



GERMANY

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2007/2008



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Buddeberg GmbH
Mallastr. 49
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1 WS Porti Range of Portable Samplers

Fully automatic, portable samplers enclosed in V4A stainless steel housings with carrying handle. Intermittent sampling uses the vacuum pressure principle. Standard features include:

- Recyclable 571 (V4A) stainless steel housing
- 6 m lift height (>0.5 m/s at 5 m with 12 mm tubing). Tubing suitable for 10 mm or 12 mm connections.
- Duran 50 Borosilicate sample chamber for sample volumes of 20 to 200 ml
- Indirect circular distributor
- Software for time, volume or event proportional sampling complete with 9 programme memories, several distribution memories, warning signal, 'in operation' signal, 'service due' signal etc.
- Transport box in PE with PU foam insulation and carrying handle
- Integral (removable) 230V 50 Hz electricity supply and 24 V d.c.
- 2 x 12V, 7.2A batteries with 30 W maximum load and integral fuse

Specifications:

Sampling method:	Air vacuum pump
Dosing bottle:	Duran 50 borosilicate glass
Sample shot volume:	20 to 200 ml
Suction height:	6 m
Distributor:	Indirect, motorised (where fitted)
Distributor hose:	15 mm dia. silicone
Pump:	Vacuum/pressure pump with stainless steel head and 24V d.c. motor with a lift speed of 0.5 m/s at 5 m
Housing:	Type 316 Ti stainless steel (V2A)
Control:	Microprocessor controlled, 4 button tactile keypad with 4 x 20 column LCD display, real-time clock and 5 year RAM battery back-up
Software:	Menu driven, with 9 possible programs and various alarms, including " in operation" and "service required". User defined programming
Flow signal input:	Analogue: 0/4 to 20 mA Digital: potential-free contacts (min. impulse = 50 ms)
Event signals:	Potential-free contacts (impulse duration 1s - 99 min)
Interface:	RS 232 or RS 485
Remote operation:	Modem/GSM-Modem (Option)
Electrical data:	24V d.c./max.30 VA
Integral Charger:	230V a.c./max. 53 VA



Further samplers - please see page 370



2 Range of Portable Samplers WS Porti

Portable sampler, stainless-steel housing.
Vacuum-system, rechargeable battery and charger included.

Dimensions (WxDxH): 415 x 290 x 430 mm
Weight: Approx. 13.5 kg (without battery)

Type	Description	Cat. No.	PK
WS Porti 1S	with WS controller (time proportional only)	9.916 001	1
WS Porti 1 / 1T	with WS controller (time, volume and event proportional)	9.916 002	1
WS Porti 12 / 12T	with WS controller and distributor mechanism	9.916 003	1
WS Porti 24 / 24T	with WS controller and distributor mechanism	9.916 004	1

1 WS Porti Range of Portable Samplers

Transport Box

Base module, Porti 1/12

for 1 container or 12 bottles

Dimensions (WxDxH): 480 x 320 x 380 mm

Weight: 4.5 kg

Base module, Porti 24

for 1 container or 24 bottles

Dimensions (WxDxH): 566 x 350 x 310 mm

Weight: 7 kg

Base module, Porti 1 T/12 T (PE with PU insulation)

for 1 container or 12 bottles

Dimensions (WxDxH): 710 x 360 x 415 mm

Weight: 18 kg

Base module, Porti 4 T/24 T (PE with PU insulation)

for 4 container or 24 bottles

Dimensions (WxDxH): 920 x 500 x 455 mm

Weight: 23.5 kg

Power supply for refrigeration unit Porti 1 T/4 T/12 T/24 T: 110 - 240 V a.c.

12 - 24 V d.c.



Description	Cat. No.	PK
Transport box Porti 12	9.916 005	1
Transport box Porti 24	9.916 007	1
Cooled transport box Porti 12T for 12 x 1 L bottles (mains, battery, gas powered)	9.916 006	1
Cooled transport box Porti 24T for 24 x 1 L bottles (mains, battery, gas powered)	9.916 020	1

Further samplers - please see page 370



2 WS Porti Range of Portable Samplers

Bottles and Containers

Description	For	Cat. No.	PK
1 composite 6.4L PE container	Base module Porti 1 / 12 and Base module Porti 1 T / 12 T	9.050 021	1
12 x 1L PE bottles with closure	Base module 1 / 12 and Base module Porti 1 T / 12 T	9.916 009	1
12 x 1L bottles and 1 x 6.4L composite container with closures	Base module Porti 1 / 12 and Base module Porti 1 T / 12 T	9.916 010	1
24 x 1L PE bottles with closure	Base module Porti 24 and Base module Porti 4 T / 24 T	9.916 011	1
Composite 10.4L PE container with closure	Base module Porti 24 and Base module Porti 1 T / 12 T	9.050 019	1
5 x 1L PE bottles with closure plus 1 composite 6.4L PE container with closure	Base module Porti 1 / 12	9.916 013	1
4 composite 6.4L PE container	Base module Porti 4 T / 24 T	9.916 021	1



WS Porti Sampler Equipment

Accessories/Hose

Description	Cat. No.	PK
3/4" spiral connector for 12 mm PVC hose	9.916 014	1
3/4" spiral connector and V2A steel nozzle for suction hose	9.916 015	1
5 m x 12 mm dia. hose with 3/4" connector	9.916 016	1
5 m x 12 mm dia. hose with 3/4" connector and V2A steel nozzle	9.916 017	1



WS Porti Range of Portable Samplers

Accessories/Fastenings.

Description	Cat. No.	PK
6 m strap to secure sampler and transport box 12	9.916 018	1



1 behrotest® flow-through unit, Aquabox

The Aquabox flow-through unit enables the correct, expert determination of on-site parameters during the collection of soil and sewage samples. The unit permits the simultaneous determination of electrolytic and physico-chemical parameters under optimal and reproducible flow conditions.

Behr

Aquabox is constructed of transparent, shock-resistant PETG, a thermoplastic copolyester. The transparent construction allows constant visual identification of problems during operation, e.g. sand or sediment contamination. All components which come into contact with water are made of non-wetting PETG (flow chamber and lid) or PP (inlet and outlet tubing). Therefore the water being sampled is not affected by any release of contaminants from the materials used for construction of the Aquabox. The lid is splashproof and easy to open and close by means of a quick-release fastener. The lid has 6 variable diameter, splashproof sensor holders for inserting sensors up to 25 mm diameter (larger diameters available on request).

- The water spirals upward in the chamber around the positioned electrodes and flows out over the splashproof outer housing.
- Six holders in the lid with variable diameters provide secure sensor mounting in the peak flow area.
- On-site measurements are made easy due to the rugged construction materials.
- Water flow can be adjusted using a valve.
- An inlet bypass valve allows sampling.
- Aquabox is quick and easy to disassemble without the need for tools through a central threaded joint.

Aquabox application areas:

- In the laboratory and on-site.
- In-line and point sample operation also possible.

Type	Cat. No.	PK
Aquabox	9.843 784	1



2 behrotest® waste water mixers

With portable sample vessel. Homogenizer for pre-treatment, dividing and homogenizing heterogeneous water samples according to the Federal Working Group for Water AQS standards for wastewater quality assurance and monitoring. The vessels are protected in the rack and two handles allow easy transport. Can be filled at the sampling site via a low-profile inlet connection. With graduations. In the laboratory or sample processing vehicle the transport rack is simply placed on the base plate with magnetic stirrer and the homogenizer is immediately ready for use. The magnetic stirrer speed is adjustable. Controlled removal of homogenized sample using a PTFE needle valve. Supplied with transformer suitable for car batteries (12V).

Behr

Type	Description	Cat. No.	PK
QMR 2	Capacity 2 l*	9.920 639	1
QMR 5	Capacity 5 l*	9.920 640	1
QMR 10	Capacity 10 l*	9.920 641	1
QMR 15	Capacity 15 l	9.920 642	1
QMR 20	Capacity 20 l	9.920 643	1
QMR 25	Capacity 25 l	9.920 644	1

*12V, with adapter for mains supply



3 Water sampling bottles and glass stoppers, behrotest®

Comply with DIN 12036. Conical ground joint neck and solid glass stopper with convex base. Made of borosilicate glass 3.3.

Behr

The stoppers have two advantages:

- No bubbles are trapped at the stopper base when inserted into a filled bottle
- Less risk of breakage or cracking than conventional stoppers.

Type	Description	Cat. No.	PK
PFL 500	Sample bottles 500 ml	9.920 660	1
PFL 1000	Sample bottles 1000 ml	9.920 661	1
PFL 2000	Sample bottles 2000 ml	9.920 662	1
MST 24	Replacement stopper NS 24	9.920 663	1
MST 29	Replacement stopper NS 29	9.920 664	1

1 Sample transport containers behrotest® FTB 1/8 and FTB 2/6

Transport containers with label holders for the secure transport and practical storage of 8 DIN sample bottles 1 litre capacity each or 6 sample bottles 2 litres capacity each. These containers are light and stable, and because of their standardised dimensions, are easy to stack in a space-saving manner. Inserts for bottles with 1 or 2 litres capacity ensure temperature isolation and a secure stand for the sample bottles. These containers are also suitable for light-protected storage of samples while also keeping temperature fluctuations to a minimum.

Behr



Type	Type	Cat. No.	PK
FTB 1/8	for 8 sample bottles 1 l each	9.920 650	1
FTB 2/6	for 6 sample bottles 2 l each	9.920 651	1

2 Insulated Transport Containers for samples, behrotest® ITB 1/8 and ITB 2/6

The containers ITB 1/8 and ITB 2/9 are used for transport or storage of 8 x DIN 1 litre sample bottles or 6 x 2 litre sample bottles. Standard dimensions mean that they can be easily stored. The insulated container resists the effect of external temperature fluctuations. The lid can be filled with an additional cooling device. Cooled air flows from the lid, falling directly to the bottom of the container where the samples have to be cooled. The containers are also used to protect samples from UV, maintaining a constant climate.

Behr



Type	Description	Cat. No.	PK
ITB 1/8	for 8 x 1 litre DIN sample bottles	9.920 652	1
ITB 2/6	for 6 x 2 litre DIN sample bottles	9.920 653	1
KSP 1	Cooling device for ITB 1/8 and ITB 2/6	9.920 654	1

3 behrotest® distillation equipment for determining ammonium-nitrogen

Comprises:

WE 1/H

By introducing steam into the sample, the behrotest® WE 1/H steam generator guarantees a particularly gentle and uniform distillation for the determination of alcohol in beverages. The maximum duration for steam generation - and therefore the duration of distillation - is not limited by an internal reservoir but only by the size of the external feed container that the user chooses to employ.

Supplementary heater enables particularly high distillation performance.

Glass set GSAS

Glass set for ammonium-nitrogen distillation in WE 1/H

Behr



Type	Cat. No.	PK
WE 1/H	9.920 671	1
Glass set GSAS	9.920 674	1

Continuous steam generator behrotest® WE 1/H

The injection of steam into the sample guarantees a particularly gentle and uniform distillation. Steam is produced almost immediately (within maximum of 30 seconds). The maximum period of steam injection depends only on the size of the external container. In WE 1 the distillation occurs only as a result of water vapour injection into the sample.

Behr

Type	Cat. No.	PK
WE 1/H	9.920 671	1

Glassware for Phenol Index Determination

Behr

Type	Cat. No.	PK
GSPH	9.920 672	1



1 Glassware kit for phenol distillation with the WE 1/H

Behr

Type	Cat. No.	PK
GSAB	9.920 675	1



2 Compact system for determination of volatile oils KOL

Complete and compact system for volatile oil determination according to DAB, with base unit, heating mantle, mounting frame and glassware.

Behr

Type	Cat. No.	PK
KOL	9.920 545	1



3 Compact systems for sulphur dioxide determination, KSO/SO

For determination of sulphur dioxide (total SO₂), 2 absorption units per sample. With base unit, heating mantle, mounting frame and glassware, including 500 ml reaction flasks. Systems with adsorption units or other flask sizes on request.

Behr

Type	Description	Cat. No.	PK
KSO 2	Complete compact sytem	9.920 546	1
SO 2-6	Sytem for 6 working units	9.920 547	1



4 Compact system for determination of water content

Compact system for determination of water content by azeotropic distillation. Suitable for non-homogeneous and irregularly shaped food such as dried fruit and vegetables, Sauerkraut etc. With base stand, heating mantle, mounting frame and glassware.

Behr

Type	Cat. No.	PK
KWA 500	9.920 548	1



5 Compact distillation apparatus

Complete, compact cyanide analysis systems. With base stand, heating device, flowmeter, mounts, tubing and glassware.

Behr

Type	Description	Cat. No.	PK
KTC	Compact system for distillation during determination of total cyanide	9.843 780	1
KLFC	Compact system for air condensing of easily separated cyanide, 1-place	9.843 781	1
KLFC 2	Compact system for air condensing of easily separated cyanide, 2-place	9.843 782	1

1 Compact digestion and separation systems

With magnetic stirrer for cyanide determination.

Complete, compact systems for cyanide determination. With integral magnetic stirrer, suspended absorption vessel and dropping funnel for reagent additions, the installation corresponds with the draft document for the new DIN/DEV 38405 to D 13. With base stand, heating mantle, magnetic stirrer, flow meter, clamps, tubing and glassware.

Behr

Description	Cat. No.	PK
With magnetic stirrer for the determination of total cyanide	9.700 410	1
With magnetic stirrer for the determination of free cyanide	9.700 411	1



2 Universal analysis system, DET, behrotest®

The behrotest® DET universal analysis system is a cost effective alternative for distillation, digestion and extraction in laboratories with changing applications. It can be used, for example, in cyanide determination, extraction and many other investigations in water and food analysis.

The base unit of the DET system consists of a heating block thermostat with 5 aperture holes for reaction vessels with a diameter of 65mm.

The heating blocks have a heating range of 20 to 300°C.

The base unit also has a cold water distributor and a temperature/time controller.

Application-specific, supplementary sets with the necessary glassware, gas distributors, etc. enable you to put together complete workstations for various applications based on this unit.

Behr

Type	Description	Cat. No.	PK
DBAS	DET base unit as base for supplementary sets	9.920 552	1
DGC	DET supplementary set, total cyanide	9.920 553	1
DLFC	DET extension set, free cyanide	9.920 554	1



3 Compact system for arsenic determination, KAS

Complete and compact system for arsenic determination according to ISO 11969, with base unit, heating mantle, mounting frame and glassware.

Behr

Type	Cat. No.	PK
KAS	9.920 544	1



4 Distillation unit FBA

behrotest® distillation unit for determination of inorganic total fluoride

In highly contaminated, inorganic wastewater, having a fluoride concentration greater than 0.2 mg/l, determination of inorganic total fluorine is possible after digestion and distillation of the components. These two steps are now combined in a stable unit.

The control unit of the heating process allows serial analysis.

The single components of this unit are:

Distillation unit from borosilicate glass for acidic steam distillation, contact thermometer, heating mantles for round bottomed flasks, volumetric flasks.

Behr

Type	Cat. No.	PK
FBA	9.843 806	1



Sample preparation for standard methods



1 Extraction unit EX 1000

ISO 9377-2. This sample bottle with stable glass stopper has been specifically designed to aid sample separation. A graduated cylindrical funnel makes the separation of an organic phase much easier. Modular construction (bottle, stopper, funnel) which enables the user to transfer the organic phase directly to the clean-up column.

Behr

Type	Cat. No.	PK
EX 1000	9.843 800	1

2 Clean-up Station CUS 2

The behrotest® Clean-up column has a frit made of glass and fulfils the requirements of ISO 9377-2.

Behr

A twin stand offers safe positioning of two complete Clean-up units (dropping funnel, Clean-up column and Kuderna-Danish flask).

The two steps for clean-up can be achieved in one unit now, also can be used for two samples.

Type	Description	Cat. No.	PK
CUS 2	Clean-up-Station, supplied as: stand, 2 graduated round bottom flasks, 100 ml, 2 columns with grade 2 frits	9.843 801	1

3 Nitrogen station Kosta 2

For 2-stage concentration of an organic sample reducing the volume to max. 1 ml, whilst under a low pressure nitrogen atmosphere.

Behr

In the behrotest® Nitrogen station a splitter ensures the nitrogen enters via two adjustable injectors into the Kuderna-Danish-ground glass joint vessels.

Therefore two samples can be treated according to ISO 9377-2 simultaneously.

Type	Cat. No.	PK
Kosta 2	9.843 802	1

4 Heavy metal digestion system, compact

Complete compact system for heavy metal digestion with aqua regia. With basic stand, heating mantle, stand, tubing and glass apparatus.

Behr

Type	Cat. No.	PK
KSMA	9.843 783	1

Heavy metal decomposition workstations, basic, SMA-ARB

The behrotest® model SMA-ARB workstations are basic systems for simultaneous aqua regia digestion of either 6 or 12 samples for heavy metals analysis.

Behr

System components:

- Precision 6 or 12 sample SMA heating block for round-bottom sample vessels of 41.8 mm dia. Temperature range: 20 to 300°C.
- External time/temperature controller ET 1 (operating range 20 to 399°C). Time settings: 10 to 120 mins. and continuous operation.
- 6 or 12 each SR 2 250 ml round-bottom sample vessels with conical joint neck and PVDF collar
- 6 or 12 each RFK 1 reflux condensers
- 6 or 12 each AS 1 absorption vessels
- SG/B stainless steel support frame for 6 or 12 sample vessels
- Stand with cooling water distributor and storage holder for 6 or 12 condensers

Type	Description	Cat. No.	PK
SMA-ARB 6	for simultaneous digestion of up to 6 samples for heavy metal analysis	9.882 106	1
SMA-ARB 12	for simultaneous digestion of up to 12 samples for heavy metal analysis	9.882 107	1



1 Heavy metal decomposition workstations, medium, SMA-ARM

Behr

The behrotest® SMA-ARM workstations are intermediate level systems for simultaneous aqua regia digestion of either 6 or 12 samples for heavy metals analysis, incorporating a programmable, microprocessor-controlled time/temperature controller as well as a fume manifold for drawing off acid vapours. This results in greater convenience and functionality in routine laboratory operations.

System components

- Precision 6 or 12 sample SMA heating block for round-bottom sample vessels of 41.8 mm dia.
Temperature range: 20 to 300°C
- External time/temperature controller TRS 200 (operating range 20 to 399°C). Time settings: 1 to 999 mins.
With continuous display of actual and desired temperatures, interval duration and remaining time.
Up to 10 intervals are programmable.
- 6 or 12 each SR 2 250 ml round-bottom sample vessels with conical joint neck and PVDF collar
- 6 or 12 each RFK 1 reflux condensers
- PTFE sleeves for conical joints
- SG/B stainless steel support frame for 6 or 12 sample vessels
- TS bench-top stand and transport carrier for support frame
- Stand with cooling water distributor and storage holder for 6 or 12 condensers
- AH fume manifold for drawing off the acid vapours in both 6 and 12 sample versions.
Connects to scrubber suction unit (i.e. behrosog)



Type	Description	Cat. No.	PK
SMA-ARM 6	Intermediate level workstation for simultaneous digestion of up to 6 samples for heavy metal analysis, incl. microprocessor	9.882 108	1
SMA-ARM 12	Intermediate level workstation for simultaneous digestion of up to 12 samples for heavy metal analysis, incl. microprocessor	9.882 109	1

2 Pressure fusion system behrotest® PFA 130

Behr

Pressure fusion device with PFA reaction insert for trace analysis without absorption or desorption occurring in the sample material. Provides improved detection limits for AAS, ICP etc. Can be operated in a drying cabinet without additional heating.

- No conditioning processes
- No substance entrainment
- No memory effects
- Single fusion process for all heavy metal definitions increases confidence
- Multiple and series analyses can be carried out for greater cost-effectiveness

Pressure vessel made of anodized aluminium with integral, factory set pressure protection system. Tubing connection for controlled pressure relief.

Capacity: 100 ml
 Max. permissible operating pressure: 50 bar
 Max. permissible operating temperature: 170°C
 Dia. x height, mm: 90 x 165 mm



Type	Cat. No.	PK
PFA 130	9.882 224	1

3 Sample hydrolysis and digestion vessels

Bohlender

For the digestion of small sample volumes up to 0.5g in microwave ovens. Made of isostatically pressed, high-grade PTFE (TFM). The chemical resistance and usual PTFE properties remain unchanged. TFM is a modified PTFE by Hoechst and contains thermoplastic elements. This gives rise to a homogeneous, non-porous surface.

Contaminating residues from earlier digestions are therefore avoided. Resists pressure deformation (to max. 25 bar) and temperature (max. 160°C). An accessory burst-proof, sealing membrane prevents loss of volatile compounds and provides safety against overpressure.

Optional digestion vessels with interchangeable inserts (internal liners) enable precise weighing-in (in most cases the complete vessels would be too heavy for balances). In addition, different digestion processes can be carried out in only one basic vessel by using several inserts.



Type	Capacity	Max. temp.	Int. dia.	Max. pressure	Int. height	Cat. No.	PK
	ml	°C	mm	bar	mm		
Standard	10	160	16	25	52	9.601 461	1
Standard	20	150	22	20	60	9.601 462	1
Standard	50	150	33	20	62	9.601 463	1
Standard	100	140	35	15	110	9.601 464	1
Insert 'Inliner'	10	160	16	25	52	9.601 471	1
Insert 'Inliner'	20	150	22	20	60	9.601 472	1
Insert 'Inliner'	50	150	33	20	62	9.601 473	1



1 Overhead mixers ELUM 2

For elution with distilled water according to EN. Behr
For 24-hour elution with distilled water at constant speed.

Type	Description	Cat. No.	PK
ELUM 2/1	For 2 x 2 l bottles, speed 1 rpm	9.920 610	1
ELUM 2/5	For 2 x 2 l bottles, speed 5 rpm	9.920 611	1



2 Elution mixers ELUM 6 and ELUM 46

With fixed speed of 1 rpm, according to the current national and international soil elution regulations. With the extension modules mixing units with up to 18 containers can be assembled. Behr

Type	Description	Cat. No.	PK
ELUM 6	Overhead mixer for 6 x 2 l bottles	9.920 612	1
ELUM 46	Overhead mixer for 4 x 6 l bottles	9.920 615	1
EFL 2	Glass bottle 2 l, with PTFE insert in cap	9.920 614	1
EFL 6	Plastic bottle 6 l	9.920 617	1
SAD 61	Adapter for use of six 1 l jars in ELUM 6	9.920 619	1
ELUM 6/E	Extension module for 6 x 2 l bottles	9.920 613	1
ELUM 46/E	Extension module for 4 x 6 l bottles	9.920 616	1



3 Laboratory sewage plants, behrotest®

According to DIN/DEV 38412 - L 24 and L 26 and OECD 303 A (Coupled Units Test). Behr
Trolley mounted. All glassware is made of borosilicate glass 3.3, with pumps for water transport and aeration, flow meters and storage containers.
Model KPL 1 with jacketed Plexiglass containers allows the operator to additionally investigate the influence of the water temperature on biodegradation.
Laboratory sewage unit KLD 4 has an additional preliminary denitrification stage, in which activated sludge is held under virtually anaerobic conditions.
In this way the sludge is denitrified and certain wastewater pollutants are more easily degraded.
In combination with aeration, two stirrers prevent unwanted sludge deposits in the denitrification stage and in the aeration vessel.
The operator can set the pumping and pause times for the return of the sludge to the denitrification vessel.

Type	Description	Cat. No.	PK
KA 1	Lab-scale waste water system, complete	9.920 600	1
KA 1/SR	Lab-scale waste water system, complete with oxygen level control	9.920 605	1
KLD 4	Lab-scale waste water system, complete with denitrification stage	9.920 602	
KLD 4/SR	Lab-scale waste water system, complete with denitrification stage and oxygen level control	9.920 606	1
KLD 4/N	As KLD 4, with sludge reinoculation	9.920 598	1
KLD 4N/SR	As KLD 4/SR, with sludge reinoculation	9.920 599	1

1 Column elution unit for the elution of soil samples behrotest®

Behr

Column elution unit A:

Column elution acc. to LUA recommendations with fixed-speed 4-channel peristaltic pump. The unit consists of:

- system stand
- fixed-speed, 4-channel peristaltic pump
- supply container, 20 litres
- 4 elution columns, inside diameter 6 cm, 32 cm long, with 2 threaded openings (GL 45, with Teflon inserts) to simplify filling the columns
- 4 x 2 litre drip collectors for column eluate with threaded opening (GL 45) and vent
- Tygon and PVC supply tubing with check-valve in column supply line
- Teflon tubing lines between columns and drip collectors

Column elution unit B:

column elution acc. to LUA recommendation as above but with adjustable-speed, 4-channel peristaltic pump.

- flow rate 0.003 to 35 ml/min
- speed range 2 to 100 rpm
- simultaneous regulation of all 4 channels

Column elution unit C:

behrotest® column elution unit acc. to DIN V 19736 with fixed-speed, 4-channel peristaltic pump.

The unit consists of:

- system stand
- fixed-speed, 4-channel peristaltic pump
- 20 litre supply container
- 4 elution columns, inside diameter 6 cm, 16 cm long, 450 ml capacity with 2 threaded openings (GL 45, with Teflon inserts) to simplify filling the columns
- 4 2 litre drip collectors for column eluate with threaded opening (GL 45) and vent
- Tygon and PVC supply tubing with check-valve in column supply line
- Teflon tubing lines between columns and drip collectors

Column elution unit D:

behrotest® column elution unit acc. to DIN V 19736, as above but with adjustable-speed, 4-channel peristaltic pump.

- flow rate 0.003 to 35 ml/min
- speed range 2 to 100 rpm
- simultaneous regulation of all 4 channels

Quartz sand behrotest®:

for column elution unit, grain diameter 1 to 2 mm acc. to DIN V 19736, bottle of 1000 g

Quartz wool behrotest®:

for column elution unit, bag of 100 g



Description	Cat. No.	PK
Column elution unit A	9.843 740	1
Column elution unit B	9.843 741	1
Column elution unit C	9.843 742	1
Column elution unit D	9.843 743	1
Quartz sand for column elution unit	9.843 744	1
Glass wool for column elution unit	9.843 745	1

2 Sedimentation cones, glass

BRAND

Imhoff pattern. DIN 12672. Borosilicate glass 3.3. Graduations and inscriptions in contrasting white enamel. Ring mark at 1000ml.

Graduations, ml:	Subdivisions ml/Tolerance ±ml:
0 to 2	0.1/0.1
2 to 10	0.5/0.5
10 to 40	1/1
40 to 100	2/2
100 to 1000	50/10

Type	Grad.	Cat. No.	PK
ml			
Without stopcock	up to 100*	9.304 262	1
With stopcock	up to 100*	9.304 272	1
Without stopcock	up to 1000	9.304 273	1

* No subdivisions from 100 to 1000 ml.





1 Sedimentation cone, plastic

Imhoff pattern. DIN 12672. SAN. Kartell
Transparent SAN (Styrene acrylonitrile).
With screw cap for draining the contents.
Temperature-resistant up to max. 85°C.
Graduations, ml: Subdivisions, ml
0 to 2 0.1
2 to 10 0.5
10 to 40 1
40 to 100 2
100 to 1000 50

Type	Grad.	Cat. No.	PK
	ml		
With screw cap	up to 1000	9.304 280	1



2 Sedimentation cones, accessory stand

Acrylic/PP. Kartell
To hold two Imhoff sedimentation cones.
Compact and easy to transport even when fully loaded.

Width mm	Length mm	Height mm	Cat. No.	PK
150	300	300	9.304 281	1

Further samplers - please see page 370



3 Sedimentation cones, accessory holders

Imhoff pattern, solid grey PVC. Stable design. Behr

For	Cat. No.	PK
2 Imhoff funnels without stopcock	9.882 101	1
4 Imhoff funnels without stopcock	9.882 102	1
2 Imhoff funnels with stopcock	9.882 103	1
4 Imhoff funnels with stopcock	9.882 104	1



4 5 Flocculation testers

For flocculation tests of water and waste water. Stuart
- choice of 2- or 6-bank models
- digital speed display
- two adjustable speed presets
- accurate and reproducible speeds
- diffused base illumination with black background
- accepts beakers up to 1000 ml.
Adjustable speed range 25 to 250 rpm.
Dimensions (H x W x D): 460 x 320 x 220 mm (two-bank model)
460 x 750 x 220 mm (six-bank model).
For 230 V 50 Hz, single phase supplies.
Supplied with rotor blades but without beakers.
With BioCote silver based antimicrobial protection.



Type	Description	Cat. No.	PK
SW5	Flocculation tester, 2-bank	9.951 491	1
SW6	Flocculation tester, 6-bank	9.951 492	1

Accessories for flocculation testers

Coagulant injector for SW6 flocculator only. Stuart
 For simultaneous injection of coagulant or reagents in six sample beakers.

Type	Description	Cat. No.	PK
SW6/2	Coagulant injector for flocculator	9.951 493	1

1 Checkit direct turbidimeter

Compact infrared turbidimeter Checkit direct has been created for rapid and precise on-site analysis. Measurements, to DIN EN 27 027, are taken of the diffused light at an angle of 90°C.

Wide measuring range from 0.2 to 2000 TE/F=NTU=FNU at a detection limit of 0.2 NTU allows use in various applications from drinking water to waste water analysis. Because the measurements are taken by infra-red light, both coloured and colourless liquids can be measured.

Relevant standards are supplied for calibration of the device.

A second calibration model permits alternative calibration with user-defined turbidity standards.

Applications of Checkit direct turbidimeter:

- Water treatment
- Food and beverage industries
- Petrochemical industry
- and many more

Technical data:

Measuring cycle: approx. 9 seconds
 Display: LCD display
 Optics: Temperature compensated LED (875nm) and photosensor amplifier in a waterproof sample chamber
 Keyboard: Acid and solvent resistant, polycarbonate film, splashproof
 Dimensions (L x W x H): 190 x 110 x 55 mm

Type	Cat. No.	PK
PCcompact turbidimeter	9.920 200	1



AQUALYTIC

2 Laboratory turbidimeter Turbi Direct

Turbidity is measured according to ISO 7027 by nephelometric means (90° scattered light). The infra-red light-source permits measurement of coloured and colour-free samples.

The automatic measurement range detection facility (Autorange) enables direct turbidity measurement from 0.01 to 1100 NTU.

Advantages:

- Automatic overall range adjustment with 4 standards
- High accuracy
- For laboratory and mobile use
- Storage for up to 1000 data-sets
- Real-time clock
- Waterproof sample chamber and housing

Technical Data

Measuring principle: Nephelometric - non ratio
 Light source: Lab-IR: IR-LED
 Lab-VIS: Tungsten lamp
 Measuring range: 0 to 1000 NTU (Auto range)
 Resolution: 0.01 NTU (0 to 9.9 NTU)
 0.1 NTU (10 to 99.9 NTU)
 1 NTU (100 to 1000 NTU)
 Accuracy: ±2% of measured value +0.01 NTU
 Time: < 6 Seconds
 Operating temperature: 0 to 50°C
 Sample volume: 30 ml (27 ml minimum)
 Size: 237 x 254 x 121 mm (L x W x H)
 Weight: 1.32 kg
 Interface: RS232
 Mains supply: 100-240 V

Type	Cat. No.	PK
Turbi Direct	9.920 492	1



AQUALYTIC



1 B.O.D. auto-check measurement systems, OxiTop®

WTW

In accordance with DIN EN 1899 H55.

Modular and mercury-free B.O.D. systems for practical, daily operation.

The system is TÜV/GS tested. With no mechanical moving parts the programme-controlled, Inductive Stirring System is durable and does not require any type of maintenance.

The magnetically coupled stirring bars are periodically speeded up to, or slowed down from the minimum to the maximum stirring speed respectively.

A controlled "catching device" forces the stirrer bars into the magnetic field and synchronises them with the stirring speed.

An optimal gas exchange for BOD determinations is therefore guaranteed in the sample bottle. The mercury-free, OxiTop measuring system works manometrically with a pressure sensor and 2-digit digital display.

- Large measuring range with overflow indicator
- Auto Temp function - intelligent temperature monitoring for automatic start under the best possible conditions
- Automatic zero setting at start
- Integral memory - daily readings no longer required
- Battery powered with typical running time of 2 years.

system comprises:

B.O.D. measuring units with inductive stirring system and OxiTop® measuring system, ready for use in thermostatic cabinets and incubators with amber sample bottles 600 ml, stirring bars, stirring bar remover, sodium hydroxide pellets, rubber sleeves, 164 ml and 432 ml overflow measuring flasks, chart paper block and nitrification inhibitor. Any conventional manometric B.O.D. system can be converted to the OxiTop® system. Various conversion kits are available for this - details on request.

IS 6 and IS 12:

- Number of stirring positions: 6 or 12
- Speed: 180 to 450 rpm
- Safety class: 3, IEC 1010
- Protection system: IP 30 DIN 40050
- Supply requirements: Mains adapter 230 V (+ 10 % to - 15 %)

OxiTop-System:

- Instrument range: 0 to 50 digits (display units)
- Operating pressure range: 500 to 1100 hPa
- Display accuracy: ±1 digit (±3.55 hPa)
- Safety class: 3, IEC 1010
- Protection system: IP 54 DIN 40050

Type	Description	Cat. No.	PK
OxiTop® IS 6	6-place	9.920 000	1
OxiTop® IS 12	12-place	9.920 001	1
OxiTop® IS 12-6	Generally as OxiTop® IS 12, but with 6 OxiTop® measuring systems, suitable for expansion to 12 measuring units	9.920 003	1

1 B.O.D. auto-check measurement systems, OxiTop® Control

In accordance with DIN EN 1899 H55.
 OxiTop® Measuring System with infra-red communication between measuring head Oxitop C and the Controller Oxitop Control 100.
 Sample administration for up to 100 parallel samples and automatic sample ID.
 The display presents a clear view of the whole sample management and process with indication of the process step.

WTW



The display function means that manual identification or labelling is no longer necessary. The two operating modes included, "Routine B.O.D." and "Standard B.O.D." fulfil standard requirements and additional demands such as calculation and statistics. GLP-compliant documentation with testing agent monitoring is included.

It is not possible to switch samples.
 The progress of individual sample procedures is stored in the measuring head with 180 to 360 data records. Each measuring system independently implements a temperature-controlled start using the integral AutoTemp function. The measuring positions can be called up at any time using the controller and their measurements loaded into the controller's memory (even through the closed insulating glass door or cover of the thermostatic cabinets and OxiTop® boxes).

B.O.D. evaluation and curve construction is carried out in the controller. Data output to PC is possible via the RS232 interfaces. OxiTop® Control can be expanded as required using extension sets. The inductive stirring system corresponds with OxiTop® (see previous page).

Complete system comprises:

OxiTop® B.O.D. controller, OxiTop®-C measuring heads (each battery operated) and inductive stirring system, ready for use in OxiTop® thermostatic cabinets and incubators. Controller includes graphics display, sample management for up to 100 measuring positions, amber sample bottles 600 ml, stirring bars, stirring bar remover, sodium hydroxide pellets, rubber sleeves, 164 ml and 432 ml overflow measuring flasks, chart paper block and nitrification inhibitor.

Controller OxiTop® OC 100:	
Measuring ranges:	0 to 40/80/200/400/800/2000/4000mg/L BOD
Safety class:	3, IEC 1010
Protection system:	IP 42 DIN 40050.
OxiTop®-C measuring head:	
Measurement principle:	manometric, by means of a pressure sensor
Operating pressure range:	500 to 1350 hPa
Accuracy:	±1 % Meas. value ±1 hPa
Resolution:	1 hPa (corresponds with 0.7 % of the B.O.D. measuring range)
Display:	LED pilot lamp
Safety class:	3, IEC 1010
Protection system:	IP 54 DIN 40050

Type	Description	Cat. No.	PK
OxiTop® Control 6	6-place	9.920 010	1
OxiTop® Control 12	12-place	9.920 011	1

2 Controlled temperature cabinet, OxiTop® Box

With temperature regulated forced air circulation.
 Benchtop model with transparent, hinged cover. can be used with various accessories, including OxiTop® IS, OxiTop® Control and IS 602.
 With interior power supply socket to allow operation of stirrers etc. within the chamber.
 Corrosion-resistant housing made of stainless steel or plastic.
 Temperature control is maintained using forced air circulation and a CFC-free refrigeration unit.
 Cross flow ventilation provides uniform temperature distribution.
 Overtemperature protection, automatic defrosting and condensate evaporation are also provided, to maximise system efficiency. Stability at 20°C ±0.5°C.
 A special storage rack is provided for methylene blue samples.
 Also suitable for "BOD dilution" samples.

WTW



Dimensions (WxDxH):	425 x 600x 375 mm
Weight:	approx. 30 kg
Supply requirements:	230 V 50 Hz (+10 %, -15 %) 200 W.

Type	Cat. No.	PK
OxiTop® Box	9.920 025	1



1 Controlled temperature cabinets BOD

WTW

To maintain samples at the same temperature during incubation, there is a need for an controlled temperature cabinet. WTW offers a choice of cabinet with temperature range adjustable from 10°C to 40°C (temperature stability ±1°C), power supply 230 V 50Hz. For stirring the samples there is a supply socket for a mixer inside the cabinet. Depending on the size of the samples there is max. space for 2 to 4 shelves. So up to 48 standard BOD samples, 4 x type IS 12 or 8 x IS 6-Var stirring platforms can be accommodated. For special applications the larger Model TS 1006-i is required, having enough space between the shelves for 1.5 litre bottles. Models TS 606/2-i and TS 606/4-i with separate glass door are designed for use with the larger OxiTop® Control system, allowing the digital readout to be viewed through the glass.

Temperature range: +10°C to +40°C
 Settable resolution: 1°C
 Ambient temperature: +10°C to +32°C (Climate class SN)
 Storage: -25°C to +65°C

Type	For	Cat. No.	PK
TS 606/2-i	2 BOD OxiTop® units	9.926 304	1
TS 606/3-i	3 BOD OxiTop® units	9.926 305	1
TS 606/4-i	4 BOD OxiTop® units	9.926 308	1
TS 1006-i	4 BOD OxiTop® units	9.926 311	1

Refrigerators - please see page 523



2 BOD-Measurement-System OxiDirect

AQUALYTIC

The sensor system OxiDirect® is a 6-sample system which allows precise measurement of BOD, based on the manometric principle. Manometric respirometers relate oxygen uptake to the change in pressure caused by oxygen consumption, while maintaining a constant volume. Thanks to modern, integral pressure sensors, it is no longer necessary to use mercury for pressure measurement. In addition to the BOD unit for measurement and recording of BOD levels, the OxiDirect® BOD measuring system includes sample bottles, measuring sensors, non-wearing inductive stirring system, overflow measuring flasks for exact sample volumes, nitrification inhibitor and potassium hydroxide as an absorbent.

- System comprises:
- Aqualytic OxiDirect, complete with 6 sensors, control unit and batteries
 - magnetic, inductive stirring system with power supply
 - 6 sample bottles
 - 6 adapter caps and 6 stirring bars
 - 1 volumetric flask, 157ml
 - 1 volumetric flask, 248ml
 - 1 x 50 ml bottle potassium hydroxide solution
 - 1 x 50 ml bottle nitrification inhibitor
 - 1 user manual

Technical data:
 Measuring principle: manometric, electronic pressure sensor
 Ranges: 0 to 40, 0 to 80, 0 to 200, 0 to 400, 0 to 800, 0 to 2000, 0 to 4000 mg/l O₂
 User-selectable, between 1 and 28 days
 Measurement period:
 Power supply: 3 x 1.5V alkaline batteries, size "C"
 IP 54 (Sensor)
 Protection class: CE
 Approval:
 Interface: RS232 for printer or PC
 Clock: Real time
 Application: BOD5/ BODF/ OECD301F

Type	Description	Cat. No.	PK
BOD OxiDirect®	6 positions, complete with accessories	9.699 238	1
BOD OxiDirect®	12 positions, complete with accessories	9.699 239	1
BOD sample bottle	Amber glass, 500 ml, 6 bottles	9.303 436	6
Tubing		9.303 437	1
Potassium hydroxide solution	45 %, 50 ml	9.303 438	1
Nitrification inhibitor (N-ATH)	50 ml	9.303 433	1

1 Thermostatic cabinets

CFC-free, thermostatic cabinets produced by Aqualytic® provide continuous temperature control for a number of different applications.

AQUALYTIC

The low temperature range from 2 to 40°C allows use as cooled incubators for microbiology, amongst other uses. Furthermore, samples can be incubated, or BOD tests for sewage analysis carried out. All temperatures can be selected in 0.1°C steps and are maintained with a stability of ±0.5°C in the sample. An LCD digital readout simultaneously indicates the current and set-point temperatures within the cabinet.



Description	Capacity L	Cat. No.	PK
With normal door	135	9.699 040	1
With normal door	195	9.699 042	1
With normal door	280	9.699 044	1
With normal door	395	9.699 038	1
With glass door	140	9.699 041	1
With glass door	195	9.699 043	1
With glass door	280	9.699 045	1
With glass door	395	9.699 039	1

2 BOD mixing equipment

behrotest® BOD mixing equipment is reliable and simple to operate. In conjunction with appropriate accessories - from dilution water containers with cooling coils to circulation thermostat and right on up to Micro-dosing units for allylthiourea - complete work stations can be configured. You can significantly reduce the operation overhead for determining BOD via DIN EN 1899-1 (=DEV H 51), thereby also reducing costs.

Behr

BSB 2:

Comprises 1litre graduated mixing cylinder, magnetic stirrer and 3-way PTFE stopcock for bubble-free supply of dilution water from below

Behr

Type	Cat. No.	PK
BSB 2	9.920 504	1



BSB 4A:

Similar to BSB 2 but semi-automatic with fill-level shut-off and rinse mechanism

Behr

Type	Cat. No.	PK
BSB 4A	9.920 506	1

Dosing mechanism complete with dispenser and holder for use with BSB mixing equipment

Behr

Type	Cat. No.	PK
DSA	9.920 510	1



3 BOD (Karlsruher) bottles with stoppers

behrotest®. The funnel shaped bottle neck is filled with sample water, which is displaced when the meter electrode is inserted. This ensures results are not affected by unwanted air bubbles, allowing oxygen into the samples, giving a false reading.

Behr

Capacity ml	Length* mm	Cat. No.	PK
100	30	9.920 514	1
100	60	9.920 515	1
250	30	9.920 513	1
250	60	9.920 509	1

* Stopper handle length (mm)



4 BOD meters Type KF 12, accessory funnel bottle

Karlsruher BOD bottle with NS19 conical ground joint.

WTW

Type	Cat. No.	PK
Karlsruher BOD bottle, 250 ml	9.304 170	1

Oxygen meter - please see page 218





BOD bottles with stoppers		
With NS 19 cone glass stopper.		<i>Behr</i>
Type	Cat. No.	PK
BOD bottles with stoppers, 100 ml	9.920 500	1



1 Dissolved oxygen bottles, Winkler pattern				
Winkler pattern. Soda-lime glass. For determination of dissolved oxygen in water. Capacity determined exactly to ±0.01 ml and engraved on bottle. With white labelling area. Solid, bevelled glass stopper, secured with an accessory spring clip. Each bottle is adjusted to the relevant stopper. Stoppers and bottles are therefore not interchangeable. Each bottle and its stopper is marked with a unique, matching identification number.		<i>BRAND</i>		
Nominal capacity ml	NS	Cat. No.	PK	Snap-on clip
100 to 150	14/23	9.304 038	1	9.304 050
250 to 300	19/26	9.304 048	1	9.304 051

2 Thermostatic circulator behrotest®		
For temperature control of BOD dilution water. Holds the BOD dilution water at +20°C by active cooling or warming. Connection for external temperature probe.		<i>Behr</i>
Type	Cat. No.	PK
Thermostatic circulator	9.920 512	1



3 Dilution water containers for BOD depletion water				
With vent, level display and stopcock. Solid-coloured (for light protection). Additional lid for easier cleaning. With cooling coil (stainless steel) and connections for refrigerated thermostats or thermostating devices.		<i>Behr</i>		
Type	Capacity litres	Description	Cat. No.	PK
VD30	30	blue, with aeration heads and air pressure connection	9.920 519	1
VD60	60	blue, with aeration heads and air pressure connection	9.920 517	1
VD120	120	without heating jacket	9.920 532	1
VDT120	120	blue, with aeration heads and air pressure connection	9.920 534	1
VDT30	30	as VD 30 but with internal cooling/warming coil and connection for thermostat-circulation pump	9.920 520	1
VDT60	60	as VD 60 but with internal cooling/warming coil and connection for thermostat-circulation pump	9.920 516	1



4 COD sample digestion units PA-CSB		
Units configured to simultaneously treat a maximum of 6 or 12 x COD samples in accordance with DIN/DEV and ISO. The digestion unit contains the following components: - TRS 200/CSB-Automatic microprocessor-controlled, time and temperature regulator - CSB/E precision block heater for RG 2 reaction vessels - E/B insert/capping rack for RG 2 reaction vessels - KW/N cooling trough with holder and stand for E/B - RG 2 reaction vessels - LK 1 air condenser - LS stand for LK air condenser.		<i>Behr</i>
Type	Cat. No.	PK
PA-CSB 6	9.920 540	1
PA-CSB 12	9.920 541	1

1 COD workstations, PB-CSB/M

For COD determination.

Complete workstations for the simultaneous determination of a maximum of 6 or 12 samples in accordance with DIN/DEV and ISO. Manual dosing and titration.

The workstations comprise:

- TRS 200/CSB-Automatic microprocessor-controlled, time and temperature regulator
- COD/E precision block thermostat heater for RG 2 reaction vessels
- E/B insert/capping rack for RG 2 reaction vessels
- KW/N cooling trough with holder and stand E/B
- SM 12/N serial magnetic stirrer for E 12/B insert/capping rack (PB-CSB 12/M only)
- RG 2 reaction vessels
- MRST 2 magnetic stirrer bar set, pack of 12
- SIST 100 boiling stones, capacity 100g
- LK 1 COD air condenser
- LS air condenser stand
- PTFE 29 sleeves for LK 1, set of 12
- TS CSB transport stand for E/B insert/capping rack E/B
- HTI 1 manual titrating station.

Behr



Type	Cat. No.	PK
PB-CSB 6/M	9.920 542	1
PB-CSB 12/M	9.920 543	1

2 Reagent metering unit

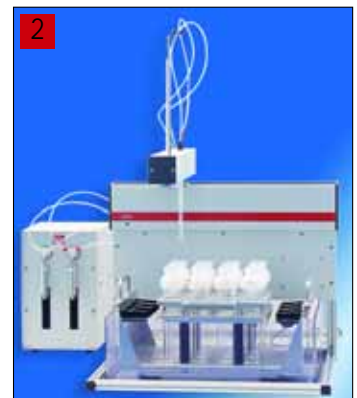
Reagent metering unit for automating and accelerating reagent addition in the laboratory. Possibility of connecting the behr reagent dosing modules with 1, 2 and 4 burettes. Capable of delivering into any desired number of vessels of differing sizes on a surface measuring 330 x 210 mm.

The reagent addition is performed via one or more dosing tips moving successively to each vessel.

Options are also available to permit simultaneous delivery into two adjacent vessels.

The reagent metering unit is controlled by Windows software.

Behr



Type	Description	Cat. No.	PK
DS 20	for up to 12 samples, incl. burettes and cooling trough	9.920 747	1
SM 12 / P	12 position inductive magnetic stirrer for direct connection to the behr Reagent Metering Unit	9.920 746	1



1 Water testing equipment

Single-parameter and multi-parameters kits, including for chlorine and pH
The Lovibond product range contains a large selection of single and multi-parameter water testing equipment.

Tintometer

Each kit is a complete, portable system that guarantees accurate water tests and contains all of the colour discs, reagents, accessory parts and detailed instructions necessary for the respective tests ensuring that reliable results may be obtained. The table below illustrates the most popular water testing kits.

In addition, kits can also be created in accordance with specific user requirements on request.

Type	Description	For	Measuring range	Accessories	Cat. No.	PK
AF 112E	Chlorine - free & combined	chlorine	0.02 to 0.3mg/l Cl ₂	comparator, colour disc	9.947 203	1
AF 112A	Chlorine - free & combined	chlorine	0.1 to 1.0mg/l Cl ₂	comparator, colour disc	9.947 204	1
AF 112B	Chlorine - free & combined	chlorine	0.2 to 4.0mg/l Cl ₂	comparator, colour disc	9.947 205	1
AF 116A	Chlorine & pH	chlorine*	0.1 to 1 mg/l Cl ₂	comparator, colour disc	9.947 208	1
		pH value*	6.8 to 8.4	comparator, colour disc	9.947 208	1
AF 116B	Chlorine & pH	Chlorine*	0.2 to 4 mg/l Cl ₂	comparator, colour disc	9.947 208	1
		pH value*	6.8 to 8.4	comparator, colour disc	9.947 208	1
AF 357	Drinking water	pH value*	0 to 5000 mg/l Cl	Tablet count. method	9.947 209	1
		Chlorine*	0.02 to 0.3 & 0.2 to 4 mg/l Cl ₂	nessleriser, colour disc	9.947 209	1
		Fluorine*	0 to 1.6 mg/l F	nessleriser, colour disc	9.947 209	1
		tot. hardness*	0 to 500 mg/l CaCO ₃	Tablet count. method	9.947 209	1
		colour of the water* (Hazen)	10 to 90 mg Pt/l	comparator, colour disc	9.947 209	1
		pH value*	6 to 8.4	comparator, colour disc	9.947 209	1

*Please note when ordering that only one catalogue number need be stated for each kit. All test apparatus for parameters listed against individual kits are supplied.



Comparator System 2000

For water testing.

Tintometer

- Simple and flexible system guarantees reliable results in the laboratory and in the field.
- Compact, portable and robust, therefore particularly suitable for in-situ analyses
- Reagents for many parameters are available in the proven tablet form
- Glass colour discs with guaranteed fade-free glass filters which can be certified in accordance with ISO 9001 QA

The following are required:

- Comparator standard equipment (Comparator 2000+ or corresponding nessleriser)
- Test specific colour discs
- Test specific reagents
- Cells with the corresponding path length
- Daylight illuminator (optional), to ensure constant light conditions

1 Comparator 2000+

Lovibond Comparator 2000+ is a quality instrument for the visual analysis of colour intensity in analysis samples using Lovibond colour discs. The integral cell attachment enables cells with a depth of 40mm to be accepted. The Lovibond Nessleriser system provides greater depths by using corresponding accessory Nessler tubes. This enables the determination of concentrations below the detection limit of the Comparator 2000+. The integral prism in the Lovibond Comparator brings the glass standard of the colour discs and the colour samples optically into the field of view. The prism is hermetically sealed, preventing the lens from being contaminated. Both the Comparator 2000+ and the Nessleriser are designed in such a way that they compensate for cloudy or coloured water samples. Each device is available for use in daylight or in combination with the artificial daylight unit 2000.

Tintometer



Description	For	Cat. No.	PK
Comparator 2000+	see method	9.947 150	1
Nessleriser 2150 with stand	50 ml tubes, path length 113 mm	9.947 151	1
Nessleriser 2250 with stand	path length 250 mm	9.947 152	1
Nessleriser 2150 with daylight unit 2000	50 ml tubes, path length 113 mm	9.947 153	1
Nessleriser 2250 with daylight unit 2000	path length 250 mm	9.947 154	1

Cuvettes and Nessler tubes for Comparator System 2000

Tintometer

Type	Description	Cat. No.	PK
A	DB424/S, 10ml cells, 13.5mm path length with plug stoppers, pack of 5	9.947 170	5
B	W 680/OG/40 cell, 40mm path length, calibrated at 20 ml	9.600 784	1
C	AF306/P, Nessler tubes, 50 ml, 113 mm path length, with anti-meniscus plungers, pair	9.947 174	1
D	DB420, Nessler tubes, 250mm path length, with anti-meniscus plungers, pair	9.947 175	1

2 Comparator system 2000, water test discs and reagent tablets

A large selection of water test discs are available for colorimetric chemical analyses and colour classification. Each test disc is equipped with fade-free, non porous glass filters, the quality of which is not impaired by UV light or other environmental influences. Test discs whose code begins with "N", are designed for use in the Nessleriser 2150. Test discs which start with the letter "C" are designed for use in the Nessleriser 2250. All other test discs are designed for use in the comparator 2000+ . The most popular water test discs feature in the table below. Other test discs are available on request.

Tintometer



For	Disc	Measuring range	Cat. No.	PK
Ammonia	3/112	0 to 0.40mg / l NH ₄	9.947 001	1
	3/113	0 to 1.0 mg / l N	9.947 002	1
	3/125	0 to 10 mg/l N	9.947 003	1
	NAB	10 to 26µg NH ₄	9.947 006	1
Bromine	3/53A	0.2 to 2.0mg / l	9.947 009	1
	3/53B	1 to 10mg / l	9.947 010	1
Chlorine	3/40E	0.02 to 0.3mg / l	9.947 011	1
	3/40A	0.1 to 1.0mg / l	9.947 012	1
	3/40J	0.1 to 2.0mg / l	9.947 013	1
	3/40B	0.2 to 4.0mg / l	9.947 014	1
	3/40K	0.5 to 6.0mg / l	9.947 015	1
	3/40S	1 to 4mg / l	9.947 016	1
	3/40P	2 to 5mg / l	9.947 017	1
	3/40HN	2 to 10mg / l	9.947 018	1
	3/2ARP	5 to 50 mg / l	9.947 019	1
	3/2IOD	5 to 250 mg / l	9.947 020	1
Hazen / APHA	NDPB	0.01 to 0.10mg / l	9.947 021	1
	NDP	0.05 to 0.50mg / L	9.947 023	1
	NDPD	0.1 to 1.0mg / l	9.947 024	1
	NSH	10 to 90 mg Pt / l	9.947 029	1
Hydrazine	CAA	0 to 30 mg Pt / l	9.947 030	1
	CAB	30 to 70 mg Pt / l	9.947 031	1
	3/126	0 to 0.5mg / l	9.947 032	1
Iron	3/135	0.02 to 0.2mg / l	9.947 033	1
	3/116	0.1 to 1.0 mg / L	9.947 034	1
	3/117	1 to 10 mg / l	9.947 035	1
Nitrate	3/124	0.1 to 1.0 mg/l N	9.947 037	1
Nitrite	3/103	0.05 to 0.50 mg/l N	9.947 039	1
	NJ	0.05 to 1.0mg / l	9.947 041	1
	3/133	0 to 4.0 mg/l PO ₄	9.947 042	1
Phosphate	3/70	0 to 100 mg / l PO ₄	9.947 044	1
	3/128	0 to 0.5 mg / l S	9.947 046	1
Sulphide	3/151	0 to 1.0 mg / l	9.947 047	1
Zinc	3/102	0 to 4.0 mg / l	9.947 048	1

Reagent tablets for Comparator system 2000

Tintometer

For	Type	Cat. No.	PK
Ammonia	Ammonia No. 1	9.947 060	100
	Ammonia No. 1	9.947 061	250
	Ammonia No. 2	9.947 062	100
	Ammonia No. 2	9.947 063	250
Bromine, Chlorine, Chlorine dioxid	DPD No. 1	9.947 065	100
	DPD No. 1	9.947 066	250
Chlorine	DPD No. 2	9.947 069	100
	DPD No. 2	9.947 070	250
	DPD No. 3	9.947 071	100
	DPD No. 3	9.947 072	250
	DPD No. 4	9.947 073	100
	DPD No. 4	9.947 074	250
	Chlorine HR (Kj)	9.947 075	100
	Chlorine HR (Kj)	9.947 076	250
	Acidifying GP	9.947 077	100
	Acidifying GP	9.947 078	250
Hydrazine	DPD (Ness) No. 1	9.947 079	100
	DPD (Ness) No. 2	9.947 080	100
	DPD (Ness) No. 3	9.947 081	100
Hydrazine	Hydrazine Test powder	9.947 089	1
Iron	Iron LR	9.947 100	100
	Iron LR	9.947 101	250
	Iron HR	9.947 102	100
	Iron HR	9.947 103	250
Nitrate	Nitrate Test tablets	9.947 106	100
	Nitrate Test powder	9.947 107	1
Nitrite, Nitrate	Nitrite LR	9.947 108	100
	Nitrite LR	9.947 109	250
Nitrite	Nitrite Acidifying	9.947 118	250
Phosphate	Phosphate No. 1 LR	9.947 119	100
	Phosphate No. 1 LR	9.947 120	250
	Phosphate No. 2 LR	9.947 121	100
	Phosphate No. 2 LR	9.947 122	250
	Phosphate HR	9.947 123	100
	Phosphate HR	9.947 124	250
	Phosphate HR	9.947 128	100
Sulphide	Sulphide No. 1	9.947 129	100
	Sulphide No. 2	9.947 129	100
Zinc	Copper/Zinc HR	9.947 130	100
	Copper/Zinc HR	9.947 131	250

We can supply this
manufacturer's
whole
product range !

partner of the



Lab Logistics Group

behr

Labor-Technik

1 Dräger Tubes®

The Dräger Tubes® measuring system is the safe method for measuring pollutants in the soil, water and air. More than 500 substances can be measured in varying concentrations. The long-established principle of Dräger Tubes® is still the same. A defined volume of gas/air must be pumped through the sampling tube. This can be achieved by using the Accuro® gas pump. On contact with the substance under test the reagent system contained in the tube reacts and displays a colour. The strength of the concentration of the substance is shown by the length of the colour band displayed and can be read directly from the scale. The Dräger-Tubes® sampling system provides accuracy, economy, efficiency, quick and easy handling. Over 250 tubes are available on request for all substances and measuring fields. Further sampling devices, diffusion tubes for long-term measurements as well as sampling systems with activated carbon tubes, ORSA collector and TDS thermodesorption tubes are also available.

Dräger



Type	Measuring range	Cat. No.	PK
Accuro gas pump		9.620 410	1
Gas pump set accuro (incl. bag a. E-Set)		9.620 411	1
Ammonia 2/a tubes	2 to 30 ppm	9.620 404	10
Ammonia 5/a tubes	5 to 700 ppm	9.620 405	10
Acetone 100/b tubes	100 to 12000 ppm	9.620 421	10
Alcohol 25/a tubes	25 to 5000 ppm	9.620 423	10
Ammonia 5/b tubes	5 to 100 ppm	9.620 424	10
Benzene 0.5/a tubes	0.5 to 10 ppm	9.620 406	10
Petroleum hydrocarbons 10/a tubes	10 to 300 ppm	9.620 426	10
Benzene 0.5/c tubes	0.5 to 10 ppm	9.620 427	5
Hydrocyanic acid 2/a tubes	2 to 30 ppm	9.620 428	10
Chlorine 0.2/a tubes	0.2 to 3 ppm	9.620 407	10
Formaldehyde 0.2/a tubes	0.2 to 5 ppm	9.620 429	10
Carbon dioxide 100/a tubes	100 to 3000 ppm	9.620 408	10
Carbon monoxide 5/c tubes	8 to 700 ppm	9.620 409	10
Carbon monoxide 2/a tubes	2 to 60 ppm	9.620 432	10
Nitrous fumes 0.5/a tubes	0.5 to 10 ppm	9.620 433	10
Ozone 0.05/b tubes	0.05 to 0.7 ppm	9.620 434	10
Perchloroethylene 2/a tubes	2 to 300 ppm	9.620 436	10
Phenol 1/b tubes	1 to 20 ppm	9.620 437	10
Hydrogen phosphide 0.01/a tubes	0.01 to 1 ppm	9.620 438	10
Mercury vapour 0.1/b tubes	0.05 to 2 mg/m ³	9.620 439	10
Hydrochloric acid 1/a tubes	1 to 10 ppm	9.620 413	10
Hydrochloric acid/nitric acid 1/a tubes	1 to 10/15 ppm	9.620 441	10
Sulphur dioxide 0.5/a tubes	0.5 to 25 ppm	9.620 420	10
Hydrogen sulphide 5/b tubes	5 to 60 ppm	9.620 425	10
Carbon disulphide3/a tubes	3 to 95 ppm	9.620 442	10
Hydrogen sulphide 1/d tubes	1 to 200ppm	9.620 443	10
Toluene 5/b tubes	5 to 300 ppm	9.620 446	10
Trichloroethylene 2/a tubes	20 to 250 ppm	9.620 447	10

2 Gas detectors, X-am 2000

The X-am 2000 is a compact 4 gas detector for monitoring the atmosphere to detect concentrations of several gases continuously and simultaneously. Four measuring vessels provide a large number of sensors. With an external pump for remote extension tubes or telescopic tools to be used for measuring levels in difficult to access areas.

Dräger



Type	Cat. No.	PK
Dräger X-am 2000, Ex	9.620 456	1
Dräger X-am 2000, Ex, O ₂	9.620 457	1
Dräger X-am 2000, Ex, O ₂ , CO, H ₂ S	9.620 458	1
Battery charger set	9.620 459	1

Further monitoring devices for one or multiple gas measurements, or detectors for all application areas, available on request.

3 Dräger Sampling Tubes

Using the Dräger activated charcoal tubes or silica gel tubes, hazardous substances in the air are collected using a suitable medium via adsorption or chemisorption. The sample is then analysed in the laboratory by means of various analytical methods such as gas chromatography (GC), high performance liquid chromatography (HPLC), UV-VIS photometry, or IR spectroscopy.

Dräger



Description	Type	Cat. No.	PK
Charcoal tubes	BiA	9.620 414	10
Charcoal tubes	G	9.620 415	10
Charcoal tubes	B/G	9.620 416	10
Silica gel tubes	BiA	9.620 417	10
Silica gel tubes	G	9.620 418	10
Silica gel tubes	B/G	9.620 419	10



1 Single parameter photometers, CheckitDirect

AQUALYTIC

Suitable for analysis of potable, industrial and waste water.
 Simple, 4-key control provides easy operation.
 Equipped with the latest microprocessor technology,
 the unit displays results automatically after reset.
 Long-lasting LED light sources guarantee very accurate
 measurement and long service life for the photometric system.
 Powered by a 9V PP3 battery giving approx. 600 measurements.

Measurement cycle: approx. 3 seconds (method dependent)
 Display: LCD
 Optics: Temperature compensated LED and photosensor intensifier in a
 waterproof sample chamber
 Keyboard: 3-key polycarbonate film, splashproof
 Overall WxDxH: 190 x 110 x 55 mm

Type	Measuring range	Cat. No.	PK
Ammonium	0.02 to 1; 0.2 to 10 mg/l*	9.699 050	1
Chloride	0.5 to 25; 5 to 250 mg/l*	9.699 051	1
Chlorine DPD, reagent tablets	0.05 to 6 mg/l	9.699 052	1
Chlorine DPD, liquid reagents	0.05 to 4 mg/l	9.699 053	1
Chlorine HR	5 to 200 mg/l	9.699 054	1
Iron	0.02 to 1; 0.2 to 10 mg/l*	9.699 055	1
Phosphate LR	0.05 to 4 mg/l	9.699 057	1
Chlorine/pH/Cys	0.05 to 6.0 mg/l; 6.5 to 8.4; 2 to 160 mg/l	9.920 202	1

*Higher measuring range through dilution Further parameters available on request



2 3 4 5 Visicolor® analysis kit and photometer

MACHEREY-NAGEL

1 Visicolor® ECO Analysis kit

The Visicolor® Eco Analysis kit contains the following test kits:
 Ammonium: 0.2 to 3 mg/litre NH₄⁺/Carbonate hardness: 1 drop = 1°d/
 Total hardness: 1 drop = 1°d/Nitrate: 1 to 120 mg/litre NO₃⁻/
 Nitrite: 0.02 to 0.5 mg/litre NO₂⁻/pH: 4.0 to 9.0/Phosphate 0.2 to 5 mg/litre P
Shelf life of reagents: at least 18 months

2 Visicolor® soil kit

The Visicolor® soil kit contains all reagents, apparatus and accessories for the processing of
 soil samples and the subsequently regulation of
 - Phosphate (P) - Soil structure - Potassium (K) - pH - Ammonium, Nitrite, Nitrate (N)

3 Visicolor® environmental kit

The Visicolor® environmental kit allows the ecological evaluation of different waters and contains,
 besides the photometer PF-11, the following Visicolor® tests:
 Ammonium (DEV): 0.2 to 10 mg/litre NH₄⁺ /carbonate hardness C20
 Accuracy: 0.1 mmol/litre and/or 0.5°d /Iron (Triazin): 0.1 to 2.0 mg/litre Fe/total hardness H2OF
 Accuracy: 0.1 mmol/litre and/or 0.5°d/Nitrate 50: 1 to 50 mg/litre NO₃⁻/Nitrite: 0.05 to 2.0 mg/litre NO₂⁻/
 pH: 4.0 to 10.0/Phosphate (DEV) 0.1 to 1.5 mg/litre P
 The reagents are sufficient for 60 to 120 tests.
Durability of reagents: at least 18 months

4 PF-11 portable filter photometer for laboratories, complete in kit with manual, rechargeable batteries and battery charger.

Light source: Tungsten - point-light-lamp
Detector: Silicon photo-element
Display: LCD-display 2 x 16 digit, 5 mm high
Operation: 3 membrane-covered pushbuttons
Measuring range: approx. 2 A
Accuracy: ±3%
Long-term stability: < 0.01 A/h
Interface: serial RS232

Power supply: 4 x 1.2V NiCad batteries for over 1000 measurements,
 with 9V 1.5A a.c. adapter/battery charger
Dimensions: 195 x 100 x 40 mm
Weight: 470 g incl. batteries



Type	Cat. No.	PK
Visicolor® ECO, analysis kit	9.304 577	1
Visicolor® Soil kit, incl. manual	9.304 578	1
Visicolor® environmental kit, incl. Photometer	9.304 579	1
PF-11 filter photometer	9.304 580	1

*LP for one package, volume discount at 10 packages

1 2 3 4 5 6 Test kits, Visicolor®

MACHEREY-NAGEL

1 Visicolor®

HE Ammonium. Highly sensitive test kit for testing of ammonium.
 Measuring range (scale gradation):
 0.0/0.02/0.04/0.07/0.10/0.15/0.20/0.30/0.40/0.50 mg/l NH₄

2 Visicolor®

ECO Nitrate. Test kit for Nitrate testing.
 Measuring range (scale gradation): 0/1/3/5/10/20/30/50/70/90/120 mg/l NO₃
 This test kit is qualified for the analysis of seawater.

3 Visicolor®

ECO Nitrite. Test kit for Nitrite testing.
 Measuring range (scale gradation): 0.0/0.02/0.03/0.05/0.07/0.1/0.2/0.3/0.5 mg/l NO₂
 This method is qualified for the analysis of seawater.

Visicolor®

alpha pH 5-9. Test kit for the pH analysis.
 Measuring range (scale gradation): pH 5.0/5.5/6.0/6.5/7.0/7.5/8.0/8.5/9.0

4 Visicolor®

HE Phosphate. Highly sensitive test kit for Phosphate analysis.
 Measuring range (scale gradation): 0.0/0.05/0.10/0.15/0.20/0.3/0.4/0.6/0.8/1.0 mg/l P

5 Visicolor®

Oxygen SA 10. Test kit for the titrimetric analysis of dissolved oxygen in water according to DIN EN 25 813.
 Measuring range: 1 syringe filling is enough for testing 0.2 to 10 mg/litre HO.
 1 scale line = 0.2 mg/litre
 Contents: sufficient for 100 tests with an average oxygen content of 9 mg/litre

6 Visicolor®

Carbonate hardness C 20. Test kit for carbonate hardness in water as well as for the partial alkalinity.
 Dual range test kit for carbonate hardness (=m-value) as well as the partial alkalinity (=p-value).
 Measuring range: 1 syringe filling is enough for testing 0.5° to 20°d and /or 0.2 to 7 mmol/litre H⁺.

Visicolor®

alpha Total Hardness. Test kit for total hardness.
 Reaction basis (a): Titration
 Measuring range: 1 drop = 1°d
 Contents: sufficient reagents for 50 tests with an average hardness of 10°d.



Type	For	Cat. No.	PK
Visicolor® HE Ammonium	110 tests	9.304 581	1
Visicolor® ECO Nitrate	110 tests	9.304 565	1
Visicolor® ECO Nitrite	120 tests	9.304 582	1
Visicolor® alpha pH 5.0 to 9.0	200 tests	9.304 570	1
Visicolor® HE Phosphate	300 tests	9.304 583	1
Visicolor® Oxygen SA 10	100 tests	9.304 569	1
Visicolor® Carbonate hardness C 20	200 tests	9.304 585	1
Visicolor® Total hardness	100 tests	9.304 586	1



1 2 Handheld Photometers pPhotoFlex series

WTW

Handheld photometers for use in a wide range of areas such as process control, mobile water testing or wine industry. Easy operation with menu driven, user guidance.

- Smart cuvette adapter: holds 28 mm or 16 mm round cuvettes with height 91 to 104 mm; allows a variety of test methods to be conducted
- Optics: LED's with filters, accuracy < 2 nm, 436 nm, 517 nm, 557 nm, 594 nm, 610 nm, 690 nm
- Concentration, Absorption, Transmission
- Methods can be updated or downloaded from the Internet
- 100 user defined routines
- 1000 data sets, RS232 interface
- pH range: pH 0 to 16.00 (± 0.01) for DIN standard combination electrodes
- Batteries: 4 button cells
- incl. calibration interval and calibration protocol

Optional: LabStation with rechargeable battery and charger, pPhotoFlex software LSdata for easy data export and lab use, incl. down/upload functions.

pPhotoFlex Turb

Generally as pPhotoFlex, with additional turbidity measurement:

- IR light source acc. DIN 27027 /ISO 7027
- Measuring range: 0 to 1100 NTU/FNU
- Resolution: 0 to 9.99 NTU: 0.01; 10 to 99 NTU: 0.1; 100 to 1100 NTU: 1NTU
- Accuracy: 0.01 NTU or 2% of measured value
- 3 point calibration
- Standard set with traceable AMCO® Standards (0.02 - 10 - 1000 NTU).

Complete pPhotoFlex Sets

The mobile laboratory: smart with integrated "lab table" to hold instrument, cuvettes, beaker and stand for pH electrode. Complete sets with:

- pH electrode SenTix 41 for pPhotoFlex models
- 1 adjustable Pipette with 5 ml volume for pPhotoFlex models
- Calibration standard kit for pPhotoFlex Turb and Turb 40 IR/T.

pPhotoFlex/SET:

pPhoto Flex in field case with platform insert, including pH electrode Sentix 41, pipette KK/VAR 5000+ tips, 5 ml, Tec buffer 4.01 and 7.00 (50 ml each), beaker, stand, cleaning tissues, empty 16/28 mm cuvettes, screwdriver, AK 540B PC cable, manuals.

pPhotoFlex Turb/SET:

pPhoto Flex Turb including pH and turbidity electrode in field case with platform insert, pH-electrode Sentix 41, pipette KK/VAR 5000+ tips, 5 ml, Tec buffer 4.01 and 7.00 (50 ml each), beaker, stand, cleaning tissues, empty 16/28 mm cuvettes, screwdriver, AK 540B PC cable, manuals.



Type	Cat. No.	PK
pPhotoFlex	9.923 625	1
pPhotoFlex Turb	9.923 626	1
pPhotoFlex SET	9.923 601	1
pPhotoFlex Turb/ SET	9.923 602	1



3 Photometers, PhotoLab Series

WTW

High-precision, laboratory photometers with multilevel QA/IQC functions. Feature easy operation, GLP-conforming documentation, simultaneous turbidity measurement and compensation. Automatic check of the optical system and zeroing on start up. Clear graphics display with instructions. AutoSelect function recognises cuvettes via barcode; all necessary settings automatically of more than 150 method data. The RS232 interface transfers data to the user's PC. With real time clock and memory (incl. date/time) for 500 (S6) or 1000 (S12) data records. Accommodates cylindrical cells, 16mm diameter and rectangular cells (except S6) 10, 20 and 50mm path length. Autozeroing. CE, UL, CUL tested.

photoLab S6

With 6 interference filters (photodiode array) for 340/445/525/550/605/690nm ± 2 nm, 10mm bandwidth. For routine applications with round cuvettes in waste water analysis.

photoLab S12

With 12 interference filters (photodiode array). 10mm bandwidth. Similar to S6, but with additional filters for 410/500/565/620/665/820nm. All test kits can be used (round cuvettes and reagent test kits), 50 user defined methods, Kinetic functions.

PhotoLab Spektral

High-precision grating spectrophotometer with Zeiss optics, range 330 to 850 nm ± 1 nm, bandwidth variable, photodiode array, 10 nm bandwidth. Additionally to features above: enhanced options for 99 user defined methods, absorption spectra, MultiACHAT Software for easy data entry and handling.

Type	Description	Cat. No.	PK
PhotoLab S6	Mains version, 220 V European plug	9.923 631	1
PhotoLab S6-A	Rechargeable battery version, 220 V European plug	9.923 632	1
PhotoLab S12	Mains version, 220 V European plug	9.923 635	1
PhotoLab S12-A	Rechargeable battery version, 220 V European plug	9.923 636	1
PhotoLab Spektral	220/115 V European plug	9.923 645	1
LP 6/12	Spare lamp for S6, S12	9.923 638	1
LP Spektral	Spare lamp, Spektral	9.923 639	1

1 Photometer photoLab and pFotoFlex, stored test protocols

A: Stored in photoLab S6, S12 and Spektral.

B: Stored in photoLab S12 and Photolab Spektral.

C: Stored in pFotoFlex and pFotoFlex Turb

Reagent-free tests:

Cu - copper plating bath, 690 nm, 820 nm - copper plating bath - B

CrO₃ - chromium plating bath - chromium plating bath - B

Ni - nickel plating bath - nickel plating bath - B

HZ - Hazen colour - Hazen colour - B

IFZ - iodine number, 340 nm, 455 nm - iodine number - Bm-1 (DFZ) - colouring - FB445 - B, Cm-1 (DFZ)

- colouring - FB525 - A, Cm-1 (DFZ) - colouring - FB620 - B, C

FAU - turbidity 620 - T620 - B

E - extinction - extinction - A, B, C

Can be supplied on request:

14558 - NH₄-N, ammonium - A14563 - NO₃-N, nitrate - A14540 - O₂ COD, COD - A14541 - O₂ COD, COD - A.

WTW



Type	Description	For	Unit	No. of determinations	Cat. No.	PK
14697	a-Ten, Surfactants anionic	B	0.05 to 2.00 mg/l	25	9.920 904	1
14831	Ag, Silver	B	0.25 to 3.00 mg/l	100	9.920 905	1
14825	Al, Aluminium	B, C	0.02 to 1.20 mg/l	300	9.920 906	1
14821	Au, Gold	B, C	0.50 to 12.00 mg/l	80	9.920 907	1
14839	B, Boron	B	0.05 to 0.80 mg/l	60	9.920 908	1
14551	C ₆ H ₅ OH, Phenol	B	0.10 to 2.50 mg/l	25	9.920 893	1
14815	Ca, Calcium	B, C	5.00 to 160.00 mg/l	100	9.920 909	1
14834	Cd, Cadmium	A, C	0.025 to 1.00 mg/l	25	9.920 873	1
01745	Cd, Cadmium	A	0.002 to 0.50 mg/l	55	9.920 946	1
00595	Cl ₂ , Chlor free	A, C	0.03 to 6.00 mg/l	200	9.920 949	1
00597	Cl ₂ , Chlor free + total	A, C	0.03 to 6.00 mg/l	200	9.920 950	1
00599	Cl ₂ , Chlor free + total	B	0.010 to 6.00 mg/l	200	9.920 951	1
Cl-3 TP	Cl ₂ , Chlor total	C	0.00 to 2.00 mg/l	100	9.920 864	1
14730	Cl, Chloride	A, C	5.00 to 125.00 mg/l	25	9.920 910	1
14897	Cl, Chloride	B, C	2.50 to 250.00 mg/l	100	9.920 911	1
14561	CN, Cyanid	A, C	0.01 to 0.50 mg/l	25	9.920 881	1
09701	CN, Cyanid	B	0.002 to 0.05 mg/l	100	9.920 914	1
14552	Cr, Chromate (Chromium)	A, C	0.05 to 2.00 mg/l	25	9.920 875	1
14758	Cr, Chromate (Chromium)	B	0.01 to 3.00 mg/l	250	9.920 915	1
14553	Cu, Copper	A, C	0.05 to 8.00 mg/l	25	9.920 887	1
14767	Cu, Copper	B	0.02 to 6.00 mg/l	250	9.920 916	1
14557	F, Fluoride	B, C	0.10 to 1.50 mg/l	25	9.920 884	1
14549	Fe, Iron	A, C	0.05 to 4.00 mg/l	25	9.920 883	1
14761	Fe, Iron	B, C	0.005 to 5.00 mg/l	1000	9.920 917	1
14896	Fe, Iron	A	1.00 to 50.00 mg/l	25	9.920 918	1
14565	GH, total hardness / Ca	A, C	5.00 to 215.00 mg/l	25	9.920 919	1
14500	HCHO, Formaldehyde	A	0.10 to 8.00 mg/l	25	9.920 885	1
14678	HCHO, Formaldehyde	B	0.02 to 8.00 mg/l	100	9.920 921	1
14779	HS, Hydrogensulfide	B	0.02 to 1.50 mg/l	220	9.920 922	1
14562	K, Potassium	A, C	5.00 to 50.00 mg/l	25	9.920 886	1
00815	Mg, Magnesium	A, C	5.00 to 75.00 mg/l	25	9.920 953	1
14770	Mn, Manganese	B, C	0.01 to 10.00 mg/l	500	9.920 924	1
09711	N ₂ H ₄ , Hydrazine	B	0.005 to 2.00 mg/l	100	9.920 983	1
14537	N _{total} , Totale Nitrogen	A, C	0.50 to 15.00 mg/l	25	9.920 897	1
14763	N _{total} , Totale Nitrogen	A	10.00 to 150.00 mg/l	25	9.920 926	1
14544	NH ₄ -N, Ammonium	A, C	0.50 to 16.00 mg/l	25	9.920 927	1
14559	NH ₄ -N, Ammonium	A	4.00 to 80.00 mg/l	25	9.920 928	1
14752	NH ₄ -N, Ammonium	B, C	0.01 to 3.00 mg/l	500	9.920 929	1
A6/25	NH ₄ -N, Ammonium	A, C	0.20 to 8.00 mg/l	25	9.920 958	1
14554	Ni, Nickel	A	0.10 to 6.00 mg/l	25	9.920 888	1
14785	Ni, Nickel	B	0.02 to 5.00 mg/l	250	9.920 930	1

*replacement for A5/25

Photometer PhotoLab S6, S12 - stored test protocols

WTW

Type	Description	For	Unit	No. of determinations	Cat. No.	PK
14776/1	NO ₂ -N, Nitrite	B,C	0.005 to 1000 mg/l	1000	9.920 931	1
N5/25*	NO ₂ -N, Nitrite	A,C	0.01 to 0.700 mg/l	25	9.920 960	1
14542	NO ₃ -N, Nitrate	A,C	0.5 to 18.0 mg/l	25	9.920 890	1
14556	NO ₃ -N, Nitrate	B,C	0.10 to 3.00 mg/l	25	9.920 891	1
14773	NO ₃ -N, Nitrate	B	0.2 to 20.0 mg/l	100	9.920 932	1
14764	NO ₃ -N, Nitrate	A	1.0 to 50.0 mg/l	25	9.920 933	1
14942	NO ₃ -N, Nitrate	B, C	0.2 to 71.0 mg/l	50	9.920 870	1
N2/25*	NO ₃ -N, Nitrate	A,C	0.5 to 25.0 mg/l	25	9.920 959	1
14694	O ₂ , Oxygen	A	0.5 to 12.0 mg/l	25	9.920 925	1
14555	O ₂ COD, COD	A	500 to 10000 mg/l	25	9.920 879	1
14560	O ₂ COD, COD	A	4.0 to 40.0 mg/l	25	9.920 880	1
14690	O ₂ COD, COD	A	50 to 500 mg/l	25	9.920 934	1
14691	O ₂ COD, COD	A	300 to 3500 mg/l	25	9.920 935	1
14895	O ₂ COD, COD	A	15 to 300 mg/l	25	9.920 936	1
C3/25*	O ₂ COD, COD	A,C	10 to 150 mg/l	25	9.920 956	1
C4/25*	O ₂ COD, COD	A,C	25 to 1500 mg/l	25	9.920 957	1
00607/1	O ₃ , Ozone	B,C	0.010 to 4.0 mg/l	200	9.920 952	1
14833	Pb, Lead	A	0.10 to 5.00 mg/l	25	9.920 872	1
01744	pH	A,B	pH 6.4 to 8.6	280	9.920 945	1
14543	PO ₄ -P, Phosphate	A,C	0.05 to 5.00 mg/l	25	9.920 937	1
14546	PO ₄ -P, Phosphate	A,C	0.5 to 25.0 mg/l	25	9.920 896	1
14729	PO ₄ -P, Phosphate	A,C	0.5 to 25.0 mg/l	25	9.920 938	1
14842	PO ₄ -P, Phosphate	B	0.5 to 30.0 mg/l	400	9.920 939	1
14848	PO ₄ -P, Phosphate	B,C	0.01 to 5.00 mg/l	420	9.920 940	1
00616	PO ₄ -P, Phosphate	A,C	3.0 to 100.0 mg/l	25	9.920 954	1
00798	PO ₄ -P, Phosphate	B,C	1.0 to 100.0 mg/l	100	9.920 955	1
P6/25*	PO ₄ -P, Phosphate	A,C	0.05 to 5.00 mg/l	25	9.920 961	1
P7/25*	PO ₄ -P, Phosphate	A,C	0.5 to 25 mg/l	25	9.920 962	1
14683	RH, Residual hardness	A	0.50 to 5.00 mg/l Ca	25	9.920 941	1
14794	Si, Silicate	B,C	0.05 to 5.00 mg/l	300	9.920 942	1
00857	Si, Silicate	B, C	0.5 to 500.0 mg/l	100	9.920 868	1
14622	Sn, Tin	B	0.10 to 2.50 mg/l	25	9.920 943	1
14394	SO ₃ , Sulfite	B	1.0 to 20.0 mg/l	25	9.920 900	1
01746	SO ₃ , Sulfite	B	1.0 to 60.0 mg/l	150	9.920 948	1
14564	SO ₄ , Sulfate	A	100 to 1000 mg/l	25	9.920 899	1
14791	SO ₄ , Sulfate	B	25 to 300 mg/l	200	9.920 944	1
14548	SO ₄ , Sulfate	A,C	5 to 250 mg/l	25	9.920 898	1
14566	Zn, Zinc	A,C	0.20 to 5.00 mg/l	25	9.920 901	1
14832	Zn, Zinc	B	0.05 to 2.50 mg/l	90	9.920 902	1
00861	Zn, Zinc	B, C	0.025 to 1.000 mg/l	25	9.920 866	1

*replacement for N4, N1, C1, C2, P4, P5
Further tests available, details on request!


1 Thermal COD reactor CR 2200

WTW

- routine unit for waste water analysis
- key digestion programmes are held in memory
- with 12 hole block for 16 mm o.d. reaction tubes
- temperatures: 100°C, 120°C, 148°C and 150°C
- 7 heating programmes: 148°C and 2 hours, 148°C and 20 minutes, 120°C and 30 minutes, 120°C and 60 minutes, 150°C and 120 minutes, 120°C and 120 minutes, 100°C and 60 minutes.
- Automatic switch-off after end of set programme

Type	Cat. No.	PK
CR 2200	9.920 806	1


2 Thermal COD reactor CR 3200

WTW

- Professional unit for waste water analysis
- Temperature resistant housing
- Direct reagent temperature monitoring optional
- With 24 hole block for 16 mm o.d. reaction tubes
- Temperatures can be freely selected between room temperature (25°C) and 170°C
- Key digestion programmes are held in memory
- 7 fixed heating programmes (as CR2200) and 8 freely adjustable programmes (from room temperature (25°C) to 170°C and 0 to 180 minutes)
- Automatic switch-off after end of set programme

Type	Cat. No.	PK
CR 3200	9.920 807	1

1 Thermal COD reactor CR 4200

Generally as CR 3200, but additionally with
 - Simultaneous adjustment of two different temperatures
 - 2 x 12 hole blocks for 16 mm o.d. reaction tubes, which can be operated at different or identical temperatures.

WTW



Type	Cat. No.	PK
CR 4200	9.920 808	1

2 CSB measuring station, CheckitDirect COD Vario

(ISO 15705: 2003-01). This measuring station from Aqualytic® allows the accurate rapid, and economical determination of meaningful waste water COD levels. Easy operation even by unskilled operators. Comprises COD photometer, 25 tube tests covering lower measuring ranges, a reactor block for sample digestion on a tube stand. Twin, long-life LED light sources in the CheckitDirect photometer guarantee stability and the ergonomic keyboard ensures operating safety and ease-of-use.

AQUALYTIC



Specifications:

Measurement cycle: approx. 3 seconds (method dependent)
 Display: LCD readout
 Optics: Temperature compensated LED and photosensor amplifier in protected sample chamber
 Power: 9 V PP3 battery, giving approx. 40 hrs operation
 Overall WxDxH: 190 x 110 x 55 mm

Type	Description	Cat. No.	PK
CSB measuring station, CheckitDirect COD Vario		9.950 530	1
CheckitDirect COD Vario(photometer only)		9.950 531	1
ET 108 CSB reactor	with 8 holes x 16 mm dia.	9.950 532	1
ET 125 CSB reactor	with 25 holes x 16 mm dia.	9.699 234	1
CODvario tube test	0 to 150mg/l O ₂	9.950 533	25
CODvario tube test	0 to 1500mg/l O ₂	9.950 534	25
CODvario tube test	0 to 15000mg/l O ₂	9.950 535	25



1 Photometer-System PCmulti

AQUALYTIC

The PCmulti is a modern, microprocessor-controlled photometer with ergonomically designed keypad and large-format graphic display. It is equipped with a wide range of pre-programmed methods (e.g. ammonia, COD, phosphate) based on the proven range of Aqualytic® tablet reagents, liquid reagents, vial tests and powder reagents. The calibration and software-supported control options mean that the unit is also suitable for use as a testing instrument. The seven standard rechargeable batteries (supplied) ensure easy mobile use.

Advantages

- Wide range of pre-programmed methods
- Large, graphics display
- RS232 interface
- Suitable for use with standard rechargeable batteries
- Updates for new methods and languages via the Internet
- 1000 data set memory
- Custom method recall is also possible

Comprises: Multi direct, ready-to-use incl. 7 x rechargeable batteries and battery charger for 100 - 240 V, 3 each 24 mm and 16 mm cuvettes, 16mm cuvette adapter, 3 x syringes, 1 x 100ml plastic beaker and case with waterproof insert. **Without reagents.**

Technical data:

Optics:	temperature compensating LED, internal reference channel
Measuring time:	approx. 10 seconds
Power supply:	7 NiCd-battery pack (1.5V AA), charged in the unit using external power pack
Dimensions (HxWxD):	70 x 265 x 195 mm
Ambient operating conditions:	up to max 90% humidity (non condensing), approx. 5 to 40°C
Approval:	CE
Wavelength:	430 nm/ 530 nm/ 560 nm/ 580 nm/ 610 nm/ 660 nm

Type	Description	Cat. No.	PK
Photometer Multi Direct		9.699 230	1
Set of 12 round cuvettes with cap	24 mm dia.	9.699 231	1
Set of 10 round cuvettes with cap	16 mm dia.	9.699 240	1
Adapter	for round vials, 16 mm dia.	9.699 264	1
108 COD reactor	with 8 apertures, 16 mm dia.	9.950 532	1
Beaker, plastic	100 ml	9.699 265	1
Stirring rod, plastic	13 cm long	9.699 266	1
Cleaning brush	10 cm long	9.699 267	1
Syringe	plastic, 2 ml	9.699 268	1
Syringe	plastic, 5 ml	9.699 269	1
Syringe	plastic, 10 ml	9.699 270	1
Battery charger	100 - 240 V 50/60 Hz, EU plug	9.699 271	1



2 3 Turbidimeter Turb 430 series

WTW

Mobile turbidimeter for field applications.

- Measuring range: 0 to 1100 NTU/FNU
- Resolution: 0 to 9.99 NTU: 0.01; 10 to 99 NTU: 0.1; 100 to 1100 NTU: 1NTU
- Accuracy: 0.01 NTU or 2% of measured value
- 3 point calibration
- 1000 data sets, RS232 interface
- Standard set with traceable AMCO® Standards (0.02/10/1000 NTU)

Turb 430 IR/SET:

Portable Turbidimeter Turb 430 T (90°) 0 to 1100 NTU/FNU with IR acc. DIN EN 27027 in field case with table insert, calibration kit and accessories.

Turb 430 T/SET:

Portable Turbidimeter Turb 430 T (90°) 0 to 1100 NTU with Tungsten Lamp acc. US EPA 180.1 in field case with platform insert, calibration kit and accessories.

Accessories: empty cuvettes, buffer solutions with pH 4.01 and 7.00, AK Labor 540B PC cable, stand for pH electrode, cleaning tissues, screwdriver for battery replacement.



Type	Cat. No.	PK
Turb 430 IR/SET	9.923 603	1
Turb 430 T/SET	9.923 604	1

Turb 430 IR/T as single device available on request.

1 Accessories for photometer pFotoFlex series and turbidimeters Turb 430 series

LabStation with LSdata software for easy data evaluation.

The Accu-pack is included in the LabStation.

- direct export to MS-Excel
- GLP-conform data transfer
- calibration curve calculation
- adjustment via PC

WTW



Type	Description	Cat. No.	PK
LabStation	for pFotoFlex model, with LSdata, rechargeable battery and charger	9.923 627	1
pFotoFlex Accu	Rechargeable battery and charger for photoFlex and Turb 430 models	9.923 628	1
AK540/B	Interface cable for systems with 6-pin plug on PC via RS 232 incl. 9/25 pin adapter	9.923 629	1
FC pFotoFlex/Turb 430	Field case with table insert and inserts for device, stand and cuvettes	9.923 600	1

Extraction apparatus, glass, with condenser and round-bottom flask

Duran®. Soxhlet-pattern. The siphon is protected by the vapour tube. Compact design: with NS 29/32 flask connections. Please order separately: condenser, extractor top pipe and round-bottom flask.

Lenz

2 Condensers, ground glass joint, Dimroth

for Extractor ml	Condenser NS	Cat. No.	PK
30	29/32	9.043 021	1
100, 150, 200	45/40	9.043 023	1
500	60/46	9.043 026	1

3 Extractor top pipe

for Extractor ml	NS	Cat. No.	PK
30	29/32	9.043 011	1
100	45/40	9.043 013	1
150	45/40	9.043 014	1
200	45/40	9.043 018	1
500	60/46	9.043 016	1

4 Round-bottom flask

for Extractor ml	Capacity ml	NS	Cat. No.	PK
30	100	29/32	9.011 840	1
100, 150, 200	250	29/32	9.011 845	1
500	1000	29/32	9.011 855	1



Further glassware - please see page 431



5 Compact extraction apparatus

Complete, compact extraction systems with base stand, heating mantle, glassware frame, tubing and glassware (reaction flask, extractor and Dimroth condenser).

Behr



Type	Description	Cat. No.	PK
KEX 30	Compact system for 30 ml Soxhlet extraction	9.843 777	1
KEX 100	Compact system for 100 ml Soxhlet extraction	9.843 778	1
KEX 100 F	Compact system for 100 ml fat extraction	9.843 779	1



1 Hotplates behrotest® with metal protective grille

Adjustable hotplates for general laboratory use. A metal grille protects the user against inadvertent contact with the hot surface and also prevents the vessel from falling off the hotplate. Behr

Type	Dia. mm	Heating capacity W	Mains supply V	Cat. No.	PK
KP 1	90	500	230	9.645 100	1
KP 2	145	1100	230	9.645 101	1

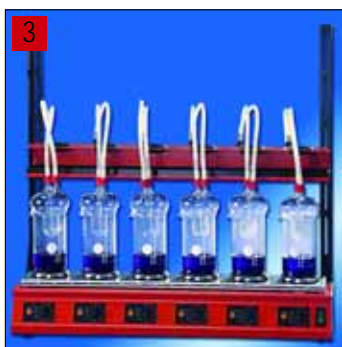


2 Serial Extraction Apparatus behrotest® for Soxhlet-/Fat-Extraction

Excellent value and user friendly apparatus for classical Soxhlet- and Fat- Extraction: Behr

- Each position individually controlled
- Cooling water supply is automatically split for homogeneous cooling at each position
- Practical shelf provided for holding the condensers when not in use
- Holder for safe positioning of the extraction assembly components while the sample tube is used

Type	Type	Capacity ml	Cat. No.	PK
R 106 S	Serial hotplate system, soxhlet, 6-position	100	9.043 028	1
R 104 S	Serial hotplate system, soxhlet, 4-position	100	9.043 029	1
R 306	Serial hotplate system, soxhlet, 6-position	30	9.043 031	1
R 304	Serial hotplate system, soxhlet, 4-position	30	9.043 030	1



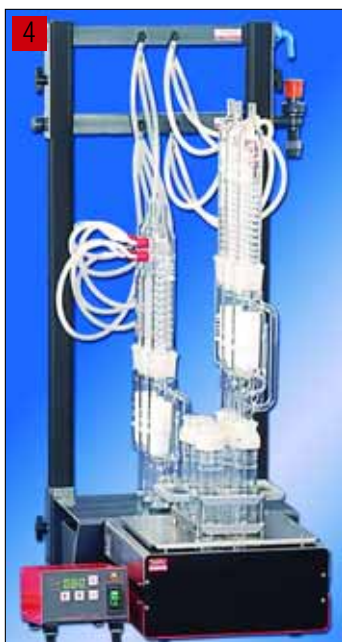
3 Hydrolysis extraction set, behrotest®

Acid digestion extraction (Weibull-Stoldt Method). Behr

The quantitative determination of fat content in foodstuffs is performed through solvent extraction. "Free fat" is determined by direct extraction. "Total fat" content is determined by adding "Free fat" to the "Bound fat" which is released by acid digestion.

- behrotest® Hydrolysis apparatus, complete with:
- Serial heating unit
 - Rack for 4 or 6 funnels
 - 4 or 6 glass funnels, 100 mm
 - PE washbottle, 500 ml
 - 100 folded filters
 - Boiling stones
 - Colling water manifold with condenser rack and connection tubing
 - Beakers (600 ml), cold fingers

Type	Description	Cat. No.	PK
Hydro 1	Hydrolysis apparatus, single sample	9.043 032	1
Hydro 6	Hydrolysis apparatus, 6-sample, complete	9.043 033	1
Hydro 4	Hydrolysis apparatus, 4-sample, complete	9.043 034	1



4 Soxhlet extraction, 30 ml, 6 sample places

Complete unit to undertake Soxhlet extraction, using 6 x 30 ml flasks. Behr

Comprises:

- Temperature and time controller
- Heating block with 6 sample positions
- Condenser frame with coolant water distribution manifold
- Glassware (flasks, extractors, Dimroth condensers)

Type	Cat. No.	PK
SMX 30	9.843 787	1

4 Soxhlet extraction, 100 ml, 6 sample places

Complete unit to undertake Soxhlet extraction, using 6 x 100 ml flasks. Behr

Comprises:

- Temperature and time controller
- Heating block with 6 sample positions
- Condenser frame with coolant water distribution manifold
- Glassware (flasks, extractors, Dimroth condensers)

Type	Cat. No.	PK
SMX 100	9.873 789	1

1 Multiple hotplate systems behrotest®

Multiple hotplate systems with individually adjustable heating controls. A metal grille protects the user against inadvertent contact with the hot surfaces and also prevents the vessel being heated from falling off the hotplates.

Behr



Diameter: 90 mm

Type	Description	Cat. No.	PK
HB 4	4 hotplates with metal protective grilles, 94 mm dia.	9.645 590	1
HB 6	6 hotplates with metal protective grilles, 94 mm dia.	9.645 591	1

2 Serial extraction apparatus, Soxhlet

For 4 or 6 extractions in 250 to 500 ml flasks using the traditional Soxhlet method. The system is based on serial 4 or 6-place heater banks with 85 mm diameter hotplates. Each heater can be individually controlled. Supplied with: Spherical bowl and air bath hotplate fittings, support rods (600 x 12 mm) and power supply cable. The cooling water supply, soxhlet glass components and holders are not supplied (see accessories).

Gerhardt



Type	Zones	Power	Dimensions	Weight	Cat. No.	PK
			(W x D x H)			
			W mm	kg		
EV6 All/14	4	1800	600 x 225 x 650	10.00	9.595 024	1
EV6 All/16	6	2400	900 x 225 x 650	14.00	9.595 026	1

3 Extraction thimbles

Cellulose. Supplied in packs of 25. Dimensions given are nominal internal diameter x external length in mm.

Whatman



Type	Int. dia.	Length	Cat. No.	PK
	mm	mm		
Single	10	50	9.951 335	25
Single	18	55	9.951 336	25
Single	19	90	9.951 337	25
Single	22	80	9.951 338	25
Single	25	80	9.951 339	25
Single	25	100	9.951 340	25
Single *	26	60	9.951 341	25
Single	28	80	9.951 342	25
Single	28	100	9.951 343	25
Single	28	120	9.951 344	25
Single	30	80	9.951 345	25
Single	30	100	9.951 346	25
Single	33	80	9.951 347	25
Single	33	94	9.951 348	25
Single	33	100	9.951 349	25
Single	33	118	9.951 350	25
Single	37	130	9.951 351	25
Single	41	123	9.951 352	25
Single	43	123	9.951 353	25
Single	60	180	9.951 354	25
Double	22	80	9.951 355	25
Double	33	80	9.951 356	25

*Fits Soxtec™ extractor



1 Extraction and filter thimbles Grade 603

Manufactured in pure cellulose according to DIN 12449.

Whatman

Dia.	Length	Standard extractor capacity	For	Cat. No.	PK
mm	mm	ml			
19	90			9.951 337	25
22	80	30	Büchi 1)	9.043 901	25
25	80			9.043 909	25
25	100	70	Büchi 1)	9.043 902	25
26	60			9.043 910	25
33	80		Gerhardt 2) Foss-Tecator 3)	9.043 907	25
33	90			9.043 911	25
33	94	100	Büchi 1)	9.043 903	25
33	100			9.043 916	25
33	118			9.043 904	25
33	130			9.043 917	25
33	205	250		9.043 905	25
35	150			9.043 915	25
40	85			9.043 918	25
43	123		Büchi 1)	9.043 950	25
44	230			9.043 906	25



2 3 Standard Kjeldahl block digestion systems K 8, K 12 and K 20

Block digestion systems for standard Kjeldahl digestion vessels with a volume of 250 ml
High performance heating and fume exhaust by means of a fume manifold.
10 freely configurable programmes for block temperature and digestion time.

Behr

Type	Description	Cat. No.	PK
K 8	with 8 sample positions	9.843 900	1
K 12	with 12 sample positions	9.843 901	1
K 20	with 20 sample positions	9.843 902	1



3 Micro Kjeldahl block digestion systems K 6, K 24 and K 40

Block digestion systems for Micro Kjeldahl digestion vessels with a volume of 100 ml.
High performance heating and fume exhaust by means of a fume manifold.
10 freely configurable programmes for block temperature and digestion time.
Stable and robust construction. Vessel support frame and fume exhaust manifold in acid-resistant stainless steel.

Behr

Type	Description	Cat. No.	PK
K 16	with 16 sample positions	9.843 903	1
K 24	with 24 sample positions	9.843 904	1
K 40	with 40 sample positions	9.843 905	1



4 Macro-Kjeldahl digestion & distillation apparatus

Large combined instrument for 6 digestions and 6 distillations.
With 500 or 750 ml Kjeldahl flasks.

Gerhardt

Made up of one macro-Kjeldahl series distillation apparatus.
The equipment includes a 2 litre exhaust gas washing bottle,
water-jet pump WSP and all connection tubing.

Supply requirements: 2 x 400 V 3-ph.
Nominal consumption: 6960 W
Size (WxDxH): 970 x 470 x 1820 mm
Weight: 75 kg.
Heating places: 6

Type	For flasks ml	Cat. No.	PK
KI 13/16	500	9.843 220	1
KI 13/16	700	9.843 221	1

1 Kjeldahl series distillation apparatus

With dish-shaped tubular heating elements built into stainless steel reflectors. Each place with individual stepless control. Supplied with Kjeldahl flasks, Reitmair splash-heads, condensers, delivery tubes, Erlenmeyer flasks, all rubber seals, stands and mains connection cables.

Gerhardt



Type	Flask	Zones	Heating capacity		Mains supply		Dimensions (W x D x H) mm	Cat. No.	PK
			W	V	W	V			
KI 9/16	50 ml	6	1800	230	650	380	950	9.843 055	1
KI 9/16	100 ml	6	1800	230	650	380	950	9.843 056	1
KI 9/16	250 ml	6	1800	230	650	380	950	9.843 058	1
KI 12/24	500 ml	4	2320	230	650	380	950	9.843 061	1
KI 12/24	750 ml	4	2320	230	650	380	950	9.843 066	1
KI 12/26	500 ml	6	3480	400	650	380	950	9.843 062	1
KI 12/26	750 ml	6	3480	400	650	380	950	9.843 067	1

2 Multi-bank digestion apparatus with Kjeldahl flasks

With dish-shaped tubular heating elements built into stainless steel reflectors. Each position has individual, stepless control. All systems can be supplied with clamp supports for operation in a fume cupboard, or with a glass suction system for use in the laboratory. We recommend fume removal with the Turbosog suction station or with water-jet pump WSP. Supplied with Kjeldahl flasks and mains supply cable. The digestion apparatus is supplied with a glass suction system. It is only available with supports on request.

Gerhardt



Type	Zones	Heating capacity		Mains supply		Dimensions (W x D x H) mm	Cat. No.	PK
		W	V	W	V			
KI 8/16 for 50 ml flasks	6	1800	230	600	250	300	9.843 017	1
KI 8/16 for 100 ml flasks	6	1800	230	600	250	300	9.843 018	1
KI 8/16 for 250 ml flasks	6	1800	230	600	250	300	9.843 019	1
KI 11/24 for 500 ml flasks	4	2320	230	600	250	300	9.843 045	1
KI 11/24 for 750 ml flasks	4	2320	230	600	250	300	9.843 046	1
KI 11/26 for 500 ml flasks	6	3480	400	900	250	300	9.843 048	1
KI 11/26 for 750 ml flasks	6	3480	400	900	250	300	9.843 049	1
Water operated vacuum pump	-	-	-	-	-	-	9.843 351	1
Isoversinic hose tubing, 1.5 m (required for water operated vacuum pump)	-	-	-	-	-	-	9.843 124	1

Kjeldahl weighing boats - please see page 235



3 Raw fibre digestion apparatus RF

Two models, 4-place and 6-place, according to Lepper. Each position has an individual stepless control. With 2-pole mains switch and pilot lamp. Apparatus is ready for use with special stands, glass condenser attachments, ring sets, silicone tubingconnections, beakers (1000 ml) and mains supply cable. Maximum temperature 425°C. Hydrolysis unit. By using filters, funnels, washing bottles, boiling chips and filtering racks the raw fibre digestion apparatus can also be used as anhydrolysis unit.

Gerhardt



Type	Zones	Heating capacity		Dimensions (W x D x H) mm	Weight kg	Cat. No.	PK
		W	V				
RF 16/4	4 x 800 ml	1800	230	600 x 225 x 340	12.00	9.843 460	1
RF 16/6	6 x 800 ml	2700	230	900 x 225 x 340	18.00	9.843 461	1
HY 16/6	6 x 800 ml	2700	230	900 x 225 x 340	19.00	9.843 462	1



1 Infrared rapid sample digester with manual power control

InKjel infrared rapid sample digester with manual power control and direct heating by infra-red source (1500 W).

Behr

Configurations available:

- 6 sample vessels each 250 ml
- 12 sample vessels each 250 ml
- 4 sample vessels each 500 ml
- 4 sample vessels each 750 ml

Using 500 ml or 750 ml sample vessels behrotest® InKjel M also meets the requirements of water and sewage analysis. Base unit Kjel M can incorporate different holders and suction systems. This allows the user to convert the apparatus for use with various vessel sizes by simply exchanging the vessel holder and the suction system.

InKjel 450 M	InKjel 450 M infra-red rapid sample digester for 4 x 500 ml sample vessels
InKjel 475 M	InKjel 475 M infra-red rapid sample digester for 4 x 750 ml sample vessels
InKjel 625 M	InKjel 625 M infra-red rapid sample digester for 6 x 250 ml sample vessels
InKjel 1225 M	InKjel 1225 M infra-red rapid sample digester for 12 x 250 ml sample vessels

Type	Cat. No.	PK
InKjel 450 M	9.843 768	1
InKjel 475 M	9.843 769	1
InKjel 625 M	9.843 770	1
InKjel 1225 M	9.843 771	1



2 Accessories for infrared rapid sample digestors

Behr

Type	Description	Cat. No.	PK
BEHROSOG 3	Circulation cooler for cooling water distribution	9.920 584	1
STI	Manual titration station for nitrogen analysis	9.843 772	1
KT 1	Catalyst tablets (5.0 g K ₂ SO ₄ ; 0.5 g CuSO ₄) pack quantity: 1000	9.843 767	1000
KT 2	Catalyst tablets (5.0 g K ₂ SO ₄ ; 0.15 g CuSO ₄ ; 0.15 g TiO ₂) pack quantity: 1000	9.843 773	1000
SR 3i	Sample vessel, 250 ml, for InKjel	9.843 766	1
KJ 500	Sample vessel, 500 ml, for InKjel	9.843 775	1
KJ 750	Sample vessel, 750 ml, for InKjel	9.843 776	1
EG 6	Vessel holding frame for six 250 ml vessels. Component of InKjel 625 M and P	9.843 788	1
EG 12	Vessel holding frame for twelve 250 ml vessels. Component of InKjel 1225 M and P	9.843 789	1
EG 4/ 500	Vessel holding frame for four 500 ml vessels. Component of InKjel 450 M and P	9.843 790	1
EG 4/ 750	Vessel holding frame for four 750 ml vessels. Component of InKjel 475 M and P	9.843 791	1
AE 4	Fume exhaust manifold for InKjel 450 and 475 (M and P)	9.843 792	1
AE 6	Fume exhaust manifold for InKjel 625 (M and P)	9.843 793	1
AE12	Fume exhaust manifold for InKjel 1225 (M and P)	9.843 794	1



3 Steam distillation unit S1

Simple steam distillation unit for a small number of samples.

Behr

Supply requirements:	230 V 50 Hz a.c.
Power rating:	1700 W
Cooling water consumption:	approx. 5 l/min
Distillation time:	approx. 2 to 3 min per sample
Reagent containers:	Size is optional.
Interface:	RS232
Dimensions (W x H x D):	410 x 675 x 410 mm
Weight:	32 kg

Type	Description	Cat. No.	PK
S 1	Steam distillation unit, manual operation	9.843 814	1

1 Steam distillation unit S 3

Semi-automatic steam distillation unit for a routine number of samples.
Choice of manual or automatic addition of H₂O and NaOH.
Single distillation programme. Variable steam generating capacity (40% to 100%)
Error diagnosis with both visible and audible indication.

Behr

Supply requirements:	230 V 50 Hz a.c.
Power rating:	1700 W
Cooling water consumption:	approx. 5 l/min
Distillation time:	approx. 2 to 3 min per sample
Reagent containers:	size is optional
Interface:	RS232
Display:	LCD
Programme storage:	1
Dimensions (W x H x D):	410 x 675 x 410 mm
Weight:	35 kg



Type	Description	Cat. No.	PK
S 3	Steam distillation unit, partly automated	9.843 815	1
KAS 30	Set of 3 canisters (20 l each) for S 3, incl. float switch	9.843 816	1

2 Steam distillation unit S 4

Complete water still.
Programmed addition of H₂O, NaOH and H₂BO and automatic removal of sample residues by suction.
The steam production can be varied between 40 % and 100 %. Up to 99 programmes can be stored and recalled.

Behr

Supply requirements:	230 V 50 Hz a.c.
Power rating:	1700 W
Cooling water consumption:	approx. 5 l/min
Distillation time:	approx. 2 to 3 min per sample
Reagent containers:	behrotest® containers recommended
Interface:	RS232
Display:	LCD
Programme storage:	99
Dimensions (W x H x D):	410 x 675 x 410 mm
Weight:	35 kg



Type	Description	Cat. No.	PK
S 4	Steam distillation unit, fully automatic	9.843 817	1
KAS 40	Set of 4 x 20 l containers for S 4, incl. float switch	9.843 818	1

3 Micro II centrifuge, dairy testing

For determining fat levels in milk and dairy products.
Microprocessor-controlled with time and temperature preselection.
Heater, brake, locking lid, digital time and temperature display.
With steel housing 430 x 460 x 280 mm.

Gerber

Type	Cat. No.	PK
With rotor for 8 butyrometers	9.112 580	1
With rotor for 12 butyrometers	9.112 579	1





1 Universal centrifuge, dairy testing

Multi-purpose centrifuge for dairy laboratories. With four pre-programmed speeds for: Gerber

- Gerber: 350 xg
- Solubility in milk powder: 164 xg
- Roese-Gottlieb (Mojonnier): 80 xg
- Speed range 200 to 1300 rpm

Microprocessor controller with LED display for speed, run time, temperature and error messages.

With steel housing, locking lid, automatic brake and imbalance detector.

External dimensions (WxDxH) 640 x 450 x 640 mm. For 230 V 50/60 Hz a.c.

Accessory chamber heating available.

Without rotor.

Type	Cat. No.	PK
Universal Gerber Centrifuge w/o rotor, 230 V, 50/60 Hz	9.112 581	1
Heater, 1300 W	9.112 582	1

Rotor for Universal dairy centrifuge

Stainless steel. Gerber

Type	Cat. No.	PK
Rotor with 12 places, for stainless steel inserts as indicated	9.112 584	1
Insert for butyrometer	9.112 585	1
Insert for ADPI solubility tubes	9.112 586	1
Insert for Mojonnier tubes	9.112 587	1
Swing-out rotor with 36 inserts, complete	9.112 583	1



2 Butyrometer water bath

Robust white-coated stainless steel bath to hold 12 butyrometers, adjustable temperature with LED display, with stainless steel heating element. Gerber
For 230 V supplies, 500W.

Type	Cat. No.	PK
Butyrometer water bath	9.112 591	1

Accessories for Butyrometer water bath

Type	Cat. No.	PK
PP stand, for 12 butyrometers	9.112 592	1
Shaking cover for above	9.112 593	1
Cover, stainless steel, 12 openings for Butyrometer on stand 9.112 592	9.112 594	1



3 Butyrometers

Duran glass, to ISO. Gerber

Description	Cat. No.	PK
Milk butyrometer, volumetric method 0 to 6%:0.1	9.112 588	1
Milk/Skimmed milk butyrometer, Kehe, volumetric method 0 - 4%:0.05	9.112 565	1
Skimmed milk butyrometer, Siegfeld, volumetric method 0 - 0.5%:0.02	9.112 566	1
Cream butyrometer, Koehler, volumetric method 5 ml, 0 - 40 %:0.5	9.112 567	1
Cream butyrometer, Koehler, volumetric method 5 ml, 0 - 70 %:0.5	9.112 568	1
Milk powder butyrometer, Teichert, gravimetric method 2.5 g, 0 - 35%:0.5	9.112 569	1
Cream butyrometer, Roeder, gravimetric method 5 g, 0 - 50%:0.5	9.112 570	1
Cream butyrometer, Roeder, gravimetric method 5 g, 0 - 30 - 55%:0.5	9.112 571	1
Cheese butyrometer van Gulik/DIN, gravimetric method 3 g, 0-40%:0.5, with stoppers and beakers	9.112 572	1
Rubber stopper, Gerbal M, for volumetric method butyrometers	9.112 573	1
Key for Gerbal M stopper	9.112 574	1
Rubber stopper 30/17x22 mm, large, single conical with hole for gravimetric method	9.112 575	1
Rubber stopper 15/10x13 mm, small, single conical with hole for gravimetric method	9.112 576	1
Glass beaker for Roeder cream butyrometer	9.112 577	1
Glass beaker for cheese butyrometer	9.112 578	1

1 Accessories for butyrometers

Duran glass, to ISO.

Gerber



Type	Cat. No.	PK
Milk pipettes 11 ml	9.112 589	1
Milk pipettes 10.75 ml	9.112 603	1
Amyl alcohol pipette 1 ml	9.112 604	1
Tilt measure for 1 ml amyl alcohol, with rubber stopper, without bottle	9.112 590	1
Milk syringe, exchangeable barrel, 11 ml	9.112 605	1
Milk syringe, exchangeable barrel, 10.75 ml	9.112 606	1
Sulphuric acid pipette 10 ml	9.112 607	1
Tilt measure for 10 ml sulphuric acid, rubber stopper, without bottle	9.112 608	1
Cream pipette 5 ml	9.112 609	1
Water pipette 5 ml	9.112 610	1
Cream syringe, exchangeable barrel, 5 ml	9.112 611	1

2 Chloride Meter PCLM3

- For industrial applications
- Three measurement ranges
- Large, clear display
- Easily maintained
- Simple to operate
- Fast reliable results

Jenway



The Model PCLM3 will determine concentrations in:

Biological samples such as serum, plasma, urine, sweat and cerebrospinal fluid.
 Industrial samples with low ionic strength, neutral pH and that are free of silver halides, other silver-reactive compounds (other than chloride), semi-solid matter and low levels of dissolved solids.

Methodologies are available for the measurement of chloride in:

Oil based mud, Sodium bicarbonate crystals, Smoked fish, Biological fluids, Butter, Milk, Cement, Cheese, Curry powder & spices, Seasonings

Meter PCLM3(Industrial Version) supplied with mains lead, buffer, gelatin, industrial chloride standard, 3 silver electrodes, 2 silver anodes, electrode polish, glass beaker, stirrers, tweezers and instruction manual.

Specifications:

Range:	10 to 999 mg/l
Sample Volume:	500 µl
Reproducibility:	±3 mg/l
Linearity:	±3 µg/l or 1% (whichever is the greater) in the range of 10 to 999 mg/l
Power:	115/240 V a.c. ±10% 50/60 Hz
Size:	240 x 215 x 160 mm
Weight:	3.1 Kg

Type	Cat. No.	PK
Model PCLM3	9.309 400	1

Accessories for Chloride Meter PCLM3

Jenway

Description	Cat. No.	PK
Glass beaker	9.309 401	1
Acid buffer solution (500 ml)	9.309 402	1
Gelatine (30 ml)	9.309 403	1
Chloride standard (industrial) (180 ml)	9.309 404	1
Electrode polish	9.309 405	1
Stirrer bar	9.309 406	10
Silver electrodes (1 cathode/2 detectors)	9.309 407	1
Silver anodes	9.309 408	3



3 Water still, Muldestor

Maintenance-free operation. With electronic low-water safety device.
 Distillate complies with DAB requirements. Pyrogen, salt and gas free distillate.
 Ready-to-use equipment with silica heater and tubing. CE marked.

Wagner & Munz

Mains supply:	230 V/1.5 kW
Distillate purity:	<0.75 µS
Output:	2 litres/hr.
Operation:	fully automatic

Type	Cat. No.	PK
2-litre wall mounted model	9.910 010	1
2-litre free standing model	9.910 020	1





1 Water stills, single distillation, without reservoir

Bench mounting, single distillation units for 2 and 4 litres/hr. output without reservoirs, 2001/2 and 2001/4. Distillate quality complies with DAB and is micro-organism and pyrogen free, with low dissolved CO₂ levels. Conductivity approx. 2.3 µS/cm at 20°C. With grade 1.4301 stainless steel boiler and condenser with splash trap to avoid raw water carry-over. The boiler is easy to access by lifting off the condenser. Heated by a grade 1.4876 stainless steel, tubular element. Degassing of carbon dioxide is through an outlet in the condenser. Mains switch with indicator lamp located on the front panel. External cabinet made of electrolytically galvanized sheet steel, powder coated in light grey (RAL 9002). Water supply inlet is on right hand side of the cabinet*. An enclosed-scale thermometer indicates the cooling water temperature. The distillate is drawn off at the front from an output tube running from the condenser. Cooling water discharge is on the right hand side of the cabinet* via a constant level device which ensures the boiler is always supplied with water. Distillation using the pre-heated, cooling water from the condenser saves energy. Stillhead and boiler are emptied and cleaned by lifting off the condenser. Thermostatic low-water safety cut-out protects the heating element against boiling dry. Supplied with mains lead and earthed plug for 230 V 50/60 Hz. *Water supply and drainage tubing are not included. GFL

Type	Output	Water consumption	Dimensions (W x D x H)	Power	Weight	Cat. No.	PK
	L / hr.	approx. L / hr.	mm	W	g		
2001/2	2	20	300 x 250 x 510	2000	7500	9.910 600	1
2001/4	4	40	300 x 250 x 510	3000	7500	9.910 601	1



2 Water stills, with reservoir

Bench or wall mounting, single distillation units with reservoir, 2002/2004/2008/2012. Distillate quality in compliance with DAB, micro-organism and pyrogen free, and low-gas. Resistivity approx. 2.3 µS/cm at 20°C. The boiler can be accessed easily by lifting off the condenser. Stainless steel boiler and condenser with splash trap to avoid raw water carry over. The condenser is contained in the distillate reservoir which is also stainless steel. Stainless steel, tubular elements. The reservoir holds twice the hourly output of the still. Raw water is supplied via a solenoid valve with connection for ½" (12.7 mm)*i.d. flexible pressure tubing. The solenoid valve is mounted in the still and switches the raw water supply on when the still commences operation and stops it when the reservoir has been filled, thus preventing unnecessary water consumption. Cooling water discharge is via a ¾" (19mm)*i.d. tubing connection. Withdrawal of the distillate takes place on the front panel at the lower section, the boiler is emptied through the right hand side drain stopcock. Electronic contaminant monitors switch the apparatus off if significant impurities are sensed in the boiler. Degassing of carbon dioxide is through an outlet in the upper section. Distillation using the pre-heated, cooling water from the condenser saves energy. An electronic level switch stops the unit when the reservoir is full and automatically switches it back on again once the distillate has been drawn off. A thermostatic low-water safety device protects the tubular heating element against running dry. Mains switch with indicator lamp located on the front panel. Double-walled external cabinet made of electrolytically galvanized, powder coated sheet steel. Supplied with mains lead (single phase units additionally with impact-resistant plug). *Water supply and drainage tubing are not included. GFL

Type	Output	Water consumption	Dimensions (W x D x H)	Power	Voltage	Weight	Cat. No.	PK
	L / hr.	approx. L / hr.	mm	W	50/60 Hz	kg		
2002	2	30	540 x 290 x 420	1500	230V	15.40	9.910 602	1
2004	4	48	620 x 330 x 460	3000	230V	20.20	9.910 604	1
2008	8	72	780 x 410 x 540	6000	400V**	30.70	9.910 608	1
2012	12	198	780 x 410 x 670	9000	400V**	43.00	9.910 612	1

**400V/3/N/PE (220V/3ph./PE versions are available on request)

1 Water stills, double distillation, without reservoirs, 2102/2104/2108

Bench mounting, double distillation units. Distillate quality in compliance with DAB, micro-organism and pyrogen free, and low-gas. Mono distillate conductivity approx. 2.2 µS/cm at 20°C, bi distillate conductivity approx. 1.6 µS/cm at 20°C. The boiler can be accessed easily by lifting off the condenser. With grade 1.4301 stainless steel boiler and primary condenser with splash trap to avoid raw water carry over. The secondary condenser is made of D 50 Duran glass. Heated by grade 1.4876 stainless steel, tubular elements. Water is supplied centrally via a solenoid valve with connection for ½" (12.7 mm) i.d. flexible pressure tubing*. The solenoid valve switches the raw water supply on when operation commences.

GFL



Distillate withdrawal:

Mono distillate: via stopcock made of D 50 glass with Teflon key.

Bi distillate: Free running output with D 50 glass dust protection bell to cover accessory reservoir inlet. Distillation uses the pre-heated, cooling water from the condensers, saving energy.

Two-point, low-water safety device: 1. float switch, 2. thermostatic overtemperature cut-out.

Electronic contaminant monitor. Degassing of carbon dioxide is through discharge tubes on the condenser.

Two-piece cabinet made of powder coated, electrolytically galvanized, sheet steel.

Upper section can be removed using quick-release clamps. Mains switch with indicator lamp located on the front panel along with indicator lamps for monitoring stages of distillation.

Supplied with mains lead.

*Water supply and drainage tubing are not included.

Type	Output	Water consumption	Dimensions (W x D x H)	Power	Voltage	Weight	Cat. No.	PK
	L / hr.	approx. L / hr.	mm	W	50/60 Hz	kg		
2102	2	72	500 x 260 x 470	3500	230V	18.00	9.910 642	1
2104	4	120	550 x 280 x 570	6500	400V*	23.00	9.910 644	1
2108	8	198	700 x 390 x 700	11500	400V*	39.00	9.910 648	1

* 400V/3/N/PE (220V/3PH/PE versions are available on request)

2 Water stills, glass, 2202 - 2304

Fully automatic. 3 single distillation models for 2, 4 or 8 litres/hr. output.

2 double distillation models for 2 or 4 litres/hr. output.

Suitable for bench or wall mounting.

Minimal level of metal ions in the distillate. Distillate quality in compliance with DAB, micro-organism and pyrogen free, and low-gas. Resistivity for types 2303 and 2304 approx. 1.6 µS/cm at 20°C, for types 2202 to 2208 2.2 µS/cm at 20°C.

All of the components which come in contact with water are made of D 50 Duran glass.

Boiler heating elements are silica-sheathed. The condenser is sterilized by the steam generated.

Raw water is supplied via a solenoid valve with connection for ½" (12.7mm)*i.d. flexible pressure tubing.

The solenoid valve is mounted in the still and switches the raw water supply on when the still commences operation and stops it when the reservoir has been filled, thus preventing unnecessary water consumption. Withdrawal of the distillate takes place on the right hand side of the cabinet via the hose connection*.

Electronic level monitoring occurs throughout the entire distillation process.

The water supply is interrupted in the event of a power failure.

Thermostatic low-water safety device protects the tubular heating element against running dry.

Electronic contaminant monitors automatically trigger flushing and rinsing of the boiler.

Degassing of carbon dioxide is through discharge tubes on the condenser.

Mains switch with indicator lamp located on the front panel. External cabinet made of electrolytically galvanized sheet steel, powder coated. All parts of the still visible through a clear plastic front screen.

Supplied with mains lead (single phase units additionally with earthed plug).

*Water supply and drainage tubing is not included.

GFL



Technical Specification:

Dimensions (WxDxH)

2202/2204: 650 x 200 x 390 mm

2208/2302/2304: 650 x 365 x 390 mm

Type	Output	Water consumption	Power	Voltage	Weight	Cat. No.	PK
	L / hr.	approx. L / hr.	W	50/60 Hz	kg		
2202 (Mono)	2	48	1500	230V	16.00	9.910 672	1
2204 (Mono)	4	96	3000	230V	17.00	9.910 673	1
2208 (Mono)	8	144	6000	400V*	24.00	9.910 674	1
2302 (Bi)	2	96	2900	230V	24.00	9.910 675	1
2304 (Bi)	4	144	5800	400V*	24.00	9.910 676	1

* 400V/3/N/PE (220V/3ph./PE versions are available on request)



1 2 Dechlorification filter 2904

Water stills, 2000 to 2100 series, accessories. GFL
 For all water stills. Removes added chlorine components from tap water.
 Complete with connections for ½" (12.7 mm) i.d. flexible pressure tubing*, including initial resin charge.
 Replacement resin charge 2905 for dechlorification filters.
 Phosphate guard 2906.
 For all water stills. Prevents hardness deposits forming in the condenser coil by phosphatizing the incoming tap water. Complete with connections for ½" (12.7 mm) i.d. flexible pressure tubing*, including initial resin charge.
 Replacement resin charge 2907 for phosphate guard.
 Separate water supplies 2901, (2002-2012), 2902 (for glass distiller) 2903 (2102-2108).
 For supplying the boiler with softened or fully deionised water (pressure > 1 bar) and the condensing coil (pressure > 3 bar) with phosphatized or normal tap water.
 Reduces performance of the still by approx. 10 to 15 %.
 Reservoir level switch 2908 and 2910
 For all-glass water stills with an electrical connection for switching off the power and water when the supply vessel is full (not included).

Type	Cat. No.	PK
2904 dechlorification filter	9.910 664	1
2905 replacement element for dechlorification filter	9.910 665	1
2906 phosphate guard	9.910 666	1
2907 replacement element for phosphate guard	9.910 667	1
2901 separate water supply for 2002 to 2012	9.910 661	1
2902 separate water supply for glass water stills	9.910 662	1
2903 separate water supply for 2102 to 2108	9.910 663	1
2908 level switch for glass water stills	9.910 668	1

Further accessories available on request.



3 Deioniser, behropur®

Heavy-walled, robust and practical mixed bed deioniser in blue polyethylene with free flow output to the reservoir. Also ideal for the post desalination of reverse osmosis systems or for aquariums. Behr

- Can be directly connected to the water supply and is immediately ready for operation.
- Automatic venting as water is supplied from below.
- Minimal risk of contamination due to slotted filter in the raw water inlet.
- Nozzles are durable and easy to clean. Highly resistant to abrasion or shocks.
- Extremely sturdy, heavy-duty nozzle welding by the manufacturer's own welding process.
- Resistivity meter fitted.
- B5 and B10 can also be used as wall mounted devices (wall mounting included).
- Also available with water quality cut-out and solenoid valve which engages if specified limits are exceeded and reservoir level control.
- Resistivity control available directly on the unit or remotely at any location.
- Fitted in-line with reduction adapters for ½" laboratory water fittings and ¾" standard water taps.

Output data:

Model	B5	B10
Cation exchange capacity* at 10°dH:	500 L	1000 L
Flow max. L/hr.:	50	100
Dia. in cm:	16	21
Height in cm:	53	63

Type	Description	Cat. No.	PK
B5	unpressurised, complete with resistivity meter	9.882 114	1
B10	unpressurised, complete with resistivity meter	9.882 115	1
B5Z	dual cartridge for unpressurised	9.882 116	1
B10Z	dual cartridge for unpressurised	9.882 117	1
B5A	unpressurised, resistivity meter with water quality cut-out and solenoid valve	9.882 118	1
B10A	unpressurised, resistivity meter with water quality cut-out and solenoid valve	9.882 119	1

* Limiting value 20 µS

1 Deionisers, pressure-resistant, behropur®

Compact and secure mixed bed deionisers for small to medium-sized volumes of ultra pure water. Ideal for feeding laboratory washing machines, general requirements in the laboratory, low level consumption in industry and for post-treatment desalination of the output from reverse osmosis systems.

Behr

- Optimal utilisation of the deioniser due to totally uniform water distribution in the resin chamber.
- Can be connected directly to the raw water mains without a pressure reducer.
- Back pressure resistant.
- Also available with water quality cut-out and solenoid valve, which engages if specified limits are exceeded, and reservoir level control.
- Resistivity control available directly on the unit or remotely at any location.

Performance data:

Model	B10dN	B22dN	B45dN
Cation exchange capacity at 10°dH:	1200 L	2400 L	5500 L
Flow max. L/hr.:	300	500	800
Dia. in cm:	21	21	26
Height incl. LF in cm:	68	112	125
Height, cartridge only in cm:	55	98	110



Type	Description	Cat. No.	PK
B10dN	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar, with resistivity meter	9.882 120	1
B10dNZ	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar, dual cartridge	9.882 123	1
B10dNA	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar resistivity meter, with water quality cut-out and solenoid	9.882 126	1
B22dN	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar, with resistivity meter	9.882 121	1
B22dNZ	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar, dual cartridge	9.882 124	1
B22dNA	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar resistivity meter, with water quality cut-out and solenoid	9.882 127	1
B45dN	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar, with resistivity meter	9.882 122	1
B45dNZ	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar, dual cartridge	9.882 125	1
B45dNA	Pressure-resistant mixed bed unit made of nylon, for steady loads up to 8 bar resistivity meter, with water quality cut-out and solenoid	9.882 128	1

2 Deionisers, SG stainless steel (V4A)

High quality, (V4A) stainless steel deionisers, pressure-resistant to 10 bar. Excellent build quality ensures long working life, with robust couplings made of cast metal and components in contact with the ion-exchange resin made of stainless steel. Optimised water distribution flow throughout the cartridge. Complete deionisers include P2/30 conductivity meter and tubing set. Larger deionisers are also available on request.

SG Wasseraufbereitung

Type	Output L / hr.	Dia. mm	Height mm	Weight kg	Cat. No.	PK
SG 2000 SK*	450	240	535	18	9.914 440	1
Spare cartridge for SG 2000 SK	450	240	405	16	9.914 442	1
SG 2800 SK*	800	240	695	24	9.914 450	1
Spare cartridge for SG 2800 SK	800	240	570	22	9.914 452	1
SG 4500 SK*	1000	240	925	35	9.914 435	1
Spare cartridge for SG 4500 SK	1000	240	800	33	9.914 437	1
SG 6200 SK*	1000	240	1145	48	9.914 430	1
Spare cartridge for SG 6200 SK	1000	240	1020	46	9.914 432	1
SG 2000**	450	240	485	18	9.914 511	1
Spare cartridge for SG 2000	450	240	405	16	9.914 512	1
SG 2800**	800	240	650	24	9.914 508	1
Spare cartridge for SG 2800	800	240	570	22	9.914 509	1
SG 4500**	1000	240	880	35	9.914 505	1
Spare cartridge for SG 4500	1000	240	800	33	9.914 506	1
SG 6200**	1000	240	1100	48	9.914 586	1
Spare cartridge for SG 6200	1000	240	1120	46	9.914 587	1

* with connector coupling**with 3/4" threaded connectors





1 Conductivity meters

SG Wasseraufbereitung

Model P 2/30 Sk.
With analogue display 0 to 30 µS/cm and connector coupling.
Model P2/30.
With analogue display 0 to 30 µS/cm and threaded connections.
Model LFW 200.
With digital display 0.1 to 199.9 µS/cm. With potential free switching contact, malfunction alarm indicator, connections for solenoid valve, K = 0.2 cell with or without temperature compensation (Pt 500) and reservoir float switch with external indication. Designed for wall mounting.
Dimensions (W x D x H): 200 x 60 x 120 mm.
Model P1/50 WA
With analogue display, measuring range 0 to 50 µS/cm, potential free switching contact (value free selectable), for wall mounting

Type	Cat. No.	PK
P 2/30 Sk	9.914 460	1
P 2/30	9.914 516	1
LFW 200	9.914 517	1
P1/50 WA	9.914 518	1



2 Reverse osmosis systems, euRO basic and euRO basic DI

SG Wasseraufbereitung

These compact, powerful systems can operate directly from potable water supplies and provide outputs up to 150 litres per day. The integral RO pump has a recovery of 50%.

Advantages:

- Raw water preparation for basic analysis, laboratory washing machines, autoclaves, pre-treatment of laboratory ultra-pure water systems
- RO membranes ensure >99% bacteria and particle removal
- Optimized membrane flushing extends membrane life
- Plug and play operation
- Accessory pressure tanks mean that there is no need of a separate pump for output water
- Conductivity meter monitors permeate quality
- RS232 interface included
- euRO basic DI includes a secondary deionization module to produce output water with a conductivity of <0.1µS/cm

Technical Data:

Connections: permeate, concentrate, raw water: R ¾"
Salt selection rate, normal: 95 to 98%
Residual conductivity, euRO basic DI: <0.1µS/cm
Power requirement: 50 W
Input conductivity: <1000 µS/cm
Silt density index SDI: < 3
Dimensions (H x W x D): 520 x 340 x 320
Supply water pressure: 0 to 5 bar

Type	Pure water output at 15°C L / hr.	Weight kg	Cat. No.	PK
euRO basic	7	20	9.914 598	1
euRO basic DI	7	21	9.914 599	1



3 Accessories for euRO basic and euRO basic DI reverse osmosis systems

SG Wasseraufbereitung

Type	Change interval	Cat. No.	PK
Post-treatment desalination VMD (if requested)	every 3 months*	9.914 520	1
Preprocessing module AMB	1-2 x jährlich	9.914 524	1
RO Module	every 2 to 3 years	9.914 519	1

* intervals between exchanges might be shorter, depending on the quality of the raw water and the throughput

1 Reverse osmosis systems, euRO plus series

The well-proven euRO range has been enhanced to peak water quality level in the plus series by adding electronic deionisation cells: accessory deionisers for removing inorganic materials from the output are therefore no longer required.

SG Wasseraufbereitung

- Resistance up to 18.2 megohm (0.055 µS/cm)
- TOC < 3 to 5 ppb at RO cell output (if feed water < 100ppb)
- Micro-organism reduction > 99%
- Typical pure water quality < 0.06 µS

Technical data:

Connections: Permeate, concentrate, raw water: 8/6 mm/R ¾"
 Rating: 200/300 W
 Dimensions (WxDxH): 340 x 420 x 520 mm
 Colloidal index (SDI): < 3
 Supply water pressure: 2 to 6 bar



Type	Pure water output at 15°C L / hr.	Weight kg	Cat. No.	PK
3401	5	39	9.914 619	1
3402	10	40	9.914 620	1
3403	20	41	9.914 621	1
3404	40	45	9.914 622	1
3406	55	46	9.914 623	1
3408	75	47	9.914 624	1

2 Reverse osmosis system, euRO/euRO - DI

Eleven models with outputs from 10 to 350 l/hr that provide pure water supplies from 50 to 7000 litres per day. Trouble-free modular upgrades allow the system to "grow" alongside increasing user requirements.

SG Wasseraufbereitung

- pure water treatment for simple analysis, laboratory rinsing machines, autoclaves, up to ultrapure water systems
- germ/pyrogen retention rate >99%
- modern, maintenance-friendly design
- modular flushing for long service life
- complete, connection-ready system; fittings allow supply tanks to be expanded if required (e.g. euRO supply tanks with 30, 60 and 80 litre capacities)
- conductivity monitor e.g. for downstream ion exchanger possible
- menu-driven controller, RS232 interface
- euRO - DI: includes post-treatment module for residual desalination of permeate



Technical Data:

Connections: permeate, concentrate, raw water: R ¾"
 Salt retention rate, normal: 99 %
 Residual conductivity, euRO - DI: < 0.2 S/cm
 Power requirement: 200 W
 Input conductivity: <1000 µS
 Blocking index SDI: <3
 Dimensions (WxDxH): 340 x 420 x 520 mm (euRO 200/350: H= 1350 mm)
 Supply water pressure: 2 to 6 bar

Type	Pure water output at 15°C L / hr.	Weight kg	Cat. No.	PK
3000	10	22	9.914 653	1
3000-DI	10-DI	23	9.914 654	1
3001	20	30	9.914 610	1
3001-DI	20-DI	26	9.914 656	1
3002	40	35	9.914 611	1
3002-DI	40-DI	28	9.914 658	1
3003	60	40	9.914 612	1
3004	80	45	9.914 613	1
3005	100	33	9.914 661	1
3006	200	83	9.914 662	1
3007	350	88	9.914 663	1



1 Accessories for ultra pure water systems euRO and euRO DI

SG Wasseraufbereitung

Type	For	Change interval	Cat. No.	PK
Pre-treatment module AMB*	all sytems euRO	every 6 months***	9.914 520	1
Post-treatment module VMD	euRO 10 DI euRO 20-40 DI	every 3 months***	9.914 524	1
RO membrane	euRO 10 euRO 10 DI	every 2 to 3 years	9.914 515	1
RO module**	euRO 20-40 DI euRO 20-350	every 2 to 3 years	9.914 519	1

*euRO 200 and 350: 2 pre-treatment module AMB
**number depending on the size of the system
***Interval of exchanges depends on raw water quality and throughput



2 Purest water system, Ultra Clear Basic

SG Wasseraufbereitung

The Ultra Clear Basic combines the highest water quality with a low price and the economical maintenance costs associated with the Ultra Clear series.

The water quality conforms to well-known standards, such as ASTM Type 1, NCCLS Type1 and ISO 3696 Type 1, and exceeds these in some respects. UV lamps and/or ultra-filtration can be ordered as factory options or installed later on.

Typical system applications: AAS, IC, GC, HPLC, cell cultures and microbiology.

- microprocessor control with clear text display, resistance and temperature compensated conductance displays
- conductance control with limit value entries for ultra-pure water
- sterile filter 0.2 µm
- circulation mode with day and night programme to service individual components during night-time periods
- simple module changing with pluggable connector system featuring "Aqua-Stop"
- extremely quiet (less than 40 dba)
- supply requirements 220V 50 Hz, other voltages are available without extra charge

Specifications*

Resistance at 25°C in Megohm:	18.2
Conductance at 25°C in µS/cm:	0.055
Bacteria, KbE/ml:	< 1
Particle count/ml:	< 1
Dimensions WxDxH:	340 x 320 x 535 mm

Type	Ultra-pure water rating	TOC value	Endotoxin content	Cat. No.	PK
	up to min ⁻¹		EU/ml		
Ultra Clear Basic	1.5	<20 ppb	-	9.914 649	1
Ultra Clear Basic UV	1.5	<5 ppb	-	9.914 650	1
Ultra Clear Basic plus	1.2	<20 ppb	<0,002	9.914 651	1
Ultra Clear Basic UV plus	1.2	<5 ppb	<0,002	9.914 652	1

* For drinking water up to 2 bar, conductance < 10 µS/cm, TOC < 50 ppb

1 Ultra pure water systems, Ultra Clear

Four ultra-modern designs, which can be customised to the user's requirements. The units are modular and can be upgraded with UV oxidation or ultra filtration accessories.

SG Wasseraufbereitung



Requirements for AAS, HPLC, IC, ICP, cell cultures and microbiology have not only been fulfilled, but significantly exceeded, depending on the unit.

Output is via a discharge pistol and flexible hose.

- Programmable microprocessor control system with keypad, plain text display, resistance or conductance display with temperature compensation
- Additional pressure reducing valve is not required
- Input and output conductivity levels given, together with entry of limits
- Internal sterile filtration filter 0.1µm, 1000 m², and additional disinfection
- Circulation mode programmable (intermittent/non-stop)
- very quiet (under 40 dB)
- Easy module change by quick-connector coupling system with Aqua Stopp
- Supply requirements: 220V 50 Hz, other voltages are available on request.

Specifications:

Ultra-pure water output up to L/min:	2
Resistance at 25°C Megohm:	18.2
Conductivity at 25°C µS/cm:	0.055
Bacteria KbE/ml:	<1
Particle >0.1µm amount/ml:	<1
Dimensions (WxDxH):	340 x 320 x 535 mm

Type	TOC value	Endotoxin content	Cat. No.	PK
		EU/ml		
Ultra Clear	5 - 10 ppb	-	9.914 497	1
Integra	5 - 10 ppb	-	9.914 472	1
Ultra Clear UV	<1 ppb	-	9.914 496	1
Integra UV	<1 ppb	-	9.914 473	1
Ultra Clear plus	5 - 10 ppb	<0,001	9.914 498	1
Integra plus	5 - 10 ppb	<0,001	9.914 474	1
Ultra Clear UV plus	<1 ppb	<0,001	9.914 495	1
Integra UV plus	<1 ppb	<0,001	9.914 475	1
Ultra Clear UV TM*	<1 ppb	-	9.914 476	1
Integra UV TM*	<1 ppb	-	9.914 477	1
Ultra Clear UV plus TM*	<1 ppb	<0,001	9.914 478	1
Integra UV plus TM*	<1 ppb	<0,001	9.914 479	1

High-purity water systems with TOC monitoring



1 Ultra pure water system, Ultra Clear TWF

SG Wasseraufbereitung

The Ultra Clear Direct is an ultra-pure water system which accommodates almost any option that can be directly connected to the drinking water mains system - with an output of up to 2 l/min. UV oxidation, ultra-filtration and TOC monitoring can be integrated into all UV models. Permeate can be easily tapped directly from the tank for simple flushing purposes and a separate flushing machine can also be operated. Typical system applications: AAS, IC, GC, HPLC, TOC analysis, cell and tissue cultures, DNA sequencing, in-vitro fertilisation, PCR, and much more.

- microprocessor control with clear text display, resistance and conductivity display temperature compensated
- conductivity control with limit value entries for permeate and purest water
- sterile filter 0.1µm
- circulation mode with day and night programme to condition individual components during night-time periods
- simple module changing with pluggable connector system featuring "Aqua-Stop"
- supply requirements 220 V 50 Hz, other voltages available without extra charge

Specifications*

Ultra-pure water rating up to L/min:	2
Resistance at 25°C in Megohm:	18.2
Conductivity at 25°C in µS/cm:	0.055
Bacteria, KbE/ml:	< 1
Particle >0.1/1µm count/ml:	< 1
Permeate rating l/hr:	<10
Input conductivity µS/cm:	<1000
Power requirement W:	50
Silt density index SDI:	<3
Dimensions WxDxH in mm:	560 x 320 x 530

Type	TOC value	Endotoxin content EU/ml	Cat. No.	PK
Ultra Clear TWF	5 - 10 ppb	-	9.914 643	1
Ultra Clear TWF UV	<1 ppb	-	9.914 644	1
Ultra Clear TWF UV + TOC Monitor	<1 ppb	-	9.914 645	1
Ultra Clear TWF plus	5 - 10 ppb	0.001	9.914 646	1
Ultra Clear TWF UV plus	<1 ppb	0.001	9.914 647	1
Ultra Clear TWF UV plus + TOC Monitor	<1 ppb	0.001	9.914 648	1

* For supply water conductivity < 1000 µS/cm
Available with 30l, 60l or 80l tank.

Ultra Clear TWF pure water systems, accessories

SG Wasseraufbereitung

Type	Change interval	Cat. No.	PK
Pre-treatment module AMB	every 6 months	9.914 524	1
Post-treatment module MF III D	1 to 2 x a year	9.914 521	1
Sterile filter 0.1 µm	every 6 months	9.914 522	1
Sterile filter 0.2 µm	every 6 months	9.914 525	1
UV-spare lamp UC (for systems without TM only)	1 to 2 x a year	9.914 523	1
UV-spare lamp UC (for systems with TM only)	1 to 2 x a year	9.114 525	1
RO-Module	every 2 to 3 years	9.914 519	1
CO2 trap CT1 incl. Vent filter (spare cartridge)	1 x a year	9.914 527	1
Vent filter VF1 (spare cartridge)	1 x a year	9.914 528	1
UV-submersion light UV-SL 1	1 x a year	9.914 529	1



2 Ultra Clear water systems, accessories

SG Wasseraufbereitung

Type	Change interval	Cat. No.	PK
Pre-treatment module VMD	1 to 2 x per year	9.914 520	1
Post-treatment module MF III D	1 to 2 x per year	9.914 521	1
Sterile filter 0.1 µm, 1000 cm ²	every 6 months	9.914 522	1
UV-light (for systems with TM)	1 x per year	9.114 525	1
UV-light (for systems without TM)	1 x per year	9.914 523	1

1 Ultra pure water system, arium® 611

arium® 611 Type 1 laboratory water purificationsystems designed to meet the requirements of reagent grade water for critical and routine analysis according to ASTM, NCCLS, ISO and USP specifications.

Sartorius (Biolab)

Applications:

- Buffer and reagent preparation for molecular biology applications
- chromatography applications (GC, HPLC, AA, ICP-MS)
- cell culture applications

Features:

- Four line alphanumeric display with language selection (german, english, france, spain, italian and japanese)
- Displaying water quality in MWxcm or $\mu\text{S}/\text{cm}$
- Flexible Display/Dispenser unit (can be mounted in up to 2 m distance)
- Production capacity up to 2 l/min
- Typical conductivity 0.055 $\mu\text{S}/\text{cm}$ (18.2 MWxcm)
- Typical TOC < 1 ppb (arium 611UV and 611VF)
- Automatic recirculation also in standby (15 min/h) for constant high product water quality
- High Effective, full automatic sanitization procedure in only 1.5 h
- Several visual alarm functions
- Horizontal UV-lamp (arium 611UV and 611VF)
- Ultrafilter in crossflow mode
- TOC monitoring by external equipment (optional accessory)
- Serial interface RS-232
- PLC interface for external communication



Type	Description	TOC value	Cat. No.	PK
arium® 611 DI	Basic system, for all critical laboratory applications	< 4 ppb	9.914 589	1
arium® 611UV	With UV oxidation chamber for all applications which require ultra pure water with an extremely low TOC value, e.g. H	< 1 ppb	9.914 590	1
arium® 611 UF	With ultra filtration module for all applications that require pyrogen free water, e.g. cell culture	< 4 ppb	9.914 591	1
arium® 611 VF	With UV oxidation and UF module for extremely critical ultra pure water applications	< 1 ppb	9.914 592	1