Multi 9310 IDS Set 1	Digital multiparameter bench top meter, with IDS electrode SenTix™ 940 buffer solutions, KCL, power supply, stand, software and USB cable
13513950	inoLab Multi 9310 IDS Set 2	Digital multiparameter bench top meter, with IDS electrode SenTix 98, buffer solutions, KCL, power supply, stand, software and USB cable
13523950	inoLab Multi 9310 IDS Set 3	Digital multiparameter bench top meter, with TetraCon™ IDS electrode buffer solutions, KCL, power supply, stand, software and USB cable
12623800	inoLab Multi 9310 IDS Set C	Digital multiparameter bench top meter, with IDS electrode SenTix 940 buffer solutions, KCL, IDS sensor TetraCon 925, conductivity standard, power supply, stand, software and USB cable

Cat. No	Description
12642956	inoLab Multi 9420 IDS Professional digital multiparameter bench top meter for IDS sensors, for measurements/documentation according to GLP/AQA, with dual channel input for pH/mV, DO and conductivity, with universal power supply, stand and operation manual, software and USB cable
12652956	inoLab Multi 9420 IDS Set B Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, optical IDS DO sensor FDO 925 (Cat No. 10604635)
12662956	inoLab Multi 9420 IDS Set C Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, digital IDS conductivity cell TetraCon™ 925 (Cat No. 11715184), 0.01mol/L KCl, conductivity standard
12672956	inoLab Multi 9420 IDS Set E Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, digital IDS conductivity cell LR 925/01 (Cat No.11745184)
12682956	inoLab Multi 9430 IDS Professional digital multiparameter bench top meter for IDS sensors, for measurements/documentation according to GLP/AQA. With triple channel input for pH/mV, DO and conductivity. Single instrument with universal power supply, stand and operation manual, software and USB cable
12692956	inoLab Multi 9430 IDS Set B Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, optical IDS DO sensor FDO 925 (Cat No. 10604635)
12602966	inoLab Multi 9430 IDS Set C Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, digital IDS conductivity cell TetraCon 925 (Cat No. 11715184), 0.01mol/L, conductivity standard
12612966	inoLab Multi 9430 IDS Set E Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, digital IDS conductivity cell LR 925/01 (Cat No.11745184)
12603056	inoLab Multi 9430 IDS Set K Professional digital multiparameter bench top meter, with IDS sensors: digital IDS pH electrode SenTix 980 (Cat No. 10805371), buffer 4, 7 and 10.01, 3mol/L KCl, optical IDS DO sensor FDO 925 (Cat No. 10604635), digital IDS cond cell TetraCon 925 (Cat No. 11715184), 0.01mol/L KCl, cond standard



**Dissolved oxygen meter, inoLab Oxi 7310, set of 4**

- Measures Dissolved Oxygen, and temperature
- AutoRead function for stable end-point readings
- Automatic air pressure and salinity compensation
- GLP-compliant with 5000 memory time/date indexed
- USB interface for PC data transfer
- Powered with batteries or power adapter



		Model 7310
Temperature	Range, °C	-5 to 105
	Resolution, °C	0.1
	Accuracy, °C	±0.1
DO	Range, mg/L	0.00 to 90
	Resolution, mg/L	0.01, 0.1
	Accuracy, %	±0.5
Pressure	Range, mbar	0.0 to 200, 0 to 1.250
	Resolution	0.1, 1
General	Display type	Backlit graphic LCD

Cat No.	Description
12693066	Dissolved oxygen meter 7310, includes DO sensor, power supply, stand, self stirring DO sensor StirOx(R) G (Cat. No. 10160691), polishing stripe, electrolyte, cleaning solution, replacement caps, CD-ROM, software, USB cable



# pH Electrode Selection Guide

Use the selection guide below to help you choose the right Fisherbrand electrode for your particular application.

Sample/Application Type	Recommended Electrode Type	Cat. No
<b>General purpose</b> for many common sample types, e.g. aqueous samples, drinking water etc 	 <b>Glass bodied</b> 	<b>11749798</b> Connector: BNC
	 <b>Plastic bodied</b> 	<b>11706358</b> Connector: BNC
<b>Food and drink</b> e.g. juices, baby food, cheese 	 <b>Tuff-Tip</b> 	<b>11755638</b> Connector: BNC
	 <b>Spear tip</b> 	<b>11736209</b> Connector: S7
<b>Environmental samples</b> e.g. wastewater, soils, sea water 	 <b>Tuff-Tip</b> 	<b>11755638</b> Connector: BNC
<b>Low ionic strength</b> e.g. treated effluent, deionised water, distilled water <b>Non-aqueous</b> e.g. solvents, alcohols 	 <b>Sleeve junction</b> 	<b>11726358</b> Connector: S7
	<b>Life science samples</b> Tris-containing reagents, proteins etc 	 <b>Tuff-Tip</b> 
<b>Small samples</b> e.g. samples stored in test tubes, small flasks and beakers 	 <b>Thin stem Semi micro</b> 	<b>11769798</b> Connector: BNC
<b>High-viscosity samples</b> e.g. slurries, suspended solids 	 <b>Sleeve junction</b> 	<b>11726358</b> Connector: S7



## pH Electrode Connectors

The type of pH electrode connector can vary according to the brand of the meter as well as the electrode type. The following information provides you with a brief overview of these connectors. However, if you require any further assistance connecting your electrode to your meter contact our Product Support Advisors.

- The BNC connector is accepted by the vast majority of modern pH meters. It is characterised by its locking twist action.



- The S7 (screw cap) connectors are becoming more popular due to their flexibility. Electrodes with an S7 head can be connected to a variety of meter inputs using a separate cable.



- The DIN connector, although not as common as a BNC, is still used by several different meter types.



**Fisherbrand®**  
pH electrodes



	Cat. No	Electrolyte	Style	Body Material	pH Range	Temperature Range, °C	Dimensions, mm	Cable	Connector	Sample/Application Type
1	11786348	Gel	-	Plastic	0 to 14	0 to 80	12 x 120	-	S7	General/field purpose
2	11739798	KCL 4M + AgCl	-	Glass	0 to 13	0 to 80	12 x 120	1m	DIN	General/laboratory purpose
3	11786338	KCL 4M + AgCl	-	Glass	0 to 14	0 to 80	12 x 160	-	S7	Laboratory purpose
4	11769798	KCL 4M + AgCl	Micro electrode	Glass	0 to 13	0 to 80	6 x 115	1m	BNC	Small samples
2	11779788	KCL 4M + AgCl	pHast Temp	Glass	0 to 13	-5 to 100	12 x 120	1m	BNC	General purpose
2	11749808	KCL 4M + AgCl	pHast Temp	Glass	0 to 13	-5 to 100	12 x 120	1m	DIN	General purpose

**SI Analytics**

a xylem brand

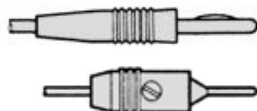
**pH electrode head, S7**

- High precision pH electrodes for laboratory measurements
- Filling orifice with rotating ring facilitating the addition of electrolyte
- Platinum diaphragm providing a more regular electrolyte flow for precise, repetitive measurements, unaffected by stirring
- Electrolyte KCl 3M

Cat No.	Description	pH	Temp range, °C	O.D. x length, mm	Diaphragm
10435192	Plastic pH electrode	0 to 14	-5 to 50	12 x 120	Fibre
10342911	Glass pH electrode	0 to 14	-5 to 100	12 x 120	Platinum
10057790	Glass pH electrode	0 to 14	-5 to 100	12 x 170	Platinum

**Coaxial cable**

- For electrode with S7 or S8 head
- Length 1m



Cat No.	Description
11766348	Coaxial cable for electrode with S7 or S8 head and 4mm banana (WTW, SI Analytics, Hanna, Knick)
11786398	Coaxial cable for electrode with S7 or S8 head and 2mm banana (Thermo Scientific Orion, Beckmann, Coming, Sargent)



**Filling electrolytes for electrodes**

Cat No.	Description	Volume, mL
11970039	KCl 1M + AgCl	250
11935068	KCl 3M + AgCl	250
11914229	KCl 4M + AgCl	100



**Storage solutions for electrodes**

Always keep your storage solutions topped up. The pH electrode bulb needs to be moist at all times. Storing in the storage solution will maintain sensitivity by removing build up from your electrodes. Do not store the pH electrode in distilled water as this will shorten the life of your pH electrode.

Cat No.	Description	Volume, mL
11910049	KCl 3M, storage solution	250
11904719	KCl 3.5M, sterile storage solution, ampule, in vial with analysis certificate	500

When the result time is too long, the regenerant solution is a solution of 2.5% ammonium hydrogen difluoride (NH<sub>4</sub>HF<sub>2</sub>/H<sub>2</sub>O) to reactivate the membrane.

Cat No.	Description	Volume, mL
11950725	Cleaning and maintenance solution	250
11957755	Regenerant solution	100

# Technical note:

**Cleaning glass pH membranes**

Dirty glass membranes are usually indicated by beads of water forming on the bulb when rinsing with distilled water. The bulb can be cleaned as follows:

- **For protein**  
Soak in fresh protein removal solution 12941678 for 30 minutes, rinse thoroughly before use
- **For inorganic deposits**  
Wash with EDTA, ammonia or acids
- **For grease and similar films**  
Wash with acetone, methanol, etc

**Reconditioning glass pH membranes**

Prolonged use, excessive alkaline immersion, or high temperature operation will cause surface leaching of the membrane glass, resulting in erratic or sluggish response which cannot be remedied by cleaning the electrode. Immerse the electrode tip into 0.1N HCl for less than 5 minutes, and rinse with water. Then immerse the electrode tip into 0.1N KOH for 5 minutes, and rinse thoroughly with water. Check for electrode's performance. If the problem persists, repeat the steps but note that frequent HCl/KOH treatment can shorten the electrode life.

Looking for buffers and standards?

refer to page 51



# Technical note:

## Use of Electrodes for pH Measurement

pH measurement is usually done with the use of a combination electrode. The combination electrode is an electrode system formed by a glass sensing half-cell and an internal reference half-cell. As the reference junction acts as the path of conduction between the reference electrolyte and the sample to be measured, it must allow free movement of electrons through the junction and into the sample.

A potential develops on the membrane surface when a pH electrode comes into contact with a sample. Its value varies with the pH of the sample. This variation in potential is measured in mV by a meter and is converted to direct pH values.

The selection of a suitable electrode depends on the types of application.

### Electrode selection criteria:

- 1 Electrode Body - Glass body is more resistant to corrosive materials and solvents and withstands high temperatures beyond 100°C. In contrast, plastic body electrodes are not recommended for temperatures above 80°C but are more durable for rugged use. As such the glass body electrode is most suited for routine pH measurements for accuracy, high temperature and ease of cleaning while the plastic body electrode is a good choice for more rugged applications.
- 2 Reference Construction - Refillable electrodes allows replenishment of reference electrolyte for repeated usage. Conversely a sealed electrode usually has gel reference electrolyte and replacement of electrode is necessary when there is contamination. The reproducibility and potential stability of the calomel reference electrode is superior to those of the Ag/AgCl electrode at a constant and relatively low temperature. The calomel reference electrode has a temperature limitation of 80°C and is recommended for clinical measurements and samples containing protein, tris buffers and high purity water applications. The Ag/AgCl reference electrode is good for general purpose applications with a wide temperature range of -5 to 110°C.
- 3 Junction - The single junction electrode is ideal for general purpose applications while the double junction electrode is suitable for use with biological samples and can be used to replace calomel reference electrodes.
- 4 Applications - General purpose electrodes are economical combination electrodes ideal for general-purpose applications in the lab or field. They have the impact-resistant qualities of a plastic body. Electrodes provide a fast, stable response and are ideal for prolonged use. Most electrodes come in different lengths and diameters for specific applications. Refillable electrode extends the useful life and is ideal for measurement of viscous samples and pH samples with low conductivity.

## Maintenance and Storage of pH Electrodes

Electrodes are delicate measuring instruments that require proper care and maintenance to produce accurate and reliable results, and to prolong useful life. Always keep the pH electrode moist when not in use for a period of time, by using an electrode storage solution or a pH 7 buffer as storage media to soak the electrode. DO NOT store the electrode in distilled or deionised water as this will cause ions to leach out of the glass bulb and reference electrolyte, causing slow and sluggish response. Electrodes may be shipped with either protective caps or in electrode soaking bottles to prevent cracking or scratching, and to keep the glass bulbs moist. Remove the electrode gently from the storage bottle and rinse it with distilled water before use. For long-term storage, always keep the electrode in the bottle, filled with sufficient storage solution to cover the bulb. Replenish the bottle as needed.

## Handling

The electrode should be rinsed thoroughly between sample measurements and calibrations with distilled or deionised water. Blot the electrode dry to gently dislodge excess water. Use a lint-free wiping paper as rubbing causes the electrode to be charged electrostatically. Never use polymer or plastic body electrodes in samples containing organic solvents.

## Refillable Electrodes

The filling solution in refillable electrodes should be filled up to, but not past, the refill hole. Make sure that the refill hole is open when measuring to ensure that the fill solution flows properly through the reference junction.

## Unblocking the Reference Junction

**A blocked or clogged reference junction attributes to about 80% of all pH measurement difficulties; resulting in extremely slow response, off-scale readings and electrically noisy measurements. Procedures for unblocking the junction depend on the type of reference junction electrode in use:**

### Gel-filled Electrodes

Soak the electrode in warm water (about 60°C) for 5 to 10 minutes to re-establish contact. Or place the electrode in warm saturated KCl solution (60°C) and allow both electrode and solution to cool down to room temperature.

### Liquid-filled Electrodes

Sleeve and Annular Junction – Drain the electrode, rinse the cavity with distilled water and refill it with fresh electrolyte. For sleeve-type electrodes, rotate the sleeve to re-establish flow if necessary.







**pH buffer solutions**

- NIST standard solution
- Identification by colour
- Certificate available, visit [www.eu.fishersci.com](http://www.eu.fishersci.com)



Cat No.	Description	Volume, mL
10457711	Buffer solution pH 4.00	500
10000642	Buffer solution pH 7.00	500
10774074	Buffer solution pH 10.00	500



**pH Buffers**

NIST Standard solution ready to use for pH measurement

Cat No.	Description	Volume, mL
10675492	Buffer standard solution pH4.00 (phthalate), stabilised with 10ppm mercury (II) chloride, traceable to NIST	1.000
10030190	Buffer standard solution pH4.00 (phthalate), stabilised with 10ppm mercury (II) chloride, traceable to NIST	2.500
10082521	Buffer standard solution pH7.00 (phosphate), stabilised with 10ppm mercury (II) chloride, traceable to NIST	500
10151570	Buffer standard solution pH7.00 (phosphate), stabilised with 10ppm mercury (II) chloride, traceable to NIST	1.000
10284240	Buffer colour coded solution pH10.00 (borate ) blue, traceable to NIST	1.000
10214200	Buffer standard solution pH10.00 (borate), traceable to NIST	2.500

**pH buffer solutions, NIST standard solution**

- Traceable measurements
- Accuracy  $\pm 0.02$  pH
- Certificate available, visit [www.eu.fishersci.com](http://www.eu.fishersci.com)



Cat. No	Description	Volume, mL
10703324	Buffer solution pH 2.00	500
10104823	Buffer solution pH 3.00	500
10545151	Buffer solution pH 4.00	500
10609483	Buffer solution pH 5.00	500
10690404	Buffer solution pH 6.00	500
10082521	Buffer solution pH 7.00	500
10593854	Buffer solution pH 8.00	500
10082531	Buffer solution pH 9.02	500
10789234	Buffer solution pH 10.00	500



**pH and Redox ampoules**

Cat. No	Description	Pack qty
11984769	Schott pH buffer in vial with analysis certificate, 3 x 20 ampoules, pH 4, 7, 10	60
11994769	Schott pH buffer in vial with analysis certificate, 2 x 30 ampoules, pH 4, 7	60
11924779	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH 4	60
11904779	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH 7	60
11914779	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH10	60
11934779	Schott pH buffer in vial with analysis certificate, 3 x 20 ampoules, pH 4.01, 6.87, 9.18	60
11944779	Schott pH buffer in vial with analysis certificate, 2 x 30 ampoules, pH 4.01, 6.87	60
10471171	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH 1.68	60
11974779	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH 4.01	60
11954779	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH 6.87	60
11964779	Schott pH buffer in vial with analysis certificate, 60 ampoules, pH 9.18	60
10208990	Schott Redox control vial, 60 ampoules, 190mV	60
10340641	Schott Redox control vial, 60 ampoules, 430mV	60
10760651	Schott Redox control vial, 60 ampoules, 600mV	60



**pH buffers, high resolution, colour coded @ 25°C**

- Accuracy  $\pm 0.01$  pH
- NIST traceable
- ISO 17025 Accredited Test Method
- Certificate available, visit [www.eu.fishersci.com](http://www.eu.fishersci.com)



Cat. No	Description	Volume, mL
11758465	Buffer solution pH 4.000 (red) $\pm 0.010$ @ 20°C	500
11768465	Buffer solution pH 7.000 (yellow) $\pm 0.010$ @ 20°C	500
11778465	Buffer solution pH 10.000 (blue) $\pm 0.010$ @ 20°C	500



# Technical note:

## Electrochemistry – conductivity ISO Standard 7888:1985

Conductivity of water allows measuring ionic constituents of all types of water including surface water, process waters in water supply and treatment plants. Its units are Siemens per meter (**S/m**) and millimhos per centimeter (**mmho/cm**). Its symbol is **k** or **s**.

Electrical conductivity is defined as the ratio between the current density (J) and the electric field intensity (e) **s=J/e**






Resistivity is the opposite of the resistivity (r) **s=1/r**

TDS or Total Dissolved Solids is a measure of the total ions in solution (**mg/L**). The ratio TDS/EC depends on the sample.

### Typical conductivity of waters:

Solution	Conductivity	Constant cell k, cm <sup>(-1)</sup>
Ultra pure water	0.055 µS/cm	0.01 to 0.1
Distilled water	0.5 µS/cm	0.1
Drinking water	50 to 500 µS/cm	1.0
Wastewater	2 to 5 mS/cm	1 to 10
Sea water	56 mS/cm	10

### Important Features to consider in a conductivity meter:

-  Auto-ranging Meter: automatically selects the appropriate range for measurement. There is no need to change the dial, multiply values on the display, or turn the potentiometer
-  Temperature Compensation: a cell with built-in temperature sensor allows the meter to make adjustments to the conductivity or TDS readings based on changes in solution temperature. Reference temperature can be +20°C for AFNOR or +25°C for CE
-  TDS Conversion Factor: when a solution does not have a similar ionic content to natural water or salt water, then a TDS conversion factor is needed to automatically adjust the readings
-  Adjustable Temperature Coefficients: the TDS of certain samples, such as alcohols and pure water, are affected by changes in temperature. An adjustable temperature coefficient allows the user to compensate for temperature changes on the solution being measured
-  Adjustable Cell Constant: adjusts the reading on the display to reflect use of a cell with a constant other than k=1.0 cm<sup>(-1)</sup>



### Conductivity standards

- Broad range conductivity standards, with conductivity stated at 25°C
- All are directly traceable to N.I.S.T. standard reference materials.
- Temperature dependence data, lot no. and expiry date are printed on all product labels.
- Certificate available, visit [www.eu.fishersci.com](http://www.eu.fishersci.com)



### Standard values

Cat No.	Description	Volume, mL
11738455	84µS/cm	500
10338797	147µS/cm	500
11416634	12,880µS/cm	500
11446634	12,880µS/cm	500
11733217	111,800µS/cm	500

### Premium values

Cat No.	Description	Volume, mL
11728455	1.30µS/cm	250
10460538	5µS/cm	500
11516723	10µS/cm	500
11718455	20µS/cm	500
10003477	500µS/cm	500
10778448	1.000µS/cm	500
11748495	2000µS/cm	500
11456634	5.000µS/cm	500
11536723	10.000µS/cm	500
11546723	20.000µS/cm	500
11556723	50.000µS/cm	500
10790320	100.000µS/cm	500
11566723	150.000µS/cm	500
11576723	200.000µS/cm	500
11586723	300.000µS/cm	500
11596723	350.000µS/cm	500
11743217	450.000µS/cm	500
11506733	500.000µS/cm	500



### Conductivity standards

Cat. No	Description	Volume, mL
15264878	Conductivity standard, 84µS	480
15159916	Conductivity standard, 500µS	480
12385168	Conductivity standard, 1413µS	480
11564684	Conductivity standard, 12.88mS	1.000
11594684	Conductivity standard, 111.8mS	480



**Standard control solution, NaCl NIST**

- Accuracy ±1%
- NIST analysis certificate available at [www.eu.fishersci.com](http://www.eu.fishersci.com)

Cat. No	Description	Volume, mL
11960725	Standard NaCl NIST 3g/L	250
11990725	Standard NaCl NIST 5.84g/L	250
11980725	Standard NaCl NIST 23g/L	250
11900725	Standard NaCl NIST 30g/L	250
11970725	Standard NaCl NIST 58.4g/L	250
11900735	Standard NaCl NIST 125g/L	250



**Sodium hydroxide, pellets**

- Plastic bottle
- MSDS and Certificates of Analysis available online on [www.eu.fishersci.com](http://www.eu.fishersci.com)



Cat. No	Description	Pack qty
10475091	Sodium hydroxide, 97+%, for analysis	500g
10502731	Sodium hydroxide, 98%, extra pure	1kg
10743591	Sodium hydroxide, 98.5%, for analysis	1kg
10338630	Sodium hydroxide, 98.5%, for analysis	2.5kg



**Turbidity standard**

- 2 year shelf life
- Certified accuracy of ± 1%
- Traceable to NIST

Cat No.	Description	Volume, mL
11499149	Turbidity standard, ratio 0.0NTU	100



**Turbidity meter, infrared, TN 100**

- IP67 waterproof, even the well is waterproof
- Excellent repeatability
- EPA approved
- Infrared system ISO 7027 compliant
- Battery life, more than 1.200 tests
- Lamp life, more than 1 million tests
- Automatic ranging up to 1.000NTU
- Three year warranty



Range: 0.01 to 19.99NTU; 20.0 to 99.9NTU; 100 to 1.000NTU  
 Accuracy: ±2% until 500NTU, above 500NTU, ±3%  
 Resolution: 0.01, 0.1, 1

Cat No.	Description
10142422	TN100 turbidimeter

Accessories:

11786384	Calibration kit (0.02, 20.0, 100, 800 NTU), 4x60mL
----------	--



**Turbidity meter, AL250T-IR**

With infra-red light source (EN ISO 7027).

- Range from 0.01 to 1.100NTU
- Measurement with infrared light at an angle of 90°
- Measurement of coloured liquids
- Easy handling
- 600 tests without battery change



Wavelength	860nm
Range	0.01 to 1.100NTU (FNU, TE/F)
Resolution	0.01 to 9.99NTU = 0.01NTU 10.0 to 99.9NTU = 0.1NTU 100 to 1.100NTU = 1NTU
Accuracy	±2.5 % of reading or ± 0.01NTU (0 to 500NTU) ± 5 % (500 to 1.100NTU)
Reagents required	None
Storage	Internal ring memory for 16 data sets

Cat No.	Description
11709079	Turbidity meter, AL250T-IR, includes 4 turbidity standards <0.1, 20, 200 and 800NTU, battery, vials, warranty information, certificate of compliance, instruction manual in case

# Technical note:

**Turbidimeter**

One of the most common parameters determining water quality is the turbidity.

Applications: drinking water, disinfection processes, industrial processes, and water treatment plants.

For example:  
 Distilled water 0.02NTU  
 Drinking water 0.02 to 0.5NTU  
 Wastewater 70 to 2.000NTU



## Fisherbrand®

### Weighing dishes

Disposable aluminium dishes with fluted sides. Useful as evaporating, weighing and general utility dishes.

- Inexpensive enough for single use
- Made of lightweight aluminium
- Flat bottom
- Fluted or slightly fluted sides
- Flanged rim



Cat No.	Description	Quantity
11739418	Aluminium dish, 60mL	1.200
11749418	Aluminium dish, 75mL	1.000
11774059	Aluminium dish, 200mL	50
11784059	Aluminium dish, 500mL	50

For vacuum filtration system  
refer to pages 18-20



Distributor  
GE Healthcare

### Filter paper, circles, glass microfibre, 934-AH RTU

- Ready To Use format (RTU)
- Binder free, high purity borosilicate glass microfibre filter
- Fast and convenient: use the pre-washed, pre-weighed filter immediately – no need to pre-treat
- Efficient: superior fine particle retention at high flow rates
- High loading capacity: capable of processing very turbid samples
- Pore size 1.5µm

Each pretreated filter comes in an aluminium pan, with the filter weight clearly noted. Each pan has its own unique barcode.



Cat No.	Description	Pack qty
13227139	Microfibre filter, 42.5mm dia.	100
13237139	Microfibre filter, 47mm dia.	100
13247139	Microfibre filter, 55mm dia.	100
13257139	Microfibre filter, 90mm dia.	100



### Desiccators, borosilicate glass, 250mm dia.

Borosilicate glass 3.3 DIN 12491.

- Designed for use under full vacuum
- Due to the high wall thickness and the reduced thermal shock resistance under pressure loading, the desiccators must not be heated on one side only or heated using a naked flame



Cat No.	Description
10343241	Desiccator with flat flange and knobbed lid, no connection
10099820	Desiccator plate, porcelain, 250mm



Distributor  
GE Healthcare

### Filter papers, glass microfibre, GF/C, 1.2µm

Perfect for suspended solids determination:

- Conform to EN 872
- High loading capacity enabling filtration of very turbid samples
- Retention of very fine particles
- Fast flow rates
- For the retention of particles and larger microorganisms
- An extremely efficient filter for the collection of suspended solids in potable, natural and industrial waters



Cat No.	Description	Pack qty
11360364	Filter papers, 37mm diameter	100
11360584	Filter papers, 47mm diameter	100
11370584	Filter papers, 50mm diameter	100
11380584	Filter papers, 55mm diameter	100
10261601	Filter papers, 70mm diameter	100
11300594	Filter papers, 90mm diameter	100



Distributor  
GE Healthcare

### Filter papers, circles, Grade 934-AH

Perfect for suspended solids determination.

This is a smooth surface, high-retention borosilicate glass microfibre filter (1.5µm) that withstands temperatures of over 500°C. The fine particle retention of this popular grade is outstanding, with high retention efficiency at high flow rates and high loading capacity. Grade 934-AH can be used for a wide range of laboratory applications such as determination of total suspended solids in water, removal of turbidity, filtration of bacterial cultures, water and air pollution monitoring.



Cat No.	Description	Pack qty
11324904	Filter paper, circles, 37mm dia.	100
11370614	Filter paper, circles, 47mm dia.	100
11380614	Filter paper, circles, 55mm dia.	100
11390614	Filter paper, circles, 70mm dia.	100
10022171	Filter paper, circles, 90mm dia.	100

## Thermo SCIENTIFIC

### Desiccator, 250mm

- Transparent polycarbonate cover
- Blue polypropylene base
- No gasket necessary



Cat No.	Description
10451751	Desiccator, 250mm

Accessories:

10179510	Ceramic-metal composite unbreakable plate for desiccator
10709475	Desiccant in a cartridge, 230g, 114mm dia.

For balances and centrifuges  
refer to pages 21 and 22

**Fisherbrand®**

**Moisture analyser**

- Large backlit LCD display
- RS232 bi-directional interface
- Easy to clean heating chambers, ideal for frequent use and low cost maintenance
- Compact footprint, designed to take up less space
- Heating technology: Halogen (50°C to 160°C in 5° increments)
- Repeatability (Std. Dev., g): 0.2% (3g sample) 0.05% (10g sample)
- 200V a.c. to 240V a.c., 3A, 50/60Hz
- Two year warranty



Cat No.	Description
15305123	Moisture analyser, MBS65, 60g/5mg

**sartorius**

**Humidity analyser, MA 35M**

- Weighing range 35 to 150g
- Precision of readings 0.1 to 1g
- Temperature 40 to 160°C
- Protective cover for keypad
- Fully automatic end point detection or 0.1 to 99 minutes timer shut off mode



Cat No.	Description
10601775	Moisture analyser MA35M, 150g/1mg

**Thermo SCIENTIFIC**

**Muffle furnace, up to 1,100°C**

Thermo Scientific™ Thermolyne™ muffle furnaces offer heating solutions for a number of application needs. From general laboratory use to industrial applications, Thermolyne furnaces are ideal for fast heat up and temperature control up to 1100°C.



- Fast heat up and outstanding energy efficiency
- Small bench top
- Digital single setpoint control
- CE certified

Cat No.	Capacity, L	Dims., int., mm	Dims., ext., mm
10215522	1.3	100 x 130 x 100	120 x 140 x 120
10453152	2.1	230 x 330 x 360	250 x 400 x 370

**memmert**

**Oven, natural convection, 32L, UN30**

- Temperature range 30 to 300°C
- Chamber constructed of stainless steel, rear panel made of galvanised steel, fully insulated stainless steel door
- Preheated air intake
- The air exchange rates and valve position are controlled via the Control Cockpit



Cat No.	Description	Dimensions, int., [d x w x h], mm
12676977	Oven UN30	250 x 400 x 320

**Thermo SCIENTIFIC**

**Oven, general protocol model, gravity convection, 65L, OGS60**

The Thermo Scientific™ Heratherm™ oven range includes an array of features to match your needs.



**Efficient**

- Surpassing energy efficiency, increasing cost effectiveness, reducing environmental impact
- Unique door design reduces heat emission significantly
- Timer for effective usage and additional energy savings
- Space saving footprint without compromising volume
- Flexible shelving system allows for optimal space utilisation

**Safe**

- Routine check upon startup for optimum performance levels
- Temperature uniformity as good as ±2°C at 150°C
- Automatic audible and visual over-temperature alarm
- Access port for data logging with independent sensors

**Easy**

- Easy to read, large display
- Easy setting with intuitive interface
- Easy cleaning with rounded corners

Model No.	OGS60
Type	Gravity convection
Temperature range, °C	50 to 250 (general protocol)
Volume, L	65
Shelves, No. of	13 max./2 standard
Dimensions, external (w x d x h), mm	530 x 565 x 720
Dimensions, internal (w x d x h), mm	328 x 415 x 480
Mass, kg	42

Cat No.	Description
10659650	Gravity convection oven, OGS60



Distributor  
GE Healthcare



### Syringe filter, Puradisc Aqua

Specifically designed for filtration of environmental samples prior to COD and DOC analysis. The membranes used in these devices are prewashed prior to assembly to reduce the organic carbon level.

- Larger filtration area (44% greater in comparison with 25mm)
- Designed for aqueous samples
- Sterile, individually packed
- Pore size 0.45µm

Cat No.	Description	Pack qty
10787651	Syringe filter, cellulose acetate 30mm O.D., non-sterile, male luer lock	500
11373155	Syringe filter, cellulose acetate 30mm O.D., non-sterile, male luer lock	100



### Photometer COD

- Range 30 to 15.000mg/L
- Direct readings in mg/L
- Compatible with all spectrophotometers
- Supplied with correlation table



Cat No.	Description	Quantity
11752103	Photometer COD 0 to 15.000mg/L	1
Accessories:		
11893510	Ready-to-use mercury-free COD tube 0 to 150mg/L	25
11803520	Ready-to-use mercury-free COD tube 0 to 1.500mg/L	25
11813520	Ready-to-use mercury-free COD tube 0 to 15.000mg/L	25
11701034	Ready-to-use mercury-free COD tube 0 to 150mg/L	150
11761044	Ready-to-use mercury-free COD tube 0 to 1.500mg/L	150
11791054	Ready-to-use mercury-free COD tube 0 to 15.000mg/L	150



# Technical note:

## Chemical Oxygen Demand COD

COD analysis (Chemical Oxygen Demand) refers to the oxygen used during the oxidation of substances dissolved and suspended in water. In this way, it is possible to determine the amount of chemically oxidisable substances with energy oxidants present in a strongly acidic solution.

The traditional COD method is the wet chemistry method with a two-hour digestion at high heat under acidic conditions in which potassium dichromate acts as the oxidant for any organic material present in a water sample. Silver sulfate is present as the catalyst and mercuric sulfate acts to complex out any interfering chloride. After the digestion, the extent of oxidation is measured through indirect measurement of oxygen demand via electrons consumed in the reduction of Cr<sup>6+</sup> to Cr<sup>3+</sup> by titrimetrical or colorimetrical determination.

The second solution is the photometric method, where the sample is directly processable in the photometer. This method is rapid (30min only), safe and reliable.

COD test results can also be used to estimate the BOD results on a given sample, however the relationship has to be established for each sample.



### Thermoreactor, COD analysis, ECO 6 and ECO 16

- Electronic temperature control, temp. regulation from ambient to 200°C
- Analysis time can be set from 1 to 199 minutes or continuous
- ECO 6 processes up to 6 x 200mL test tubes, 42mm dia, or 6 x test tubes 22mm or test tubes 16mm dia.
- ECO 16 processes up to 14 x 16mm dia. mL test tubes, plus 2 x 22mm dia. test tubes simultaneously
- LCD countdown display shows the temperature and remaining time
- COD analysis in only 30 minutes at 160°C
- 16mm diameter tubes minimise reagent consumption
- Automatic shut-down at run end
- Acoustic signals, e.g., at shut-down
- Anti-splash cover protects the user



Cat No.	Description
11735674	Thermoreactor, 6 position
11761953	Thermoreactor, 16 positions
Accessories:	
11751455	COD test tubes, 200mL 42mm dia. with cone NS 29/32. Pack of 3
11761455	Air refrigerator with ground cone
15349634	Anti-splash bell
15329634	PTFE sheath for 29/32 cone
11701883	Stainless steel handle for simultaneously moving 6 test tubes, 42mm dia.

**Fisherbrand**

**Thermoreactor, COD analysis for ready to use tubes**



Accurate Control

- Five preset temperatures - 70, 100, 120, 150 and 160°C
- Four analysis times - 30, 60, 120 minutes or continuous
- LED indicator of operation

Choice of Size

- ECO 8 - 8 samples in 16mm diameter test tubes plus 1 sample in 22mm diameter
- ECO 25 can process 25 samples in 16mm diameter test tubes simultaneously

Economical Operation

- COD analysis in only 30 minutes at 160°C
- 16mm diameter tubes minimise reagent consumption

Safety Assured

- Automatic shut-down at run end
- Acoustic signals, e.g., at shut-down
- Anti-splash cover protects the user
- For ECO 25, test tube extractor removes all tubes without user contact

Rapid ID through alphanumeric labelling

Cat No.	Description
15389464	Thermoreactor COD, 8 position O.D. 16mm test tubes plus one sample in O.D. 22mm
11751304	Thermoreactor COD, 25 position O.D. 16mm test tubes
<b>Accessories:</b>	
11747343	Inox holder for thermoreactor, 25 position



**Thermoreactor, for COD and other digestion processes**

Ideal for performing routine water analysis tests with small sample amounts, as eight programs are available for digestion of 12 sample cuvettes at 100, 120, 148 and 150°C (212, 248 and 298.4°F).



- Programs for routine tests
- Seven pre-stored programs
- Ideal for routine measurements, wastewater

Cat No.	Description
10159081	Thermoreactor, CR2200, 12 sample

**Reagecon**

**COD calibration standards, NIST traceable**

Cat No.	Description	Volume, mL
12549787	Calibration standard solution, COD 10, 10mg/L	500
11513162	Calibration standard solution, COD 600, 600mg/L	500
12800317	Calibration standard solution, COD 1.000, 1.000mg/L	500



**Chemicals for COD**

- Packaging type: glass bottle

Cat No.	Description	Volume, mL
10518240	Potassium dichromate solution 0.021 M (0,125N), NIST for COD and volumetric analysis	1.000
10060190	Potassium dichromate solution 0,021 M (0,125N), NIST for COD and volumetric analysis	2.500
10020230	Silver nitrate solution 1.000 g/L, for COD	500
10284050	Silver sulfate solution 1% w/v (d = 1,84) in sulfuric acid, for COD	2.500
12626727	Silver sulfate solution 1% w/v (d = 1,84) in sulfuric acid, for COD	1.000
10030230	Silver sulfate solution 5% w/v (d = 1,84) in sulfuric acid, for COD	2.500



**Technical note:**

**Biological oxygen demand BOD**

BOD (Biochemical Oxygen Demand) is a chemical procedure for determining the amount of dissolved oxygen consumed by aerobic biological microorganisms in water.

Two methods are widely used:

1. Dilution method
2. Manometric method, without dilution and with continuous measurements.

The analysis is carried out on a given water sample at certain temperature over a specific period.

The results are most commonly expressed in milligrams of oxygen consumed per litre of sample at a constant temperature of 20°C over a 5 day incubation period (BOD5), or during complete oxidation obtained after a maximum period of 30 days (BODultimate).

BOD determination is widely used as an indication of the organic quality of water and the degree of organic pollution of water.



**Bottle, BOD Karlsruhe, 250mL**

The BOD Karlsruhe bottle has an overflow funnel making measurement possible with a BOD sensor without sample loss. The completely full bottle limits exchanges with the oxygen in the air. 70 x 188mm diameter. With ground stopper CN 19/32.



Cat No.	Description
10428312	BOD Karlsruhe 250mL bottle



**Incubator, 2° to 40°C, 135L**

- ISO 1402, DIN 12664
- For BOD5 measurement at 20°C
- 0.1°C resolution
- High-output radial ventilation, 120m³/h
- Ventilated refrigerated incubator +2 to + 40°C



Cat No.	Description
15287918	Incubator +2/+40°C 135L TC135S



**BOD Sensor Set**

A ready to use complete system for individual BOD analysis only.

It is immediately operational for measuring the BOD on four scales, i.e., 90ppm, 250ppm, 600ppm and 999ppm. The sample quantity to be examined varies from 100mL to 400mL, the bottle's total capacity being 500mL.



The BOD Sensor Systems comprise of a six or ten position stirring unit complete with BOD sensors, alkali holders for absorbing the carbon dioxide and stirring bars.

The compact, easy to handle design means that six BOD bottles can be housed in a small amount of space. Features a stirring system offering non stop operation without the risk of shut off or overheating.

- Complete system for BOD analysis
- Sensor system also available for 10 positions
- Analysis performed over weekends: the BOD sensor automatically stores five BOD measurements at 24hr intervals

Cat No.	Description
11757433	BOD sensor set. Includes KOH traps, BOD bottle and 6 x 35mm magnetic stir bar
12754536	6 BOD sensors with KOH traps, 6 BOD bottles, and 6 x 35mm magnetic stir bar
11771864	Control test tablets, pack of 10
11781864	BOD sensor check



**BOD meter, digital, BD 600 and BOD 606**

- User friendly and maintenance-free, non-wearing
- Large, illuminated & brilliant graphic display
- Graphical representation of measured values
- USB and SD card data transfer
- Mercury-free, environmentally friendly
- Remote control
- User-selectable time span from 1 to 28 days
- Inductive stirring system, 100-240V / 50/60Hz



BD 600 set includes complete unit with six sensor heads, and control unit with batteries, power supply unit, USB cable, remote control, inductive stirring unit, 6 x each of sample bottles, rubber gaskets and magnetic stirring rods, 1 x 157mL and 1 x 428mL overflow flasks, 1 x 50mL bottle of potassium hydroxide solution and 1 x 50mL bottle of nitrification inhibitor solution, and instruction manual.

BD 606 set includes 2 x BD 600 complete units with 6 sensor heads, and control unit with batteries, 2 power supply units, 2 USB cables, remote control, inductive stirring unit, 12 sample bottles, 12 rubber gaskets, 6 magnetic stirring rods, 1 x 157mL and 1 x 428mL overflow flasks, 1 x 50mL bottle of potassium hydroxide solution and 1 x 50mL bottle of nitrification inhibitor solution, and instruction manual.

Manometric, mercury-free electronic pressure sensor.

Ranges	0 to 40, 0 to 80, 0 to 200, [mg/L O <sub>2</sub> ], 0 to 400, 0 to 800, 0 to 2.000, 0 to 4.000mg/L
Applications	BOD5, BOD7, OECD 301 F
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), every 2 hours (2 days), daily (3 to 28 days)

Cat No.	Description
15416110	BD 600, 6 position BOD meter
15328314	BD 606, 12 position BOD meter

Accessories:

10478030	NaOH tablets, 500 g
11789219	BOD meter calibration kit

**Nitrification inhibitor**

Accessory for BOD testing of wastewater samples.

Cat No.	Description	Volume, mL
11745518	Nitrification inhibitor	50

**BOD microbe capsules**

These convenient capsules, containing dehydrated microbial culture, ensure the accuracy and consistency of your BOD testing. Use them to inexpensively and quickly obtain an acclimated blend of bacteria. One capsule provides enough seed for up to 250 BOD tests daily. Each bottle contains 50 capsules.



Cat No.	Description	Pack qty
11770519	BOD microbe capsules	50



# Technical note:

## Total Kjeldahl Nitrogen (TKN) determination

**This is an analytical method for the quantitative determination of nitrogen in chemical substances. Total Kjeldahl Nitrogen (TKN) is the sum of organic nitrogen, ammonia and ammonium.**

**This method was originally developed by Johan Kjeldahl in 1883 to measure the amount of protein in the grain used to produce beer.**

**The method comprises three main steps:**

- 1** Digestion - The sample is heated with concentrated sulfuric acid, which decomposes the organic substances by oxidation to liberate the reduced nitrogen as ammonium sulfate. Potassium sulfate is then added in order to increase the boiling point of the medium.
- 2** Distillation - The solution is then distilled with sodium hydroxide, which converts the ammonium salt to ammonia.
- 3** Titration - The amount of ammonia present (hence the amount of nitrogen present in the sample) is usually determined by titration. A known amount of acid solution is added to the receiving flask. The excess acid is back-titrated using a base. Methyl orange is used as a pH indicator. boric acid may be used for the titration.



### Scrubber, SMS

Designed to neutralise corrosive and toxic fumes produced during oxidative mineralisations or similar processes.

Complete system

- Condensation in a water trap
- Neutralisation with acids or bases
- Optional absorption with activated carbon
- Ideal for high fume levels such as with soybean analysis

Convenient to use

- Condensate flasks removable for ease of emptying
- Easy to replace the neutralising reagents
- Small footprint



Cat No.	Description	Pack qty
11331620	SMS Scrubber	1

Accessories:

11351620	Activated carbon refill	10
11361620	Filter for activated carbon	1



### Digestion systems, Kjeldahl, DKL

TEMSTM technology: time, energy, money and space saving.

- Incredibly fast heating from room temperature to 450°C
- Excellent precision ( $\pm 0.5^\circ\text{C}$ ), stability and homogeneity
- Full automation
- Rack lowers and raises automatically reducing processing time
- Complete operator protection, audible and visual alarms for abnormal operation, independent safety thermostat
- Excellent sample visibility
- Library of 30 popular applications with capacity to store 24 four step protocols
- Supplied with lift, suction cap, drip tray, sample rack and test tubes



Cat No.	Description
11775644	DKL8, for 8 x 250mL tubes, 42mm diameter
11785644	DKL12, for 12 x 250mL/400mL tubes, 42mm diameter
11795644	DKL20, for 20 x 250mL tubes, 42mm diameter
11705654	DKL42, for 42 x 100mL tubes, 26mm diameter

Test tubes:

11715654	Test tubes, dia. 42mm x 300mm, 250mL for DKL8, DKL12, DKL20
11725654	Test tubes, dia. 26mm x 300mm, 100mL for DKL42

Sample racks:

11735654	Sample rack for DKL8
11775654	Sample rack for DKL12
11795654	Sample rack for DKL20
11715664	Sample rack for DKL42

Stand for sample racks:

11745654	Stand for sample rack for DKL8
11785654	Stand for sample rack for DKL12
11705664	Stand for sample rack for DKL42

Other accessories:

11755654	USB cable 1.8m
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### Sulfuric acid

- Min. 95% d=1.83, Certified AR
- HDPE plastic bottle

Cat No.	Description	Volume, mL
10294300	Sulfuric acid, for analysis	1.000



### Distillation unit, UDK

- Nitrogen detection limit of 0.1mg
- Compatible with all Gerhardt, Büchi tubes or tubes with 35 to 55mm diameter, height 260 to 300mm
- Steam generator with no maintenance
- Titanium condenser for optimising the distillation process
- Limit of detection:  $\geq 0.1$ mg azote
- Reproducibility:  $\pm 1\%$
- Dimensions (h x d x l) mm: 780 x 416 x 385
- Power supply: 230V, 50/60Hz
- Power: 2.100W



Cat No.	Description
11795664	UDK 129 Manual distillator
11301570	UDK 139 Manual distillator
11386680	UDK 159 Distillation and titration system

#### Accessories:

11782393	Tube adapter 48mm dia.
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### Bromocresol Green, pure, indicator grade

Cat No.	Description	Pack qty
10521211	Bromocresol Green, pure, indicator grade	5kg

### boric acid, 4%

Cat No.	Description	Volume, mL
11969172	4% boric acid, reagents for coloured solution	1.000

### Sulfuric acid

Cat No.	Description	Volume, mL
11933293	Sulfuric acid 0.1N, for titration	1.000
11973293	Sulfuric acid 0.2N, for titration	1.000

### Hydrochloric acid

Cat No.	Description	Volume, mL
11993113	Hydrochloric acid 0.2N, for titration	1.000



### Reagents, AFNOR ready to use

Kjeldahl reagents for the assay of nitrogen; ready-to-use solutions avoiding dangerous dilutions with guarantee of reproducible results

Cat No.	Description	Volume, mL
11909182	boric acid 2% solution with indicator	5.000
11933113	boric acid 2% solution with indicator	1.000



Distributor  
GE Healthcare

### Weighing boats, disposable, Kjeldahl

- Ideal for weighing and transferring Kjeldahl samples safely and reliably
- 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
- Dimensions (l x w x h), mm: 54.9 x 9 x 9.9



Cat No.	Description	Pack qty
11393115	Weighing boat, grade 609, 0.07mm thick, 80gm <sup>2</sup>	100



### Chemicals for Kjeldhal digestion

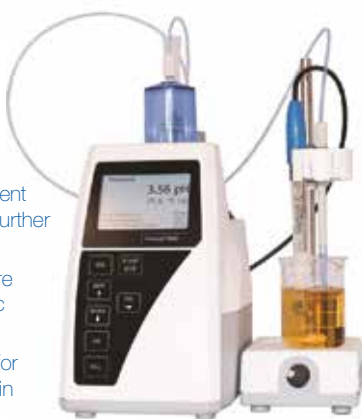
Cat No.	Description	Pack type	Volume
10395850	Kjeldahl copper catalyst tablets, technical, contains 1g Na <sub>2</sub> SO <sub>4</sub> and equivalent of 0.1g CuSO <sub>4</sub>	Plastic	500 tablets
10020220	Kjeldahl copper catalyst tablets, technical, contains 1g Na <sub>2</sub> SO <sub>4</sub> and equivalent of 0.1g CuSO <sub>4</sub>	Plastic	1.000 tablets
10447260	Kjeldahl copper catalyst tablets, technical, contains 5g K <sub>2</sub> SO <sub>4</sub> and equivalent of 0.1g CuSO <sub>4</sub>	Plastic	1.000 tablets
10375900	Kjeldahl selenium catalyst tablets, technical, contains 1g Na <sub>2</sub> SO <sub>4</sub> and eq. of 0.05g selenium	Plastic	500 tablets
10784181	Kjeldahl selenium catalyst tablets, technical, contains 1g Na <sub>2</sub> SO <sub>4</sub> and eq. of 0.05g selenium	Plastic	1KG
10335950	Kjeldahl sodium sulfate catalyst tablets, technical, contains 1g Na <sub>2</sub> SO <sub>4</sub>	Plastic	1.000 tablets
10060250	Kjeldahl titanium catalyst tablets, technical, contains 1g Na <sub>2</sub> SO <sub>4</sub> , eq. of 0.03g TiO <sub>2</sub> , 0.03g CuSO <sub>4</sub>	Plastic	1.000 tablets
10635882	Kjedhal boric acid solution, pure, solution 4% alkaline with indicator	Plastic	1L
10141480	Kjedhal boric acid solution, pure, solution 4% alkaline with indicator	HDPE Bottle	5L
10645882	Kjeldahl digestion reagent, technical	Glass Bottle	2.5L
10294290	Kjeldahl phenol reagent, pure, for determination of nitrogen	Plastic	1L
10704381	Kjeldahl sodium hydroxide/ sodium thiosulfate solution, technical, for Kjeld-Foss automatic nitrogen analyser	HDPE Bottle	5L

## SI Analytics

a xylem brand

### Titration, automatic, TitroLine™ 5000

- High resolution pH/mV measurement input for pH-, ORP-, silver- and further mV-electrodes
- Pt 1000 and NTC 30 temperature measurement input for automatic temperature compensation
- Pre-installed standard methods for FOS/TAC, alkalinity, total acidity in drinks, chloride etc.
- Linear and dynamic titration to equivalence points
- Titration to pH and mV-ends points



Applications: Chloride in wastewater, permanganate index and COD, total Kjeldhal nitrogen, FOS/TAC, pH value, alkalinity.

Volume display	0000.000 to 9999.999mL
Display resolution	0.005 to 0.025mL (depending on dosing unit)
Dosing speed	Max. 100mL/min (with 50mL unit)
Dosing units	20mL or 50mL dosing unit, interchangeable
Dosing accuracy	Systematic error 0.15%, random error 0.05% in compliance with EN ISO 8655-6
Filling speed	Min. 30s to 999s adjustable (time according to the cylinder volume)
Burette resolution	8,000
Electrical supply	100 -240V, 50/60Hz; power input 30V A
Interfaces	1 x USB-A and 1 x USB-B, 2 x RS 232-C

Cat No.	Description
15314408	TitroLine 5000 with 20mL dosing unit. Includes ready to use assembled 20mL dosing unit, manual controller, titration clamp, stand rod, magnetic stirrer TM 50 and power supply 100-240V
15362367	TitroLine 5000 with 50mL dosing unit. Includes ready to use assembled 50mL dosing unit, manual controller, titration clamp, stand rod, magnetic stirrer TM 50 and power supply 100-240V
15398293	TitroLine 5000 with 20mL dosing unit. Includes ready to use assembled 20mL dosing unit, manual controller, titration clamp, stand rod, magnetic stirrer TM 50 and power supply 100-240V with Electrode and buffer set
15324408	TitroLine 5000 with 50mL dosing unit. Includes pH electrode and buffer set, with ready to use assembled 50mL dosing unit, manual controller, titration clamp, stand rod, magnetic stirrer TM 50 and power supply 100-240V

## JENWAY

### Fluorimeters, 62 series



For less sensitive applications with a broader wavelength range, select model 6270. Choose Model 6280 for the most sensitive determinations with emission wavelengths up to 650nm, and for higher emission wavelengths select model 6285 with its red-enhanced detector.

All three models offer intuitive operation and up to 20 methods can be created without restriction and saved for future use. The permanent time and date tag on every stored reading further enhances Good Laboratory Practice (GLP), while calibration reminders and operator identity can also be entered to support conformance and traceability of operation. Please note: filters must be ordered separately as an accessory.

- High quality optics: pulsed xenon lamp and Total Energy Transfer (TET)
- Intelligent Filter Modules ensure correct filters are fitted for selected method
- Intuitive programming allows fast program creation
- Raw fluorescence or concentration values options
- Standard curve and kinetic functions
- Heated sample holder and sipper pump accessories
- Compatible with DataWay PC software
- Three year warranty

These fluorimeters are supplied with 100 disposable cuvettes and mains adapter for use on 90V to 230V supply with UK, Euro and US mains lead.

Cat No.	Description
11404849	Fluorimeter 6270, with power supply and 100 disposable cuvettes, 190 to 110nm
11414849	Fluorimeter 6280, with power supply, 190 to 650nm
11424849	Fluorimeter 6285, with power supply, 190 to 850nm

#### Accessories:

11404849	Bandpass filters, 320 to 380nm
11414849	Bandpass filters, 380 to 500nm
11424849	Bandpass filters, 480 to 580nm
11404859	Cut-off filters (low cut transmission blocked below stated wavelength) 305nm
11494849	Cut-off filters (low cut transmission blocked below stated wavelength) 395nm
11484849	Cut-off filters (low cut transmission blocked below stated wavelength) 475nm
11474849	Cut-off filters (low cut transmission blocked below stated wavelength) 545nm
11464849	Cut-off filters (low cut transmission blocked below stated wavelength) 610nm
11424859	Interference filters, 254nm
11484869	Interference filters, 340nm
11414879	Interference filters, 365nm
11434879	Interference filters, 380nm
11454879	Interference filters, 400nm
11434889	Interference filters, 450nm
11454889	Interference filters, 470nm
11404899	Interference filters, 514nm



**Spectrophotometers, photoLab 7000 series**

- The spectrophotometers photoLab™ 7100 VIS and photoLab™ 7600 UV-VIS combine routine analysis with spectral analysis and pioneering procedure OptRF
- New reference beam optics and new brilliant colour display



	photoLab™ 7100 (VIS)	photoLab™ 7600 (UV/VIS)
Wavelength range	320 to 1.100nm	190 to 1.100nm
Optics	Grid monochromator with step motor and reference beam, 4nm bandwidth	Grid monochromator with step motor and reference beam, 4nm bandwidth
Lamp	Wolfram-Halogen	Xenon flash lamp
Measurement/programming	Concentration, absorbance, % transmission, kinetics and spectra in Abs or % transmission, multi-wavelengths and multi-step readings	Concentration, absorbance, % transmission, kinetics and spectra in Abs or % transmission, multi-wavelengths and multi-step readings
Scan speed	700 to 2.000nm/min, scans in 1, 2, 5, 10nm steps of wavelength range	700 to 2.000 nm/min, scans in 1, 2, 5, 10nm steps of wavelength range
Wavelength accuracy/reproducibility	±1nm / <0.5nm	±1nm / <0.5nm
Photometric accuracy/reproducibility	- 0.003 E for E < 0.600; 0.5% of the display for 0.600 < E < 2.000	ATC / MTC (0 to 100°C) (pH only)
Methods and profiles	>200 pre-programmed methods, 1.000 user-defined methods, 20 profiles for kinetics and spectra, comprehensive programming options	>200 pre-programmed methods, 1.000 user-defined methods, 20 profiles for kinetics and spectra, comprehensive programming options
Interface/update	1 USB-A, 1 USB-B, 1 Ethernet / update via internet and USB-Stick	1 USB-A, 1 USB-B, 1 Ethernet / update via internet and USB-Stick

Cat No.	Description
15335409	PhotoLab 7100 VIS spectrophotometer, 320 to 1.100nm
15345409	PhotoLab 7600 UV/VIS spectrophotometer, 190 to 1,100nm

**Ready-to-use reagent tube kits for photoLab series**

Cat No.	Kit contents	Measuring range, mg/L	Pack qty
11771043	Ammonium assay	0.01 to 2.6	25 tests
11737315	Ammonium assay	0.2 to 8	25 tests
11784745	Ammonium assay	0.5 to 16	25 tests
11794745	Ammonium assay	4.0 to 80	25 tests
11782265	AOX assay	0.05 to 2.5	25 tests
11792265	AOX assay	Preparation kit	2 kits
11702275	AOX assay	Enrichment kit	2 kits
10627004	Boron assay	0.05 to 2	25 tests
11793177	Chloride assay	0.02 to 7.5	200 tests
11785783	Chloride assay	5 to 125	25 tests
11734764	Chromium VI and total assay	0.5 to 2	25 tests
11701083	COD assay	4 to 40	25 tests
11717315	COD assay	10 to 150	25 tests
11761043	COD assay	15 to 300	25 tests
11764725	COD assay	50 to 500	25 tests
11727315	COD assay	25 to 1.500	25 tests
11774725	COD assay	300 to 3.500	25 tests
11791073	COD assay	500 to 10.000	25 tests
11771073	Copper assay	0.1 to 8	25 tests
11781073	Cyanide (free and easily realised) assay	0.01 to 0.5	25 tests
11711083	Fluoride assay	0.1 to 1.5	25 tests
11783177	Free and total chlorine assay	0.05 to 7.5	150 tests
11773177	Free chlorine assay	0.05 to 7.5	150 tests
11784006	Hydrogen peroxide assay	2.0 to 20	25 tests
11754764	Iron assay	0.05 to 4	25 tests
11795783	Iron assay	1 to 50	25 tests
11705793	Magnesium assay	0.10 to 8.00	25 tests
11761495	Manganese assay	0.1 to 5.0	25 tests
11757315	NBSP assay	0.01 to 0.7	25 tests
11747315	NBSP assay	0.5 to 25	25 tests
11724774	Nickel assay	0.1 to 6	25 tests
11761093	Nitrate assay	0.1 to 3	25 tests
11734774	Nitrate assay	0.5 to 18	25 tests
11792675	Nitrate assay	1 to 50	25 tests
11774745	Oxygen assay	0.5 to 12	25 tests
11754774	Phenol assay	0.1 to 2.5	25 tests
11791113	Potassium assay	5 to 50	25 tests
11774006	Residual hardness assay	0.075 to 0.750 <sup>d</sup> (0.13) mg/L	25 tests

**Ready-to-use reagent tube kits for photoLab series, continued**

Cat No.	Kit contents	Measuring range, mg/L	Pack qty
11744774	Sulfate assay	5 to 250	25 tests
11781093	Sulfate assay	100 to 1.000	25 tests
11791073	Sulfite assay	1 to 25	25 tests
11784784	Tin assay	0.2 to 5	25 tests
11732285	Total hardness assay	0.7 to 30.1°d, (5 to 215) mg/L	25 tests
11751073	Total nitrogen assay	0.5 to 15	25 tests
11754725	Total nitrogen assay	10 to 150	25 tests
11767315	Total phosphate	0.05 to 5	25 tests
11777315	Total phosphate	0.13 to 15	25 tests
11771093	Total phosphate	0.5 to 25	25 tests



# Technical note:

## Analyses of relevance to health

The range of health parameters may include fluoride (where it is known to occur naturally), nitrate (where intensification of farming has led to elevated levels in ground water), lead (in areas where it has been used in plumbing), chromium (e.g. in areas where it is mined), arsenic (where it is known to occur naturally), and pesticides (where local practices and use indicate that high levels are likely).

If these or any other chemicals of health significance are thought to be present, they should be monitored and the results examined in the light of the WHO guidelines, values and any relevant national standards.

**WTW**  
a xylem brand

**OptRF**  
FASTER THAN  
ANY DIGESTION

**photoLab® 7600 UV-VIS**

- OptRF - pioneering optical reagent-free measurement of COD, Nitrate and Nitrite

**photoLab® 7100 VIS**

- Routine and special applications from water to wine

wtw.com

**xylem**  
Let's Solve Water



Distributor  
GE Healthcare

**Filter units, syringe, GD/XP™**

GD/XP syringe filters can be used with samples that require inorganic ion analysis (e.g., trace metal analysis using ICP-MS).

- Prefilter made of polypropylene for minimisation of ion extractables
- Integrated prefiltration with a dual-layer prefilter stack and one final 0.45µm membrane
- Easy filtration of hard to filter samples



GD/XP™ syringe filters are ideal for use with samples that require ion analysis, as levels of ion extractables are minimised, they contain a prefilter stack of 20µm and 5µm polypropylene filters.

Model No.	GD/XP™
Diameter, mm	25
Effective filtration area, cm²	4.6

Cat No.	Description	Membrane	Pore size, µm	O.D., mm	Pack qty
11344804	GD/XP™	Nylon	0.45	25	150
11330344	GD/XP™	Nylon	0.45	25	1,500
11354804	GD/XP™	PVDF	0.45	25	150
11370344	GD/XP™	PVDF	0.45	25	1,500



Distributor  
GE Healthcare

**In-line filters, Polydisc GW**

- Polydisc GW has been developed for the preparation of larger volumes of groundwater samples for the analysis of dissolved heavy metals.

- Remarkably lightweight



Cat No.	Description	Pack qty
11379194	Polydisc GW filter 50mm, nylon with quartz fibre prefilter, 0.45µm	20
11389194	Polydisc GW filter 50µm, nylon with quartz fibre prefilter, 0.45µm	50



# Technical note:

## Jar Testers - Flocculators

**This test is used to test the efficiency of the chemical coagulant that will be used to remove suspended solids from waste-water and avoid overdosing of precipitation agents.**



**Flocculator, portable,**

**4 place FP4**

- For low form beakers
- Adjustable rotor height
- L x D x H, mm: 250 x 250 x 320
- Mass, kg: 4.5



Cat No.	Description	Pack qty
11751873	Flocculator FP4	1

Accessories:

15449083	Glass beaker, low form, 1.000mL	10
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**Flocculator, 6 place, JLT6**

Standardised Control:

- Digitally selectable speed from 10 to 300rpm
- Microprocessor controlled operating time for unattended operation
- Identical speed and time for all positions for comparable results
- Reliable and repeatable results from VELP stirring quality
- Precise speed from an electronically controlled d.c. gear motor



Practical Operation and Design:

- Six-position jar tester
- High visibility LED displays for speed and time
- Illuminated back panel to simplify sample observation
- Stirring rods adjustable in height without tools
- Strong resistance to chemical and mechanical corrosion

Cat No.	Description	Pack qty
11701174	Flocculator JLT6	1

Accessories:

15449083	Glass beaker, low form, 1.000mL	10
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**High Purity Acids for Elemental Analysis**

Fisher Chemical offers a complete range of acids to meet the most challenging applications. Choose from our Optima™, TraceMetal™ and PrimarPlus™ grades to ensure that the sensitivity you require is always available.

[www.eu.fishersci.com](http://www.eu.fishersci.com)





### Incubators, microbiological

#### Safe

- Safe view of samples through internal glass door, without impact on temperature
- Safe conditions with superior temperature uniformity
- Safe containment with automatic over temperature alarm
- Alarm in case of temperature deviations

#### Easy

- Easy temperature setting with intuitive user interface
- Easy to remove 'One Click' shelf system
- Easy to clean interior with rounded corners
- Easy to read large display

#### Efficient

- Efficient small footprint to optimise bench top space
- Conveniently stackable without the need for tools or stacking kits
- Efficient utilisation of interior with flexible shelf system
- Incubators are supplied with two shelves



Cat No.	10529070	10839810	10744262	10699640
Model No	IGS60	IGS100	IGS180	IMC18
Capacity, L	75	117	194	18 (approx.)
Power rating, W	300	520	710	45
Current, A	3.7	2.3	3.1	0.45 to 0.85
Dimensions, external [w x d x h], mm	530 x 565 x 720	640 x 565 x 820	640 x 738 x 920	260 x 470 x 415
Dimensions, internal [w x d x h], mm	354 x 414 x 508	464 x 414 x 608	464 x 589 x 708	180 x 290 x 310
Mass, kg	40	51	65	7.2



Distributor  
GE Healthcare

### Filter units, syringeless Mini-UniPrep

- All in one filtration process allows you to process sample loads in a third of the time
- Three consumables in one unit: syringe, filter and flask
- Six filtration steps in one with the six position compressor
- Compatible with most major autosamplers



Cat No.	Description	Pore size, µm	Membrane	Pack qty
11318724	Six position compressor			1
11388734	Mini-UniPrep™	0.2	PVDF	100
11398734	Mini-UniPrep™	0.2	Nylon	100
11308754	Mini-UniPrep™	0.2	RC	100
11338744	Mini-UniPrep™	0.45	PVDF	100
11368744	Mini-UniPrep™	0.45	Nylon	100
11305124	Mini-UniPrep™	0.45	RC	100



Distributor  
GE Healthcare

### Filters, syringe, Puradisc 25

Puradisc syringe filters combine premium quality and economy. They are well suited for quick, efficient filtration of samples up to 100mL volume. Puradisc filters are produced from pigment-free polypropylene or polycarbonate with standard inlet (female luer lock) and outlet (male luer) connections, unless otherwise stated. Options include 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 microvial, eliminating air lock.



For aqueous or solvent-based solutions, HPLC, TLC, GC sampling.

Cat No.	Description	O.D., mm	Pore size, µm	Pack qty
11333305	Syringe filter, nylon membrane, non-sterile	25	0.2	1.000
11323315	Syringe filter, nylon membrane, non-sterile	25	0.45	1.000

# Microbiology

## Surface Sampling

Contact dishes  
Dip slides  
Swabs

- Fisherbrand
- Greiner
- Sterilin

## Water & Product Sampling

Dip slides  
Filtration systems and multibranch manifolds  
Plastic labware  
Samplers

- Thermo Scientific
- Sartorius
- Bürkle
- Gosselin
- Labconco

## Air Sampling

Air samplers

- Fisherbrand
- Thermo Scientific
- BD Difco\*
- Sartorius



## Sample Preparation

Balances  
Centrifuges  
Dry and ready-to-use media  
Glassware  
Glove boxes  
Label printers  
Membranes and filtration devices  
Petri dishes  
Stomacher/grinder  
Water baths

- Fisherbrand
- Thermo Scientific
- Brady
- Wheaton
- Memmert
- Sartorius
- GE Healthcare
- Gosselin
- Grant
- Kinematica
- Labconco
- Plas Lab
- Pyrex
- Retsch
- Sterilin



## Sterilisation/Destruction

Autoclaves  
Autoclave bags  
Sterilisation indicators  
Systec

- Fisherbrand
- Thermo Scientific
- 3M
- Astell

## Safety

Class II safety cabinets  
Clinical waste containers  
Coveralls and overshoes  
Disinfectants and sanitisers  
Facemasks  
Gloves  
Glove boxes  
Respiratory protection  
Warning labels

- Fisherbrand
- Thermo Scientific
- Brady
- DuPont
- Kimberly-Clark
- Microflex
- 3M
- Anios
- Ansell
- Bolle
- Labconco
- Plas Lab



\* restricted access in some EU countries



### Inoculation



Bunsen burners  
Inoculating loops and spreaders  
Spiral platers



- Fisherbrand
- Thermo Scientific
- Gosselin
- Sterilin

### Incubation


Anaerobic jars  
Glove boxes  
Microbiological incubators  
Shaker incubators

- Fisherbrand
- Thermo Scientific
- Bibby Scientific
- Memmert
- Grant
- Plas Labs

### Counting


Cell density meters      Spectrophotometers  
Colony and cell counters      Stereomicroscopes  
Slides and coverslips



- Fisherbrand
- Thermo Scientific
- Bibby Scientific
- Carl Zeiss
- Motic
- Schott
- UVP

### Identification/Staining

Antibiotics      Microbiological stains  
Antisera      Microscopes  
ATCC strains      Rapid tests  
Chemicals      Slide and coverslips



- Fisherbrand
- Thermo Scientific
- Acros
- Brady
- Carl Zeiss
- Pro-Lab Diagnostics

### Storage/Cryostorage

Barcode readers  
Cryostorage systems  
Dewars  
Fridges / Freezers  
Storage consumables (microplates, cryotubes, boxes)  
Ultra-low temperature freezer






- Fisherbrand
- Thermo Scientific
- Brady
- Corning
- Liebherr
- Statebourne Cryogenics
- Tenak

Proteomic Studies



Genomic Studies





Distributor  
GE Healthcare

### Filters, polyamide membranes

Universal filter made from pure polyamide for clarification and sterile filtration.

Polyamide membrane filters are mechanically very strong and exhibit excellent wet and dry strength. They are hydrophilic making them suitable for aqueous and organic solutions. The membrane filters can be used up to 135°C.

- 110µm thickness
- Hydrophilic
- Polyamide (nylon)
- Poresize 0.45µm

Cat No.	Description	O.D., mm	Pore size, µm	Pack qty
11385404	Membrane filter	47	0.2	100
11395404	Membrane filter	50	0.2	100
11305414	Membrane filter	47	0.45	100
11358944	Membrane filter	50	0.45	100



### SPE cartridges, HyperSep™ C18

The use of SPE sample preparation can significantly enhance the robustness and reliability of many biological, pharmaceutical, forensic and environmental applications.

Thermo Scientific HyperSep C18 Cartridges feature a highly retentive alkyl-bonded phase for non-polar to moderately polar compounds. The hydrophobic reversed phase material is retentive for most nonpolar compounds, and retains most organic analytes from aqueous matrices.



Cat No.	Bed weight, mg	Volume, mL	Pack qty
11514765	100	3	50
10631324	200	3	50
10434963	500	3	50
10098942	500	6	50
10344653	1.000	6	50
10523364	2.000	15	50
10166203	5.000	25	50
10434445	10.000	75	50



Distributor  
GE Healthcare

### Filtration device, vacuum, GV050/2

Chemically resistant to most aqueous and organic solvents including acids and caustic solutions.

- Autoclavable and can be sterilised in dry heat to 180°C
- Can be used up to 200°C
- Funnel volume: 250mL

Includes: glass vacuum filtration device, glass frit filter, hose coupling connection, 1.000mL (NS45) Erlenmeyer flask, silicone cap with air inlet, membrane filter accessories.



Cat No.	Description
11314944	Filtration device, 12.5cm² filtration area



### SPE vacuum manifolds, HyperSep™ glass block

The use of SPE sample preparation can significantly enhance the robustness and reliability of many biological, pharmaceutical, forensic and environmental applications. We offer a full range of extraction accessories to complement both traditional cartridges and 96 well plate formats.

Thermo Scientific™ HyperSep™ glass block manifolds offer a simple way to quickly process multiple samples. The manifold's rigid Corian lid resists warping, and permits samples to elute directly into disposable test tubes. The design allows visible inspection of the extraction process and facilitates cleaning.



Cat No.	Description	Pack qty
10447263	16-port Vacuum Manifold	1
10354413	24-port Vacuum Manifold	1
10419344	Vacuum Pump (European Version)	1



**HPLC and UHPLC columns, Accucore™**

Thermo Scientific™ Accucore™ HPLC, and UHPLC columns are a family of products based on Core Enhanced Technology™ that provide ultimate core performance and allow you to maximise your investment. Accucore columns are ideal for applications such as analysis of herbicides in water.

- Solid core particles for fast separations with superb resolution
- Exceptionally rugged and easy to use columns
- Easy interactions: SeamLess workflow options (column, system and data processing combined), allows for simple and easy to implement separations

Cat No.	Description	Application areas
15418060	Accucore Vanquish C <sub>18</sub> +, 100mm x 2.1mm, 1.5µm	Explosives, pesticides, herbicides,
12625695	Accucore-150 C <sub>18</sub> , 150mm x 2.1mm, 2.6µm	statins, beta blockers,
11317471	Accucore C <sub>18</sub> , 100 x 2.1mm, 2.6µm	PAHs, ibuprofen
11337501	Accucore PFP 100mm x 2.1mm, 2.6µm	
11367531	Accucore RP-MS 150mm x 2.1mm, 2.6µm	



**HPLC and LC-MS columns, Acclaim™**

Thermo Scientific™ Acclaim™ columns are based on high-purity, porous silica particles with advanced and innovative column bonding technologies.

This provides complementary selectivity, high column efficiencies and symmetrical peaks. Acclaim columns meet the high standards set by modern HPLC and LC-MS methods and are frequently used to analyse environmental and chemical samples.

- Ultra-pure, porous spherical silica
- High efficiencies
- Novel surface chemistries for different selectivities
- Reproducible and reliable manufacturing process



Cat No.	Description	Application areas
11371813	Acclaim Polar Advantage II 50mm x 4.6mm, 3µm	Explosives, aniline and nitroanilines,
11391863	Acclaim Polar Advantage II, 150mm x 3.0mm, 3µm	phenylurea compounds, triclosan,
11372003	Acclaim C <sub>30</sub> , 150mm x 3.0mm, 3µm	phthalates, phenols,
11351783	Acclaim C <sub>18</sub> , 50mm x 2.1mm, 5µm	perfluorinated organic compounds,
11351863	Acclaim 120 C <sub>18</sub> , 150mm x 3.0mm, 3µm	microcystins in drinking and environmental waters
11361773	Acclaim 120 C <sub>18</sub> , 150mm x 4.6mm, 3µm	
11371933	Acclaim E2 250mm x 3mm, 3µm	



**HPLC columns, Hypercarb™**

Thermo Scientific™ Hypercarb™ (Porous graphitic carbon - PGC) has unique properties as a stationary phase in High Performance Liquid Chromatography (HPLC). Its chemical surface properties distinguish it from more conventional LC packings such as bonded-silica gels and polymers.

PGC behaves as a strongly retentive alkyl-bonded silica gel for non-polar analytes, however its retention and selectivity behaviour towards polar and structurally related compounds is very different from conventional C<sub>18</sub> columns and make it ideally suited for water analysis.

- Exceptional retention of very polar analytes
- Separation for structurally related substances
- pH stability from 0 to 14, and are not affected by aggressive mobile phases

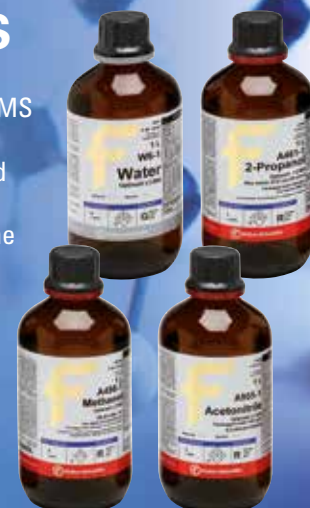
Cat No.	Description	Application areas
10089832	Hypercarb 100mm x 4.6mm, 5µm	Herbicides, metabolites
10129334	Hypercarb 100mm x 1.0mm, 3µm	Herbicides, environmental water samples
10745983	Hypercarb 100mm x 3mm, 5µm	Polar metabolites
11538420	Hypercarb 20mm x 2.1mm, 7µm	Desphenyl-chloridazone and methyl-desphenyl-chloridazone in surface, ground and drinking water



**Optima LC/MS**

Fisher Chemical OPTIMA™ LC/MS solvents, blends, additives and modifiers have set the standard of excellence for consistent, reproducible performance in the mobile phase of LC/MS.

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**GC columns, TraceGOLD™**

Thermo Scientific™ TraceGOLD™ GC columns offer you a leap forward in column performance, delivering ultra low bleed, superior inertness and the highest levels of reproducibility. TraceGOLD columns are ideal for applications such as analysis of pollutants in water.



- **Ultra low bleed** - Leading to greater sensitivity, essential for GC-MS applications, while providing extended column lifetimes
- **High levels of reproducibility** - Both run-to-run and column-to-column reproducibility. You can expect every column to provide the same high levels of performance as the previous one
- **Superior inertness** - Offering highly inert columns ensuring excellent peak shape and sensitivity, especially for highly active or difficult compounds

Cat No.	Length x I.D. x film thickness	Application areas
10177894	TG-5SiIMS 30m x 0.25mm x 0.25µm	PAH's, phthalates, phenols, amines
10584685	TG-5MS 30m x 0.25mm x 0.25µm	Phenols, amines, pesticides, PCB congeners
15287478	TG-17SiIMS 30m x 0.25mm x 0.25µm	PAH's, pesticides, herbicides, triglycerides
10016174	TG-35MS 30m x 0.25mm x 0.25µm	Organochlorine pesticides, pesticides and herbicides, PCB congeners, phthalate esters
11521164	TG-VRX 60m x 0.25mm x 1.4µm	Volatile organic pollutants (EPA 8021)
11531154	TG-VMS 60m x 0.25mm x 1.4µm	Volatile organic pollutants (EPA 8260B)
11541124	TG-OCPI 30m x 0.25mm x 0.25µm	Organochlorine pesticides



**GC septa, blister packs**

GC septa in individual blister packs for enhanced product cleanliness.



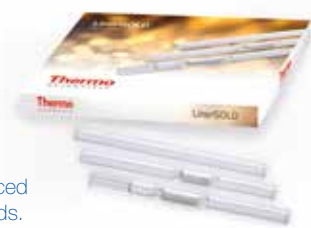
- Quality GC septa for all applications
- Ultra clean blister packaging
- Long lifetime materials
- Maximum operating temperatures up to 400°C

Cat No.	Description	System Compatibility	Pack qty
15340431	BTO septa, dia., 11mm	Trace 1300 GC, Agilent GC	50
15380421	BTO septa, dia., 17mm	Trace GC Ultra	48
15300451	Marathon septa, dia., 11mm	Trace 1300 GC, Agilent GC	50
15360441	Marathon septa, dia., 17mm	Trace GC Ultra	48
15320441	TR-Green septa, dia., 11mm	Trace 1300 GC, Agilent GC	50
15380431	TR-Green septa, dia., 17mm	Trace GC Ultra	48



**GC liners, LinerGOLD™**

The GOLD standard in GC liner performance Thermo Scientific™ LinerGOLD™ GC liners provide enhanced inertness for a wide range of compounds. Using a unique, state of the art deactivation process, they provide enhanced transfer of the sample to the GC column, leading to increased accuracy and precision in analysis. This enables lower detection limits for active compounds.



- **Increased accuracy and sensitivity in analysis** – LinerGOLD prevents the loss of sensitive compounds in analysis
- **Lower detection limits** – when analysing active and sensitive compounds
- **Excellent reproducibility** – gives confidence in your results from liner to liner – setting the GOLD standard

Cat No.	Description	System Compatibility	Pack qty
15457980	Direct straight liner, wool, 4 x 6.3 x 78.5	Trace 1300 GC, Agilent GC	5
15447990	Splitless liner, single taper, wool, 4 x 6.3 x 78.5	Trace 1300 GC, Agilent GC	5
15408000	Precision liner 4 x 6.3 x 78.5	Trace 1300 GC, Agilent GC	5
15477990	Splitless liner with double taper, 4 x 6.3 x 78.5	Trace 1300 GC, Agilent GC	5
15488010	Precision liner 5 x 8 x 105	Trace GC Ultra	5
15458010	Splitless liner, single taper, 5 x 8 x 105	Trace GC Ultra	5



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**Fisherbrand<sup>®</sup>**  
**Paper, absorbent, surface protection**

Ultra white absorbent paper, 100g/m<sup>2</sup>, with polyethylene coating on one side. Protects laboratory benches from acids, toxic, corrosive and radioactive products and glass impact. Aids recovery of valuable materials such as precious metals.

- Grade 604 absorption capacity 170g/m<sup>2</sup>
- Grade 606 absorption capacity 200g/m<sup>2</sup>



Cat No.	Description	Pack qty
11714916	Grade 604, 50mm x 50m roll	1
11758722	Grade 606, 460mm x 50m roll	1
11527362	Grade 606, 570mm x 460mm sheets	100

**3M**

**Spectacles, SecureFit™ 400 series**



- 3M™ SecureFit™ 400 series eyewear includes 3M™ Patented Diffusion Temple Technology, a scientific advancement that helps diffuse pressure over the ear, enhancing frame comfort while not compromising the security of fit
- With the addition of soft, self adjustable nose pads and dual-injected padded temple touch points, 3M™ SecureFit™ 400 series eyewear allows for even greater personalisation of fit and reduces the need for multiple eyewear requirements
- Motion-inspired, contoured piping in a bold, modern colour palette infuses even more style to the 3M™ SecureFit™ 400 series
- Made of polycarbonate lenses that absorb 99.9% of UVA and UVB, 3M™ SecureFit™ 400 series eyewear meets the requirements of EN 166:2001 and are so lightweight you will forget that you have them on

Cat No.	Description
15371994	SecureFit™ spectacles 400 series clear
15322004	SecureFit™ spectacles 400 series blue
15391994	SecureFit™ spectacles 400 series grey



**Gloves, latex, disposable, PPE Category III**



- Manufactured from high quality soft, powder free latex film. The powder free gloves have a synthetic inner coating for ease of donning. Ambidextrous with a rolled cuff, 0.34mm thick at the palm and an AQL of 1.5. Length 240mm.
- Chemical resistance data for this glove is available at [sempermed.com](http://sempermed.com)
- Powder-free, inner coated

Cat No.	Glove size	Pack qty
11753273	XS	100
11713273	S	100
11723273	M	100
11733273	L	100
11743273	XL	90



**Gloves, nitrile, disposable, purple, PPE Category III**



Ergonomically designed and 100% nitrile. Latex and protein free with non-detectable residual accelerators. Textured fingertips. Powder free.

250mm length

Cat No.	Glove size	Pack qty
11502723	2XS	100
11512723	XS	100
11522723	S	100
10223882	M	100
11542723	L	100
11552723	XL	100

Extra protection nitrile gloves, 300mm length

Cat No.	Glove size	Pack qty
10090812	XS	50
10611783	S	50
10000822	M	50
10769824	L	50
10580043	XL	50



**Gloves, latex, disposable, PPE Category III**



Latex examination gloves provide a protective barrier and contain soothing Aloe vera to help prevent skin from drying, cracking and chapping. Textured to provide excellent grip. Powder free. EN 374:2003 (AQL 1.5).

Cat No.	Glove size	Pack qty
15153269	S	100
15173269	M	100
15163269	L	100
15183269	XL	100



**Gloves, nitrile, disposable, Aloe vera, PPE Category III**



Premium nitrile gloves offering the comfort and feel of latex. Comfortable, strong and durable. 100 gloves per box reduces waste, congestion and environmental impact. Tested against more than 30 chemicals. PPE complies with Category III, AQL 0.65, EN 374-1 and -2, ISO 16604 certified for food contact. 0.06mm thickness.

Cat No.	Size	Pack qty
15193269	S	100
15103279	M	100
15123279	L	100
15113279	XL	100



**Gloves, nitrile, disposable, KIMTECH SCIENCE™ STERLING™ nitrile gloves**



Combines protection, comfort and sustainability for all-round care of the science and the environment.

Tested against over 40 chemicals and 10 cytotoxic drugs. Strength, quality and cleanliness tracked by certificate of analysis. PPE Category III compliant, AQL 0.65, EN374-1 and -2, ISO 16604, food contact approved. Available in two lengths: 240mm or 250mm.

Sterling Nitrile

Cat No.	Size	Length, mm	Pack qty
10634525	XS	240	150
10765495	S	240	150
10735685	M	240	150
10682415	L	250	150
10754175	XL	250	140



**Gloves, PPE, Category III, KIMTECH SCIENCE™ Comfort Nitrile**

Combines high comfort, quality and cleanliness for protection in low risk research applications.



- PPE Category III
- A brand-new nitrile formulation engineered for comfort
- 150 gloves per standard sized box
- Better chemical protection than latex, tested on the 6 most common chemicals in the lab
- Non-contaminated gloves can be recycled through our RightCycle Programme

Cat No.	Size	Pack qty
15302256	XS	150
15312256	S	150
15322256	M	150
15332256	L	150
15362206	XL	150



**Gloves, disposable, powder free, KIMTECH SCIENCE™ Purple Nitrile™**



- Excellent choice for higher risk applications in life sciences and non-sterile pharmaceutical manufacturing
- Best combination of protection, cleanliness and quality
- Best chemical protection in the KIMTECH SCIENCE™ Range, tested against over 50 chemicals and 20 cytotoxic drugs
- Strength, quality and cleanliness tracked by certificate of analysis
- PPE Cat III compliant, AQL 0.65, EN 374-1 and -2, ISO 16604, food contact approved

Cat No.	Size	Pack qty
10737655	XS	100
10248264	S	100
15322256	M	100
11889610	L	100
11809620	XL	90



**Gloves, latex, chemical resistant, Profil™Plus, PPE Category III**

Pure cotton flock lined heavy glove. Sanitized™/Actifresh™ for anti-bacterial protection and treated inside to reduce allergy risk. Outstanding grip, specially designed for chemical processing in wet conditions, chlorinated finish provides good wet grip. Picot style. Colour yellow. Length 300mm, thickness 0.65mm.

Cat No.	Size	Pack type	Pack qty
12425120	S	Pair	12
12435120	M	Pair	12
12445120	L	Pair	12
12455120	XL	Pair	12



**Gloves, nitrile, chemical resistant, Premium Sol-Vex™, PPE Category III**

A premium nitrile glove providing new standards of safety for high risk chemical handling. Each glove is individually air-pressure tested. Manufactured from a newly developed nitrile film which offers greater strength and superior chemical resistance, suitable for particularly hazardous chemical areas, e.g. chemical manufacture, transfer of aggressive chemicals and handling chemical mixtures. Other areas for use include oil refining, laboratory testing and the handling of pesticides, insecticides and plant protection chemicals. Sanitised™/Actifresh™ with dot pattern reverse lozenge grip that actually strengthens the glove. Flock lined with semi-gauntlet length for better forearm protection. Lozenge style. Colour red. Length 380mm, thickness 0.425mm.

Cat No.	Size	Pack type	Pack qty
11781583	7	Pair	12
12495160	8	Pair	12
11761583	9	Pair	12
12415170	10	Pair	12
12425170	11	Pair	12

**Honeywell**

**Gloves, knitted, temperature resistant, Aratherma**



Industries include: manufacturing, steel and metals.

- EN 420-2010 - General requirements
  - EN 388-2003 - Mechanical risks
  - EN 407-2004 - Thermal Risks
- High thermal protection gloves in Kevlar™ (protect between 250°C and 350°C)

Cat No.	Size	Pack type	Pack qty
11887040	9	Pair	1

**Honeywell**

**Gloves, temperature resistant, Foundry M20**



- Industries include: Automotive and part manufacturer, foundry iron and steel industry, metal steel, ship building, transportation, utilities welding
- CE Category: II Intermediary risks
- In accordance with standards:
  - EN 420-03 EEC Basic standards
  - EN 388-03 Mechanical hazards
  - EN 407-04 Thermal Hazards
  - EN 12477-2002 Type B Welding hazards
- Water-repellent and heat resistant cowhide split leather glove
- Gunn cut, sewn on thumb, gauntlet type
- Hand lined with 4mm flame resistant foam laminated on flame and heat resistant jersey
- 180mm grain leather cuff lined with cotton canvas
- Stitched with Kevlar™ thread. Length 385mm.

Cat No.	Size	Pack type	Pack qty
11896900	10	Pair	1



**Respirators, 4000 Series**

The 4000 series respirators by 3M™ are a range of ready to use, maintenance free half masks with built-in filters designed for effective and comfortable protection against a combination of many gases, vapours and particulate hazards found throughout the industry.



- Low profile design for better peripheral vision
- Exhalation valve centrally positioned for effective removal of heat and moisture
- Respirators can be used until damaged, particulate filters clog, gas filters become saturated or after one month
- Soft, non-allergenic material with textured face seal
- Adjustable head cradle and easy to fasten neck straps
- Lightweight, well balanced design

Cat No.	Description	Colour
12302409	4277 Organic, inorganic, acid gas, particulate respirator FFABE1P3 R D	Brown/grey/yellow/white
12312409	4279 Organic vapours, inorganic, acid gases and ammonia, particulate respirator FFABEK1P3 R D	Brown/grey/yellow/green/white
12372399	4251 Organic vapour and particulate respirator FFA1P2 R D	Brown/white P2
12392399	4255 Organic vapour and particulate respirator FFA1P3 R D	Brown/white P3

**3M Science. Applied to Life.™**

## When should I change my filters?

Introducing the 3M™ Organic Gas & Vapour Service Life Indicator Filters 6051i and 6055i Series, a revolutionary new product that offers a simple, visual tool that can help answer the question that every respirator user must answer — ‘when should I change my filters?’

To learn more and to find out if the 3M™ Organic Gas & Vapour Service Life Indicator Filters 6051i and 6055i Series is right for your workplace, visit [3M.eu/6000ifilters](http://3M.eu/6000ifilters).

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**Respirators, half mask, 7500 series**

The 3M™ 7500 series reusable half masks have set a new standard in comfort. The patented exhalation valve provides increased durability and is easy to keep clean. Available in three sizes, all masks have the 3M™ Bayonet Attachment System offering a broad range of twin lightweight filters to protect against gases, vapours and particulates depending on your individual needs and can also be used with 3M™ Supplied-Air Systems. The 3M™ reusable half face respirator uses advanced silicone material to help provide comfortable and durable respiratory protection.



- Drop down feature for added convenience during breaks
- Soft, silicone face piece for comfort and durability
- Thin nose bridge area for more comfort
- Fully maintainable
- 3M™ Cool Flow™ Valve reduces heat build-up to offer workers comfortable protection - even in hot and humid conditions
- Flexible system for gas, vapour and particulate filters
- Lightweight (136g)
- EN 140:1998

Cat No.	Description	Pack qty
10359494	7502 premium half mask, medium	1
10769155	7503 premium half mask, large	1



**Filters for 3M reusable respirators, 6000 and 7500 Series**

Particulate protection

Cat No.	Description	Pack qty
12322329	2125 particulate protection filter P2R	20
12332329	2128 particulate protection filter P2R (nuisance level organic vapour)	20
12342329	2135 particulate protection filter P3R	20
11793333	2138 particulate protection filter P3R plus ozone protection, 10 x TLV and organic vapours/acid gas below TLV	20

Gas and vapour protection

Cat No.	Description	Colour	Pack qty
12302339	6051 A1 filter	Brown	8
12312339	6054 K1 filter	Green	8
12332339	6057 ABE1 filter	Brown/grey/yellow	8
12352339	6059 ABEK1 filter	Brown/grey/yellow/green	8
12342339	6075 A1 + formaldehyde filter	Brown/grey formol	8
12322339	6055 A2 filter	Brown	8

Gas and vapour protection

Cat No.	Description	Colour	Pack qty
12372339	6096 A2 HgP3R filter	Brown/red/white P3	4



## Honeywell

### Face mask, half mask, Valuair™

- The half mask Valuair can be used only with certified T series cartridges (following the standard EN 141, EN 143) The oxygen concentration has to be superior to 17%
- Comfortable and effective seal with four-strap stable monobloc harness for optimised wearer tolerance
- Click-fit cartridge fastening system



Cat No.	Description	Pack qty
12632653	Half mask, Valuair, medium	1
12642653	Half mask, Valuair, large	1

## Honeywell

### Face mask, half mask, Premier

The half mask Valuair™ can be used only with certified T series cartridges (following the standard EN 141, EN 143). They can only be used in sufficiently ventilated premises where the atmosphere contains a minimum oxygen volume of 17%. Enhanced comfort and long lasting protection. Very soft and comfortable face piece: silicone skirt.



- Extra comfortable harness for long duration works
- Click-fit system for filter connection: enhanced protection
- Four-points floating yoke with neck strap. Rolled and flexible edges of the face piece

Cat No.	Description	Pack qty
11807171	Half mask, Premier, medium	1
12652653	Half mask, Premier, large	1

## Fisherbrand™

### Laboratory coats, unisex

Washable at 85°C. Manufactured to high quality standards, the Fisherbrand unisex laboratory coat is exclusively available from Fisher Scientific. Manufactured using a quality pre-shrunk polycotton fabric, it is suitable for industrial laundering at temperatures up to 85°C. Features include, two lower patch pockets, breast pocket with integral pen pocket, concealed stud fastened front, single rear vent for ease of movement. Non-PPE product.



Cat No.	Size	Pack qty
11558102	S	12
11568102	M	12
11578102	L	12
11588102	XL	12
11598102	2XL	12

## Honeywell

### Filters, T Series

T series filters are compatible with both full and half face mask respirators that accepts bayonet style cartridge connections. Cartridge conforms to NIOSH Standards.



- NIOSH approved
- Solid and non-oil based aerosol resists available on [www.eu.fishersci.com](http://www.eu.fishersci.com)

Cat No.	Description	Colour	Pack qty
11827161	Filter A1	Brown	10
11817171	Filter A2 vapours	Brown	10
11817211	Filter A2 vapours	Brown/grey/yellow/green	10
11806960	Filter A1P3	Brown/white P3	6
11867171	Filter organic vapours and particles A2P3	Brown/white P3	6
11827221	Filter A1B1E1K1P3	Brown/grey/yellow/green/white P3	6
11857171	Filter high efficient particles P3	P3	10

## Honeywell

### Shoes, safety, Peak AMG, S3 CI SRC

Water resistant oiled leather and textile panel ankle boot. PU2D outsole injected. SRC certified. 200J Spacium™ toe cap in injected polymer and Flexium™ anti-puncture sole.



- Resistant to tearing and spattering of fluids: extended life cycle
- Breathable, 3D absorbent and quick-dry interior lining

Complies with EN ISO 20345:2011 standard.

Cat No.	Size	Pack qty
15196535	35	1 pair
15116545	36	1 pair
15126545	37	1 pair
15136545	38	1 pair
15106545	39	1 pair
15146545	40	1 pair
15176545	41	1 pair
15156545	42	1 pair
15166545	43	1 pair
15186545	44	1 pair
15106555	45	1 pair
15196545	46	1 pair

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