Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81,
Киргизия (996)312-96-26-47
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16,
Россия (495)268-04-70
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Казахстан (772)734-952-31
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

www.lovibond.nt-rt.ru | | dnj@nt-rt.ru

Каталог продукции компании LOVIBOND

Content

new!

Rapid Tests

Comparators

Photometry

Reagents

Vario Reagents

Turbidity

Flocculation

BOD

Temperature Control

Electrochemistry

Microbiology

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Pool Analytics

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Three-Chamber-Tester
Chlorine
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MINIKIT

Analysis	Type	Range	Methods Tablet Count	Speed Test	Yes/No Test
Alkalinity-m	AF 444	20 - 800 mg/L $CaCO_3$ ≅ 0.4 - 16 mmol/L		■	
Alkalinity-m	AF 413	10 - 500 mg/L $CaCO_3$ ≅ 0.2 - 10 mmol/L	■		
Alkalinity-p	AF 414	20 - 500 mg/L $CaCO_3$	■		
Calcium Hardness	AF 446	20- 800 mg/L $CaCO_3$ ≅ 0.4 - 16 mmol/L		■	
Calcium Hardness	AF 416	10- 500 mg/L $CaCO_3$ ≅ 0.1 - 5 mmol/L	■		
Chloride	AF 418	5 - 5000 mg/L Cl	■		
Cyanuric Acid	AF 422	20 - 200 mg/L Cyanuric Acid			
Hardness Total (very low range)	AF 426	1 - 10 mg/L $CaCO_3$ ≅ 0.01 - 0.1 mmol/L	■		
Hardness Total (low range)	AF 425	1 - 50 mg/L $CaCO_3$ ≅ 0.01 - 0.5 mmol/L	■		
Hardness Total (Yes/No)	AF 423	Limit 4 mg/L, 8 mg/L or 20 mg/L $CaCO_3$			■
Hardness Total	AF 445	20 - 800 mg/L $CaCO_3$ ≅ 0.4 - 16 mmol/L		■	
Hardness Total	AF 424	5 - 500 mg/L $CaCO_3$ ≅ 0.05 - 5 mmol/L	■		
Alkalinity Caustic/P	AF 415	20 - 500 mg/L $CaCO_3$	■		
Nitrite	AF 427	70 -1540 mg/L $NaNO_2$			
Organo-Phosphonate	AF 411	1 - 20 mg/L active O-P	Drop count method		
QAC (Quaternary Ammonium Comp.)	AF 417	0 - 500 mg/L active QAC Limit 200 mg/L (Yes/No)	■		■
Säurekonzentration	AF 410	0.75-10% Acid	■		
Sulphate (low range)	AF 432	20 - 200 mg/L Na_2SO_4	■		
Sulphate	AF 431	40 - 200 mg/L SO_4 (40 - 4000 mg/L by dilution)			
Sulphite (low range)	AF 434	2 - 50 mg/L Na_2SO_3	■		
Sulfit (high range)	AF 435	20 - 500 mg/L Na_2SO_3	■		
Tannin Index	AF 436	2 - 20 units	■		

The methods

The MINIKITs are designed for tablet based rapid water testing. Most MINIKITS are based on titrimetric methods.

Tablet count method

In the tablet count method, the liquid titration solution and indicator are replaced by Lovibond® tablet reagents. A specific number of tablets is added to a defined sample volume until a chemically induced colour change takes place. The concentration of the parameter being measured is calculated from the number of tablets required. The measuring range can be expanded by varying the sample volume.

Speed test

The speed test is based on reverse titration. After adding a reagent tablet to a calibrated test tube, the water sample is added slowly until the colour of the solution changes (e.g. from red to blue). The user can then obtain the result from the liquid level.

Yes/No test

A Yes/No test tells the user whether a specific ingredient is present in the water and/or if its concentration is higher or lower than a defined level.

Turbidity method

A two-section calibrated test tube is filled with the water sample and a reagent tablet added. The reagent creates a level of turbidity that is proportional to the concentration of the parameter being measured. The inner tube, which has a black dot on its base, is lowered until the dot is obscured by the turbidity. The result is read off from the water level in the inner tube.

Turbidity	Ordercode	Reagent	Ordercode	Quantity
	414440	Alk-Test	515570BT	100
	414130	Total Alkalinity tablets	515321BT	250
	414140	Alkalinity-p-tablets	515101	250
	414460	Cal-Test	515580BT	100
	414160	Calcium Hardness	515191BT	250
	414180	Chloride	515131	250
■	414220	CyA-Test	511370BT	100
	414260	Hardness VLR	515351BT	250
	414250	Hardness LR (BW)*	515171BT	250
	414230	Hardness Yes / No	515361BT	250
	414450	T Hardness Test	515590BT	100
	414240	Total Hardness	515161BT	250
	414150	Alkalinity-p-tablets Alkalinity-p ($BaCl_2$)-tablets	515101BT 515110BT	250 100
	414270	Nitrite No. 1 Nitrite No. 2	515200BT 515210BT	100 100
	414110	Organo-Phosphonate No. 2 Organo-Phosphonate No. 1	465351 512961BT	100 mL 250
	414170	QAC-Test	515410BT 515411BT	100 250
	414100	Acid Concentration	505420	100
	414320	Sulfate No. 1 Sulfate No. 2	515221 515231	250 250
■	414310	Sulfate	515451BT	250
	414340	Sulfite No. 1	515271BT	250
	414350	Sulfite No. 2 HR Sulfite No. 2 LR (BW*)	515281BT 515331BT	250 250
	414360	Tannin No. 1 Tannin No. 2	503500 503511	100 250

Delivery content

- Kit in a plastic box
- Tablet reagents for an average of 30 tests
- Sample container
- Required accessories
- Instruction manual

also suitable for seawater

Green Chemistry (for detailed information see page 82)

Test Kits

Cooling and Industrial Process Water

Lovibond® test kits are specially developed for testing cooling and industrial process water. They make use of both colorimetric and titrimetric techniques. Each test kit contains all the necessary chemicals and reagents in liquid or powder form to conduct the tests.

The detailed instructions contain a step-by-step explanation of the test procedure. The kits are supplied in a sturdy, compact plastic case. Competitively priced refill reagent packs are available for all Lovibond® test kits.

Analysis	Range mg/L	Method	No. of Tests (approx.)	Order Code
Alkalinity PM-1 (p- + m-value)	1 drop = 1 or 0.5 mmol/l[1)]	titrimetric	75	2418501
Chloride LR CD-1	1 drop = 5 or 2.5 mg/L Cl^-[1)]	titrimetric	100	2418504
Chloride HR CD-2	1 drop = 50 or 25 mg/L Cl^-[1)]	titrimetric	100	2418506
DEHA	0.05 – 1 mg/L DEHA	colorimetric	50	24157580
Iron FE-2	0.1 – 2 mg/L Fe. 0.5 – 8 mg/L Fe	colorimetric	250	2418440
Hardness Carbonate (new version)	1 drop = 1 or 0.5 °dH*[1)]	titrimetric	25	2418413
Hardness Carbonate KH-1	1 drop = 1 or 0.5 °dH*[1)]	titrimetric	50	2418513
Hardness Residual RH-1	1 drop = 0.1 or 0.05 °dH*[1)]	titrimetric	50	2418514
Hardness Total (new version)	1 drop = 1 or 0.5 °dH*[1)]	titrimetric	25	2418411
Hardness Total GH-1	1 drop = 1 or 0.5 °dH*[1)]	titrimetric	50	2418511
Hardness Total (new version) + Carbonate GKH-1	1 drop = 1 or 0.5 °dH*[1)]	titrimetric	25	2418412
Carbonic Acid CO-2	1 drop = 5 or 2.5 mg/L CO_2[1)]	titrimetric	70	2418518
Phosphate (Total) PO-2 (ortho, poly, organic)	2.5 – 25 mg/L PO_4^{3-}	colorimetric	90	2418523
Phosphate (ortho) PO-3	2.5 – 25 mg/L PO_4^{3-}	colorimetric	70	2418544
Sulphite SUL-1	1 drop = 5 or 2.5 mg/L Na_2SO_3[1)]	titrimetric	80	2418532

* 1.0°dH = 0.18 mmol/l ; 5.6° dH = 1 . 0 mmol/l [1)] depending on sample volume

Hardness Test Kits

Water hardness can be problematic in various applications. Be it in the household, coffee or tea preparation or in technical applications.

Lovibond® always offers the right solution for rapid and cost-effective testing of total hardness, residual hardness or carbonate hardness.

Test Kit (Silt Density Index, SDI)

- SDI calculations in just 15 minutes
- Ideally suited for reverse osmosis plants
- Enables calculation of membrane fouling time, backwash frequency and membrane lifespan

The Silt Density Index (SDI) is a measure of the solids or particulate content of water and is of specific importance when commissioning reverse osmosis plant. The SDI of the feedwater is required to calculate membrane fouling time, backwash frequency and, ultimately, membrane lifespan. The Lovibond® test kit gives the RO engineer instant SDI values, increasing the speed and effectiveness of the installation.

The kit utilises a membrane/flow meter system to enable SDI calculations in just 15 minutes. Sufficient membranes included for 100 tests.

Article	Tests/Pack	Code
Silt Density Index (SDI) Test Kit	**-**	**56K001901**
0.45 µm Pore Filter Circles 47 mm diameter	100	56A007690
On/Off Valve	-	56A007201
Pressure Regulator	-	56A007301
Pressure Gauge	-	56A007401
High Pressure Hose 1 m	-	56A007501
Filter Holder 47 mm	-	56A007701

Non-Oxidising Biocide Kits

Article	Range mg/L	Tests (aprox.)	Code
Bronopol-Kit (2-Bromo-2-nitropropan-1,3-diol)	0 - 50 mg/L	50	56K001101
Bronopol-Reagent Pack	-	50	56R001150
DBNPA-Kit (2,2-Dibromo-3-nitrilopropionamid)	5 - 20 mg/L	50	56K001201
DBNPA-Reagent Pack	-	50	56R001250
Isothiazoline-Kit	0 - 7.5 mg/L	50	56K001401
Isothiazoline Reagent Pack	-	50	56R001450

Three-Chamber-Tester Chlorine / pH

If a fast and particularly cost-effective determination of chlorine or pH value is required, consider our three-chamber chlorine / pH tester. It comes with a pictogram-based manual and is supplied with the associated reagent tablets. So even untrained laymen can use immediately.

0.1 -3.0 mg/L Chlorine, pH value 6.8 - 8.2

Three-Chamber-Tester Chlorine/pH **151610**

Green Chemistry

Arsenic Test Kit (5ppb)

The arsenic test is due to its high sensitivity suitable for the determination of arsenic in drinking water.

The advantages at one view

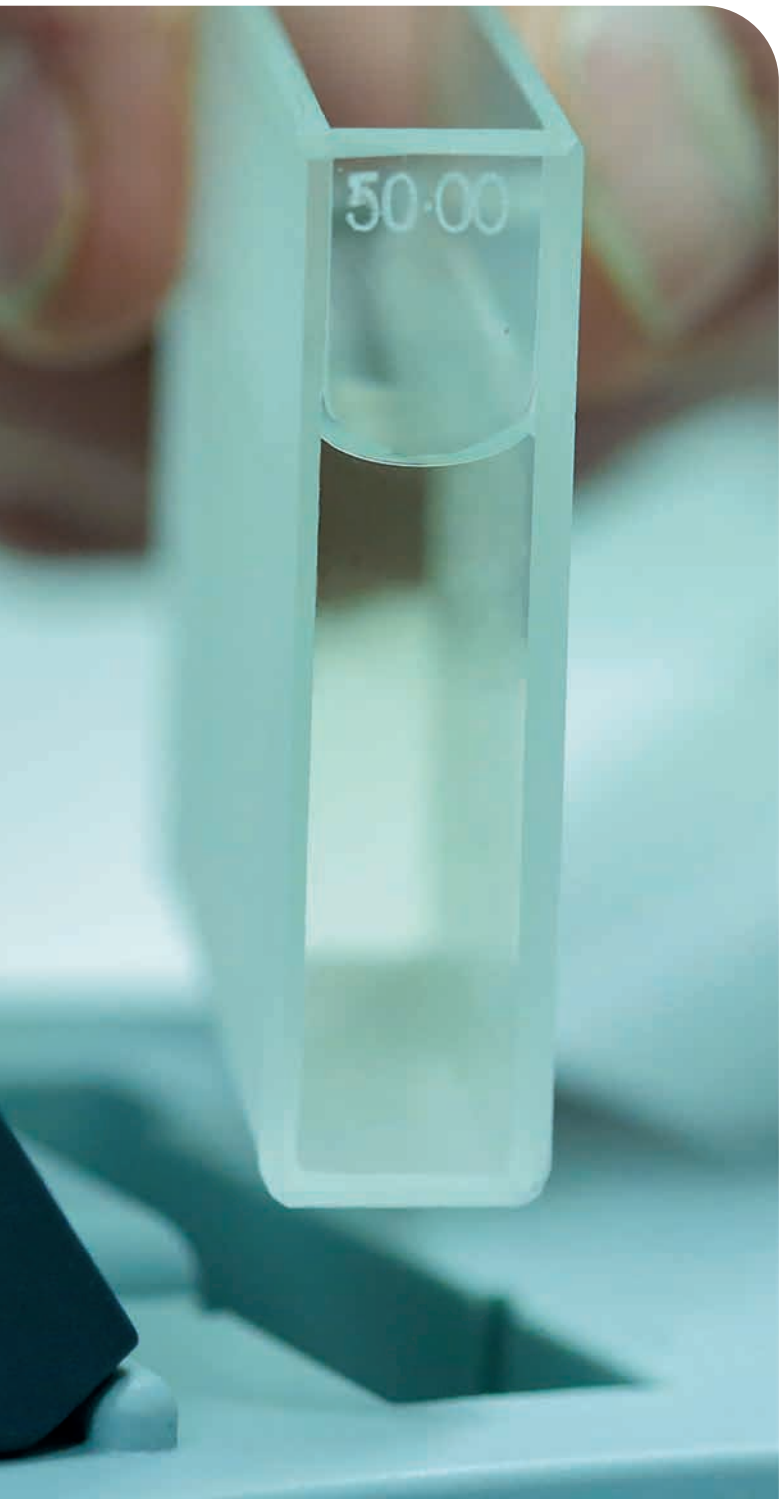
- Sensitivity is according to the requirements of the WHO for drinking water quality. This test detects 0.005 mg/L Arsenic.
- The removal of the interfering sulfide ions is integrated in the test procedure. To minimize the potential danger for the user of the test kit it doesn't use the highly toxic lead acetate for the sulfide removal.
- A solid acid substance is used in order to avoid any irritation by a corrosive acid on the user's hands.
- The unbreakable plastic reaction vessel is more convenient and safe for on-site testing.
- During the test procedure the reaction vessel is tightly closed. The developing arsine gas cannot escape and therefore does not harm the user.
- The test kit contains a water-proof colour chart which also includes the brief instruction for use in pictograms. Even if there is a lack of knowledge in foreign languages everybody can now handle the test kit.

Resolution:
0 - 0,005 - 0,01 - 0,025 - 0,05 - 0,1 - 0,25 - 0,5 mg $As^{3+/5+}$/L

Kit for 100 measurements in case.
Order code: 400700

Arsenic Test Kit, ready to use

Comparators



CHECKIT® Comparator
page 18

Comparator 2000+
page 30

Comparator EC Pt-Co
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CHECKIT® Comparator

CHECKIT® Comparator Test Kits are accurate, easy to use test kits for water analysis.
Simply add the reagent to the sample cell, rotate the disc until the colour matches the prepared water sample and read the concentration value.

CHECKIT® Comparator

The Lovibond® CHECKIT® Comparator is a compact and handy colorimetric unit which is suitable for both mobile and static analysis work. Supplied with a generous number of different colour scales, it provides the basis for a comprehensive, easy-to-use colorimetric analysis system.

CHECKIT® Disc

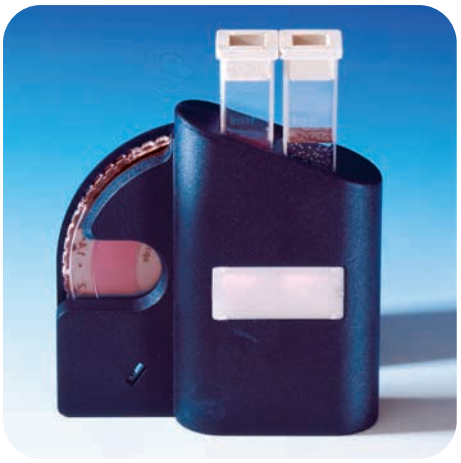
Each CHECKIT® Disc contains a continuous colour scale which makes it possible to achieve an exact colour match between the colour standard and the sample. These CHECKIT® Discs are specially manufactured in selected materials to retain colour stability over a long period and guarantee reliable, reproducible measurement results.

Applications

- Water Treatment (e.g. Drinking Water)
- Pool Water
- Laboratory and Field Testing
- Special Applications

Please see page 22 onwards for tests, ranges and reagents

Front view of the CHECKIT® Comparator with cells



Rear view of the CHECKIT® Comparator with diffuser plate, cells and disc

Complete Test Kit with reagent in carrying case, ready to use

Plastic cells, frosted on two sides, volume 10 ml, path length 13.5 mm, with lids

CHECKIT® Discs with continuous and stable scales

Tablet reagents in blister packaging

Plastic cells in pack, available:

5 cells - 145505
10 cells - 145500
100 cells - 145510

Delivery content

- CHECKIT® Comparator
- CHECKIT® Disc(s)
- Reagents for an average of 30 tests
- Cuvettes
- Accessories
- Instruction manual
- Warranty information
- in portable case

Single Parameter Test Kits

Test	Range* (± 5 % F.S.)	Code
Acid Capacity $K_{S4.3}$	0.5 - 5 mmol/L	147460
Alcalinity-m	20 - 240 mg/L $CaCO_3$	147450
Aluminium	0 - 0.3 mg/L Al	147200
Ammonia	0 - 1 mg/L N	147210
Ammonium, Powder Pack	0 - 0.5 mg/L N	147211
Bromine	0 - 5 mg/L Br	147280
Chlorine (DPD)** free, combined, total	0.02 - 0.3 mg/L Cl_2	147000
Chlorine (DPD) free, combined, total	0 - 1 mg/L Cl_2	147010
Chlorine (DPD) free, combined, total	0 - 2 mg/L Cl_2	147040
Chlorine, free (DPD), Powder Pack	0 - 3.5 mg/L Cl_2	147050
Chlorine, total (DPD), Powder Pack	0 - 3.5 mg/L Cl_2	147051
Chlorine free + total (DPD), Powder Packs	0 - 3.5 mg/L Cl_2	147052
Chlorine (DPD) free, combined, total	0 - 4 mg/L Cl_2	147020
Chlorine KI	10 - 300 mg/L Cl_2 (total)	147030
Chlorine dioxide**	0.01 - 0.2 mg/L ClO_2	147330
Copper, free (Cu^{2+})	0 - 1 mg/L Cu	147230
Copper HR, free + total	0 - 5 mg/L Cu	147430
Copper HR, free, Powder Pack	0 - 5 mg/L Cu	147431
Copper LR**, free + total	0 - 1 mg/L Cu	147440
Copper LR**, free, Powder Pack	0 - 1 mg/L Cu	147441
DEHA	0 - 0.5 mg/L DEHA	147370
Fluoride, only Testpack available	0.2 - 2 mg/L F^-	
Iron HR	0- 10 mg/L Fe	147320
Iron LR	0.05 - 1 mg/L Fe	147220
Iron (TPTZ), Powder Pack	0 - 1.8 mg/L Fe	147470
Manganese LR, only Testpack available	0.1 - 0.7 mg/L Mn	
Manganese VLR**, only Testpack available	0.02 - 0.2 mg/L Mn	
Molybdate LR**	0 - 10 mg/L MoO_4	147291
Molybdate HR	0 - 100 mg/L MoO_4	147290
Molybdate HR	50 - 500 mg/L MoO_4	147295
Nitrate LR, only Testpack available	0 - 1 mg/L NO_3	
Nitrite LR	0 - 0.5 mg/L N	147300
Nitrite, Powder Pack	0 - 0.3 mg/L N	147301
Ozon (DPD), in the presence of chlorine	0 - 1.0 mg/L O_3	147270
Ozon (DPD)	0 - 1.0 mg/L O_3	147275
pH value (Phenol red)	6.5 - 8.4 pH	147100
pH value (Bromocresol purple)	5.2 - 6.8 pH	147110
pH value (Bromocresol purple)	6.0 - 7.6 pH	147120
pH value (Universal)	4 - 10 pH	147130
Phosphate, Powder Pack	0 - 2.5 mg/L PO_4	147480
Phosphate LR	0 - 4 mg/L PO_4	147240
Phosphate HR	0 - 80 mg/L PO_4	147250
Silica LR	0.25 - 4 mg/L SiO_2	147350
Silica HR, Powder Pack	0 - 100 mg/L SiO_2	147351
Silica VLR**	0 - 1 mg/L SiO_2	147360
Sodium hypochlorit	2 - 18 %	147490
Sulfite LR	0.5 - 10 mg/L SO_3	147380
Total Alkalinity	20 - 240 mg/L $CaCO_3$	147450
Zinc LR	0 - 1 mg/L Zn	147340

* Disc readings see following pages
** Only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm)

also suitable for seawater
Green Chemistry
Potassium Iodide reduced

Test Kits 2in1

Test Kit	Code
Chlorine 0 - 1.0 mg/L Cl_2* **pH value** 6.5 - 8.4 pH	147016
Chlorine 0.1 - 2.0 mg/L Cl_2* **pH value** 6.5 - 8.4 pH	147046
Chlorine 0 - 4.0 mg/L Cl_2* **pH value** 6.5 - 8.4 pH	147026
Bromine 0 - 5.0 mg/L Br **pH value** 6.5 - 8.4 pH	147285
Copper 0 - 1.0 mg/L Cu **pH value** 6.5 - 8.4 pH	147235

Test Kit 5in1

Water Balance	Code
Chlorine 0 - 4.0 mg/L Cl_2* **pH value** 6.5 - 8.4 pH **Cyanuric acid** (Turbidity method)** 20 - 200 mg/L Cys **Calcium hardness** (Speed-Test)** 20 - 800 mg/L $CaCO_3$ **Total Alkalinity (m)** (Speed-Test)** 20 - 800 mg/L $CaCO_3$	147028

Disc readings see following pages.
*All test kits for chlorine are for "free, combined and total chlorine".
**Reagents for turbidity method and speed test (Test-Kit 5 in 1) see MINIKIT, page 12.

Testpak

The Testpak concept makes it easy to add new parameters to the CHECKIT® Comparator.

The only requirement is the CHECKIT® Comparator as the basic unit, Code: 145000.

For test paks, see the following pages.

CHECKIT® Comparator

Tests, Test Kits, Testpaks, Discs, Reagents

Test	Range	Readings (Accuracy ± 5 % Full Scale)	Test Kit	Testpak
Acid capacity $K_{S4.3}$	0.5 - 5 mmol/l	0.5 / 1 / 1.5 / 2 / 2.5 / 3 / 3.5 / 4 / 5	147460	147960
Aluminium	0 - 0.3 mg/L Al	0 / 0.01 / 0.02 / 0.03 / 0.04 / 0.05 / 0.06 / 0.07 / 0.08 / 0.09 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3	147200	147700
Ammonia	0 - 1 mg/L N	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0	147210	147710
Ammonia VARIO	0 - 0.5 mg/L N	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5	147211	147711
Bromine	0 - 5 mg/L Br	0 / 0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.2 / 1.4 / 1.6 / 1.8 / 2 / 2.5 / 3 / 3.5 / 4 / 4.5 / 5	147280	147780
Chlorine free, combined**, total	0 - 1 mg/L Cl_2	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.55 / 0.6 / 0.65 / 0.7 / 0.75 / 0.8 / 0.85 / 0.9 / 0.95 / 1.0	147010	147510
Chlorine free, combined**, total	0 - 2 mg/L Cl_2	0.1 / 0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.1 / 1.2 / 1.3 / 1.4 / 1.5 / 1.6 / 1.7 / 1.8 / 1.9 / 2.0	147040	147540
Chlorine free, combined**, total	0 - 4 mg/L Cl_2	0 / 0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.2 / 1.4 / 1.6 / 1.8 / 2.0 /2.2 / 2.4 / 2.6 / 2.8 / 3.0 / 3.5 / 4.0	147020	147520
Chlorine free, combined**, total	0 - 3.5 mg/L Cl_2	0 / 0.2 / 0.4 / 0.6 / 0.8 / 1 / 1.2 / 1.4 / 1.6 / 1.8 / 2 / 2.2 / 2.4 / 2.6 / 2.8 / 3 / 3.2 / 3.4 / 3.5	147052	147550,free 147551,total
Chlorine free, combined**, total **may be calculated by deducting free from = total chlorine	0.02 - 0.3 mg/L Cl_2	0.02 / 0.03 / 0.04 / 0.05 / 0.06 / 0.07 / 0.08 / 0.09 / 0.1 / 0.11 / 0.12 / 0.13 / 0.14 / 0.15 / 0.16 / 0.17 / 0.18 / 0.2 / 0.22 / 0.24 / 0.26 / 0.28 / 0.3 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm) Code: 145010	147000	147500
Chlorine KI total only	10 - 300 mg/L Cl_2	10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100 / 110 / 120 / 130 / 140 / 150 / 160 / 170 / 180 / 190 / 200 / 210 / 220 / 230 / 240 / 250 / 260 / 270 / 280 / 290 / 300	147030	147530
Chlorine bleach lye (see Sodiumhypochlorite)				
Chlorine dioxide	0.01 - 0.2 mg/L ClO_2	0.01 / 0.02 / 0.03 / 0.04 / 0.05 / 0.06 / 0.07 / 0.08 / 0.09 / 0.1 / 0.11 / 0.12 / 0.13 / 0.14 / 0.15 / 0.16 / 0.17 / 0.18 / 0.19 / 0.2 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm) Code: 145010	147330	147830
Copper, free **(Cu^{2+})**	0 - 1 mg/L Cu	0 / 0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0	147230	147730

* Rapid: fast dissolving tablet
\# including stirring rod

Green Chemistry

Disc	Reagent	Reagent form	Code					
146460	Alkacheck	T	100 Pc	**513200BT**	250	**513201BT**		
146200	Aluminium No.1	T	100 Pc	**515460BT**	250	**515461BT**		
	Aluminium No.2	T	100 Pc	**515470BT**	250	**515471BT**		
	Combi pack# Aluminium each No.1 & No.2	T	100 Pc	**517601BT**	250	**517602BT**		
146210	Ammonia No.1		100 Pc	**512580BT**	250	**512581BT**		
	Ammonia No.2		100 Pc	**512590BT**	250	**512591BT**		
	Combi pack# Ammonia each No.1 & No.2		100 Pc	**517611BT**	250	**517612BT**		
146211		**Set**		**535500**				
	VARIO Ammonia Salicylate F10	PP	200 Pc					
	VARIO Ammonia Cyanurate F10	PP	200 Pc					
146280	DPD No.1 Rapid*	T	100 Pc	**511310BT**	250	**511311BT**	500	**511312BT**
146010	DPD No.1 Rapid*	T	100 Pc	**511310BT**	250	**511311BT**	500	**511312BT**
	DPD No.3 Rapid*	T	100 Pc	**511290BT**	250	**511291BT**	500	**511292BT**
	DPD No.4 Rapid*	T	100 Pc	**511570BT**	250	**511571BT**	500	**511572BT**
146040	DPD No.1/3/4 Rapid*	T	s.a.					
146020	DPD No.1/3/4 Rapid*	T	s.a.					
146050	VARIO Chlorine Free DPD F5	T	100 Pc	**530090**				
	VARIO Chlorine Total DPD F5	T	100 Pc	**530080**				
146000	DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**
	DPD No.3	T	100 Pc	**511080BT**	250	**511081BT**	500	**511082BT**
	Combi pack# DPD each No.1 & No.3	T	100 Pc	**517711BT**	250	**517712BT**		
	DPD No.4		100 Pc	**511220BT**	250	**511222BT**	500	**511222BT**
146030	Chlorine HR (KI)	T	100 Pc	**513000BT**	250	**513001BT**		
	Acidifying GP	T	100 Pc	**515480BT**	250	**515481BT**		
	Combi pack# each Chlorine HR (KI) & Acidifying GP	T	100 Pc	**517721BT**	250	**517722BT**		
146330	DPD No. 1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**
	DPD Glycine f)	T	100 Pc	**512170BT**	250	**512171BT**		
	Combi pack# each DPD No.1 & Glycine	T	100 Pc	**517731BT**	250	**517732BT**		
146230	Copper/Zinc LR	T	100 Pc	**512620BT**	250	**512621BT**		

CHECKIT® Discs

Material Safety Data Sheets:

f) additionally required for determination of chlorine dioxide / ozone in the presence of chlorine

Green Chemistry Potassium Iodide reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

CHECKIT® Comparator

Tests, Test Kits, Testpaks, Discs, Reagents

Test	Range	Readings (Accuracy ± 5 % Full Scale)	Test Kit	Testpak
Copper HR free and total	0 - 5 mg/L Cu	0 / 0.5 / 1.0 / 1.5 / 2.0 / 2.5 / 3.0 / 3.5 / 4.0 / 4.5 / 5.0	147430	147930
Copper HR, only free	0 - 5 mg/L Cu	0 / 0.5 / 1 / 1.5 / 2 / 2.5 / 3 / 3.5 / 4 / 5	147431	147931
Copper LR free and total	0 - 1 mg/L Cu	0 / 0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm) Code: 145010	147440	147940
Copper LR, only free	0 - 1 mg/L Cu	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm) Code: 145010	147441	147941
DEHA	0 - 0.5 mg/L DEHA	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5	147370	147870
Fluoride Testpak available only	0.2 - 2 mg/L F	0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.2 / 1.4 / 1.6 / 1.8 / 2.0	-	147890
Iron LR	0 - 1 mg/L Fe	0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.55 / 0.6 / 0.65 / 0.7 / 0.75 / 0.8 / 0.9 / 1.0	147220	147720
Iron HR	1 - 10 mg/L Fe	1 / 1.5 / 2 / 2.5 / 3 / 3.5 / 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 / 7.5 / 8 / 8.5 / 9 / 10	147320	147820
Iron (TPTZ)	0 - 1.8 mg/L Fe	0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1 / 1.1 / 1.2 / 1.3 / 1.4 / 1.5 / 1.6 / 1.7 / 1.8	147470	147970
Manganese LR Testpak available only	0.1 - 0.7 mg/L Mn	0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.55 / 0.6 / 0.65 / 0.7	-	147910
Manganese VLR Testpak available only	0.02 - 0.2 mg/L Mn	0.02 / 0.03 / 0.04 / 0.05 / 0.06 / 0.07 / 0.08 / 0.09 / 0.1 / 0.11 / 0.12 / 0.13 / 0.14 / 0.15 / 0.16 / 0.18 / 0.2 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm) Code: 145010	-	147920

* Rapid: fast dissolving tablet
\# including stirring rod

Green Chemistry

Disc	Reagent	Reagent form		Code				
146430	Copper No.1	T	100 Pc	**513550BT**	250	**513551BT**		
	Copper No.2	T	100 Pc	**513560BT**	250	**513561BT**		
	Combi pack# Copper each No.1 & No.2	T	100 Pc	**517691BT**	250	**517692BT**		
146431	Vario Cu1 F10	PP	100 Pc	**530300**				
146440	Copper No.1	T	100 Pc	**513550BT**	250	**513551BT**		
	Copper No.2	T	100 Pc	**513560BT**	250	**513561BT**		
	Combi pack# Copper each No.1 & No.2	T	100 Pc	**517691BT**	250	**517692BT**		
146441	Vario Cu1 F10	PP	100 Pc	**530300**				
146370	DEHA	T	100 Pc	**513220BT**	250	**513221BT**		
	DEHA-Solution	L	15 mL	**461185**	100	**461181**		
146390	SPADNS-Reagent Solution	L			250	**467481**	500	**467482**
	Pipetting aid		1 Pc	**365055**				
	Pipette 2 mL		1 Pc	**365050**				
146220	Iron LR (Fe^{2+} and Fe^{3+})	T	100 Pc	**515370BT**	250	**515371BT**		
	Iron (II) LR (Fe^{2+})	T	100 Pc	**515420BT**	250	**515421BT**		
146320	Iron HR	T	100 Pc	**515380BT**	250	**515381BT**		
146470	Vario Iron TPTZ F10	PP	100 Pc	**530550**				
146410	VARIO Manganese Reagenz	**Set LR F10**		**535090**				
	VARIO Alkaline-Cyanide Solution	L	60 mL					
	Vario Ascorbic Acid	PP	100 Pc					
	Vario PAN Indikator Solution	L	60 mL					
	Accessories:							
	VARIO Rochelle Salt Solution needed for samples with hardness values above 300 mg/L $CaCO_3$	L	30 mL	**530640**				
146420	VARIO Manganese Reagent	**Set LR F10**		**535090**				
	VARIO Alkaline-Cyanide Solution	L	60 mL					
	Vario Ascorbic Acid	PP	100 Pc					
	Vario PAN Indikator Solution	L	60 mL					
	Accessories:							
	VARIO Rochelle Salt Solution needed for samples with hardness values above 300 mg/L $CaCO_3$	L	30 mL	**530640**				

Test Kit complete in case

Material Safety Data Sheets:

f) additionally required for determination of chlorine dioxide / ozone in the presence of chlorine

Green Chemistry Potassium Iodide reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

CHECKIT® Comparator

Tests, Test Kits, Testpaks, Discs, Reagents

Test	Range	Readings (Accuracy ± 5 % Full Scale)	Test Kit	Testpak
Molybdate	0 - 100 mg/L MoO_4	0 / 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100	147290	147790
Molybdate HR	50 - 500 mg/L MoO_4	50 / 100 / 150 / 200 / 250 / 300 / 500	147295	147795
Molybdate LR	0 - 10 mg/L MoO_4	0 / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm) Code: 145010	147291	147791
Nitrate LR Testpak available only	0 - 1 mg/L N	0 / 0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0	-	147810
Nitrite LR	0 - 0.5 mg/L N	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5	147300	147800
Nitrite VARIO	0 - 0.3 mg/L N	0 / 0.01 / 0.02 / 0.03 / 0.04 / 0.05 / 0.06 / 0.07 / 0.08 / 0.09 / 0.10 0.11 / 0.12 / 0.13 / 0 .14 / 0.15 / 0.16 / 0.17 / 0.18 / 0.19 / 0.20 0.21 / 0.22 / 0.23 / 0.24 / 0.25 / 0.26 / 0.27 / 0.28 / 0.29 / 0.30	147301	147801
Ozone (DPD) in the presence of chlorine	0 - 1.0 mg/L O_3	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.55 / 0.6 / 0.65 / 0.7 / 0.75 / 0.8 / 0.9 / 1.0	147270	147770
Ozone (DPD)	0 - 1.0 mg/L O_3	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.55 / 0.6 / 0.65 / 0.7 / 0.75 / 0.8 / 0.9 / 1.0	147275	147775
pH	5.2 - 6.8 pH	5.2 / 5.3 / 5.4 / 5.5 / 5.6 / 5.7 / 5.8 / 5.9 / 6.0 / 6.1 / 6.2 / 6.3 / 6.4 / 6.5 / 6.6 / 6.7 / 6.8	147110	147610
	6.0 - 7.6 pH	6.0 / 6.1 / 6.2 / 6.3 / 6.4 / 6.5 / 6.6 / 6.7 / 6.8 / 6.9 / 7.0 / 7.1 / 7.2 / 7.3 / 7.4 / 7.5 / 7.6	147120	147620
	6.5 - 8.4 pH	6.5 / 6.6 / 6.7 / 6.8 / 6.9 / 7.0 / 7.1 / 7.2 / 7.3 / 7.4 / 7.5 / 7.6 / 7.7 / 7.8 / 7.9 / 8.0 / 8.1 / 8.2 / 8.3 / 8.4	147100	147600
pH-Universal	4 - 10 pH	4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10	147130	147630
Phosphate LR	0 - 4 mg/L PO_4	0 / 0.25 / 0.5 / 0.75 / 1.0 / 1.25 / 1.5 / 1.75 / 2.0 / 2.25 / 2.5 / 2.75 / 3.0 / 3.25 / 3.5 / 3.75 / 4.0	147240	147740
Phosphate HR	0 - 80 mg/L PO_4	0 / 5 / 10 / 15 / 20 / 25 / 30 / 35 / 40 / 45 / 50 / 55 / 60 / 65 / 70 / 75 / 80	147250	147750

* Rapid: fast dissolving tablet
\# including stirring rod

Green Chemistry

Disc	Reagent	Reagent form	Code					
146290	Molybdate No.1 HR Molybdate No.2 HR Combi pack# Molybdate each No.1 HR & No.2 HR	T T T	100 Pc 100 Pc 100 Pc	**513060BT** **513070BT** **517631BT**	250 250 250	**513061BT** **513071BT** **517632BT**		
146295	Molybdate No.1 HR Molybdate No.2 HR Combi pack# Molybdate each No.1 HR & No.2 HR	T T T	100 Pc 100 Pc 100 Pc	**513060BT** **513070BT** **517631BT**	250 250 250	**513061BT** **513071BT** **517632BT**		
146291	Molybdate No.1 HR Molybdate No.2 HR Combi pack# Molybdate each No.1 HR & No.2 HR	T T T	100 Pc 100 Pc 100 Pc	**513060BT** **513070BT** **517631BT**	250 250 250	**513061BT** **513071BT** **517632BT**		
146310	Nitrite LR Nitrate-Test tablets Nitrate Test powder Nitrate Test tubes	T T P	100 Pc 100 Pc 15 g 1 Pc	**512310BT** **502810** **465230** **366220**	250	**512311BT**		
146300	Nitrite LR	T	100 Pc	**512310BT**	250	**512311BT**		
146301	VARIO Nitri 3 F10	PP	100 Pc	**530980**				
146270	DPD No.4 DPD Glycine f)	T T	100 Pc 100 Pc	**511220BT** **512170BT**	250 250	**511221BT** **512171BT**	500	**511222BT**
146275	DPD No.4	T	100 Pc	**511220BT**	250	**511221BT**	500	**511222BT**
146110	Bromocresol Purple	T	100 Pc	**511730BT**	250	**511731BT** **511641BT**		
146120	Bromothymol Blue	T	100 Pc	**511640BT**	250	**511791BT**		
146100	Phenol Red Rapid*	T	100 Pc	**511790BT**	250		500	**511792BT**
146130	Universal pH	T	100 Pc	**515440BT**	250	**515441BT**		
146240	Phosphate No.1 LR Phosphate No.2 LR Combi pack# Phosphate each No.1 LR & No.2 LR	T T T	100 Pc 100 Pc 100 Pc	**513040BT** **513050BT** **517651BT**				
146250	Phosphate HR	T	100 Pc	**511980BT**				

Plastic cells, volume 10 ml

Material Safety Data Sheets:

f) additionally required for determination of chlorine dioxide / ozone in the presence of chlorine

Green Chemistry Potassium Iodide reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

CHECKIT® Comparator

Tests, Test Kits, Testpaks, Discs, Reagents

Test	Range	Readings (Accuracy ± 5 % Full Scale)	Test Kit	Testpak
Phosphate	0 - 2.5 mg/L PO_4	0 / 0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1 / 1.1 / 1.2 1.3 / 1.4 / 1.5 / 1.6 / 1.7 / 1.8 / 1.9 / 2 / 2.1 / 2.2 / 2.3 / 2.4 / 2.5	147480	147980
Silikat LR	0.25 - 4 mg/L SiO_2	0.25 / 0.5 / 0.75 / 1.0 / 1.25 / 1.5 / 1.75 / 2.0 / 2.5 / 3.0 / 3.5 / 4	147350	147850
Silica HR VARIO	0 - 100 mg/L SiO_2	0 / 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100	147351	147851
Silica VLR	0 - 1 mg/L SiO_2	0 / 0.05 / 0.1 / 0.15 / 0.2 / 0.25 / 0.3 / 0.35 / 0.4 / 0.45 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0 only with CHECKIT® Comparator D55 with mirror optics (path length 55 mm)	147360	147860
Sodiumhypochlorite (Chlorine bleach lye)	2 - 18 %	2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18	147490	147990
Sulfite LR	0.5 - 10 mg/L SO_3^{2-}	0.5 / 1 / 1.5 / 2 / 2.5 / 3 / 3.5 / 4 / 4.5 / 5 / 6 / 7 / 8 / 9 / 10	147380	147880
Total Alkalinity	20 - 240 mg/L $CaCO_3$	20 /30 / 40 / 50 / 60 / 70 / 80 / 90 / 100 / 110 / 120 / 130 140 / 160 / 180 / 200 / 220 / 240	147450	147950
Zinc LR	0 - 1 mg/L Zn	0 / 0.1 / 0.2 / 0.3 / 0.4 / 0.5 / 0.6 / 0.7 / 0.8 / 0.9 / 1.0	147340	147840

* Rapid: fast dissolving tablet
\# including stirring rod

Green Chemistry

Disc	Reagent	Reagent form	Code			
146480	Vario PHOS 3 F10	PP	100 Pc	**531550**		
146350	Silica No.1	T	100 Pc	**513130BT**	250	**513131BT**
	Silica No.2	T	100 Pc	**513140BT**	250	**513141BT**
	Combi pack# Silica	T	100 Pc	**517671BT**	250	**517672BT**
	each No.1 & No.2 Silica PR	T	100 Pc	**513150BT**	250	**513151BT**
146351		**Set**		**535700**		
	Vario Silica HR Molybdate F10	PP	100 Pc			
	Vario Silica HR Acid Rgt F10	PP	100 Pc			
	Vario Silica HR Citric Acid F10	PP	100 Pc			
146360	Silica No.1	T	100 Pc	**513130BT**	250	**513131BT**
	Silica No.2	T	100 Pc	**513140BT**	250	**513141BT**
	Combi pack# Silica	T	100 Pc	**517671BT**	250	**517672BT**
	each No.1 & No.2 Silica PR	T	100 Pc	**513150BT**	250	**513151BT**
146490	Chlorine HR (KI)	T	100 Pc	**513000BT**	250	**513001BT**
	Acidifying GP	T	100 Pc	**515480BT**	250	**515481BT**
	Combi pack# each Chlorine HR (Ki) & Acidifying GP	T	100 Pc	**517721BT**	250	**517722BT**
	Dilution set for sample preparation		1 Pc	**414470**		
146380	Sulfite LR	T	100 Pc	**518020BT**		
146450	Alkacheck	T	100 Pc	**513200BT**	250	**513201BT**
146340	Copper/Zinc LR	T	100 Pc	**512620BT**	250	**512621BT**
	EDTA	T	100 Pc	**512390BT**	250	**512391BT**
	Dechlor	T	100 Pc	**512350BT**		

CHECKIT® Comparator with powder reagent / tablets

Material Safety Data Sheets:
f) additionally required for determination of chlorine dioxide / ozone in the presence of chlorine

Green Chemistry Potassium Iodide reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Comparator 2000+

Compensation for coloured & turbid samples

Integrated prism

High scratch resistant glass standards

Guaranteed stability of the coloured glass standards

Colorimeter for regular testing with colour-stable glass standards

Comparator 2000+

With its accessories, the Lovibond® Comparator system 2000+ is an extremely versatile, modular system for testing water. It is simple to use yet is uncompromising in terms of precision and reproducibility of results. It is compact and portable. The integrated prism brings the glass standards of the test discs and the coloured sample into the same field of view.

Comparator 2000+

Lighting unit TK 102

Test discs

The required accuracy of results is only ensured if stable, fade-free colour standards are used.

Glass colour standards are fade-free, resistant to chemicals and scratchproof. Lovibond® standards are made from coloured glass filters. They comply with international standards, e.g. ISO 7393/2.

Please see the table on page 34 for information on the various test discs or refer to our **disc catalogue Lovibond Comparator 2000+**.

Lighting unit

We recommend the use of the battery-operated Lovibond® lighting unit in variable lighting conditions. This guarantees uniform lighting conditions, and ensures greater test accuracy.

Cells

We manufacture precision plastic and optical glass cells in line with the highest quality standards. The cells ensure high accuracy and reproducibility of results.

Plastic cells

Test disc with colour-stable glass standards

Applications

- Water Treatment (e.g. Drinking Water)
- Pool Water
- Research Centres
- Universities
- Special Applications
- Laboratory and Field Testing

Order codes see page 34

Comparator 2000+ Test Kits

Complete kits for water analysis

Scope of delivery for standard kits

Comparator test kits are supplied as a complete system in a sturdy plastic case. Together with the Comparator 2000+ and test discs, each kit includes all the necessary cells, accessories and Lovibond® tablet reagents (for 100 measurements) to achieve reliable results.

The table to the right shows a selection of the most popular standard test kits. The entire product range can be found in the special catalog for Comparator 2000+.

Customised equipment

In addition to supplying standard test kits, we can construct customised kits to suit individual requirements.

Based on the desired test parameters and measuring ranges we will draw up a detailed offer to suit your application.

Optional accessory

All test kit versions allow integration of the battery-operated portable lighting unit TK 102.

Operating instructions

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

Example of a comparator test kit, together with daylight unit

Type	Designation/Combi	Test	Range	Type C.d.*	Code
AF 270	**Mini Lab Pool Water**	Aluminium Ammonia Chlorine Chloride** Cyanuric Acid (Cys)** Iron Alkalinity-m pH-value Sulphate**	0 - 0.5 mg/L Al 0 - 0.4 mg/L N 0.1 - 1.0 mg/L Cl_2 1.0 - 4.0 mg/L Cl_2 5 - 5000 mg/L Cl^- 0 - 80 mg/L 0.1 - 1.0 mg/L Fe 20 - 800 mg/L $CaCO_3$ 5.2 - 6.8 pH 6.8 - 8.4 pH 40 - 4000 mg/L SO_4	3/127 A 3/112 3/40 A 3/40 S - - 3/116 - 2/1 G 2/1 J -	412700
AF 357	**Drinking Water**	Chloride (salinity)** Chlorine Fluoride Hardness Total** Hazen pH-value	0 - 5000 mg/L Cl^- 0.02 - 0.3 mg/L Cl_2 0.2 - 4 mg/L Cl_2 0 - 1.6 mg/L F^- 0 - 500 mg/L $CaCO_3$ 10 - 90 mg/L Pt 6 - 8.4 pH	- 3/40 C 3/40 B NO 11 - NSH 2/1 J	413570
AF 358	**Sewage and Domestic Effluents**	Ammonia Chlorine Nitrite Permanganate (BOD) pH-value Sulphide	0 - 1 mg/L N 0.1 - 1 mg/L Cl_2 1 - 10 mg/L Cl_2 0.05 - 0.5 mg/L N 0 - 60 mg/L 4 - 8 pH 8 - 9.6 pH 0 - 0.5 mg/L S	3/113 3/40 A 3/40 HN 3/103 3/3 A 2/1 CC 2/1 C 3/128	413580
AF 368	**Mini Lab Heavy Metals** (supplied without reagents)	Chromium Copper Cyanide Nickel Zinc	0.4 - 4 mg/L Cr 0.05 - 1 mg/L Cn 1 - 10 mg/L Cu 1 - 10 mg/L Ni 0 - 2 mg/L Zn	3/59 3/86 3/39 3/36 3/69	413680

Type	Designation/Combi	Test	Range	Type C.d.*	Code
AF 274	**Amine**	Amine	1 - 10 mg/L	3/58	412740
AF 112A	**Chlorine** free, comb. tot.	Chlorine	0.1 - 1 mg/L Cl_2	3/40 A	411120
AF 112B	**Chlorine** free, comb. tot.	Chlorine	0.2 - 4 mg/L Cl_2	3/40 B	411130
AF 112E	**Chlorine** free, comb. tot.	Chlorine	0.02 - 0.3 mg/L Cl_2	3/40 E	411250
AF 112E/F	**Chlorine** free, comb. tot.	Chlorine Chlorine	0.02 - 0.3 mg/L Cl_2 0.2 - 0.8 mg/L Cl_2	3/40 E 3/40 F	411126
AF 112J/J	**Chlorine** free, comb. tot.	Chlorine pH-value	0.1 - 2.0 mg/L Cl_2 6.8 - 8.4 pH	3/40 J 2/1 J	417246
AF 112N/T	**Chlorine** free, comb. tot.	Chlorine Chlorine	0.1 - 1.0 mg/L Cl_2 1.1 - 2.0 mg/L Cl_2	3/40 A 3/40 N	410120
AF 112ED	**Chlorine dioxide**	Chlorine dioxide	0.04 - 0.57 mg/L ClO_2	3/40 CD	410001
AF 112 EF/ED	**Chlorine dioxide**	Chlorine dioxide	0.04 - 0.57 mg/L ClO_2 0.38 - 1.52 mg/L ClO_2	3/40 CD 3/40 FD	410007
AF 116A	**Chlorine, pH**	Chlorine pH-value	0.1 - 1 mg/L Cl_2 6.8 - 8.4 pH	3/40 A 2/1 J	411140
AF 116B	**Chlorine, pH**	Chlorine pH-value	0.2 - 4 mg/L Cl_2 6.8 - 8.4 pH	3/40 B 2/1 J	411160
AF 118S	**Chlorine, pH**	Chlorine) Chlorine pH-value pH-value	0.1 - 1.0 mg/L Cl_2 1.0 - 4.0 mg/L Cl_2 5.2 - 6.8 pH 6.8 - 8.4 pH	3/40 A 3/40 S 2/1 G 2/1 J	411181
AF 139	**Sodium hypochlorite**	Sodium hypochlorite	2 - 18 % NaOCl	3/2 Hypo	411390
AF 129	**Water Balance**	Chlorine pH-value Alkalinity-m** Calcium hardness**	0.2 - 4.0 mg/L 6.8 - 8.4 pH 20 - 500 mg/L $CaCO_3$ 20 - 500 mg/L $CaCO_3$	3/40 B 2/1 J - -	411290

* C.d. Colour disc, disc readings see following pages

** MINIKIT

Green Chemistry

Potassium Iodide reduced

Comparator 2000+ and Accessories

Type	Item	Code
TK 100	Comparator 2000+	142000
TK 102	Portable lighting unit, battery operated	142050
	Daylight Unit for Comparator 2000+, mains operated	171010
AF 631	Water sampler with two 500 mL bottles and one lid	170500
	Measuring beaker, 100 mL	384801
	Vial stand for 10 vials (ø 16 mm) acrylic glass	418957
	Glass stirring rod, 12 cm length	364110
	Plastic stirring rod,13 cm length	364100
	Brush, 11 cm length	380230

Type	Item	Code
Glass Cells		
DB424/S	5 glass cells, 13.5 mm path length 13.5 mm path length, volume 10 mL, with lid, calibrated at 10 mL	354243
W680/40	Glass cell 40 mm path length, calibrated at 20 mL	606890
Plastic Cells		
	5 plastic cells, frosted on two sides,13.5 mm path length, volume 10 mL, with lid	145505
	10 plastic cells, as 145505	145500
	100 plastic cells, as 145505	145510

Glass cell with lid, volume 10 mL, calibrated 2 - 12 mL, path length 13.5 mm, Pack of 5, code: 354243

Nessleriser System and Accessories

Type	Item	Code
2150	Nessleriser 2150 with stand, daylight unit and AF 306/P	172030
2150	Nessleriser 2150 with stand	172150
2150	Nessleriser 2150 upgrade kit	172160
2250	Nessleriser 2250 with stand, daylight unit and DB 420	172040
2250	Nessleriser 2250 with stand	172250
2250	Nessleriser 2250 upgrade kit with Nessler tubes DB 420	172170
	Daylight Unit for Nessleriser, mains operated	171020
	Stand for Nessleriser upgrade kit	172180
AF 306/S	Stand for 12 Nessler tubes	170290
AF 306	Pair Nessler tubes, 113 mm	353060
AF 306/P	Pair Nessler tubes, 113 mm with plungers	353080
	Plunger for Nessler tube AF 306 and AF 306/P	353070
DB 420	Pair Nessler tubes, 250 mm with plungers	354200
	Plunger for Nessler tube DB 420	354229
AF 315	Special Nessler tube (determination of oxygen with disc NOE)	353150

Nessleriser with daylight

Comparator 2000+

Tests, Discs, Reagents, Cells

Test	Disc	Disc Readings	Range	Code Colour disc
Aluminium	3/127 A	0/ 0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.4/ 0.5 mg/L	0 - 0.5 mg/L	230205
Amine	3/58	1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 10 mg/L	1.0 - 10 mg/L	235800
Amine	3/64	0/ 0.25/ 0.5/ 1/ 2 mg/L	0 - 2 mg/L	236400
Ammonia	3/112	0/ 0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.35/ 0.4 mg/L	0 - 0.4 mg/L NH_4	230060
Ammonia	3/113	0/ 0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.8/ 1 mg/L	0 - 1.0 mg/L N	230070
Ammonia	3/125	0/ 1/ 2/ 3/ 4/ 5/ 6/ 8/ 10 mg/L	0 - 10 mg/L N	230180
Ammonia	NAA	1/ 2/ 3/ 4/ 5/ 6/ 8/ 10 µg (50 mL probe)	0.02- 0.2 mg/L NH_3	283110
Ammonia	NAB	10/ 12/ 14/ 16/ 18/ 20/ 22/ 24/ 26 µg (50 mL probe)	0.2- 0.52 mg/L NH_3	283120
Ammonia	NAC	28/ 32/ 36/ 40/ 44/ 48/ 52/ 56/ 60 µg (50 mL probe)	0.56- 1.2 mg/L NH_3	283130
Ammonia	NAD	60/ 65/ 70/ 75/ 80/ 85/ 90/ 95/ 100 µg (50 mL probe)	1.2 - 2 mg/L NH_3	283140
Bromine	3/53A	0.2/ 0.4 / 0.6/ 0.8/ 1/ 1.2/ 1.4/ 1.6/ 2 mg/L	0.2 - 2.0 mg/L	235310
Bromine	3/53B	1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 10 mg/L	1.0 - 10 mg/L	235320
Bromine	3/53C	0.5/ 1/ 1.5/ 2/ 2.5/ 3/ 4/ 5/ 6 mg/L	0.5 - 6 mg/L	235330
Chlorine free, combined, total	3/40E	0.02/ 0.04 / 0.06/ 0.08/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3 mg/L	0.02 - 0.3 mg/L	234060
Chlorine free, combined, total		0.02/ 0.04 / 0.06/ 0.08/ 0.1/ 0.2/ 0.3/ 0.4/ 0.5 mg/L	0.02 - 0.5 mg/L	295920

including stirring rod
Material Safety Data Sheets:

L = Liquid / Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Test disc
with colour stable glass standards

Certification for Comparator 2000+ Discs

To allow users to demonstrate that test equipment has been assessed for conformance with accepted quality standards, Lovibond® colour discs can be certified by the Tintometer® Group to conform to ISO 9001. If requested at the time of order, new discs are issued with a serial number and a certificate of conformance stating that the disc has satisfied the relevant inspection criteria and conforms to the requirements of the appropriate test. Depending on the requirements of the user's quality control system, used discs can be returned at regular intervals to the Tintometer® Group for checking and recertification.

Type of certificate	Code
Certificate for a new test disc	999800
Certificate for a used test disc	999810
Calibration certificate for a new test disc	999820
Calibration certificate for a used test disc	999830

Reagent	Reagent-form	Code						Accessories	Code
Aluminium No.1 Aluminium No.2 Combi pack# Aluminium per No.1 & No.2	T T T	100 Pc 100 Pc 100 Pc	515460BT 515470BT 517601BT	250 250 250	515461BT 515471BT 517602BT			13.5 mm Cell, 10 mL	354243
Amine	T	100 Pc	511010	250	511011			Extraction cell AF260	352600
Details on request								13.5 mm Cell, 10 mL	354243
Ammonia No.1 Ammonia No.2 Combi pack# Ammonia per No.1 & No.2	T T T	100 Pc 100 Pc 100 Pc	512580BT 512590BT 517611BT	250 250 250	512581BT 512591BT 517612BT			40 mm Cell W680/40	606890
Ammonia No.1 Ammonia No.2 Combi pack# Ammonia per No.1 & No.2	T T T	100 Pc 100 Pc 100 Pc	512580BT 512590BT 517611BT	250 250 250	512581BT 512591BT 517612BT			13.5 mm Cell, 10 mL	354243
Ammonia No.1 Ammonia No.2 Combi pack# Ammonia per No.1 & No.2	T T T	100 Pc 100 Pc 100 Pc	512580BT 512590BT 517611BT	250 250 250	512581BT 512591BT 517612BT			2.5 mm Cell W680/25	606780
Nessler Reagent SEIGNETTE Salt solution	L L	30 mL 100 mL	465200 466101	100	465201			Nessler-cells 113 mm Nesselriser 2150	353060 172150
Nessler Reagent SEIGNETTE Salt solution	L L	30 mL 100 mL	465200 466101	100	465201			Nessler-cells 113 mm Nessleriser 2150	353060 172150
Nessler Reagent SEIGNETTE Salt solution	L L	30 mL 100 mL	465200 466101	100	465201			Nessler-cells 113 mm Nessleriser 2150	353060 172150
Nessler Reagent SEIGNETTE Salt solution	L L	30 mL 100 mL	465200 466101	100	465201			Nessler-cells 113 mm Nessleriser 2150	353060 172150
DPD No.1	T	100 Pc	511050BT	250	511051BT	500	511052BT	13.5 mm Cell, 10 mL	354243
DPD No.1	T	100 Pc	511050BT	250	511051BT	500	511052BT	13.5 mm Cell, 10 mL	354243
DPD No.1	T	100 Pc	511050BT	250	511051BT	500	511052BT	13.5 mm Cell, 10 mL	354243
DPD No.3 *Evo* Combi pack# DPD No.1 & DPD No.3 *Evo* DPD No.4 *Evo* DPD No.1 DPD No.2 DPD No.3 DPD No.4 Combi pack# DPD per No.1 & No.3	T T T T T T T T	100 Pc 100 Pc 100 Pc 100 Pc 100 Pc 100 Pc 100 Pc 100 Pc	511420BT 517931BT 511970BT 511050BT 511530BT 511080BT 511220BT 517711BT	250 250 250 250 250 250 250 250	511421BT 517932BT 511971BT 511051BT 511531BT 511081BT 511221BT 517712BT	500 500 500 500 500 500	511422BT 511972BT 511052BT 511532BT 511082BT 511222BT	40 mm Cell W680/40	606890
DPD No.3 / 4 *Evo* Combi pack# DPD No.1 & No.3 *Evo* DPD No.1/2/3/4 Combi pack# DPD per No.1 & No.3	T T T	s.a. s.a. s.a. s.a. s.a.						40 mm Cell W680/40	606890

Green Chemistry

Evo = Potassium-Iodid reduced

Comparator 2000+

Tests, Discs, Reagents, Cells

Test	Disc	Disc Readings	Range	Code Colour disc
Chlorine free, combined, total	3/40F	0.2/ 0.25 / 0.3/ 0.35/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8 mg/L	0.2 - 0.8 mg/L	234070
Chlorine free, combined, total	3/40G	1.5/ 1.8/ 2.0/ 2.3/ 2.5/ 2.7/ 3.0/ 3.2/ 3.5 mg/L	1.5 - 3.5 mg/L	234030
Chlorine free, combined, total	3/40A	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1 mg/L	0.1 - 1.0 mg/L	234010
Chlorine free, combined, total	3/40T	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1 mg/L	0.1 - 1.0 mg/L	234110
Chlorine free, combined, total	3/40N	1.1/ 1.2/ 1.3/ 1.4/ 1.5/ 1.6/ 1.7/ 1.8/ 2 mg/L	1.1 - 2.0 mg/L	233960
Chlorine free, combined, total	3/40J	0.1/ 0.2/ 0.3/ 0.4/ 0.6/ 0.8/ 1/ 1.5/ 2 mg/L	0.1 - 2.0 mg/L	234140
Chlorine free, combined, total	3/40B	0.2/ 0.4/ 0.6/ 1/ 1.5/ 2/ 2.5/ 3/ 4 mg/L	0.2 - 4.0 mg/L	234020
Chlorine free, combined, total	3/40K	0.5/ 1/ 1.5/ 2/ 2.5/ 3/ 4/ 5/ 6 mg/L	0.5 - 6.0 mg/L	233930
Chlorine free, combined, total	3/40S	1/ 1.2/ 1.4/ 1.6/ 1.8/ 2/ 2.5/ 3/ 4 mg/L	1.0 - 4.0 mg/L	234090
Chlorine free, combined, total	3/40P	2/ 2.3/ 2.5/ 2.7/ 3/ 3.2/ 3.6/ 4/ 5 mg/L	2.0 - 5.0 mg/L	233920
Chlorine free, combined, total	3/40HN	2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/ 10 mg/L	2.0 - 10 mg/L	234081
Chlorine free, combined, total	3/40CZ	0.5/ 1/ 1.5/ 2/ 4 mg/L Cl_2 7/ 7.4/ 7.6/ 8 pH	0.5 - 4 mg/L Cl_2 7 - 8 pH	233990
Chlorine free, combined, total	3/2A	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1 mg/L	0.1 - 1.0 mg/L	232010
Chlorine free, combined, total	3/2AB	0.15/ 0.25/ 0.5/ 0.75/ 1/ 1.25/ 1.5/ 1.75/ 2 mg/L	0.15 - 2.0 mg/L	232020
Chlorine free, combined, total	3/2APC	1/ 1.5/ 2/ 2.5/ 3/ 3.5/ 4/ 4.5/ 5 mg/L	1.0 - 5.0 mg/L	232050
Chlorine free, combined, total	NDPB	0.01/ 0.02/ 0.03/ 0.04/ 0.05/ 0.06/ 0.07/ 0.08/ 0.1 mg/L	0.01 - 0.1 mg/L	283450
Chlorine free, combined, total	NDPC	0.02/ 0.04/ 0.06/ 0.08/ 0.1/ 0.12/ 0.14/ 0.16/ 0.2 mg/L	0.02 - 0.2 mg/L	283460
Chlorine free, combined, total	NDP	0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.35/ 0.4/ 0.5 mg/L	0.05 - 0.5 mg/L	283440

including stirring rod
Material Safety Data Sheets:

L = Liquid / Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test


Lighting unit, mains operated

Reagent	Reagent-form	Code						Accessories	Code
DPD No.1 DPD No.2 DPD No.3 DPD No.4	T T T	100 Pc 100 Pc 100 Pc 100 Pc	511050BT 511530BT 511080BT 511220BT	250 250 250 250	511051BT 511531BT 511081BT 511221BT	500 500 500 500	511052BT 511532BT 511082BT 511222BT	40 mm Cell W680/40	606890
DPD No.3 *Evo* DPD No.4 *Evo* DPD No.1/2/3/4	T T T	100 Pc 100 Pc s.a.	511420BT 511970BT	250 250	511421BT 511971BT	500 500	511422BT 511972BT	13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						25 mm Cell W680/25 13,5 mm Cell, 10 mL	606860 354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						25 mm Cell W680/25 13,5 mm Cell, 10 mL	606860 354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	354243
DPD No.3 / 4 *Evo* DPD No.1/2/3/4	T T	s.a. s.a.						5 mm Cell W680/5	606790
DPD No.3 / 4 *Evo* DPD No.1/2/3/4 Phenolred Tablets, see pH Value Determination	T T	s.a. s.a.						13,5 mm Cell, 10 mL 13,5 mm Cell, 10 mL	354243 354243
Reagents at specialized chemistry dealer								13.5 mm Cell, 10 mL	354243
Reagents at specialized chemistry dealer								13.5 mm Cell, 10 mL	354243
Reagents at specialized chemistry dealer								5 mm Cell W680/5	606790
DPD No.1 Nessleriser DPD No.2 Nessleriser DPD No.3 Nessleriser DPD No.4 Nessleriser	T T T T	100 Pc 100 Pc 100 Pc 100 Pc	511230BT 511240 511250BT 511260BT	250 250 250 250	511231BT 511241 511251BT 511261BT			Nessleriser 2150 Nessler-cells 113 mm	172150 353060
DPD No.1/2/3/4 Nessleriser		s.a.							
DPD No.1/2/3/4 Nessleriser		s.a.							

Green Chemistry

Evo = Potassium-Iodid reduced

Comparator 2000+

Tests, Discs, Reagents, Cells

Test	Disc	Disc Readings	Range	Code Colour disc
Chlorine free, combined, total	NDPD	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1 mg/L	0.1 - 1.0 mg/L	283470
Chlorine HR total chlorine only	3/2APH	2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/ 10 mg/L total Cl_2	2 - 10 mg/L	232060
Chlorine HR total chlorine only	3/2ARP	5/ 10/ 15/ 20/ 25/ 30/ 35/ 40/ 50 mg/L total Cl_2	5.0 - 50 mg/L	232070
Chlorine HR total chlorine only	3/2IOD	5/ 10/ 25/ 50/ 75/ 100/ 150/ 200/ 250 mg/L total Cl_2	5.0 - 250 mg/L	232090
Chlorine / pH free, combined, total	3/40CZ	0.5/ 1/ 1.5/ 2/ 4 mg/L Cl_2 7/ 7.4/ 7.6/ 8 pH	0.5 - 4 mg/L Cl_2 7 - 8 pH	233990
Chlorine dioxide	3/40AD	0.19/ 0.38/ 0.57/ 0.76/ 0.95/ 1.14/ 1.33/ 1.52/ 1.9 mg/L	0.19 - 1.9 mg/L	292260
Chlorine dioxide	3/40ED	0.04/ 0.08/ 0.11/ 0.15/ 0.19/ 0.28/ 0.38/ 0.48/ 0.57 mg/L	0.04 - 0.57 mg/L	297970
Chlorine dioxide	3/40FD	0.38/ 0.48/ 0.57/ 0.66/ 0.76/ 0.95/ 1.14/ 1.33/ 1.52 mg/L	0.38 - 1.52 mg/L	298750
Chlorine dioxide	3/157	0.25/ 0.5/ 0.75/ 1/ 1.25/ 1.5/ 2/ 3/ 5 mg/L	0.25 - 5.0 mg/L	230570
Copper	3/106	0/ 0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.8/ 1 mg/L	0 - 1.0 mg/L	230050
Copper	3/110	0/ 0.5/ 1/ 1.5/ 2/ 2.5/ 3/ 3.5/ 4 mg/L	0 - 4.0 mg/L	230040
Chrome	3/59	10/ 20/ 30/ 40/ 50/ 60/ 70/ 80/ 100 µg (25 mL probe)	0.4 - 4 mg/L	235900
DEHA	3/150	8/ 16/ 24/ 32/ 40/ 48/ 56/ 64/ 80 µg/L Disc reading should be multiplied by 2 for true DEHA concentration	16 - 160 µg/l	230460
Fluoride	NOM	0/ 0.2/ 0.4/ 0.6/ 0.8/ 1/ 1.2/ 1.4/ 1.6 mg/L	0 - 1.6 mg/L	283730
Hardness, total	4/38	0/ 5/ 10/ 15/ 20/ 25/ 30/ 40/ 60 mg/L	0 - 60 mg/L $CaCO_3$	231070
Hazen/APHA	4/28	50/ 75/ 100/ 150/ 200/ 250/ 300/ 400/ 500 mg Pt/L	50 - 500 mg/L Pt	242801
Hazen/APHA	NSH	10/ 20/ 30/ 40/ 50/ 60/ 70/ 80/ 90 mg Pt/L	10 - 90 mg/L Pt	284170

including stirring rod
Material Safety Data Sheets:

L = Liquid / Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Nessleriser
with lighting unit

Reagent	Reagent-form	Code						Accessories	Code
DPD No.1/2/3/4 Nessleriser		s.a.							
Chlorine HR (KI) Acidifying GP Combi pack# per Chlorine HR (KI) & Acidifying GP	T T T	100 Pc 100 Pc 100 Pc	**513000BT** **515480BT** **517721BT**	250 250 250	**513001BT** **515481BT** **517722BT**			40 mm Cell W680/40	**606890**
Chlorine HR (KI) Acidifying GP Combi pack# per Chlorine HR (KI) & Acidifying GP	T T T	100 Pc 100 Pc 100 Pc	**513000BT** **515480BT** **517721BT**	250 250 250	**513001BT** **515481BT** **517722BT**			13.5 mm Cell, 10 mL	**354243**
Chlorine HR (KI) Acidifying GP Combi pack# per Chlorine HR (KI) & Acidifying GP	T T T	100 Pc 100 Pc 100 Pc	**513000BT** **515480BT** **517721BT**	250 250 250	**513001BT** **515481BT** **517722BT**			13.5 mm Cell, 10 mL	**354243**
DPD No.1 DPD No.2 DPD No.3 DPD No.4 Phenol red tablets, see pH determination	T T T T	100 Pc 100 Pc 100 Pc 100 Pc	**511050BT** **511530BT** **511080BT** **511220BT**	250 250 250 250	**511051BT** **511531BT** **511081BT** **511221BT**	500 500 500 500	**511052BT** **511532BT** **511082BT** **511222BT**	13.5 mm Cell, 10 mL 13.5 mm Cell, 10 mL	**354243** **354243**
DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**	13.5 mm Cell, 10 mL	**354243**
DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**	40 mm Cell W680/40	**606890**
DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**	40 mm Cell W680/40	**606890**
Chlorine HR (KI) Acidifying GP Combi pack# per Chlorine HR (KI) & Acidifying GP	T T T	100 Pc 100 Pc 100 Pc	**513000BT** **515480BT** **517721BT**	250 250 250	**513001BT** **515481BT** **517722BT**			40 mm Cell W680/40	**606890**
Copper/Zinc R	T	100 Pc	**512620BT**	250	**512621BT**			13.5 mm Cell, 10 mL	**354243**
Copper/Zinc HR	T	100 Pc	**512340BT**	250	**512341BT**			13.5 mm Cell, 10 mL	**354243**
Details on request								13.5 mm Cell, 10 mL	**354243**
DEHA DEHA Solution	T L	100 Pc 100 mL	**513220BT** **461181**	250	**513221BT**			40 mm Cell W680/40	**606890**
Fluoride A-Z Fluoride Excess AL	T T	100 Pc 100 Pc	**511400BT** **511410**	250	**511411**			Nessleriser 2150 Nessler-cells 113 mm	**172150** **353060**
Eriochrome Hardness Powder	P	20 g	**462950**					13.5 mm Cell, 10 mL	**354243**
Straight colour match to sample								40 mm Cell W680/40	**606890**
Straight colour match to sample								Nessleriser 2150 Nessler-cells 113 mm	**172150** **353060**

Green Chemistry

Evo = Potassium-Iodid reduced

Comparator 2000+

Tests, Discs, Reagents, Cells

Test	Disc	Disc Readings	Range	Code Colour disc
Hazen/APHA	NSB	70/ 85/ 100/ 125/ 150/ 175/ 200/ 225/ 250 mg Pt/l	70 - 250 mg/L Pt	284120
Hazen/APHA	CAA	0/ 2.5/ 5/ 7.5/ 10/ 15/ 20/ 25/ 30 mg Pt/L	0 - 30 mg/L Pt	284150
Hazen/APHA	CAB	30/ 35/ 40/ 45/ 50/ 55/ 60/ 65/ 70 mg Pt/L	30 - 70 mg/L Pt	284160
Hydrazine	3/126	0/ 0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.4/ 0.5 mg/L	0 - 0.5 mg/L	230190
Hydrazine	3/135	0.02/ 0.04/ 0.06/ 0.08/ 0.1/ 0.12/ 0.14/ 0.16/ 0.2 mg/L	0.02 - 0.2 mg/L	230290
Hydrazine	3/85	0/ 0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.8/ 1 mg/L	0 - 1.0 mg/L	238500
Hydrazine	NOH	0/ 0.5/ 1/ 2/ 3/ 4/ 6/ 8/ 10 µg (25 mL probe)	0 - 0.4 mg/L	283700
Hydrogen peroxide	3/50 A	0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.35/ 0.4/ 0.5 mg/L	0.05 - 0.5 mg/L	235000
Hydrogen peroxide	3/50 B	0.1/ 0.2/ 0.3/ 0.4/ 0.6/ 1/ 1.5/ 2/ 3 mg/L	0.1 - 3 mg/L	235010
Hydrogen peroxide	3/50 E	0.01/ 0.02/ 0.03/ 0.04/ 0.05/ 0.07/ 0.09/ 0.12/ 0.15 mg/L	0.01 - 0.15 mg/L	235020
Iodine	3/77A	0.4/ 0.7/ 1.1/ 1.4/ 1.8/ 2.2/ 2.5/ 2.9/ 3.6 mg/L	0.4 - 3.6 mg/L	237710
Iodine	3/77B	0.7/ 1.4/ 2.2/ 3.6/ 5.4/ 7.2/ 9.0/ 11/ 14 mg/L	0.7 - 14 mg/L	237720
Iron, total	3/144	0.02/ 0.04/ 0.06/ 0.08/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3 mg/L	0.02 - 0.3 mg/L	230380
Iron, total	3/116	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1 mg/L	0.1 - 1.0 mg/L	230100
Iron, total	3/117	1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 10 mg/L	1.0 - 10 mg/L	230110
Iron, total	NOL	0.01/ 0.02/ 0.03/ 0.04/ 0.05/ 0.06/ 0.07/ 0.08/ 0.10 mg/L	0.01 - 0.1 mg/L	283720
Manganese	3/169	0/ 0.5/ 1/ 1.5/ 2/ 2.5/ 3/ 3.5/ 4 mg/L	0 - 4.0 mg/L	230690
Molybdate	3/162	0/ 1/ 2/ 3/ 4/ 5/ 6/ 8/ 10 mg/L	0 -10 mg/L MoO_4	230620
Molybdate	3/137	5/ 10/ 15/ 20/ 25/ 30/ 35/ 40/ 50 mg/L	5.0 -50 mg/L MoO_4	230320
Molybdate	3/138	10/ 20/ 30/ 40/ 60/ 80/ 100/ 120/ 150 mg/L	10 -150 mg/L MoO_4	230330
Nitrate	3/124	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1 mg/L	0.1 -1.0 mg/L N	230170

including stirring rod
Material Safety Data Sheets:

L = Liquid / Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Lighting unit with comparator and discs, mains operated

Reagent	Reagent-form	Code						Accessories	Code
Straight colour match to sample								Nessleriser 2150 Nessler-cells 113 mm	**172150** **353060** without lid **353080** with lid
Straight colour match to sample								Nessleriser 2250 Nessler-cells 250 mm	**172250** **354200**
Straight colour match to sample								Nessleriser 2250 Nessler-cells 250 mm	**172250** **354200**
Hydrazine Test Powder	P	30 g	**462910**					13.5 mm Cell, 10 mL	**354243**
Hydrazine Test Powder	P	30 g	**462910**					40 mm Cell W680/40	**606890**
p-DMAB Reagent	L	100 mL	**461261**					13.5 mm Cell, 10 mL	**354243**
p-DMAB Reagent	L	100 mL	**461261**					Nessler-cells 113 mm	**353060** without lid **353080** with lid
Hydrogen Peroxide LR	T	100 Pc	**512380BT**	250	**512381BT**			13.5 mm Cell, 10 mL	**354243**
Hydrogen Peroxide LR	T	100 Pc	**512380BT**	250	**512381BT**			13.5 mm Cell, 10 mL	**354243**
Hydrogen Peroxide LR	T	100 Pc	**512380BT**	250	**512381BT**			40 mm Cell W680/40	**606890**
DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**	13.5 mm Cell, 10 mL	**354243**
DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**	13.5 mm Cell, 10 mL	**354243**
Iron LR (Fe^{2+} and Fe^{3+})	T	100 Pc	**515370BT**	250	**515371BT**			40 mm Cell W680/40	**606890**
Iron LR (Fe^{2+} and Fe^{3+}) Iron (II) LR (Fe^{2+})	T T	100 Pc 100 Pc	**515370BT** **515420BT**	250 250	**515371BT** **515421BT**			13.5 mm Cell, 10 mL	**354243**
Iron HR		100 Pc	**515380BT**	250	**515381BT**			13.5 mm Cell, 10 mL	**354243**
Iron LR + Iron (II) LR		100 Pc	**515370BT**	250	**515371BT**			Nessleriser 2150 Nessler-cells 113 mm	**172150** **353060**
Manganese LR 1 Manganese LR 2 Combi pack# Manganese LR per LR 1 & LR 2	T T T	100 Pc 100 Pc 100 Pc	**516080BT** **516090BT** **517621BT**	250 250 250	**516081BT** **516091BT** **517622BT**			13.5 mm Cell, 10 mL	**354243**
Details on request								40 mm Cell W680/40	**606890**
Molybdate No.1 HR Molybdate No.2 HR Combi pack# Molybdate per No.1 HR & No.2 HR	T T T	100 Pc 100 Pc 100 Pc	**513060BT** **513070BT** **517631BT**	250 250 250	**513061BT** **513071BT** **517632BT**			40 mm Cell W680/40	**606890**
Molybdate No.1 HR Molybdate No.2 HR Combi pack# Molybdate per No.1 HR & No.2 HR	T T T	100 Pc 100 Pc 100 Pc	**513060BT** **513070BT** **517631BT**	250 250 250	**513061BT** **513071BT** **517632BT**			13.5 mm Cell, 10 mL	**354243**
Nitrate Test Nitrate Test Nitrite LR	T P T	100 Pc 15 g 100 Pc	**502810** **465230** **512310BT**	 250	 **512311BT**			13.5 mm Cell, 10 mL Nitrate-Test-cells	**354243** **366220**

Green Chemistry

Evo = Potassium-Iodid reduced

Comparator 2000+

Tests, Discs, Reagents, Cells

Test	Disc	Disc Readings	Range	Code Colour disc
Nitrate	3/142	10/ 20/ 30/ 40/ 50/ 60/ 70/ 80/ 100 mg/L	10 -100 mg/L NO_3	230360
Nitrite	3/103	0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.35/ 0.4/ 0.5 mg/L	0.05 - 0.5 mg/L N	230030
Nitrite	NJP	0.002/ 0.004/ 0.006/ 0.01/ 0.015/ 0.02/ 0.03/ 0.04/ 0.05 mg/L	0.002 - 0.05 mg/L N	283960
Nitrite	NJ	0.05/ 0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.8/ 1 µg/L (50 mL Probe)	0.001 - 0.02 mg/L N	283580
Ozone	3/67	0,1/ 0,2/ 0,3/ 0,4/ 0,5/ 0,6/ 0,7/ 0,8/ 1 mg/L	0,1 - 1,0 mg/L	236700
Ozone	3/67A	0,01/ 0,02/ 0,03/ 0,04/ 0,05/ 0,06/ 0,07/ 0,08/ 0,1 mg/L	0,01 - 0,1 mg/L	236710
Ozone	3/67S	0,05/ 0,1/ 0,15/ 0,2/ 0,25/ 0,3/ 0,35/ 0,4/ 0,45 mg/L	0,05 - 0,45 mg/L	236770
Ozone	3/148	0/ 0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.4/ 0.5 mg/L	0 - 0.5 mg/L	230440
Oxygen	3/165	2/ 3/ 4/ 5/ 6/ 7/ 8/ 10/ 12 mg/L	2,0 - 12 mg/L	230650
pH	2/1A	1.2/ 1.4/ 1.6/ 1.8/ 2.0/ 2.2/ 2.4/ 2.6/ 2.8	1.2 - 2.8 pH	221010
pH	2/1B	2.8/ 3/ 3.2/ 3.4/ 3.6/ 3.8/ 4/ 4.2/ 4.4	2.8 - 4.4 pH	221030
pH	2/1C	3.6/ 3.8/ 4/ 4.2/ 4.4/ 4.6/ 4.8/ 5/ 5.2	3.6 - 5.2 pH	221050
pH	2/1E	4.4/ 4.6/ 4.8/ 5/ 5.2/ 5.4/ 5.6/ 5.8/ 6	4.4 - 6.0 pH	221080
pH	2/1G	5.2/ 5.4/ 5.6/ 5.8/ 6/ 6.2/ 6.4/ 6.6/ 6.8	5.2 - 6.8 pH	221100
pH	2/1H	6/ 6.2/ 6.4/ 6.6/ 6.8/ 7/ 7.2/ 7.4/ 7.6	6.0 - 7.6 pH	221110
pH	2/1J	6.8/ 7/ 7.2/ 7.4/ 7.6/ 7.8/ 8/ 8.2/ 8.4	6.8 - 8.4 pH	221130
pH	2/1K	7.2/ 7.4/ 7.6/ 7.8/ 8/ 8.2/ 8.4/ 8.6/ 8.8	7.2 - 8.8 pH	221140
pH	2/1L	8/ 8.2/ 8.4/ 8.6/ 8.8/ 9/ 9.2/ 9.4/ 9.6	8.0 - 9.6 pH	221190
pH	2/1P	4/ 5/ 6/ 7/ 8/ 9/ 9.4/ 10/ 11	4.0 - 11 pH	221220
pH	2/1W	1.0/ 1.2/ 1.4/ 1.6/ 1.8/ 2.0/ 2.2/ 2.4/ 2.6	1.0 - 2.6 pH	221250
pH	2/1Z	7.6/ 7.8/ 8/ 8.2/ 8.4/ 8.6/ 8.8/ 9.0/ 9.2	7.6 - 9.2 pH	221270

including stirring rod
Material Safety Data Sheets:

L = Liquid / Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Lighting unit TK 102

Reagent	Reagent-form	Code						Accessories	Code
Nitrate No.1 Nitrate No. 2	T T	100 Pc 100 Pc	**513110** **513120**					13.5 mm Cell, 10 mL	**354243**
Nitrite LR	T	100 Pc	**512310BT**	250	**512311BT**			13.5 mm Cell, 10 mL	**354243**
Nitrite LR Nitrite Acidifying	T T	100 Pc	**512310BT**	250 250	**512311BT** **502371**			Nessler-cells 113 mm	**353060**
Details on request								Nessler-cells 113 mm	**353060**
DPD No.4 *Evo* DPD No.4	T T	100 Pc 100 Pc	**511970BT** **511220BT**	250 250	**511971BT** **511221BT**	500 500	**511972BT** **511222BT**	13,5 mm Cell, 10 mL	**354243**
DPD No.4 *Evo* DPD No.4	T T	s.a. s.a.						40 mm Cell W680/40	**606890**
DPD No.4 *Evo* DPD No.4	T T	s.a. s.a.						13,5 mm Cell, 10 mL	**354243**
Ozone Indigo	T	100 Pc	**513170BT**	250	**513171BT**			40 mm Cell W680/40	**606890**
DO-Reagent No.1 DO-Reagent No.2 DO-Reagent No.3	Tests Tests Tests	100 Pc 100 Pc 90 Pc	**461150** **461160** **461170**					13,5 mm Cell, 10 mL	**354243**
Thymol Blue	T	100 Pc	**511650BT**	250	**511651BT**			13.5 mm Cell, 10 mL	**354243**
Bomophenol Blue	T	100 Pc	**511620**	250	**511621**			13.5 mm Cell, 10 mL	**354243**
Bromocresol Green	T	100 Pc	**511760**	250	**511761**			13.5 mm Cell, 10 mL	**354243**
Methyl Red	L	100 mL	**451631**	250	**451632**			13.5 mm Cell, 10 mL	**354243**
Bromocresol Purple	T	100 Pc	**511730BT**	250	**511731BT**			13.5 mm Cell, 10 mL	**354243**
Bromothymol Blue	T	100 Pc	**511640BT**	250	**511641BT**			13.5 mm Cell, 10 mL	**354243**
Phenol Red	T	100 Pc	**511750BT**	250	**511751BT**	500	**511752BT**	13.5 mm Cell, 10 mL	**354243**
Cresol Red	T	100 Pc	**511600BT**	250	**511601BT**			13.5 mm Cell, 10 mL	**354243**
Thymol Blue	T	100 Pc	**511650BT**	250	**511651BT**			13.5 mm Cell, 10 mL	**354243**
Universal pH Indicator	L	25 mL 100 mL	**451770** **451771**	250	**451772**			13.5 mm Cell, 10 mL	**354243**
M-Cresol Purple	T	100 Pc	**511710BT**	250	**511711BT**			13.5 mm cell, 10 mL	**354243**
M-Cresol Purple	T	100 Pc	**511710BT**	250	**511711BT**			13.5 mm cell, 10 mL	**354243**

Green Chemistry

Evo = Potassium-Iodid reduced

Comparator 2000+

Tests, Discs, Reagents, Cells

Test	Disc	Disc Readings	Range	Code Colour disc
pH	NLC	6/ 6.2/ 6.4/ 6.6/ 6.8/ 7/ 7.2/ 7.4/ 7.6	6.0 - 7.6 pH	281030
pH	NLF	8/ 8.2/ 8.4/ 8.6/ 8.8/ 9/ 9.2/ 9.4/ 9.6	8.0 - 9.6 pH	281060
Phosphate	3/133	0/ 0.25/ 0.5/ 1/ 1.5/ 2/ 2.5/ 3/ 4 mg/L	0 - 4.0 mg/L PO_4	230270
Phosphate	3/136	0/ 5/ 10/ 15/ 20/ 25/ 30/ 35/ 40 mg/L	0 - 40 mg/L PO_4	230310
Phosphate	3/12	0/ 10/ 20/ 30/ 40/ 50/ 60/ 70/ 80 mg/L	0 - 80 mg/L PO_4	231200
Phosphate	3/70	0/ 10/ 20/ 30/ 40/ 50/ 60/ 80/ 100 mg/L	0 - 100 mg/L PO_4	237000
Phosphate	3/60	10/ 20/ 30/ 40/ 50/ 60/ 70/ 80/ 100 mg/L	10 - 100 mg/L PO_4	236000
Phosphate	NMD	10/ 20/ 30/ 40/ 50/ 60/ 70/ 80/ 100 µg/L (50 mL Probe)	0.2 - 2 mg/L PO_4	283950
QAC (Quaternary Ammonia Compounds)	3/118	0/ 2/ 4/ 6/ 8/ 10/ 12/ 15/ 20 mg/L	0 - 20 mg/L	230120
QAC (Quaternary Ammonia Compounds)	3/119	0/ 20/ 40/ 60/ 80/ 100/ 120/ 150/ 200 mg/L	0 - 200 mg/L	230130
Silica	3/139	0.4/ 0.6/ 1/ 1.5/ 2/ 2.5/ 3/ 3.5/ 4 mg/L	0.4 - 4.0 mg/L SiO_2	230340
Silica	3/147	1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 10 mg/L	1.0 - 10 mg/L SiO_2	230420
Silica	3/140	0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 1.0 mg/L	0.1 - 1.0 mg/L SiO_2	230250
Silica	3/13	2.5/ 5/ 7.5/ 10/ 12.5/ 15/ 17.5/ 20/ 25 mg/L	2.5 - 25 mg/L SiO_2	231300
Silica	NN	1/ 2/ 4/ 6/ 8/ 10/ 12/ 16/ 20 mg/L	1.0 - 20 mg/L SiO_2	283630
Silica	NV	0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 0.9/ 1.0 mg/L	0.2 - 1.0 mg/L SiO_2	283880
Sodiumhypochlorite (Chlorine bleach lye)	3/2 Hypo	2/ 4/ 6/ 8/ 10/ 12/ 14/ 16 %	2 - 16 %	232110
Sugar	3/29A	0/ 5/ 10/ 15/ 30/ 45/ 60/ 75/ 100 mg/L	0 - 100 mg/L	232910
Sulphide	3/128	0/ 0.05/ 0.1/ 0.15/ 0.2/ 0.25/ 0.3/ 0.4/ 0.5 mg/L	0 - 0.5 mg/L S	230210
Zinc	3/151	0/ 0.1/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.8/ 1 mg/L	0 - 1.0 mg/L	230470
Zinc	3/102	0/ 0.5/ 1/ 1.5/ 2/ 2.5/ 3/ 3.5/ 4 mg/L	0 - 4.0 mg/L	230020

including stirring rod
Material Safety Data Sheets:

L = Liquid / Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Tablet reagents in foil blister strip (BT)

Reagent	Reagent-form	Code						Accessories	Code
Bromothymol Blue pH Indicator	L	25 mL 100 mL	**451620** **451621**	250	**451622**			Nessler-cells 113 mm	**353060**
Thymol Blue pH Indicator	L	25 mL 100 mL	**451650** **451651**	250	**451652**	500	**451653**	Nessler-cells 113 mm	**353060**
Phosphate No.1 LR Phosphate No.2 LR Combi pack# Phosphate per No.1 LR & No.2 LR	T T T	100 Pc 100 Pc 100 Pc	**513040BT** **513050BT** **517651BT**	250 250	**513051BT** **517652BT**			13.5 mm Cell, 10 mL	**354243**
Phosphate HR	T	100 Pc	**511980BT**					13.5 mm Cell, 10 mL	**354243**
Details on request								13.5 mm Cell, 10 mL	**354243**
Phosphate HR	T	100 Pc	**511980BT**					13.5 mm Cell, 10 mL	**354243**
Vanadomolybdate Solution	L	1 L	**468404**					13.5 mm Cell, 10 mL	**354243**
Details on request								Nessler-cells 113 mm	**353060**
QAC LR Acidifying GP	T T	100 Pc 100 Pc	**515390BT** **515480BT**	250 250	**515391BT** **515481BT**			40 mm Cell W680/40	**606890**
QAC HR Acidifying GP	T T	100 Pc 100 Pc	**515400BT** **515480BT**	250 250	**515401BT** **515481BT**			13.5 mm Cell, 10 mL	**354243**
Silica No.1 Silica No.2 Combi pack# Silica per No.1 & No.2	T T T	100 Pc 100 Pc 100 Pc	**513130BT** **513140BT** **517671BT**	250 250 200	**513131BT** **513141BT** **517672BT**			13.5 mm Cell, 10 mL	**354243**
Silica No.1 Silica No.2	T T	100 Pc 100 Pc	**513130BT** **513140BT**	250 250	**513131BT** **513141BT**			13.5 mm Cell, 10 mL	**354243**
Details on request								40 mm Cell W680/40	**606890**
Ammonia Molybdate	L	100 mL	**460241**					40 mm Cell W680/40	**606890**
Ammonia Molybdate	L	100 mL	**460241**					Nessleriser 215 Nessler-cells 113 mm	**172150** **353060**
Details on request								Nessler-cells 113 mm	**353060**
Chlorine HR (KI) Acidifying GP Combi pack# per Chlorine HR (KI) & Acidifying GP Dilution set for sample preparation	T T T	100 Pc 100 Pc 100 Pc 1 Pc	**513000BT** **515480BT** **517721BT** **414470**	250 250 250	**513001BT** **515481BT** **517722BT**			13.5 mm Cell, 10 mL	**354243**
Details on request								5 mm Cell W680/5	**606790**
Sulphide No.1 Sulphide No.2	T T	100 Pc 100 Pc	**502930** **502940**					13.5 mm Cell, 10 mL	**354243**
Copper/Zinc LR	T	100 Pc	**512620BT**	250	**512621BT**			13.5 mm Cell, 10 mL	**354243**
Copper/Zinc HR	T	100 Pc	**512340BT**	250	**512341BT**			13.5 mm Cell, 10 mL	**354243**

Green Chemistry

Evo = Potassium-Iodid reduced

Colour measurement of water
E-Comparator EC 2000 Pt-Co

The evolution of the visual (subjective) for electronic (objective) colour measurement of water

The Lovibond® EComparator Pt-Co provides an easy way to replace the subjective visual colour comparison with an objective and accurate electronic measurement, without sacrificing the visual assessment of the colour view.

The user friendly ergonomics and intuitive interface guarantee new users can be quickly trained and easily supported. Large data storage (> 20,000 readings) and USB connectivity ensures readings can be stored and shared easily and quickly. Flexibility is further enhanced with software packages for **Windows® with multiple language* support on-screen.

Touch screen technology makes the EComparator Series easily programmable with instinctive menus on screen. Users can set language*, date and time, view preferences and create projects with individual tolerance settings.

An on-screen warning system of:

Green = Within Tolerance;

Red = Outside Tolerance;

Amber = On Border of Tolerance

provides the user with immediate information on the sample.

* Supported Languages: English, French, German, Spanish, Italian, Chinese, Japanese, Russian

**Applicable for the following operating systems: Windows XP, Windows Vista and Windows 7/10

✓ Colour measurement of water

✓ according to international standards such as:
Platinum-Cobalt / Hazen / APHA / ASTM D 1209 / TCU

Platinum-Cobalt / Hazen / APHA Colour (ASTM D 1209)

Often referred to as Pt-Co, Platinum-Cobalt, Hazen or APHA Colour – all terms are interchangeable and equally valid.

Used to measure clear to dark amber liquids.

Originally defined by specified dilutions: range from 0 at the light end of the scale to 500 at the darkest.

Used extensively in the water industry but also for clear oils, chemicals and petrochemicals such as glycerine, plasticisers, solvents, carbon tetrachloride and petroleum spirits.

Accuracy and Efficiency

The EComparator Pt-Co are supplied with a Certified and Liquid Reference Standard enabling quick and simple validation.

The instrument is equipped with an integrated light shield to protect the sample from ambient light and a flexible path length and cell choice (plastic or glass) for flexibility of application.

With robust casing and a small laboratory footprint, the EComparator Series is the ideal solution for users wishing to experience the benefits of immediate, accurate, electronic readings: the best of both worlds.

Technical Data

Light Source	White LED (25 year lifetime)
Sensors	Tristimulus Detectors, Reference and Sample
Colour	Pt-Co
Range	2 - 500
Resolution	1 Pt-Co Unit
Repeatability	± 3% +1 Pt-Co Unit
Detection limit	2 Pt-Co TCU Units
Path Length	50 mm

Standards	ASTM D1209
Comparator View	2 Field
Display	Size: 3,5 cm Resolution: 320 x 240 Colour: 24 Bit (True Colour)
Touchscreen	Resistiv
Keypad	3 key tactile membrane
Sample Chamber Cell Type Filters	W100 Spectrophotometer EC Range Holders

Filter	Glass standard for E-Comparator
Casing	Flame Retardant ABS
Material Size	L 106 x B 210 x H 57 (mm)
Power Sources	USB or Battery (4 x AA)
Data Storage	> 20.000 readings
Interface	USB 2.0 A- Micro B
Software	Data Transmission Software (**Windows®)
Temperature	Max Sampl. Temperature = 80 °C

Accessories

			Code
Liquid Standard Zero	EC 2000	500 ml	133991
Liquid Reference Standard ASTM Value 1	LIQUID REF STD		134000
Liquid Reference Standard ASTM Value 3	LIQUID REF STD		134010
Liquid Reference Standard ASTM Value 5	LIQUID REF STD		134020
Liquid Reference Standard Pt-Co 5	EC 2000	500 ml	134140
Liquid Reference Standard Pt-Co 10	EC 2000	500 ml	134150
Liquid Reference Standard Pt-Co 15	EC 2000	500 ml	134160
Liquid Reference Standard Pt-Co 30	EC 2000	500 ml	134170
Liquid Reference Standard Pt-Co 50	EC 2000	500 ml	134180
Liquid Reference Standard Pt-Co 100	EC 2000	500 ml	134190
Liquid Reference Standard ASTM 0.4 (<0.5)	LIQUID REF STD		134290
Liquid Standard (15 ± 2.0)	EC 2000	for EC 2000 PT-CO - 60 ml	135049
Liquid Standard Zero	EC 2000	for EC 2000 PT-CO - 60 ml	135059
Glass Standard conformity filter			135119
W 100 50 mm tube (plastic), tube Set 50			352101
W 100. OG. 50 mm, 1 tube (optical glass)			601070
USB adapter			190620
USB cable, 2.0 A- Micro B plug for data transfer			190630

**Applicable for the following operating systems: Windows XP, Windows Vista and Windows 7/10

Due to aesthetic considerations, the colouring of drinking water should not be strong or even visible. In many countries the colouring of drinking water is therefore determined by "True Colour Units", TCU for short, which correspond in numerical value to Hazen units. For this reason, the EC2000 Comparator is also available in a version for displaying the values in TCU units.

Code EC-TCU Kit: 162011

Code EC-TCU Instrument:162007

Delivery Content

- EC 2000-Pt-Co in carrying case
- Power Supply (UK, EU, US Plug)
- USB Cable
- Screwdriver
- 4x AA Batteries
- Liquid Reference Standard 1
- 3 x 50mm W100 (Plastic cell)
  1 x 50mm W100 (Optical Glass cell)
- Glass Standard
- CD with Software (Windows) and Manual

Code 162010

Photometry


Home
12.02.18 11:48
Konzentration
Spektrum
Extinktion
% Transmission
Kinetik
Spezial
Multi-Wellenlängen
Einstellungen
DeviceCheck
Info
F1
F2
F3
F4
Esc
Zero
START
ENTER

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Photometry

History

More than three decades have passed since the appearance of the first photometer system.

Since that time, Tintometer has become a world-famous name as the manufacturer of photometer systems sold under the brand name of Lovibond®.

Our range of photometer systems extends from the **MD100*** and **MD110*** as hand-held models, the multi parameter **MD200*** to the spectro-photometer **UV / VIS XD7500.**

The new **XD7000** (VIS) and **XD7500** (UV/VIS) spectrophotometers include all available Lovibond® methods and give the professional user a wide range of options in all areas of water analysis. These instruments also apply to special implementations and demanding applications in research and development, as well as everyday routine lab work.

The multi-functional **PM 6x0** photometer provides the answer to all requirements relating to the analysis of water used in modern swimming pools. They offer a wide variety of pre-programmed methods and are therefore suitable for the demands of modern water analysis.

The **MultiDirect** offers a wide variety of preprogrammed methods and is therefore suitable for the demands of modern water and drinking water analysis.

Representing particularly robust, portable photometers for fast, flexible on-site analysis are thetwo **MD600** and **MD610** instruments. Additionally, the enhanced MD 640 is optimally suited for tracer measurements in closed water treatment water systems with the added parameters for fluorescein and PTSA.

The **MD110**, **PM630**, the **MD610** and the **MD640** are equipped with state-of-the-art data transmission and feature a **Bluetooth®**interface. Together with the free app AquaLX® or the separately offered Bluetooth® dongle (for PC), data exchange is fast and wireless.

Parameter	MD100* & MD110*	MD200*	MD600 & MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Reagents also compatible to Hach® instruments*
Acid Capacity $K_{S4.3}$		■	■	■	■		■	■	
Alkalinity-m	■	■	■	■	■	■	■	■	
Alkalinity-p			■	■			■	■	
Aluminium	■		■	■	■		■	■	s. page 112
Ammonia	■		■	■	■		■	■	s. page 112
Arsenic							■	■	
Bromine	■	■	■	■	■	■	■	■	s. page 112
Cadmium							■	■	
Calcium Hardness	■	■	■	■	■	■	■	■	
Chloride	■		■	■			■	■	
Chlorine	■	■	■	■	■	■	■	■	s. page 112
Chlorine Dioxid	■	■	■	■	■		■	■	s. page 112
Chromium			■	■			■	■	
COD	■	■	■	■			■	■	s. page 112
Copper	■	■	■	■	■	■	■	■	s. page 112
Cyanide			■	■			■	■	
Cyanuric Acid	■	■	■	■	■	■	■	■	
DEHA	■		■	■			■	■	s. page 114
Fluoresceine (only MD 640)			■						
Fluoride	■		■	■			■	■	
Formaldehyde							■	■	
Hazen (Pt-Co-Units ; APHA)	■		■	■			■	■	
Hydrazine	■		■	■			■	■	s. page 114
Hydrogen Peroxide		■	■	■	■		■	■	
Iodine			■	■	■		■	■	
Iron (Fe^{2+}, Fe^{3+}), soluble	■	■	■	■	■	■	■	■	s. page 114
Langelier Water Balance System		■	■	■	■				
Lead							■	■	
Manganese	■		■	■			■	■	s. page 114
Molybdate / Molybdenum	■		■	■			■	■	s. page 114
Nickel			■	■			■	■	
Nitrate			■	■			■	■	s. page 114
Nitrite			■	■			■	■	s. page 114
Oxygen, active			■	■	■		■	■	

* The photometer series MD100, MD110 and MD200 does not contain all the mentioned parameters in one instrument. Number and type of parameters are version dependent (see corresponding chapter).

MD100 / MD110


MD200

PM630

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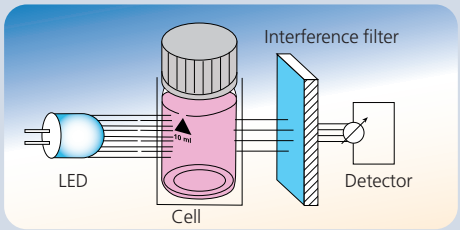
Parameter	MD100* & MD110*	MD200*	MD600 & MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Reagents also compatible to Hach® instruments*
Oxygen, dissolved	■		■	■			■	■	
Ozone	■	■	■	■	■	■	■	■	
pH-Value	■	■	■	■	■	■	■	■	
Phenole							■	■	
PHMB (Biguanide)			■	■	■		■	■	
Phosphate	■		■	■	■	■	■	■	s. page 116
Phosphonate		■	■			■	■	■	s. page 116
Polyacrylates	■						■	■	
Potassium			■	■			■	■	
PTSA (only MD 640)			■						
Silicia	■		■	■			■	■	s. page 116
Sodiumhypochlorite		■	■	■	■		■	■	
Spectral Absorption Coefficient (436 nm/525 nm/620 nm)						■	■	■	
Spectral Absorption-Coefficient (254 nm)								■	
Sulphate	■		■	■	■		■	■	s. page 116
Sulphide			■	■			■	■	
Sulphite			■	■			■	■	
Surfactants (anionic, cationic, non ionic)			■	■			■	■	
Suspended Solids	■		■	■			■	■	
TOC			■	■			■	■	
Total Hardness	■		■	■	■		■	■	
Total Nitrogen			■	■			■	■	s. page 116
Triazoles	■		■				■	■	
Turbidity (attenuated radiation method)			■	■			■	■	
Urea	■	■	■	■	■		■	■	
Zinc	■		■	■			■	■	

The principle of photometry

When specific reagents are added, the water sample takes on a degree of coloration that is proportional to the concentration of the parameter being measured. The photometer measures this coloration.

When a light beam passes through the coloured sample, energy with a specific wavelength is absorbed by the test substance. The photometer determines the coloration of the sample by measuring the transmission or absorption of light of this wavelength (in other words, monochromatic light). High-quality interference filters precisely limit the wavelength and are a prerequisite for obtaining high precision measurement results.
The use of such interference filters is one Lovibond® filter photometers to the quality standard. The photometer digitally calculates the required concentration and displays the result.



MD600 / 610 / 640

MultiDirect


XD7000 / 7500

* HACH® is a registered trademark of Hach Company, Loveland, Colorado. The use of the HACH® trademark does not imply any affiliation with or approval by Hach Company regarding the formulation, testing or compatibility of these products for use in HACH® brand spectrophotometers or other instruments or systems.

Photometer MD100, MD110 & MD200

Measurements using high quality interference filters with long-life LEDs as a light source in a transparent sample chamber.

The units provide accurate, reproducible results very quickly. Other major advantages include ease of operation, ergonomic design, compact dimensions and safe handling.

Using an internal ring memory, the last 16 data sets (MD100, MD200) and 125 data sets (MD110) are stored automatically with date, time, parameter and measurement value.

The tests are conducted using either Lovibond® tablet reagents with long-term stability, VARIO powder reagents or liquid reagents.

Bluetooth® is a wireless technology subject to regional approval. The use of the MD110 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada. The use of the MD110 will also be possible in other regions in the future.

* analog IP 68 | hour at 1 m

Scroll Memory (SM)

To avoid unnecessary scrolling for the required test method, the instrument memorizes the last method used before switching off the instrument. When the instrument is switched on again, the scroll list comes up with the last used test method first.

Zero Setting (OTZ)

For certain versions of the instrument it is not necessary to zero the instrument each time.
The zero setting is held in memory until the instrument is turned off. (**O**ne **T**ime **Z**ero - OTZ).
The zero setting can be confirmed whenever it is required.

Factory calibration certificate ISO 9001

Certificates provide the much needed information about the quality of the instrument as well as accuracy of its measurement. This is important to comply with regulatory requirements and for record keeping purposes. We at Lovibond® provide factory calibration certificates for our photometers and turbidimeters. Your instrument's photometric accuracy is tested by using standards against a reference instrument. Each test values are recorded.

For spectrophotometers tests of photometric accuracy, wavelength accuracy and stray light are conducted and recorded in the certificate.

NIST Traceability

The instrument is factory pre-adjusted to international standards. The user can set the instrument in "user calibration mode" with standards traceable to NIST adjust.
(NIST = National Institute of Standards and Technology)

Verification Standard Kit

The verification standards serve to verify the photometric accuracy and reproducibility of the results at the different wavelengths. The absorbance value is stated.
The kit contains one zero standard, six different vials for checking six different wave lengths and allows checking the complete range of MD100 photometers.
The shelf life of the verification standard kit is two years from the date of production, provided that storage and use are in accordance with the instructions provided.
Measurements are taken in mAbs.

Verification Standard Kit 215670
(MD100, MD110 & MD200)

Data Transfer

The optional available IRiM (infrared interface module) uses modern infrared technology to transmit measurement data from the **MD100** and **MD200** photometer to one of 3 optional interfaces.
These interfaces can be used to connect to a PC, a USB printer[1)] or alternatively a serial printer[2)].

The unit is supplied complete with data logging software providing easy and rapid transfer of data to the PC. As an option, the data can be saved as an Excel sheet or a .txt file.

Measurement data can quickly be printed out, using a specified[1)] USB or alternatively a printer with a serial plug-in connected to the IRiM.

The **MD110** photometers have a **Bluetooth®** feature.

Via the **Bluetooth®** interface, the measurement results are transmitted to external instruments for prompt assessment and processing, so that all data can be evaluated and collated directly on site. In order to get the best use out of this, Tintometer offers an app for mobile instruments and PC software with a dongle.

The free app **AquaLX®** is ideally designed for use in on-site measurements. Compatible with iOS®- and Android® TM-based smartphones and Tablets, it enables fuss-free data transfer. It maps all measured values as descriptive graphs with minimum and maximum limits and supports export of the data as an Excel®-compatible CSV file.

Reference Standard Kit for MD100, MD110 and MD200

The reference standards are designed to check the accuracy and the reliability of the results.

It is not possible to calibrate the photometer with the reference standards.

The shelf life of reference standards is two years from the date of production, provided that storage and use are in accordance with the instructions provided.

Kit Chlorine for instruments with tablet / liquid reagent 0.2* and 1.0* mg/L 275650

Kit Chlorine for instruments with tablet / liquid reagent 0.5* and 2.0* mg/L 275655

Kit Chlorine for instruments with tablet / liquid reagent 1.0* and 4.0* mg/L 275656

Kit Chlorine for instruments with powder reagent 0.2* and 1.0* mg/L 275660

Kit pH for instruments with tablet / liquid reagent 7.45* pH 275670

With the aid of the complimentary **Bluetooth®** dongle, the PC software makes it possible to import data directly from the photometer to the Windows-based PC. As a stationary solution, it facilitates the transfer of data through a fast established, permanent wireless connection. Further processing of the results can be processed both in the software itself and by exporting the data to Excel or as a CSV file.

The set of software and **Bluetooth®** dongle is offered as separate accessories under item no.:

Code **2444480**

Primary standard chlorine

Ideal for validating the chlorine method.
This standard is easy to handle and will meet the requirements of US EPA 334.0.

ValidCheck Chlorine 1,5 mg/l
Code.: 48105510

Please see page 86 onwards for reagents (order codes)

Lovibond® Service Products page 78

Single-Parameter MD100 / MD110 / MD200

Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents	MD100	MD110	MD200
Aluminium		0.01 - 0.3 mg/L Al	M40 /AL Tablet	Tablet	✓	276200	-	-
		0.01 - 0.25 mg/L Al	M50 /AL Powder	Powder	✓	276205	-	-
Ammonia		0.02 - 1.0 mg/L N	M60 /A Tablet	Tablet	✓	276060	-	-
		0.01 - 0.8 mg/L N	M62 /A Powder	Powder	✓	276065	-	-
Chlorine Tablet	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	✓	276000	-	-
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid	✓	276005	-	-
		0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet		-	-	-
Chlorine DUO		0.01 - 6.0 mg/L Cl_2 0.02 - 4 mg/L Cl_2	M100 / CL6 M101 / CL6	Tablet or Liquid	✓	276020	-	-
		0.1 - 10 mg/L Cl_2**	M 103 / CL10	Tablet				
		0.02 - 2.0 mg/L Cl_2	M 110 / CL2	Powder	✓	276025	-	-
		0.1 - 8.0 mg/L Cl_2 (10 mm multi vial-2)	M 111 / CL8	Powder	✓			
Chlorine Powder		0.02 - 2.0 mg/L Cl_2	M 110 / Cl2	Powder	✓	276010	-	-
		0.1 - 8.0 mg/L Cl_2 (10 mm multi vial-2)	M 111 / CL8	Powder	✓			
Chlorine HR (KI)		5 - 200 mg/L Cl_2	M105 / CLHr	Tablet	✓	276170	-	-
Chlorine dioxide		0.02 - 11 mg/L ClO_2	M120 / CLO2	Tablet	✓	276030	-	-
		0.04 - 3.8 mg/L ClO_2	M122 / CLO2	Powder	✓	276035		
Chloride		0.5 - 25 mg/L Cl^-	M90 / CL-1	Tablet	✓	276180	-	-
		5 - 250 mg/L Cl^- (by dilution)	M93 / CL-2					
COD		3 - 150 mg/L O_2	M130 / Lr	Tubes	without reagents	276120	2961202	2892502
		15 - 300 mg/L O_2	M133 / MLr					
		20 - 1500 mg/L O_2	M131 / Mr					
		200 - 15000 mg/L O_2	M132 / Hr					
Iron		0.02 - 1.0 mg/L Fe	M220 / FE	Tablet	✓	276050	-	-
		0.02 - 1.8 mg/L Fe TPTZ	M223 / FE2	Powder	✓	276055	-	-
		0.02 - 3.0 mg/L Fe	M222 / FE1	Powder	✓	276056	-	-
Fluoride		0.05 - 2.0 mg/L F-	M170 / F	Liquid	without reagents	276090	-	-
Hardness total		2 - 50 mg/L $CaCO_3$	M200 / tH1	Tablet	✓	276190	-	-
		20 - 500 mg/L $CaCO_3$ (by dilution)	M201 / tH2					
Urea		0.1 - 2.5 mg/L Urea	M390 / Ur1	Tablet and Liquid	✓	276210	-	-
		0.2 - 5 mg/L Urea (by dilution)	M391 / Ur2					
Hazen		10 - 500 mg/L Pt-Co	M 204 / PtCo	without	without reagents	276160	-	-
Copper		0.05 - 5.0 mg/L Cu	M150 / Cu	Tablet	✓	276080	-	-
		0.05 - 5.0 mg/L Cu	M153 / Cu	Powder	✓	276085	-	-
Manganese		0.2 - 4.0 mg/L Mn	M240 / Mn	Tablet	✓	276100	-	-
		0.01 - 0.7 mg/L Mn	M242 / Mn1	Powder	✓	276105	-	-
		0.1 - 18 mg/L Mn	M243 / Mn2	Powder	✓	276106	-	-
Molybdenum		0.03 - 3.0 mg/L Mo	M251 / Mo1	Powder	✓ mixing cylinder (not included)	276140 19802650	-	-
		0.3 - 40 mg/L Mo	M252 / MO2	Tablet	✓	276141	-	-
		0.6 - 30 mg/L Mo	M250 / Mo3	Tablet	✓	276142	-	-
Ozone (DPD)		0.02 - 2.0 mg/L O_3	M300 / O3	Tablet	✓	-	-	2899802

Green Chemistry
Evo = Potassium-Iodid reduced

* OTZ (zero adjustment applies to all methods of the measuring instrument)
** Delivery without reagents

Please see page 86 onwards for reagents (order codes)

Single-Parameter MD100 / MD110 / MD200

Single-Parameter

Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents	MD100	MD110	MD200
Phosphate		0.05 - 4.0 mg/L PO_4	M320 / PO4	Tablet	✓	276040	-	-
		0.06 - 2.5 mg/L PO_4	M323 / PO4	Powder	✓	276045	-	-
Silica		0.05 - 4.0 mg/L SiO_2	M350 / Si	Tablet	Tablets	276110	-	-
		0.1 - 1.6 mg/L SiO_2	M351 / SiLr	Powder	✓	276115	-	-
		1 - 90 mg/L SiO_2	M352 / SiHr	Powder	✓	276116	-	-
Suspended solids		10 - 750 mg/L TSS	M384 / SuS	without	without reagents	276150	-	-

2in1

Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents	MD100	MD110	MD200
Chlorine Tablet	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine. pH	278020	-	2889402
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid				
		0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet	Liquid reagents for Chlorine. pH	278025	-	2889412
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Chlorine Powder		0.02 - 2.0 mg/L Cl_2	M110 / CL2	Powder	Powder reagents for Chlorine. Tablets for pH	278030	-	-
		0.1 - 8.0 mg/L Cl_2 (10 mm multi vial-2)	M111 / CL8	Powder				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Copper	✓	0.05 - 5.0 mg/L Cu	M150 / Cu	Tablet	Tablets for Cu und pH	-	-	2872102
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Hydrogen-peroxide		1 - 50 mg/L H_2O_2 40 - 500 mg/L H_2O_2	M213 / HP1 M214 / HP2	Liquid	Liquid reagents for H_2O_2 and pH	-	-	2888102
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				

3in1

Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents	MD100	MD110	MD200
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine. pH. CyA	278010	2980102	2860102
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid	Tablets CyA Liquid reagents for Chlorine. pH	278015	2980152	2882002
		0.1 - 10 mg/L Cl_2**	M 103 / CL10	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Cyanuric acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine. pH. Alka-M	278060	-	2889002
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid	Tablets Alka-M Liquid reagents for Chlorine. pH	278065	-	2889302
		0.1 - 10 mg/L Cl2**	M 103 / CL10	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Alkalinity-m		5 - 200 mg/L $CaCO_3$	M30 / tA	Tablet				
Chlorine		0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine. Chlorine HR	278000	-	-
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid				
Chlorine HR (KI)		5 - 200 mg/L Cl_2	M105 / CLHr	Tablet				
Chlorine dioxide		0.02 - 11 mg/L ClO_2	M120 / CLO2	Tablet				
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine. pH. Bromine	-	-	2861802
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Brome		0.05 - 13 mg/L Br_2	M80 / Br	Tablet				
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine. pH. Acid capacity	-	-	2889012
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid	Tablets Acid capacity Liquid reagents for Chlorine. pH	-	-	2889202
		0.1 - 10 mg/L Cl_2**	M 103 / CL10	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Acid capacity		0.1 - 4.0 mmol/l $K_{S4.3}$	M20 / S:4.3	Tablet				

* OTZ (zero adjustment applies to all methods of the measuring instrument)
** Delivery without reagents
Green Chemistry *Evo* = Potassium-Iodid reduced

4in1

Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents	MD100	MD110	MD200
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine, pH, CyA, Alka-M	278070	2980702	2860502
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid	Tablets for CyA, Alka-M Liquid reagents for Chlorine and pH	278075	2980752	2860542
		0.1 - 10 mg/L Cl_2**	M 103 / CL10	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
Alkalinity-m		5 - 200 mg/L $CaCO_3$	M30 / tA	Tablet				
Chlorine DUO		0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet	Powder reagents for Chlorine, Tablets for Chlorine, pH, CyA, Alka-M	278160	-	-
		0.02 - 3.5 mg/L Cl_2	M113 / CL2	Powder				
		5 - 200 mg/L Cl_2**	M105 / CLHr	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Alkalinity-m		5 - 200 mg/L $CaCO_3$	M30 / tA	Tablet				
Hardness, Calcium		0 - 500 mg/L $CaCO_3$	M191 / CAH	Tablet				
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine, pH, CyA and Acid Capacity	-	-	2860512
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid	Tablets for CyA and Acid Capacity Liquid reagents for Chlorine and pH	-	-	2860522
		0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
pH		6.5 - 8.4 pH	M330/331 / pH	Tablet/Liquid				
Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
Acid Capacity		0.1 - 4.0 mmol/l $K_{S4.3}$	M20 / S:4.3	Tablet				
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine, pH, Acid Capacity, Urea (add. Liquid)	-	-	2862912
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid				
		0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Acid Capacity		0.1 - 4.0 mmol/l $K_{S4.3}$	M20 / S:4.3	Tablet				
Urea		0.1 - 2.5 mg/L Urea	M390 / Ur1	Tablet/Liquid				
		0.2 - 5 mg/L Urea (by dilution)	M391 / Ur2					
Chlorine	✓	0.01 - 6.0 mg/L Cl_2	M100 / CL6	Tablet or	Tablets for Chlorine, pH, Acid Capacity	-	-	2863802
		0.02 - 4 mg/L Cl_2	M101 / CL6	Liquid				
		0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
Chlorine dioxide		0.02 - 11 mg/L ClO_2	M120 / CLO2	Tablet				
pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
Acid Capacity		0.1 - 4.0 mmol/l $K_{S4.3}$	M20 / S:4.3	Tablet				

* OTZ (zero adjustment applies to all methods of the measuring instrument)
** Delivery without reagents

Green Chemistry *Evo* = Potassium-Iodid reduced

Please see page 86 onwards for reagents (order codes)

	Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents	MD100	MD110	MD200
5in1	**Chlorine**	✓	0.01 - 6.0 mg/L Cl_2 0.02 - 4 mg/L Cl_2	M100 / CL6 M101 / CL6	Tablet or Liquid	Tablets for Chlorine, pH, CyA, Alka-M, CaH	278080	-	2861202
			0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
	pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
	Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
	Alkalinity-m		5 - 200 mg/L $CaCO_3$	M30 / tA	Tablet				
	Hardness, Calcium		0 - 500 mg/L $CaCO_3$	M191 / CAH	Tablet				
	Chlorine		0.01 - 6.0 mg/L Cl_2 0.02 - 4 mg/L Cl_2	M100 / CL6 M101 / CL6	Tablet or Liquid	Tablets for Chlorine, pH, CyA, Acid Capacity, CaH	-	-	2861212
			0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
	pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
	Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
	Acid Capacity		0.1 - 4.0 mmol/l $K_{S4.3}$	M20 / S:4.3	Tablet				
	Hardness, Calcium		0 - 500 mg/L $CaCO_3$	M191 / CAH	Tablet				
6in1	**Chlorine**	✓	0.01 - 6.0 mg/L Cl_2 0.02 - 4 mg/L Cl_2	M100 / CL6 M101 / CL6	Tablet or Liquid	Tablets for Chlorine, Bromine, pH, CyA, Alka-M, CaH	278090	2980902	2861902
			0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
	Bromine		0.05 - 13 mg/L Br_2	M80 / Br	Tablet				
	pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
	Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
	Alkalinity-m		5 - 200 mg/L $CaCO_3$	M30 / tA	Tablet				
	Hardness, Calcium		0 - 500 mg/L $CaCO_3$	M191 / CAH	Tablet				
	Chlorine	✓	0.01 - 6.0 mg/L Cl_2 0.02 - 4 mg/L Cl_2	M100 / CL6 M101 / CL6	Tablet or Liquid	Tablets for Chlorine, Bromine, pH, CyA, Acid Capacity, CaH	-	-	2861912
			0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
	Bromine		0.05 - 13 mg/L Br_2	M80 / Br	Tablet				
	pH		6.5 - 8.4 pH	M330 / M331 / pH	Tablet/Liquid				
	Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
	Acid Capacity		0.1 - 4.0 mmol/l $K_{S4.3}$	M20 / S:4.3	Tablet				
	Hardness, Calcium		0 - 500 mg/L $CaCO_3$	M191 / CAH	Tablet				
	Chlorine	✓	0.01 - 6.0 mg/L Cl_2 0.02 - 4 mg/L Cl_2	M100 / CL6 M101 / CL6	Tablet or Liquid	Tablets for Chlorine, Bromine, pH, CyA, Alka-M, Copper, Iron	-	-	2862102
			0.1 - 10 mg/L Cl_2**	M103 / CL10	Tablet				
	pH		6.5 - 8.4 pH	M330/331 / pH	Tablet/Liquid				
	Cyanuric Acid		0 - 160 mg/L Cya	M160 / CyA	Tablet				
	Alkalinity-m		5 - 200 mg/L $CaCO_3$	M30 / tA	Tablet				
	Copper		0.05 - 5.0 mg/L Cu	M150 / Cu	Tablet				
	Iron		0.02 - 1.0 mg/L Fe	M220 / FE	Tablet				

* OTZ (zero adjustment applies to all methods of the measuring instrument)
** Delivery without reagents
Green Chemistry *Evo* = Potassium-Iodid reduced

Delivery Content

- Instrument in carrying case
- **MD100 & MD110**
  4 micro batteries (AAA)

  MD200
  4 micro batteries (AA),
- 3 round vials (glass) with lids
- 1 stirring rod & 1 brush & syringe
- Reagents (see tables)
- Warranty information
- Certificate (Certificate of Compliance)
- Instruction Manual
- Handbook of Methods

	Instrument with Parameter	OTZ*	Range	Method name Handbook / Display	usable reagent form	delivery content incl. reagents		MD100	MD110	MD200
Boiler Water	**Aluminium**		0.01 - 0.25 mg/L Al	M50 /AL (PP)	Powder	without reagents	276230	2962302	-	
	Iron		0.03 - 2 mg/L $Fe^{2+/3+}$	M225 / FE (L)	Liquid					
	Copper		0.3 - 5.0 mg/L Cu	M150 / Cu (T)	Tablet					
	Silica		1 - 90 mg/L SiO_2	M352 / SiHr (PP)	Powder					
	Chloride		0.5 - 20 mg/L Cl^-	M92 / CL- (L)	Liquid					
	Phosphate		5 - 80 mg/L PO_4	M335 / PO4 (L)	Liquid					
	Oxygen (dissolved)		10 - 800 µg/L O_2	M292 / O2	Vacu-vials					
	DEHA		20 - 500 µg/L DEHA	M167 / DEHA (PP)	Powder					
	Hydrazine		50 - 500 µg/L N_2H_4	M205 / Hydr (P)	Powder					
	Polyacrylates		1 - 30 mg/L Polyacrylates	M338 / POLY (L)	Liquid					
Cooling Water	**Bromine**		0.05 - 13 mg/L Br_2	M80 / Br (T)	Tablet	without reagents	276240	2962402	-	
	Chlorine		0.01 - 6.0 mg/L Cl_2	M100 / CL6 (T)	Tablet					
	Chlorine HR (KI)		5 - 200 mg/L Cl_2	M105 / CLHr (T)	Tablet					
	Chlorine dioxide		0.02 - 11 mg/L ClO_2	M100 / CL6 (T) (Factor 1,9)	Tablet					
	Ozone		0.02 - 2 mg/L O_3	M300 / O3 (T)	Tablet					
	Aluminium		0.01 - 0.25 mg/L Al	M50 /AL (PP)	Powder					
	Iron		0.03 - 2 mg/L $Fe^{2+/3+}$	M225 / FE (L)	Liquid					
	Iron in Mo		0.01 - 1.8 mg/L Fe	M224 / FEM(PP)	Powder					
	Copper		0.3 - 5.0 mg/L Cu	M150 / Cu (T)	Tablet					
	Zinc		0.1 - 2.5 mg/L Zn	M405 / Zn (L)	Liquid					
	Sulfate		5 - 100 mg/L SO_4	M360 / SO4 (PP)	Powder					
	Molybdenum		0.03 - 3 mg/L Mo	M251 / Mo1 (PP)	Powder					
			0.6 - 60 mg/L Mo	M254 / Mo2 (L)	Liquid					
	Triazoles		1 - 16 mg/L Benzotriazoles	M388 / tri (PP)	Powder					
	Polyacrylates		1 - 30 mg/L Polyacrylates	M338 / POLY (L)	Liquid					

Please see page 86 onwards for reagents (order codes)

Accessories

Item	Code
Set of 12 round vials with lid height 48 mm, Ø 24 mm	197620
Set of 5 round vials with lid height 48 mm, Ø 24 mm	197629
Satz à 10 round vials with lid, height 90 mm, Ø 16 mm	197665
Adapter for round vials ø 16 mm	19802190
Set of 12 plastic vials (PC), with lid "Multi"-Type 2, □10 mm	197600
Vial stand for 6 round vials Ø 24 mm, acrylic glass	418951
Vial stand for 10 vials (Ø 16 mm), acrylic glass	418957
Mixing cylinder, 25 mL, with stopper required accessory for molybdenum LR test with MD100 (276140)	19802650
Membrane filter set for use when preparing samples, 25 membrane filters, 0.45 µm, 2 syringes 20 mL	366150
Cleaning cloth for vials	197635
Set of 12 sealing rings for round vial ø 24 mm	197626
4 micro batteries (AAA) MD100, MD110	1950026
4 batteries (AA) MD200	1950025
Battery lid MD100, MD110	19802617
Battery lid MD200	19802241
Measuring beaker, volume 100 mL	384801
Plastic funnel with handle	471007
Plastic stirring rod, 13 cm length	364100
Plastic stirring rod, 13 cm length, (10 pcs.)	364120
Plastic stirring rod, 10 cm length	364109
Plastic stirring rod, 10 cm length, (10 pcs.)	364130
Infrared data transfer module IRiM (MD100, MD200 only)	214050
Bluetooth-Dongle and Software (MD110 only)	2444480
Serviceplan	19802801
Factory calibration certificate	999750

Technical Data	MD100	MD110	MD200
Interface for data transfer	Infrared interface (IRiM needed)	**Bluetooth®**-interface	Infrared interface (IRiM needed)
Storage	internal ring memory for **16** data sets	internal ring memory for **125** data sets	internal ring memory for **16** data sets
Power Supply	4 micro batteries (AAA), capacity approx. 17 hours or approx. 5000 tests in continuous operation with the display lighting switched off	4 micro batteries (AAA), capacity approx. 17 hours or approx. 5000 tests in continuous operation with the display lighting and **Bluetooth®** Function switched off	4 batteries (AA), capacity approx. 53 hours or 15000 tests (continuous operation without display lighting)
Dimensions	155 x 75 x 35 mm (L x W x H)		190 x 110 x 55 mm (L x W x H)
Weight	basic unit ca. 260 g		basic unit ca. 455 g (batteries incl.)
Optics	LEDs, interference filters (IF) and photo sensor in transparent sample chamber. Depending on the version, up to 3 different interference filters are used. Wavelength specifications of interference filters: 430 nm Δ λ = 5 nm 530 nm Δ λ = 5 nm 560 nm Δ λ = 5 nm 580 nm Δ λ = 5 nm 610 nm Δ λ = 6 nm 660 nm Δ λ = 5 nm		
Wavelength Accuracy	± 1 nm		
Photometric Accuracy[4)]	3 % FS (T = 20 °C - 25 °C)		
Photometric Resolution	0.01 A		
Absorption range	-2500 to 2500 m Abs		
Auto - OFF	automatic switch-off		
Display	backlit LCD (on keypress)		
Time	real time clock and date		
Calibration	factory calibration and user calibration. Reset to factory calibration possible		
Environmental conditions	temperature: 5 - 40 °C rel. humidity: 30 - 90 % (non condensing)		
Conformity	CE		

[4)] tested with standard solutions

Photometer
MD600 & MD610

Modern, mobile photometer for rapid, reliable water testing

Highest reproducible precision with interference filter

Infrared-Interface (MD600)

Bluetooth® 4.0 *Interface (MD610)*

Display with background lighting

More than 120 pre-programmed methods

Automatic selection of wavelength

The MD610 and MD600 give you mobile instruments in a modern design with the analytical features of laboratory photometers.

All important water analysis parameters from A(luminium) to Z(inc) are covered by these instruments. Combined with the high precision of Lovibond® reagents, a reliable and quick analysis of water samples is guaranteed. Reagent tablets, powder reagents, liquid reagents, or cuvette tests are used depending on the method.

The highest accuracy is guaranteed by the combination of six long-term stable LEDs as the light source together with interference filters, even when being used in absorption mode. The instruments are designed without moving parts and thus maintenance are free measuring units.
While the MD600 has an infrared interface for data exchange, the MD610 is equipped with a modern **Bluetooth®** 4.0 interface.
Measurement data can thus easily be transferred from the MD610 to smartphones or tablets.
To support this, the free app AquaLX® is available.
For stationary use, the set of PC software and **Bluetooth®** dongle availability as an accessory can alternatively be used for data transfer to a Windows-based PC.

The proven MD600 photometer uses the classic infrared interface with which data can be transferred by means of the IRiM module to the PC or laptop.

NIST Traceability

The instrument is factory pre-adjusted to international standards. The user can set the instrument in "user calibration mode" with standards traceable to NIST adjust.
(NIST = National Institute of Standards and Technology)

New methods

Test methods are regularly updated to suit market requirements. You can find software updates for new methods and additional languages on our website at .
You can program your own methods. This could be done via calibration functions in form of polynomials or by concentration measurements.

Polynomials

Up to 25 fifth order calibration polynomials (y = A + Bx + Cx2 + Dx3 + Ex4 + Fx5) can be stored for custom methods.

Concentration

With this function 2 to 14 standards can be measured. The photometer saves the value pairs obtained as calibration points of a user method (up to 10 methods).

Delivery Content

- Instrument in carrying case
- 4 batteries
- 3 round vials each 24 and 16 mm ø
- 1 adapter each for 16 mm and 13 mm vials
- Plastic stirring rod 13 cm, Brush 11 cm, screw driver
- Warranty information
- Certificate of Compliance
- Instruction Manual

Order codes (without reagents)
MD600: 214020
MD610: 214025

Please specify the reagents or parameters required at time of order. You will find them on page 86 onwards.

Up-to-date information about methods, parameters and measuring ranges can always be found on our website:

Applications

- Waste Water
- Drinking Water
- Industrial Process Water
- Science & Research
- Governmental and private Laboratories
- Mobile Applications

Bluetooth® is a wireless technology subject to regional approval. The use of the MD610 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada.
The use of the MD610 will also be possible in other regions in the future.

Please see page 86 onwards for reagents (order codes)

Lovibond® Service Products page 78

Photometer MD600 & MD610

Technical Data

Display	Backlit graphic-display
Interfaces	Infrared[1] (MD600), **Bluetooth®** 4.0 (MD610) RJ45 socket for updates[2]
Optics	LEDs, interference filters and photo sensor in transparent sample chamber Wavelength range: 430 nm IF Δ λ = 5 nm 530 nm IF Δ λ = 5 nm 560 nm IF Δ λ = 5 nm 580 nm IF Δ λ = 5 nm 610 nm IF Δ λ = 6 nm 660 nm IF Δ λ = 5 nm IF = interference filter
Wavelength Accuracy	± 1 nm
Photometric Accuracy*	2 % FS (T = 20 °C – 25 °C)
Photometric Resolution	0.005 A
Operation	Acid and solvent resistant, touch-sensitive keypad with audible feedback via integrated beeper
Language Selection	German, English, French, Spanish, Italian,Portuguese, Polish, Indonesian ; additional languages via update
Memory Capacity	approx. 1000 data sets (MD600) approx. 500 data sets (MD610)
Auto-Off	approx. 20 minutes after last keypress with audible signal
Power Supply	4 batteries (Mignon AA/LR6); Operation time: approx. 26 h continuous operation or 3500 tests
Dimensions	approx. 210 x 95 x 45 mm (unit) approx. 395 x 295 x 106 mm (case)
Weight (unit)	approx. 450 g
Ambient Conditions	5-40 °C at max. 30-90 % rel. humidity (non condensing)
CE-Conformity	

[1] optional available: IRiM (Infrared Interface Modul)
[2] optional available: connection cable with integrated electronics (RS 232 / RJ-45 plug)
* tested with standard solutions

Please see page 86 onwards for reagents (order codes)

Accessories

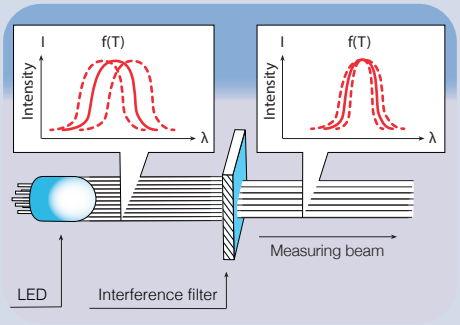
Item	Code
Set of 12 round vials with lid Height 48 mm, Ø 24 mm	197620
Set of 10 round vials with lid height 90 mm, Ø 16 mm	197665
Adapter for round vials ø 16 mm	19802190
Adapter for round vials ø 13 mm	19802192
Set of multi vials-3 with lids path length 10 mm, 10 ml volume Height 48 mm, Ø 24 mm, 12 pc.	197605
Vial stand for 6 round vials Ø 24 mm, acrylic glass	418951
Vial stand for 10 vials Ø 16 mm, acrylic glass	418957
Sealing ring for vial ø 24 mm, 12 pc.	197626
Sealing ring for vial ø 24 mm, black	197636
Battery, 1.5 V, AA-Alkali-Mangan, 4 pc.	1950025
Cleaning cloth for vial	197635
Plastic funnel with handle	471007
Plastic stirring rod, 13 cm length	364100
Plastic stirring rod, 13 cm length, 10 pc.	364120
Plastic stirring rod, 10 cm length	364109
Plastic stirring rod, 10 cm length, 10 pc.	364130
Cleaning brush, 10 cm	380230
Verification Standard Kit	215640
Reference Standard-Kit Chlorine 0.2 and 1mg/L	215630
Reference Standard-Kit Chlorine 0,5 and 2mg/L	215635
Reference Standard-Kit Chlorine 1 and 4mg/L	215636
Cable for update for connection to a PC	214030
Data transmission modul IRiM	214050
Bluetooth Dongle Set incl. PC Software	2444480
Serviceplan	19802801
Factory calibration certificate	999750

Verification Standard Kit

The verification standards serve to verify the photometric accuracy and reproducibility of the results at the different wavelengths.
The absorption value is stated.
The kit contains one zero standard, six different vials for checking six different wave lengths and allows checking the complete range of MD600 and MD610 photometers.
The shelf life of the verification standard kit is two years from the date of production, provided that storage and use are in accordance with the instructions provided.
Measurements are taken in mAbs.

Verifications Standard Kit **215640**
(MD600, MD610, MD640)

Interference filter increases reducibility



LEDs have very positive qualities as a light source for photometers:

They achieve a very high intensity in a limited spectral range, which enables low-cost optical set-ups. They are very energy-efficient, which ensures a long operating life when battery operated. They have a long service life and usually last the life of the photometer.

However, the semiconductors inside the LEDs react to temperature fluctuations and are subject to changes during their lifetime. These lead to fluctuations in both the emitted wavelength, the spectral bandwidth and the intensity.
While intensity fluctuations are still occur by zeroing the instrument can can compensate before a measurement, a constant measuring wavelength cannot be achieved without the use of high-quality interference filters.

Only when interference filters are used is it possible to ensure that their analytical methods are reproducible.

All Lovibond LED photometers use high-quality interference filters with a half-width of approx. 5 nm.

Bluetooth® is a wireless technology subject to regional approval. The use of the MD610 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada.
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Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

Please see page 86 onwards for reagents (order codes)

Lovibond® Service Products page 78

Bluetooth® 4.0
– Interface

All photometric methods of the MD600

Fluometric measurement of PTSA & Fluorescein

no adapter for Fluorescence necessary

Photometer MD640 & Fluorometer for PTSA in one instrument

Photometry, trace analysis and tracer detection in one instrument

The Lovibond® Photometer MD640 is an enhanced version of the MD610 photometer, offering additional fluorescence capability for the determination of PTSA and fluoresceine in water systems.

PTSA (1,3,6,8 pyrenetetrasulfonic acid, sodium salt) and fluoresceine are fluorescent materials that are increasingly being added to speciality water treatment products to enable real time product dose analysis. Both materials are detectable at ppb levels, are non-toxic and chemically stable, all of which make them ideal tracer additives throughout complex water systems. Accurately measuring product dose levels helps the water treatment specialist to control water chemistry; prevent corrosion, scale and biological fouling; increase system efficiency and, ultimately, save energy and costs.

Delivery Content

- Instrument in carrying case
- 4 batteries
- 3 round vials each 24 and 16 mm ø (black lid)
- 1 adapter each for 16 mm and 13 mm vials
- Plastic stirring rod 13 cm, Brush 11 cm, syringe 5 ml, screw driver
- Warranty information
- Certificate of Compliance
- Instruction Manual

Order codes (without reagents)
MD640: 214140

Please specify the reagents or parameters required at time of order.

You can find updated information on parameters and measuring ranges at

Applications

- Industrial Process Water & Waste Water
- Drinking Water
- Science & Research
- Governmental and Private Laboratories
- Mobile Applications

Technical Data

Display	Backlit graphic-display
Interfaces	**Bluetooth®** 4.0 RJ45 socket for Internet updates1
Optics	LEDs, interference filters (IF) and photo sensor in transparent sample chamber Wavelength range: 430 nm IF Δ λ = 5 nm 530 nm IF Δ λ = 5 nm 560 nm IF Δ λ = 5 nm 580 nm IF Δ λ = 5 nm 610 nm IF Δ λ = 6 nm 660 nm IF Δ λ = 5 nm IF = interference filter
UV excitation	375 nm
Ranges	PTSA 10 - 1000 ppb Fluorescein 10 - 400 ppb
Calibration Check	Monthly (user) (using calibration sets)
Calibration	Factory set & user adjustable (using calibration Standard Set)
Wavelength Accuracy	± 1 nm
Photometric Accuracy*	2 % FS (T = 20 °C–25 °C)
Photometric Resolution	0.005 A
Operation	Acid and solvent resistant, touch-sensitive keypad with audible feedback via integrated beeper
Power Supply	4 batteries (Mignon AA/LR6); Operation time: approx. 26 h continuous operation or 3500 tests
Auto-Off	Approx. 20 minutes after last keypress with audible signal
Dimensions	ap. 210 x 95 x 45 mm (unit) ap. 395 x 295 x 106 mm (case)
Weight	ap. 450 g (unit)
Ambient Conditions	5- 40 °C at max. 30-90 % rel. humidity (non condensing)
Language Selection	German, English, French, Spanish, Italian,Portuguese, Polish, Indonesian ; additional languages via Internet update
Memory	ap. 500 data sets
CE-Conformity	

Accessories

Item	Code
Set of 12 round vials with lid Height 48 mm, Ø 24 mm	197620
Set of 12 round vials with **black** lid for PTSA / Fluorescein Height 48 mm, Ø 24 mm	197657
Set of 10 round vials with lid Height 90 mm, Ø 16 mm	197665
Adapter for round vials ø 16 mm	19802190
Adapter for round vials ø 13 mm	19802192
Set of **multi vials-3** with lids path length 10 mm, 10 mL volume Height 48 mm, Ø 24 mm, 12 pc.	197605
Vial stand for 6 round vials Ø 24 mm, acrylic glass	418951
Vial stand for 10 vials Ø 16 mm, acrylic glass	418957
Sealing ring for vial ø 24 mm, 12 pc.	197626
Sealing ring for vial ø 24 mm (black)	197636
Battery, 1.5 V, AA-Alkali-Mangan 4 pc.	1950025
Cleaning cloth for vials	197635
Plastic funnel with handle	471007
Plastic stirring rod, 13 cm length	364100
Plastic stirring rod, 13 cm length 10 pc.	364120
Plastic stirring rod, 10 cm length	364109
Plastic stirring rod, 10 cm length 10 pc.	364130
Cleaning brush, 10 cm	380230
Verification Standard Kit	215640
Cable for update for connection to a PC	214030
PTSA standard addition solution, 1000 ppb, 50mL	461210
PTSA calibration set 0, 200, 1000 ppb	461245
Fluorescein standard addition solution, 400 ppb, 50mL	461230
Fluorescein calibration set 0, 75, 400 ppb	461240
Bluetooth Dongle Set incl. PC Software	2444480
Serviceplan	19802801
Factory calibration certificate	999750

[1] optional available: connection cable with integrated electronics (RS 232 / RJ-45 plug)
* tested with standard solutions

Bluetooth® is a wireless technology subject to regional approval. The use of the MD640 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada.

Please see page 86 onwards for reagents (order codes)

Lovibond® Service Products page 78

Thermoreactor RD125

For the tube test digestion of

- COD
- TOC
- Total Chromiumt
- Total Nitrogen
- Total Phosphate

Chemical digestion of samples is required for the photometric determination of COD, TOC, total phosphate and total nitrogen.

The required temperatures and reaction time can be selected by using the membrane keypad of the reactor RD125. The unit works at three different temperatures (100 / 120 / 150 °C) and three pre-set reaction times 30 / 60 / 120 minutes).

When digestion is complete, the reactor automatically switches off and gives a corresponding LED indication with short beep alarm.

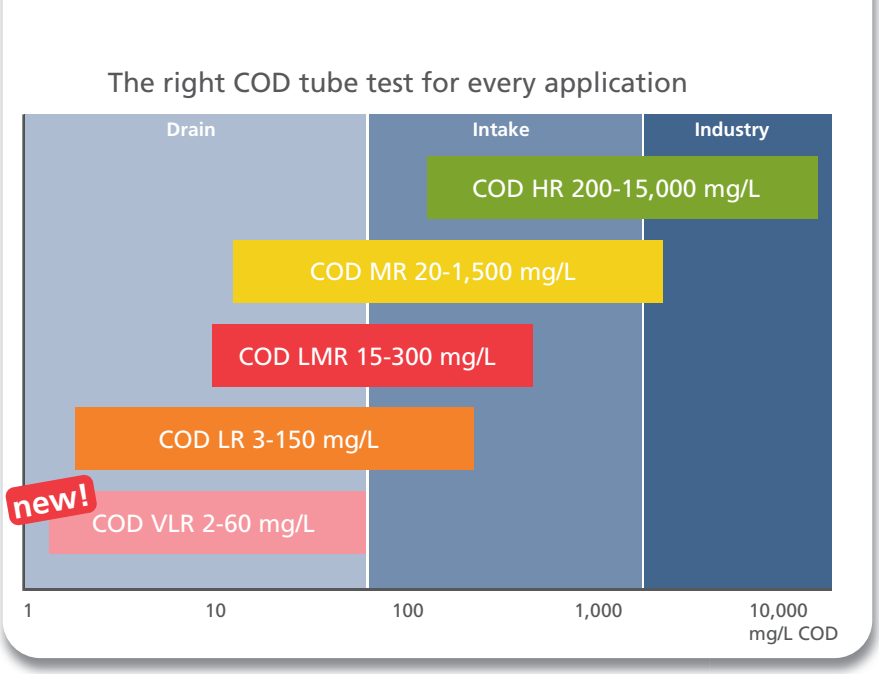
The RD125 reactor is fitted with 24 slots for 16 mm diameter vials.

The voltage can be selected between 230 V and 115 V at the rear on the instrument.

CSB-Reactor RD125 2418940

Technical data

Power supply	230 V / 50-60 Hz or 115 V / 50-60 Hz (switchable)
Power	550 W
Dimensions	248 x 219 x 171 mm
Weight	3.9 kg
Materials, housing **Block insert** **Protection grid** **Lid** **Heating block**	ABS PBT PPS PPS Aluminium
Cuvette recording	24 slots, aluminium block ø 16.2 mm ± 0.2 mm
Selectable temp.	100 / 120 / 150 °C
temperature supervision	Pt100 A class
Temperature stability	± 1 °C at the Pt100
Selected time	30 / 60 / 120 / min. and continuous operation (∞)
Heating up	from 20 °C to 150 °C in 12 min.
Protection against overheating	at the alu block at 190 °C
Beeper	max. 88 dB (Piezo Summer)
Environmental conditions	10 - 40 °C max. 85 % rel. humidity
CE-Conformity	



COD Tube Tests

The Lovibond® COD VARIO tube tests are available for the measuring ranges:

VLR 2.0 - 60.0 mg/L O_2
LR 3 - 150 mg/L O_2
LMR 15 - 300 mg/L O_2
MR 20 - 1,500 mg/L O_2
HR 200 - 15,000 mg/L O_2

New! Low VLR measuring range!

Their chemical properties and a 16 mm tube diameter make them compatible to Hach® instruments.*

Tube tests	Code
COD VLR 2.0 - 60.0 mg/L	
25 pc.	2423100
VARIO COD 0-150 mg/L O_2	
25 pc., mercury free [1]	2420710
25 pc.	2420720
150 pc.	2420725
COD 15-300 mg/L O_2	
25 pc.	2423120
VARIO COD 0-1,500 mg/L O_2	
25 pc., mercury free [1]	2420711
150 pc., mercury free [1]	2420716
25 pc.	2420721
150 pc.	2420726
VARIO COD 0-15,000 mg/L O_2	
25 pc., mercury free [1]	2420712
25 pc.	2420722
150 pc.	2420727

[1] without chloride removal

Standard solutions

Standard solutions are solutions with a defined concentration and are provided to check the operation methods and instruments of the cuvette tests as well as the condition of optical filters and the instrument.

Standard solution	Quantity	Code
100 mg/L COD	30 mL	2420803
500 mg/L COD	30 mL	2420804
5,000 mg/L COD	10 mL	2420805

*HACH® is a registered trademark of Hach Company, Loveland, Colorado. The use of the HACH® trademark does not imply any affiliation with or approval by Hach Company regarding the formulation, testing or compatibility of these products for use in HACH® brand spectrophotometers or other instruments or systems.

COD determination

Cost-effective, easy & safe

COD Photometers

With a measuring range from 0 to 15,000 mg/L O_2, the Lovibond® COD photometers are suitable for waste water testing.

Two LEDs light sources with long-term stability (λ_1 = 610 nm; λ_2 = 430 nm, according to ISO 15705:2002), a waterproof sample chamber, a large digital display, and the user-friendly keypad ensure maximum operating reliability and convenience.

Photometer in carrying case	**Code**
MD100 COD	276120
MD110 COD with **Bluetooth®**	2961202
MD200 COD	2892502

Setups COD

The Lovibond® COD Setups allow highly sensitive and precise water testing with minimum effort.

COD Setup Photometer in carrying case	**Code**
MD100	276130
MD110 with **Bluetooth®**	2961302
MD200	2892602
MD600	214040
MD610 with **Bluetooth®**	214041

Delivery Content

- Photometer
- Adapter for round vials ø 16 mm
- 2 sets of tube tests 3-150 mg/L 20-1500 mg/L
- Thermoreactor RD 125
- Tube stand
- 2 syringes 1 ml, 2 mL
- Batteries
- Warranty information
- Certificate (COC)
- Instruction manual

Please see page 86 onwards for reagents (order codes)

Waste Water Setups

Lovibond® wastewater measuring stations for routine checks with individual requirements - the complete COD laboratory from a single source.

Choose the photometer with the desired measuring technology:

MD600 (infrared) or MD610 (**Bluetooth®**).
With the RD125 thermoreactor, suitable reagents and accessories, determining the chemical oxygen demand (COD) and other important parameters for wastewater control is a safe and cost-effective matter.

Waste Water Setup MD600 Photometer MD600 with standard accessory, Infrared data transmission module IRiM	214100
Waste Water Setup MD610 Photometer MD610 with standard accessory **Bluetooth®** data transmission	214110

Reagents

VARIO COD 0-150 mg/L O_2	
25 pc., mercury free [1]	2420710
25 pc.	2420720
150 pc.	2420725
COD 15-300 mg/L O_2	
25 pc.	242312
VARIO COD 0-1,500 mg/L O_2	
25 pc., mercury free [1]	2420711
150 pc., mercury free [1]	2420716
25 pc.	2420721
150 pc.	2420726
VARIO COD 0-15,000 mg/L O_2	
25 pc., mercury free [1]	2420712
25 pc.	2420722
150 pc.	2420727
VARIO AM HR tube test	535650
VARIO Nitra X	535580
VARIO Nitri 3 F10 Powder Pack	530980
VARIO Total Nitrogen HR tube test	535560
VARIO Total Phosphate tube test	535210

Accessories

Set of round vials with lids Height 48 mm, Ø 24 mm	197629
Membrane filter set for use when preparing samples, 25 membrane filters 0.45 µm, 2 syringes 20 ml	366150
Vial stand for 6 round vials Ø 24 mm, acrylic glass	418951
Vial stand for 10 vials (Ø 16 mm), acrylic glass	418957
Automatic pipette [2], 1 - 5 ml	419076
Pipette tips [2], 1 - 5 ml (white), 100 pc.	419066
Automatic pipette [3], 0.1 - 1 ml	419077
Pipette tips [3], 0.1 - 1 ml (white), 1000 pc.	419073

[1] without chloride removal
[2] LR, LMR, HR
[3] HR

Delivery Content

- Photometer
- Thermoreactor RD125
- Tube stand
- Membrane filter set
- Instruction manual
- Warranty information
- Reagents for the following ranges

  COD 3 - 150 mg/L and 20 - 1,500 mg/L
  Ammonia 1 - 50 mg/L N,
  Nitrate 1 - 30 mg/L N,
  Nitrite LR 0.01 - 0.3 mg/L N
  Nitrogen 5 - 150 mg/L N
  Phosphate 0.02 - 1 mg/L P /
  0.06 - 3.5 mg/L PO_4

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Photometer MultiDirect

The MultiDirect is a contemporary, microprocessor-controlled photometer with ergonomically designed keypad and large-format graphic display. It is equipped with a wide range of pre-programmed methods based on the proven range of Lovibond® tablet reagents, liquid reagents, tube tests and powder reagents (VARIO Powder Packs). Users can also store their own methods.

The MultiDirect has 6 precision interference filters using different wavelengths.

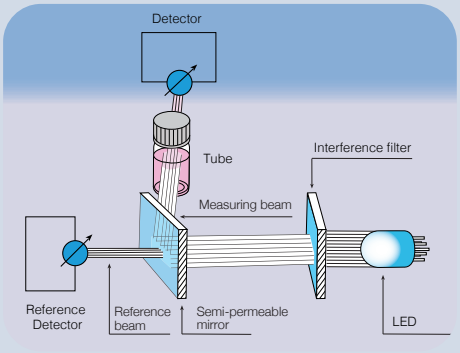
The unique design of the optics allows the automatic selection of the required wavelength without any moving parts. This and the dual beam technology utilizing an internal reference channel, guarantees the highest accuracy.

For portable use, the instrument operates with seven standard rechargeable batteries (supplied). These batteries are available all over the world and are easily changed.

The integrated intelligent charge controller allows simultaneous operation of the unit and battery charging (using the supplied power pack). The MultiDirect also operates without a power pack by using alkaline manganese batteries.

The entire instrument, including sample chamber (the most critical component of any photometer) and battery compartment, is waterproof, ensuring that no water comes in contact with the electronic components.

Dual Beam Technology



The two-beam technology with one internal reference channel guarantees highest accuracy.

Dual Beam technology and Interference filters for highest accuracy

Long-term stable LEDs as light sources

Update of new methods & languages via Internet (free of charge)

A wide range of pre-programmed methods

NIST Traceability

The instrument is factory pre-adjusted to international standards. The user can set the programmed instrument in "user calibration mode" with standards traceable to NIST adjust.
(NIST = National Institute of Standards and Technology)

New methods

Test methods are regularly updated to suit market requirements. You can find software updates for new methods and additional languages on our website at .

Polynomials

From measured data pairs (concentration Absorption), the user can create a polynomial an obedient polynomial as a calibration function for own methods serves.
A known polynomial may also be used. 25 order polynomials (y = A+Bx+Cx2 +Dx3 +EX4 + FX5) can be stored together with user-specific parameters such as wavelength, measuring range, unit and number of decimals.

Concentration

Alternatively, calibration functions for your own methods can be created by measuring two to fourteen standards. On the basis of the concentrations/absorption pairs obtained, the photometer will calculate a linear interpolation between the measured points. Up to 10 methods can be stored for further sample measurements.

Applications

- Waste Water
- Drinking Water
- Industrial Process Water
- Science & Research
- Governmental and Private Laboratories
- Mobile Applications

Please see page 86 onwards for reagents (order codes)

Lovibond® Service Products page 78

Photometer MultiDirect

Technical Data

Display	Graphic-display
Optics	6 temperature compensating LED, internal reference channel, photodiode in protected sample chamber
Wavelengths	6 interference filters in one unit, λ_1 = 430 nm IF Δ λ (nm) = 5, λ_2 = 530 nm IF Δ λ (nm) = 5, λ_3 = 560 nm IF Δ λ (nm) = 5, λ_4 = 580 nm IF Δ λ (nm) = 5, λ_5 = 610 nm IF Δ λ (nm) = 6, λ_6 = 660 nm IF Δ λ (nm) = 5 IF = interference filter
Interface	RS232 for printer and PC-connection
Download	Software and methods up-date by means of the internet
Operation	Acid and solvent resistant, touch-sensitive keypad with audible feedback

Power Supply	7 Ni-MH-battery pack (AA/Mignon), charged whilst in the unit with external mains charger, integrated overload cut-out
Dimensions (L x W x H)	265 x 195 x 70 mm
Weight (unit)	approx. 1000 g with rechargeable batteries
Ambient Conditions	up to max. 90 % humidity (non condensing) approx. 5-40 °C
Auto-Off	approx. 20 minutes after last keypress with no loss of data
Auto-Check	By pressing ON/OFF-key
Memory Capacity	approx. 1000 data sets with date, time and registration number
Approval	CE

Delivery Content

- Instrument in carrying case
- 7 rechargeable batteries
- 1 lithium battery
- Mains charger, 100-240 V
- PC connection cable
- 3 round vials each 24 and 16 mm ø
- 1 adapter for 16 mm ø vials
- 3 syringes
- 1 plastic beaker 100 ml
- Warranty information
- Certificate of Compliance
- Instruction Manual

Order code: 210000-B
Order code: 210000
(without lithium battery and reagents)

Please specify the reagents or parameters required at time of order.

You can find updated information on parameters and measuring ranges on our website at

Please see page 86 onwards for reagents (order codes)

Accessories

Item	Code
Set of 12 round vials with lid Height 48 mm, Ø 24 mm	197620
Set of 10 round vials with lid Height 90 mm, Ø 16 mm	197665
Adapter for round vials Ø 16 mm	19801094
Lid for adapter	19801100
Sealing ring for vial ø 24 mm, 12 pc.	197626
Vial stand for 6 round vials Ø 24 mm, acrylic glass	418951
Vial stand for 10 vials Ø 16 mm, acrylic glass	418957
Cleaning cloth for vials	197635
Adapter for Vacu-vial®	192075
Plastic beaker, 100 mL	384801
Plastic funnel with handl	471007
Plastic stirring rod, 13 cm length	364100
Plastic stirring rod, 13 cm length, 10 pc.	364120
Plastic stirring rod, 10 cm length	364109
Plastic stirring rod, 10 cm length, 10 pc.	364130
Serviceplan	19802801
Factory calibration certificate	999750

Item	Code
Cleaning brush, 10 cm	380230
Syringe, plastic, 2 mL	369080
Syringe, plastic, 5 mL	366120
Syringe, plastic, 10 mL	369090
Rubber seal cap	19801501
Mains charger, 100-240 V, 50-60 Hz, with international adapters	193010
Cable for connection to PC, serial 9-pins	198198
AA Ni-MH, 1100 mAh, 7 pc.	1950020
Lithium battery	1950017
Verification Standard Kit	215650
Plain paper printer Incl. mains adapter and RS 232 cable	198077

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Verification Standard Kit

The verification standards serve to verify the photometric accuracy and reproducibility of the results at the different wavelengths. The absorption value is stated.
The kit contains one zero standard, six different vials for checking six different wave lengths and allows checking the complete range of the MultiDirect photometer.
The shelf life of the verification standard kit is two years from the date of production, provided that storage and use are in accordance with the instructions provided.
Measurements are taken in mAbs.

Verification Standard Kit **215650**
(MultiDirect)

VIS / UV-VIS Spectrophotometer XD7000 / XD7500

Please see page 86 onwards for reagents (order codes)

The Tintometer® Group has a decade-long heritage of standing for in-house produced high quality reagents and instruments. With the XD series, the portfolio is supplemented by an equally first-class spectrophotometer that fulfils even the highest demands in water analysis.

The Lovibond® UV-VIS and VIS spectrophotometers XD7500 and XD7000 combine the latest reference beam technology with high user-friendliness and flexibility.

All from one provider

The XD instruments. offer over 150 preprogrammed methods, which are based on the proven Lovibond® reagents. The combination of Photometer and Lovibond® reagents gives the user a complete system for immediate work input. There are no issues concerning with the implementation of reagent and instrument.
This means that the user not only gets uncomplicated equipment for the working area at all times but also competence in after-sales service.

Quality at an affordable price

The outstanding price/performance ratio of the total systems XD7000 and XD7500 is maintained with the diverse range of Lovibond® reagents. So the user can be sure when purchasing the instrument to also have a low-priced solution for consumables in future.

Method selection made simple

The barcoded cuvette tests allow the user an immediate access to the respective method: the insertion of the 16 mm cuvettes into the light-shielded duct is sufficient.

Likewise for any other of the more than 150 parameters, the external barcode reader provides direct method selection. By adopting these barcodes into customer documents, such as work instructions, the correct operation is significantly streamlined.

Global deployment desirable

With its 24-language instrument software, a 27-language user manual and a methodology handbook written in 8 languages, the XD7000/7500 series qualifies for global applicability.

Through the self-explanatory pictograms the methodology handbook gives the user a quick and reliable overview of the path to the measurement result.

Straightforward user guidance

The bright colour display and the easy-to-use menu navigation allow every user fast access to the instrument and its functions.

Diversity assured

In addition to the pre-installed Lovibond® methods the user also benefits from the various cuvette sizes of 16 and 24 mm round cuvettes, as well as 10, 20 and 50 mm rectangular cuvettes.
These are all automatically recognised, without exception, and the user acquires a wide variety of methods.

The possibility of using a 13 mm cuvette by use of an adapter further enhances the method portfolio.

Always up to date

The latest software updates are always available for registration-free download on our website .

This allows users to keep their own XD instrument at the cutting edge with new methods, functions or languages.

Extensive features inclusive

The XD7000/7500 series offers a comprehensive set of features for versatile use in the analysis of water-based solutions:

- Preprogrammed Lovibond® methods
- The creation of user-defined methods using multiple wavelengths.
- Measurement of transmission and absorption
- Spectral scan
- kinetic analysis

Well secured

Backup of own data is becoming increasingly important, not just for the maintenance of Good Laboratory Practice (**GLP**). For this purpose, the user can set up to 3 user levels: Administrator, user and guest (sometimes with password protection).

Guidelines and quality standards that call for such security will be handled in accordance with respective requirements.

Lovibond® Service Products page 78

Analytical quality assurance

In many application areas, beyond the GLP guidelines, reliable assurance of correct and precise measurement results is both a requirement and a challenge.

The XD7000 and XD7500 instruments meet this requirement with 3 selectable functions:

PCheck

The complete photometer is checked by means of the Verification Standard Kit, which can be ordered separately.

MCheck

The photometer is checked in conjunction with the method.

SCheck

The SCheck checks whether the photometric determination of other ingredients in the sample have been disturbed.

Each of the mentioned check options includes the capability to define inspection time intervals, indicating verified results and issuing a test report.

Spectrophotometer XD7000
Order Code: 71307000

Spectrophotometer XD7500
Order Code: 71307500

Delivery Content

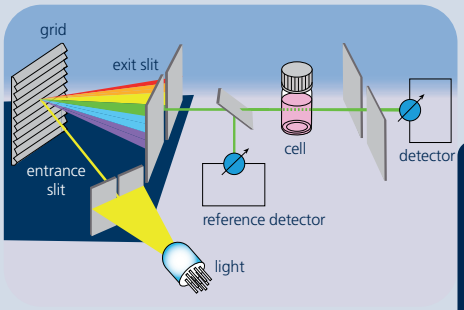
- Spectrophotometer
- Set of 4 round vials with lid + zero vial XD7x00 (24mm)
- zero via 16 mm for XD7000 / XD7500
- 4 batteries AA
- Power supply unit 100 - 240 V / 50-60 Hz / 12 V DC Output
- Power cable
- Quickstart-Guide in 27 languages
- Full User-Manual in 8 languages (digital)
- Handbook of Methods (digital)
- Calibration record in shipping box

Technical data	XD7000	XD7500
Wavelength range	320 – 1100 nm (scan range)	190 – 1100 nm (scan range)
Light source	Tungsten-halogen-lamp	Xenon flash lamp (500 millionen flashes possible)
Optical system	grid monochromator with reference beam and beam splitter after exit slit	
Measurement	grid monochromator with reference beam and beam splitter after exit slit	
Suitable Vials	round: 13, 16 and 24 mm, rectangle: 10, 20 and 50 mm	
Automatic Tube Recognition	automatic recognition of 16 and 24 mm round tubes, 10,20,50 mm rectangular tubes	
Test recognition	via internal or external barcode reader (depending on the method)	
Dimensions (W x H x D)	422 x 195 x 323 mm	
Weight	approx. 4.5 kg	
Power supply	100 – 240 V, 50 / 60 Hz	
Display	7" high contrast colour graphic-dislay	
Protection class	IP30	
Keyboard	membrane keyboard	
Interfaces	1 x ethernet RJ45, 1 x USB A for external memory, keyboard, mouse, barcode-scanner and 1x USB B for PC and PCL compatible printer	
Spectral scope	4 nm	
Wavelength accuracy	± 1 nm on all Holmium peaks	
Wavelength reproducibility	better than 0,5 nm	
Photometric range	-3.3 - +3.3 Abs	
Photometric resolution	Abs.: 0,001 Transmission: 0,1%	
Photometric accuracy	0.003 Abs below 0.6 Abs / 0.5 % from 0.6 to 2.0 Abs	
Photometric reproducibility	0.003 Abs below 0.6 Abs / 0.5 % from 0.6 to 2.0 Abs	
Photometric linearity	<1% up to 2.0 Abs between 340 to 900 nm	
Scattered light at 340 and 408 nm	< 0.1% transmission	< 0.05% transmission
Drift	< 0.005 Abs per hour after 15 minutes heat up time	
Internal storage	approx. 5000 data sets (method, user ID, date, result), autostorage function / manual storage function	
Programmability	up to 100 user programs, 20 user profiles	

The Handbook of Methods

The 900 pages contain more than 160 Lovibond® test methods. Each method can also be selected directly by the XD instrument via barcode with the scanner. With basic chapters on water analysis, source and literature references, references to standards and explanations for possible errors, it is also a compact reference book for photometry - printed or digital.

The methods manual is currently available in eight languages.



The optical system

Using reference beam technology, the spectrophotometers achieve maximum accuracy in the visual and non-visual wavelength range.

The light source according to the model and consists of a tungsten-halogen lamp in the XD7000, while the XD7500 is equipped with a xenon flash lamp.
With an output of up to 500 million flashes, the UV light source is designed to last the life of the instrument and is a cost-effective replaceable part as opposed to the usual deuterium lamps.

By means of a grating monochromator and beam splitter behind the exit slit, the respective required wavelength is precisely demarcated and allows a wave length accuracy of +/- 1 nm.

The principle in detail

The light emitted by the light source falls through the entrance slit on the monochromator and is deflected by the grating situated towards the exit slit. This mechanism, along with the limitation after the exit slip, enables the selected wavelength to be accurately reproduced.
The semi-transparent mirror deflects the reference beam while allowing the light beam to pass through to the sample in the cuvette.
The photodiodes act as detectors and transmit these signals to the microprocessor. The result is calculated and issued as a value in the display.

Accessories

Item	Code
Replacement lamp for XD7000	71310000
Transport case for XD Spectrophotometer	71310010
12 Volt Connection cable for XD Spectrophotometer	71310020
Barcode Scanner USB	71310030
Cleaning cloth for tubes	197635
USB-cable for PC-Connection, 3 m length	2444482
Batteries (AA), 4er pack	1950025
Round tube with lid, 12er-pack height 48 mm; diameter 24 mm	197620
Round tube with lid, 5er-pack height 48 mm; diameter 24 mm	197629
Round tube with lid, 10er-pack, 12er-pack height 90 mm; diameter 16 mm	197665
Tube stand for 6 vials 24 mm acrylic glass with laser engraving Lovibond	418951
Tube stand for 10 vials 16 mm acrylic glass with laser engraving Lovibond	418957
W100/OG/10 mm rectangle tube opt. glass	601040
W100/OG/20 mm rectangle tube opt. glass	601050
W100/OG/50 mm rectangle tube opt. glass	601070
W110/UV/10 mm rectangle tube quartz UV	661130
W110/UV/20 mm rectangle tube quartz UV	661140
W110/UV/50 mm rectangle tube quartz UV	661160
Secondary standard set VIS with DAkkS calibration	711160
Secondary standard set VIS with UV mit DAkkS calibration	711161
Automatic pipette 1-5 ml with stepless volume adjustment (digital)	419076
Pipette tips 1-5 ml, white (Pckg with 100 pc)	419066
Automatic pipette 0.1-1 ml with stepless volume adjustment (digital)	419077
Pipette tips 0.1-1 ml , blue (Pckg with 100 pc)	419073
Zero vial 16 mm for XD7000/XD 7500	215661
Zero vial 24 mm for XD7000/XD 7500	215662
Handbook of Methods, german	003864401
Handbook of Methods, english	003864402
Manuel des Méthodes, french	003864403
Manuale di Metodi, italian	003864404
Handbook de Métodos, spanish	003864405
Manual de Métodos, portuguese	003864406
Metotlar el Kitabi, turkish	003864407
Handbook of Methods, chinese (simplified)	003864408
Методическое пособие, русский язык	003864409
Methodehandboek, nederlands	003864410
Serviceplan	19802801
Factory calibration certificate	999750

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new!

Lovibond® Service Products

You want to maintain your instrument and at the same time trust in the reliability of your measurements and get valid results?

The Lovibond® service products are specially designed to support you in the best possible way.

We provide the following options for you to better maintain your product:

- 3 years service plan
- Fixed price service packages
- Inspection & calibration of XD spectrophotometer
- Factory calibration certificates

Lovibond® Service Plan – for all new devices

You want to be sure that your measuring instruments for water analysis have the longest possible service life and continuously deliver reliable measurement results. Lovibond® offers you the optimal and cost-effective solution for every photometer with the 3-year service plan.

Take advantage of our annual service and avoid unnecessary costs, get the full performance potential out of your equipment and prevent compliance & downtime risks. Keep your workflows & processes running smoothly protect your equipment investment.

Includes:

- Inspection
- Functions check
- Fault detection
- Troubleshooting
- Repairs
- Spare parts replacement
- Calibration
- Test protocol
- Firmware update
- Return shipping costs within EU

3 years Service Plan

Device	Duration	Part No.
MD100 / MD110 / MD200		19802801
MD600 / MD610		19802802
MD640	3 years	19802803
PM600 / PM620 / PM630		19802804
MultiDirect		19802805

Conditions

- Is offered only at the time of purchase and will be activated immediately
- Applicable to all Lovibond® photometers, expires after 3 years
- Clients will be informed in case of an unrepairable damage (Possibly exchange of parts)
- Service contracts only available for newly purchased devices
- Price for the whole contract has to be paid upfront
- Offer is only valid within Europe

Lovibond® Fixed Price Packages – for all used devices

Get safety for 5 years outside warranty for possible defects and cost calculation in case of inspection, calibration or repair. The Lovibond® Fixed Price Service Package for photometers include everything you need and can be ordered at any time.

Includes:

- Inspection
- Functions check
- Fault detection
- Troubleshooting
- Repairs
- Spare parts replacement
- Calibration
- Test protocol
- Firmware update

Fixed Price Service Packages

Device	Duration	Part No.
MD100 / MD110 / MD200	One time deal	19802701
MD600 / MD610		19802702
MD640		19802703
PM600 / PM620 / PM630		19802704
MultiDirect		19802705
SpectroDirect		19802706

Conditions

- One time deal
- 24 months warranty duration (up to 5 years after the end of legal warranty period)
- applicable to photometers (except XD 7000 and XD 7500)
- Shipping costs are not included
- Clients will be informed in case of an unrepairable damage (Possibly exchange of parts)

Inspection & Calibration of XD-Series

Inspection and calibration for spectrophotometers are essential for your measurement results and analytical quality assurance. We offer a special Service Package for the instruments of our XD series as one time deal at a fixed price.

Includes:

- Full instrument inspection
- Functions check
- Fault detection
- Troubleshooting
- Calibration
- Test protocol
- Firmware update

Device	Duration	Part No.
XD7000	One time deal	19802707
XD7500		19802708

Conditions

- One time deal, can be ordered at any time
- Repairs not included
- In the case of a defective instrument, we will make you an offer on the type of repair and replacement of parts
- Shipping costs are not included

Factory calibration certificate ISO 9001

Ensure the compliance of your instrument with regulatory requirements. Even for documentation, reporting and recording purposes calibration certificates are essential. We provide certificates for all our photometers, spectrophotometers and turbidimeters.

Device	Part No.
MD100 / MD110 / MD200	999750
PM600 / PM620 / PM630	999751
MD600 / MD610 / MD640 / MultiDirect	999752
SpectroDirect	999753
XD7000	999754
XD7500	999755
TB210 IR / TB211 IR / TB300 IR	999765

Conditions

- Certificates are offered for both new and used devices.
- Photometric accuracy and wavelength accuracy of spectrophotometers are tested with NIST traceable standards.
- In case of used instruments, standard fixed price service package charges apply on top of certificate price.


Reagents
DPD No.1

Indicator Systems
page 82

Reagents
page 86

Reagents from our own production

For decades, Tintometer has been producing reagents for water analysis and distributing them marketed worldwide under the name Lovibond®. Different forms of reagents are needed for different areas of application. Even internationally, users prefer different forms of presentation.

Our wide range of products extends from blistered tablets to powder reagents packaged in aluminium foil to liquid reagents in dosage-precise dropper bottles.

By the way: Tintometer is the only supplier on the market that designs all reagent forms with its own research & development and manufactures them in its own production.

Indicator-Systems

Green Chemistry

low the green ribbon on Lovibond® reagents. The Erlenmeyer flask with the leaf in the green Green Chemistry logo is more than a promise: For all tablets, powder and liquid reagents, it is our claim, formulations to be particularly environmentally compatible. Hazardous substances are - if possible - are replaced by non-hazardous and functionally equivalent substitutes.

Where this is not possible due to the required chemistry of the detection reaction, their concentration is reduced to the minimum necessary. And this is done without compromising the quality of the analysis results.

For example, all reagents offered for the pool sector are free of boric acid, which is often used as an auxiliary substance throughout the industry.

Boric acid is classified by the EU as harmful to reproductive ability.

However, the Lovibond® DPD No.1 tablet is not only 100 % free of boric acid, it also guarantees the sufficient buffering effect prescribed by the standard. With these properties it therefore occupies the top position in the competition.

By the way, our Green Chemistry has been awarded for its innovation.

More information about our "green chemistry" can be found here:

With DPD *Evo* one step ahead

The purple band on our DPD *Evo* reagents puts you ahead of the game when it comes to determining total chlorine levels. The semi-filled potassium iodide crystal leads you directly to the most advanced and safest DPD tablets on the market. As a pioneer of the DPD method, Tintometer is once again one step ahead. We have developed new formulations for the reagent tablets DPD No.3, DPD No.3 HR and DPD No.4, which contain considerably less potassium iodide, which is harmful to health. Because your health and safety are important to us!

Lovibond® has thus reacted at an early stage to the new general hazard classification for potassium iodide (KI). Potassium iodide is considered without exception to be a "hazard for organ damage (thyroid)". Above a certain level, hazard labelling is required and there are restrictions on distribution.

The *Evo* new products are label-free and guarantee the usual reliable test results. They are fully compatible with the classic DPD No.3 and DPD No.4 tablets. The *Evo* reagents can also be purchased as usual by private pool owners.

For all classic DPD No.3 and DPD No.4 formulations with more than 1% and almost always more than 10% potassium iodide, the new labelling requirement will have a considerable impact in future.

These tablets are mainly used in pools and swimming pools for the detection of total chlorine and oxygen.

With the analysis results, hygiene and care products can be dosed correctly. The reason for the high AI content of the reagents lies in the standardised analytical procedures for chlorine determination, which are used, for example, in public swimming pools and for drinking water testing. In the private environment, however, these standards are irrelevant.

Classic DPD tablets with a potassium iodide content of ≥ 10 % require hazard labelling with immediate effect and the ECHA classification STOT RE1, H372 applies.

Sale to private users requires:

- Official permission for sale**
- Proof of expert knowledge of the seller**
- Obligation to identify and advise on sale**
- Documentation obligation in the form of a dispensing book by the seller**
- Prohibition of mail-order sales of appropriately labelled products (thus no Internet trade!)**
- Sale to private individuals only in child-resistant packaging marked with Braille

** only valid for sale in Germany

According to the ECHA, the classification STOT RE2, H373 applies to conventional tablets containing more than 1% and less than 10% potassium iodide. For the supply of these products to private users within the EU, they must be labelled with Braille.

Our new *Evo* tablets are not affected by this labelling obligation. They may be sold as usual and purchased via self-service in the trade. Retailers and customers gain security with the new *Evo* tablets from Lovibond® and also save effort, time and above all money.

More information about our *Evo* products can be found here:

Tablet reagents

The reagent tablet is the most popular indicator system because it has several advantages. Its precise dosability, easy handling and very long shelf life make it a popular choice. Tablets can withstand almost all climatic conditions.

In part only thanks to the aluminium their blister packaging, from which they can be released at the press of a finger. Their compact form leaves almost no room for changes in the mixture due to external influences. Individually packaged, some tablets can be stored for up to 10 years.
The weight of the tablet is fixed within very narrow limits. This allows a high dosing accuracy to be achieved. These solid tablets are designed for ease of use and to dissolve easily in the sample being tested.

Achieving a tablet substance which has both the solidity and the ease of dissolution needed for ease of use whilst having no undesired effects upon the analytical results requires many years of experience and a deep knowledge of the underlying chemistry.

You can therefore rely on over 130 years of expertise in the production of reagent tablets by Lovibond®.

* HACH® is a registered trademark of Hach Company, Loveland, Colorado. The use of the HACH® trademark does not imply any affiliation with or approval by Hach Company regarding the formulation, testing or compatibility of these products for use in HACH® brand spectrophotometers or other instruments or systems.

Detailed information see page 86

Liquid reagents

The use of liquid reagents has one decisive advantage: their speed, because there is no need to dissolve reagents in solid form. However, liquid reagents must be dosed exactly, for example, with a pipette. Warning: Incorrect handling can result in significant dosage errors. In addition, pipettes must be checked continuously to ensure that they remain accurate.

Because of these issues, the counting of droplets for simple dosing has therefore become established.

Here, too, there are external factors that can influence the result. This is because the drop size can change due to temperature, material, diameter of the dosing tip and composition of the reagent.

Liquid reagents have a significantly shorter shelf life than comparable products in solid form. The shelf life also deteriorates after opening. If the storage conditions are observed, Lovibond® DPD and Phenolred solutions have a shelf life of up to two years from the date of manufacture.

Powder reagents

Simply tear open the aluminium foil pack and add the contents to the water sample: Powder reagents can be used easily and quickly. This makes the Powder Packs a popular means of detection in water analysis in many countries.
Lovibond® Powder Packs are manufactured to the same high quality standards that have been tried and tested in tablet production for decades.

Tintometer is appreciated worldwide for this.

The Lovibond® Powder Pack range is a valuable addition to the range of reagent systems. In addition, the range covers all known parameters - from aluminum to zinc.

Due to their chemical properties, Lovibond® Powder Packs can also be used in Hach® equipment.

Tube tests

It couldn't be easier:
The cuvettes already contain the essential indicators and reagents in the exact dosage required. Simply add the sample substance, insert it into the photometric measuring instrument and the result is available.

Anyone can carry out these simple tube tests. This makes highly sensitive and precise water tests exceptionally easy. The sample liquid discolours as soon as the reagent chemicals are added.

The photometer measures this discoloration and allows conclusions to be drawn about the concentration of the parameter being investigated.
The process is standardized, saves time and everyone is able to perform it, with significant reductions in workload.
The pre-dosed reagents eliminate the need to handle hazardous chemicals. This also increases work safety.
Up to six different measuring ranges are available for individual sample verifications. The round cuvettes are Ø 16 mm made of special optical glass as well as digestion or auxiliary reagents are supplied in a storage and shipping box.
It contains 24 or 25 reaction cuvettes and up to 2 zero cuvettes for adjusting the photometer systems.

Environmental Protection

In many countries used cuvette tests are taken back. This is followed by professional disposal or recycling on the basis of the applicable environmental protection aspects.

Specifications and Certificate of Analysis

To underline the high quality standard of Lovibond® reagents, a specification is available for each reagent and a certificate of analysis for each lot ( ).

Detailed information see page 86

Preparing samples for photometric measurements

Membrane filter set

Advantages

- removes turbid materials from samples
- differentiates between dissolved and total substances
- 0.45 µm mesh meets the requirements of the official German unitary procedure for water testing

To prevent the effects of light scatter, it must be ensured that all turbid materials are removed from the sample before photometric measurements are carried out. This can be achieved with the Lovibond® membrane filter set.

Where certain methods are employed (e.g., iron, manganese, CSB, etc.) a membrane filter set must be used to differentiate samples in terms of dissolved and total substances. The filter mesh size of 0.45 µm is in accordance with the official German unitary procedure for water testing.

Order code 366150
(covers 25 x 0.45 µm membrane filters and two 20 ml syringes)

Reagents

Test	No. Methods	Range	Wave lengths λ / nm								Method
			MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	
Acid Capacity $K_{S4.3}$	M20	0.1 - 4 mmol/L	-	610	610	610	610	-	615	615	Acid/Indicator [1, 2]
ADMI	MW-2530 MW-2531	2 - 100 mg/L 10 - 500 mg/L							400 bis 700	400 bis 700	Tristimulus Colorometry
Alkalinity-m	M30	5 - 200 mg/L	610	610	610	610	610	610	615	615	Acid/Indicator [1, 2, 5]
Alkalinity-m HR	M31	5 - 500 mg/L	-	-	610	610	610	610	615	615	Acid/Indicator [1, 2, 5]
Alkalinity-p	M35	5 - 500 mg/L	-	-	560	560	-	-	552	552	Acid/Indicator [1, 2, 5]
Aluminium VARIO	M50	0.01 - 0.25 mg/L	530	-	530	530	530	-	535	535	Eriochromcyanin R [2]
Aluminium	M40	0.01 - 0.3 mg/L	530	-	530	530	530	-	535	535	Eriochromcyanin R [2]
Ammonia	M60	0.02 - 1 mg/L	610	-	610	610	610	-	676	676	Indophenole blue [2, 3]
Ammonia VARIO	M62	0.01 - 0.8 mg/L	660	-	660	660	-	-	655	655	Salicylate [2]
Ammonia VARIO LR	M65	0.02 - 2.5 mg/L	-	-	660	660	-	-	655	655	Salicylate [2]
Ammonia VARIO HR	M66	1 - 50 mg/L	-	-	660	660	-	-	655	655	Salicylate [2]
Arsenic (III, V)	M68	0.02 - 0.6 mg/L	-	-	-	-	-	-	507	507	Silver diethyldithiocarbamate[1]
Biguanide (see PHMB)											

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[3] Photometrische Analysenverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart; 1989
[4] Photometrische Analyse, Lange/Vejdelek, Verlag Chemie; 1980
[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Tube	Display	Reagent	Reagent-form		Code			
24 mm ø		Alka-M-Photometer	T	100 Pc	**513210BT**	250	**513211BT**	
50 mm ☐ 10 mm ☐		Pt-Co-Units	-					
24 mm ø	$CaCO_3$	Alka-M-Photometer	T	100 Pc	**513210BT**	250	**513211BT**	
24 mm ø	$CaCO_3$	Alka-M-HR-Photometer	T	100 Pc	**513240BT**	250	**513241BT**	
24 mm ø	$CaCO_3$	Alka-P-Photometer	T	100 Pc	**513230BT**	250	**513231BT**	
24 mm ø	Al		**Set**		**535000**			
		VARIO Aluminum ECR/F20	PP	100 Pc				
		VARIO Aluminum Hexamine F20	PP	100 Pc				
		VARIO Aluminum ECR Masking Reagent	L	25 mL				
24 mm ø	Al	Aluminium No.1	T	100 Pc	**515460BT**	250	**515461BT**	
		Aluminium No.2	T	100 Pc	**515470BT**	250	**515471BT**	
		Combi pack# Aluminium per No.1 & No.2	T	100 Pc	**517601BT**	250	**517602BT**	
24 mm ø	NH_4 - N	Ammonia No.1	T	100 Pc	**512580BT**	250	**512581BT**	
		Ammonia No.2	T	100 Pc	**512590BT**	250	**512591BT**	
		Combi pack# Ammonia per No.1 & No.2	T	100 Pc	**517611BT**	250	**517612BT**	
		Ammonia conditioning powder (for seawater), for 50 Tests	P	26 g	**460170**			
24 mm ø	NH_4 - N		**Set**		**535500**			
		VARIO Ammonia Salicylate F10	PP	200 Pc				
		VARIO Ammonia Cyanurate F10	PP	200 Pc				
16 mm ø	NH_4 - N		**Set**		**535600**			
		VARIO Ammonia Salicylate F5	PP	50 Pc				
		VARIO Ammonia Cyanurate F5	PP	50 Pc				
		VARIO Am Diluent Reagent LR	TT	50 Pc				
		VARIO Deionised Water (for Zero)	L	100 mL				
16 mm ø	NH_4 - N		**Set**		**535650**			
		VARIO Ammonia Salicylate F5	PP	50 Pc				
		VARIO Ammonia Cyanurate F5	PP	50 Pc				
		VARIO Am Diluent Reagent HR	TT	50 Pc				
		VARIO Deionised Water (for Zero)	L	100 mL				
20 mm ☐	As	for chemicals see manual, reagents at specialized chemistry dealer						
		Arsenic Reaction apparatus Set			**370500**			
		Erlenmeyer flask			**370501**			
		glass stopper			**370502**			
		absorption tube			**370504**			
		W 100 (not included) (tube, optical glass-OG, 20 mm layer depth)			**601050**			

a) determination of free, combined and total
b) Thermoreactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C)
c) MultiDirect: Adapter is necessary for Vacu-vials® (Order code 192075)
d) Spectroquant® is a Merck KGaA Trademark
e) alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
f) additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
i) high range by dilution
j) Vacu-vials® is a Chemetrics Trademark

including stirring rod

Green Chemistry
Evo = Potassium-Iodid reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Reagents

Test	No. Methods	Range	Wave lengths λ / nm								Method
			MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	
Bromine	M80	0,05 - 13 mg/L	530	530	530	530	530	530	510	510	DPD [5]
	M79	0,05 - 1 mg/L	-	-	-	-	-	-	510	510	
	M78	0,1 - 3 mg/L	-	-	-	-	-	-	510	510	
Bromine Powder	M81	0.05 - 4.5 mg/L	-	-	530	530	-	-	510	510	DPD [1, 2]
Cadmium (Cd^{2+})	M87	0.025 - 0.75 mg/L	-	-	-	-	-	-	525	525	Cadion
Calcium Hardness	M191	20 - 500 mg/L	560	560	560	560	560	560	560	560	Murexid [4]
Chloride	M90	0.5 - 25 mg/L	530	-	530	530	-	-	450	450	Silver nitrate/turbidity
	M93	5 - 250 mg/L [i)]	530	-	-	-	-	-	-	-	
Chloride	M91	5 - 60 mg/L	-	-	-	-	-	-	455	455	Iron (III)-thiocyanate [4]
Chloride	M92	0.5 - 20 mg/L	430	-	430	-	-	-	430	430	Mercury thiocyanate / Iron nitrate
Chlorine [a)]	M100	0,01 - 6 mg/L	530	530	530	530	530	530	510	510	DPD [1, 2]
		0,02 - 3 mg/L	-	-	-	-	-	-	-	-	
		0,02 - 6 mg/L	-	-	-	-	-	-	-	-	
	M99	0,02 - 0,5 mg/L	-	-	-	-	-	-	510	510	
	M98	0,1 - 6 mg/L	-	-	-	-	-	-	510	510	
Chlorine HR (DPD) [a)]	M103	0,1 - 10 mg/L	530	530	530	530	530	530	-	-	DPD [1, 2]
	M104	0,1 - 10 mg/L	-	-	-	-	-	-	510	510	
Chlorine [a)]	M101	0.02 - 4 mg/L	530	530	530	530	530	-	510	510	DPD [1, 2]
		0.02 - 3 mg/L	-	-	-	-	-	-	510	510	
Chlorine Powder MR	M113	0.02 - 3.5 mg/L	530	-	530	530	-	-	510	510	DPD [1, 2]

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Tube	Display	Reagent	Reagent-form	Code					
24 mm ø	Br	For concrete use, see handbook of methods							
50 mm ☐		DPD No.3 *Evo*	T	100 Pc	**511420BT**	250	**511421BT**	500	**511422BT**
10 mm ☐		DPD No.3 HR *Evo*	T	100 Pc	**511920BT**	250	**511921BT**	500	**511922BT**
		Combi pack# DPD No.1 & DPD No.3 *Evo*	T	100 Pc	**517931BT**	250	**517932BT**		
		DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**
		DPD No.3	T	100 Pc	**511080BT**	250	**511081BT**	500	**511082BT**
		Combi pack# DPD per No.1 & No.3	T	100 Pc	**517711BT**	250	**517712BT**		
		DPD No.1 High Calcium [e]	T	100 Pc	**515740BT**	250	**515741BT**	500	**515742BT**
		DPD No.3 High Calcium [e]	T	100 Pc	**515730BT**	250	**515731BT**	500	**515732BT**
		Combi pack# DPD per No.1 & No.3 High Calcium [e]	T	100 Pc	**517781BT**	250	**517782BT**		
		Glycine [f]	T	100 Pc	**512170BT**	250	**512171BT**		
		Combi pack# DPD per No.1 & Glycine	T	100 Pc	**517731BT**	250	**517732BT**		
24 mm ø	Br	Chlorine Total DPD F10	PP	100 Pc	**530120**				
16 mm ø	Cd	Spectroquant® 1.14834.0001[d]	TT	25 Pc	**420750**				
24 mm ø	$CaCO_3$	Combi pack# Calcio H per No.1 & No.2	T	100 Pc	**517761BT**	250	**517762BT**		
24 mm ø	Cl^-	Chloride T1	T	100 Pc	**515910BT**	250	**515911BT**		
		Chloride T2	T	100 Pc	**515920BT**	250	**515921BT**		
		Combi pack# per Chloride T1 & T2	T	100 Pc	**517741BT**	250	**517742BT**		
24 mm ø	Cl^-	Chloride-51 / Chloride-52 (L)	**Set**		**2419031**				
24 mm ø	Cl^-		**Set**		**56R018490**				
		KS251 (Chloride Reagent A)	L	65 mL	**56L025165**				
		KS253 (Chloride Reagent B)	L	65 mL	**56L025365**				
24 mm ø	Cl_2	DPD No.3 EVO / DPD No.3 HR *Evo*	T	s.a.					
50 mm ☐		Combi pack# DPD No.1 & DPD No.3 *Evo*	T	s.a.					
10 mm ☐		DPD No.1 / 3	T	s.a.					
		Combi pack# DPD No.1 / 3 per No.1 & No.3	T	s.a.					
		DPD No.1 / 3 High Calcium [e]	T	s.a.					
		Combi pack# DPD No.1 / 3 High Calcium per No.1 & No.3 [e]	T	s.a.					
24 mm ø	Cl_2	DPD No.3 HR *Evo*	T	s.a.					
10 mm ☐		Combi pack# DPD No.1 & DPD No.3 *Evo*	T	s.a.					
		DPD No.1 HR	T	100 Pc	**511500BT**	250	**511501BT**	500	**511502BT**
		DPD No.3 HR	T	100 Pc	**511590BT**	250	**511591BT**	500	**511592BT**
		Combi pack# DPD HR per No.1 & No.3	T	100 Pc	**517791BT**	250	**517792BT**		
24 mm ø	Cl_2		**Set**		**471056**				
24 mm ø		DPD 1 Buffer Solution	L	15 mL	**471010**	100	**471011**		
		DPD 1 Reagent Solution	L	15 mL	**471020**	100	**471021**		
		DPD 3 Solution	L	15 mL	**471030**	100	**471031**		
24 mm ø	Cl_2	VARIO Chlorine Free DPD F10	PP	100 Pc	**530180**			1000	**530183**
		VARIO Chlorine Total DPD F10	PP	100 Pc	**530190**			1000	**530193**

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c) MultiDirect: Adapter is necessary for Vacu-vials® (Order code 192075)
d) Spectroquant® is a Merck KGaA Trademark
e) alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
f) additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
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including stirring rod

Green Chemistry
Evo = Potassium-Iodid reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Reagents

Test	No. Methods	Range	Wave lengths λ / nm								Method
			MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	
Chlorine Powder [a]	M110	0.02 - 2 mg/L	530	-	530	530	530	-	510	510	DPD [1, 2]
	M111	0.1 - 8 mg/L	530	-	530	-	530	-	-	-	
Chlorine HR (KI)	M105	5 - 200 mg/L	530	-	530	530	-	-	470	470	KI / Acid [5]
Chlorine dioxid	M120	0,02 - 11 mg/L	530	530	530	530	530	-	510	510	DPD/Glycine [1,2]
		0,05 - 2,5 mg/L	-	-	-	-	-	-	-	-	
	M119	0,05 - 1 mg/L	-	-	-	-	-	-	510	510	
Chlorine dioxide Powder	M122	0.04 - 3.8 mg/L	530	-	530	530	-	-	510	510	DPD [1, 2]
Chrome (III, VI) [b]	M124	0.005 - 0.5 mg/L	-	-	-	-	-	-	542	542	1,5-Diphenylcarbozide[1, 2]
	M125	0.02 - 2 mg/L	-	-	530	530	-	-	542	542	
COD VLR	M134	2.0 - 60.0 mg/L	-	-	-	-	-	-	347	347	Dichromate / H_2SO_4 [1, 2]
COD LR (ISO 15705:2002)[b]	M130	3 - 150 mg/L	430	430	430	430	-	-	443	443	Dichromate / H_2SO_4 [1, 2]
COD LMR (ISO 15705:2002)[b]	M133	15 - 300 mg/L	430	430	430	430	-	-	445	445	Dichromate / H_2SO_4 [1, 2]
COD MR (ISO 15705:2002)[b]	M131	20 - 1,500 mg/L	610	610	610	610	-	-	596	596	Dichromate / H_2SO_4 [1, 2]
COD HR [b]	M132	200 - 15,000 mg/L	610	610	610	610	-	-	602	602	Dichromate / H_2SO_4 [1, 2]
Copper [a]	M150	0.05 - 5 mg/L	560	560	560	560	560	560	559	559	Biquinolin [4]
	M149	0.05 - 1 mg/L	-	-	-	-	-	-	559	559	

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Tube	Display	Reagent	Reagent-form	Code					
24 mm ø 10 mm ☐ Multivial	Cl_2	Chlorine Free DPD F10 Chlorine Total DPD F10	PP PP	100 Pc **530100** 100 Pc **530120**				1000 **530103** 1000 **530123**	
16 mm ø	Cl_2	Acidifying GP Chlorine HR (KI) Combi pack# per Chlorine HR (KI) & Acidifying GP	T T T	100 Pc **515480BT** 100 Pc **513000BT** 100 Pc **517721BT**	250 **515481BT** 250 **513001BT** 250 **517722BT**				
24 mm ø 24 mm ø 50 mm ☐	ClO_2	For concrete use, see handbook of methods DPD No.3 *Evo* DPD No.3 HR *Evo* Combi pack# DPD No.1 & DPD No.3 *Evo*	 T T T	 100 Pc **511420BT** 100 Pc **511920BT** 100 Pc **517931BT**	 250 **511421BT** 250 **511921BT** 250 **517932BT**			500 **511422BT** 500 **511922BT**	
		DPD No.1 DPD No.3 Combi pack# DPD per No.1 & No.3 DPD No.1 High Calcium [e] DPD No.3 High Calcium [e] Combi pack# DPD per No.1 & No.3 High Calcium [e] Glycine [f] Combi pack# DPD per No.1 & Glycine	T T T T T T T T	100 Pc **511050BT** 100 Pc **511080BT** 100 Pc **517711BT** 100 Pc **515740BT** 100 Pc **515730BT** 100 Pc **517781BT** 100 Pc **512170BT** 100 Pc **517731BT**	250 **511051BT** 250 **511081BT** 250 **517712BT** 250 **515741BT** 250 **515731BT** 250 **517782BT** 250 **512171BT** 250 **517732BT**			500 **511052BT** 500 **511082BT** 500 **515742BT** 500 **515732BT**	
24 mm ø	ClO_2	Chlorine Free DPD F10 Glycine [f] VARIO Glycine Reagent 10%	PP T L	100 Pc **530100** 100 Pc **512170BT** 29 mL **532210**	 250 **512171BT**			1000 **530103**	
50 mm ☐ 16 mm ø	Cr	PerSulfate Reagent for CR Chromium Hexavalent	PP PP	100 Pc **537300** 100 Pc **537310**					
16 mm ø	O_2	COD 2-60 mg/L	TT	25 Pc **2423100** with Barcode					
16 mm ø	O_2	VARIO COD 0-150 mg/L VARIO COD 0-150 mg/L, mercury free* *without Chloride removal	TT TT	25 Pc **2420720** with Barcode 25 Pc **2420710** with Barcode				150 **2420725**	
16 mm ø	O_2	COD 15-300 mg/L	TT	25 Pc **2423120** with Barcode					
16 mm ø	O_2	COD VARIO 0-1500 mg/L COD VARIO 0-1500 mg/L, mercury free* *without Chloride removal	TT TT	25 Pc **2420721** with Barcode 25 Pc **2420711** with Barcode				150 **2420726** 150 **2420716**	
16 mm ø	O_2	COD VARIO 0-15000 mg/L COD VARIO 0-15000 mg/L, mercury free* *without Chloride removal	TT TT	25 Pc **2420722** with Barcode 25 Pc **2420712** with Barcode				150 **2420727**	
24 mm ø 50 mm ø	Cu	Copper No.1 Copper No.2 Combi pack# Copper per No.1 & No.2	T T T	100 Pc **513550BT** 100 Pc **513560BT** 100 Pc **517691BT**	250 **513551BT** 250 **513561BT** 250 **517692BT**				

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f) additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
i) high range by dilution
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including stirring rod

Green Chemistry
Evo = Potassium-Iodid reduced

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Reagents

Test	No. Methods	Range	MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Method
			Wave lengths λ / nm								
Copper [a]	M151	0.05 - 4 mg/L	-	-	560	-	-	-	560	560	Bicinchoninate
Copper, free VARIO	M153	0.05 - 5 mg/L	560	-	560	560	560	-	560	560	Bicinchoninate
Cyanide	M157 M156	0.01 - 0.5 mg/L 0.005 - 0.2 mg/L	- -	- -	580 -	580 -	- -	- -	585 585	585 585	Pyridine-barbituric acid [1]
Cyanuric acid	M160	10 - 160 mg/L	530	530	530	530	530	530	530	530	Melamine
Cyanuric acid HR	M161	20 - 200 mg/L	-	-	530	530	530	530	530	530	Melamine
DEHA	M165	20 - 500 µg/L	-	-	560	560	-	-	562	562	PPST [3]
DEHA VARIO	M167	20 - 500 µg/L	560	-	560	560	-	-	562	562	PPST [3]
Formaldehyde	M175 M176	1 - 5 mg/L 0.02 - 1 mg/L	- -	- -	- -	- -	- -	- -	585 585	585 585	H_2SO_4/ Chromotropic acid
Formaldehyde	M177	0.1 - 5 mg/L	-	-	-	-	-	-	575	575	H_2SO_4/ Chromotropic acid
Fluoresceine (only MD 640)	M510	10 - 400 ppb	-	-	> 395	-	-	-	-	-	Fluorescence
Fluoride	M170	0.05 - 2 mg/L	580	-	580	580	-	-	580	580	SPADNS [2]
Hazen (Pt-Co-Units ; APHA)	M204 M203	10 - 500 mg/L 10 - 500 mg/L	430 -	- -	430 -	430 -	- -	- -	455 455	455 455	Direct reading [1, 2]
Hydrogen peroxide	M210 M209	0.03 - 3 mg/L 0.03 - 1.5 mg/L 0.01 - 0.5 mg/L	- - -	- - -	530 - -	530 - -	- - -	- - -	510 - 510	510 - 510	DPD/Catalysator [5]
Hydrogen peroxide	M213 M214	1 - 50 mg/L 40 - 500 mg/L [i]	- -	430 530	430 530	430 530	- 530	- -	430 530	430 530	Titanium tetrachloride / Acid
Hydrazine	M205	0.05 - 0.5 mg/L	430	-	430	430	-	-	455	455	Dimethylamino-benzaldehyde [3]
Hydrazin	M206	0.01 - 0.6 mg/L 5 - 600 µg/L	- -	- -	430 -	430 -	- -	- -	- 455	- 455	Dimethylamino-benzaldehyde [3]
Iodine	M215	0.05 - 3.6 mg/L	-	-	530	530	530	-	510	510	DPD [5]

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Tube	Display	Reagent	Reagent-form	Code					
24 mm ø	Cu		**Set**		**56R023355**				
		KS240 (Coppercol Reagent 1)	L	30 mL	**56L024030**				
		KS241 (Coppercol Reagent 2)	L	30 mL	**56L024130**				
		KS242 (Coppercol Reagent 3)	P	10 g	**56L024210**				
		Copper No.2 (Cu total)	T	100 Pc	**513560BT**	250	**513561BT**		
24 mm ø	Cu	Vario Cu 1 F10	PP	100 Pc	**530300**			1000	**530303**
24 mm ø 50 mm ☐	CN	Cyanide-11 / Cyanide-12 / Cyanide-13	**Set** P / L		**2418875**				
24 mm ø	CyA	CyA-Test	T	100 Pc	**511370BT**	250	**511370BT**		
24 mm ø	CyA	CyA HR-Test	T	100 Pc	**511430BT**	250	**511431BT**		
24 mm ø	DEHA	DEHA Solution	L	15 mL	**461185**	100	**461181**		
		DEHA	T	100 Pc	**513220BT**	250	**513221BT**		
24 mm ø	DEHA		**Set**		**536000**				
		VARIO Oxyscav 1 Reagent	PP	200 Pc					
		VARIO DEHA 2 Reagent	L	100 mL					
10 mm ☐ 50 mm ☐	HCHO	Spectroquant® 1.14678.0001[d] Reagent test		25 Pc	**420751**				
16 mm ø	HCHO	Spectroquant® 1.14500.0001[d] Reagent test		25 Pc	**420752**				
24 mm ø	Fluoresceine	no reagents required							
24 mm ø	F	SPADNS Reagent	L	250 mL	**467481**	500	**467482**		
		Fluoride Standard	L	30 mL	**205630**				
		Reagent Solution and standard required							
24 mm ø 50 mm ☐	Pt-Co-Units	no reagents required	-		-				
24 mm ø 24 mm ø 50 mm ☐	H_2O_2	Hydrogenperoxide LR	T	100 Pc	**512380BT**	250	**512381BT**		
16 mm ø	H_2O_2	H_2O_2 Reagent Solution	L	15 mL	**424991**				
24 mm ø	N_2H_4	Hydrazine Test Powder	P	30 g	**462910**				
		measuring spoon			**384930**				
24 mm ø	N_2H_4	VARIO Hydra 2 Reagent	L	100 mL	**531200**				
24 mm ø	I	DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**
		High Calcium	T	100 Pc	**515740BT**	250	**515741BT**	500	**515742BT**

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g) Reagent recovers most insoluble iron oxides without digestion
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including stirring rod

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Reagents

Test	No. Methods	Range	Wave lengths λ / nm								Method
			MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	
Iron (II, III) soluble	M220 M219 M218	0.02 - 1 mg/L 0.01 - 0.5 mg/L 0.05 - 1 mg/L	560 - -	560 - -	560 - -	560 - -	560 - -	560 - -	562 562 562	562 562 562	Ferrozine / Thioglycolate
Iron VARIO (II, III) soluble	M221 M222	0.02 - 3 mg/L 0.01 - 1.5 mg/L	530 -	- -	530 -	530 -	- -	- -	510 510	510 510	1,10-Phenanthrolin [2]
Iron VARIO, gesamt [g)]	M223	0.02 - 1.8 mg/L 0.1 - 1.8 mg/L	580 -	- -	580 -	580 -	- -	- -	590 -	590 -	TPTZ [g)]
Iron LR ($Fe^{2+/3+}$)	M225	0.03 - 2.0 mg/L	560	-	560	-	-	-	560	560	Ferrozine / Thioglycolate
Iron LR 2 (Fe^{2+} and Fe^{3+})	M226	0.03 - 2.0 mg/L	-	-	560	-	-	-	560	560	Ferrozine / Thioglycolate
Iron HR	M227	0.1 - 10 mg/L	-	-	530	-	-	-	530	530	Thioglycolate
Iron, total, Fe in Mo	M224	0.01 - 1.8 mg/L	580	-	580	-	-	-	580	580	Fe in Mo
Lead (Pb^{2+})	M232	0.1 - 5 mg/L	-	-	-	-	-	-	520	520	4-(2-Pyridylazo)-resorcine
Lead (Pb^{2+})	M234/ M235	0.1 - 5 mg/L	-	-	-	-	-	-	515	515	4-(2-Pyridylazo)-resorcine
Manganese	M240	0.2 - 4 mg/L	530	-	530	530	-	-	450	450	Formaldoxim
Manganese VARIO LR	M242	0.01 - 0.7 mg/L	560	-	560	560	-	-	558	558	PAN
Manganese VARIO HR	M243	0.1 - 18 mg/L	530	-	530	530	-	-	525	525	Periodatoxidation [2]

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Tube	Display	Reagent	Reagent-form	Code			
24 mm ø 50 mm ☐ 10 mm ☐	Fe	Iron LR (Fe^{2+} and Fe^{3+}) Iron (II) LR (Fe^{2+})	T T	100 Pc 100 Pc	**515370BT** **515420BT**	250 250	**515371BT** **515421BT**
24 mm ø	Fe	VARIO Ferro F10	PP	100 Pc	**530560**		
24 mm ø	Fe	VARIO Iron TPTZ F10	PP	100 Pc	**530550**		
24 mm ø	Fe	KS61 (Ferrozine / Thioglycolate, FE5) digestion: KP962 (Ammonium Persulphate Powder) KS135 (Phenolphthalein Indicator) KS144 (Calcium Hardness Buffer)	L P L L	65 mL 40 g 65 mL 65 mL	**56L006165** **56P096240** **56L013565** **56L014465**		
24 mm ø	Fe	 KS60 FE1 (Acetate Buffer) KS63 FE6 (Thioglycolate Reagent) KS65 FE7 (Ferrozine Reagent) digestion: KP962 (Ammonium Persulphate Powder) KS135 (Phenolphthalein Indicator) KS144 (Calcium Hardness Buffer)	**Set** L L L P L L	 65 mL 65 mL 65 mL 40 g 65 mL 65 mL	**56R023490** **56L006065** **56L006365** **56L006565** **56P096240** **56L013565** **56L014465**		
24 mm ø	Fe	 KS160 TH2 FE8 (Total Hardness Buffer) KS63 FE6 (Thioglycolate Reagent) digestion: KP962 (Ammonium Persulphate Powder) KS135 (Phenolphthalein Indicator) KS144 (Calcium Hardness Buffer)	**Set** L L P L L	 65 mL 65 mL 40 g 65 mL 65 mL	**56R023590** **56L016065** **56L006365** **56P096240** **56L013565** **56L014465**		
24 mm ø	Fe	 VARIO (Fe in Mo) Rgt 1 VARIO (Fe in Mo) Rgt 2	**Set** PP PP	 100 Pc 100 Pc	**536010** **530310** **530320**		
10 mm ☐	Pb	Spectroquant® 1.09717.0001[d]	TT	50 Pc	**420753**		
16 mm ø	Pb	Spectroquant® 1.14833.0001[d]	TT	25 Pc	**420754**		
24 mm ø	Mn	Manganese LR 1 Manganese LR 2 Combi pack# Manganese LR per 1 LR & 2 LR	T T T	100 Pc 100 Pc 100 Pc	**516080BT** **516090BT** **517621BT**	250 250 250	**516081BT** **516091BT** **517622BT**
24 mm ø	Mn	 VARIO Ascorbic Acid VARIO Alkaline-Cyanide VARIO PAN Indicator VARIO Rochelle Saltsolution [h]	**Set** PP L L L	 100 Pc 60 mL 60 mL 30 mL	**535090** **530640**		
24 mm ø	Mn	 VARIO Manganese Citrate Buffer F10 VARIO Sodiumperiodate F10	**Set** PP PP	 100 Pc 100 Pc	**535100** 		

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g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
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Reagents

Test	No. Methods	Range	MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Method
			Wave lengths λ / nm								
Manganese	M245	0.05 - 5 mg/L	-	-	430	-	-	-	450	450	Formaldoxime
Molybdate / Molybdenum	M250	1 - 50 mg/L 1 - 30 mg/L 0.6 - 30 mg/L	- - 430	- - -	430 - -	430 - -	- - -	- - -	366 - -	366 - -	Thioglycolate [4]
Molybdate / Molybdenum VARIO LR	M251	0.05 - 5 mg/L 0.03 - 3 mg/L	- 610	- -	610 610	610 610	- -	- -	610 610	610 610	Ternary complex
Molybdaet / Molybdenum VARIO HR	M252	0.5 - 66 mg/L 0.3 - 40 mg/L	- 430	- -	430 430	430 430	- -	- -	420 420	420 420	Mercaptoacetic acid
Molybdate / Molybdenum HR	M254	1 - 100 mg/L 0.6 - 60 mg/L	- 430	- -	430 430	- -	- -	- -	430 430	430 430	Thioglycolate [4]
new! **Monochloramine & free Ammonia**	M63	0.02 - 4.5 mg/L 0.01 - 0.9 mg/L	660	-	660	660	-	-	655	655	Indophenole
new! **Monochloramine & free Chlorine**	M64	0.02 - 4.5 mg/L 0.02 - 4.5 mg/L	660	-	660	660	-	-	655	655	Indophenole
Nickel	M255 M256	0.02 - 1 mg/L 0.2 - 7 mg/L	- -	- -	- 430	- 430	- -	- -	443 443	443 443	Dimethylglyoxime [2, 3]
Nitrate	M260	0.08 - 1 mg/L 0.35 - 4.4 mg/L	- -	- -	530 530	- -	- -	- -	530 530	530 530	Zinc reduction / NED
Nitrate VARIO	M265	1 - 30 mg/L 4.4 - 132 mg/L	- -	- -	430 430	430 430	- -	- -	410 410	410 410	Chromotropic acid
new! **Nitrate DMP LR2**	M266	0.2 - 15 mg/L 0.8 - 66 mg/L	- -	- -	- -	- -	- -	- -	340 340	340 340	2,6-Dimetholphenol [3]
Nitrate DMP HR	M268	1.2 - 35 mg/L 5.3 - 154 mg/L	- -	- -	- -	- -	- -	- -	340 340	340 340	2,6-Dimethylphenole [3]
Nitrite	M270	0.01 - 0.5 mg/L 0.03 - 1.6 mg/L	- -	- -	560 560	560 560	- -	- -	540 540	540 540	N-(1-Naphthyl)-ethylenediamine [2,3]

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Tube	Display	Reagent	Reagent-form		Code		
24 mm ø	Mn		**Set**		56R024055		
		KS265 Manganese Reagent A	L	30 mL	56L026530		
		KS266 Manganese Reagent B	L	30 mL	56L026630		
		KS304 Manganese Reagent C	L	30 mL	56L030430		
24 mm ø	MoO_4	Molybdate No.1 HR	T	100 Pc	513060BT	250	513061BT
	MoO_4	Molybdate No.2 HR	T	100 Pc	513070BT	250	513071BT
	Mo	Combi pack# Molybdate per No.1 HR & No.2 HR	T	100 Pc	517631BT	250	517632BT
24 mm ø	MoO_4		**Set**		535450		
	Mo	VARIO Molybdenum 1 LR F20	PP	100 Pc			
		VARIO Molybdenum 2 LR	L	50 mL			
		required accessory:					
		mixing cylinder (not included)			19802650		
24 mm ø	MoO_4		**Set**		535300		
	Mo	VARIO Molybdenum HR1 F10	PP	100 Pc			
		VARIO Molybdenum HR2 F10	PP	100 Pc			
		VARIO Molybdenum HR3 F10	PP	100 Pc			
24 mm ø	MoO_4	KS63 (Thioglycolate Reagent)	L	65 mL	56L006365		
	Mo						
24 mm ø	NH_2Cl-Cl_2		**Set**		535800		
	NH_3-N	VARIO Monochlor F Reagent	PP	100 Pc	531810		
		VARIO Free Ammonia Reagent Solution	L	5 mL	531800		
24 mm ø	NH_2Cl-Cl_2	VARIO Monochlor F Reagent	PP	100 Pc	531810		
	Cl_2	VARIO Free Chlorine Solution	L	30 mL	531820		
50 mm ☐	Ni		**Set**		2419033		
24 mm ø		Nickel-51 (4x)	P	10 g			
		Nickel-52 (2x)	L	10 mL			
24 mm ø	NO_3 - N	Nitrate Test Powder	P	15 g	465230		
	NO_3	Nitrate Test Tablet	T	100 Pc	502810		
		Nitrite LR	T	100 Pc	512310BT	250	512311BT
		Nitrate test tube		1 Pc	366220		
16 mm ø	NO_3 - N		**Set**		535580		
	NO_3	VARIO Nitrate Chromotropic	PP	50 Pc			
		VARIO Nitra X Reagent tube	TT	50 Pc			
		VARIO Deionised Water (for Zero)	L	100 mL			
16 mm ø	NO_3 - N	Reagent tube Nitrate-111	TT	25 Pc	2423330		
	NO_3						
16 mm ø	NO_3 - N	Nitrate-111	TT	25 Pc	2423370 with Barcode		
	NO_3						
24 mm ø	NO_2 - N	Nitrite LR	T	100 Pc	512310BT	250	512311BT
	NO_2						

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Reagents

Test	No. Methods	Range	Wave lengths λ / nm: MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Method
Nitrit	M271	25 - 2500 mg/L	580	-	580	580	-	-	585	585	Ferrous Sulfate
Nitrit HR PP	M273	2 - 250 mg/L	-	-	-	-	-	-	585	585	Ferrous Sulfate
Nitrite LR new!	M275	0.03 - 0.6 mg/L 0.1 - 2 mg/L	- -	- -	- -	- -	- -	- -	545 545	545 545	Sulfanil/Naphthylamine [1]
Nitrite HR	M276	0.3 - 3 mg/L 1 - 10 mg/L	- -	- -	- -	- -	- -	- -	545 545	545 545	Sulfanil/Naphthylamine [1]
Nitrite LR VARIO	M272	0.01 - 0.3 mg/L 0.03 - 1 mg/L	- -	- -	530 530	530 530	- -	- -	507 507	507 507	Diazotation
Nitrogen-total [b] **LR** **DMP** **HR**	M283 M284	0.5 - 14 mg/L 5 - 140 mg/L [i]	- -	- -	- -	- -	- -	- -	340 340	340 340	2,6-Dimethylphenole [2,3]
Nitrogen-total [b] **DMP LR**	M283	0.5 - 14 mg/L	-	-	-	-	-	-	340	340	2,6-Dimethylphenole [2,3]
Nitrogen-total [b] **DMP HR**	M284	5 - 140 mg/L	-	-	-	-	-	-	340	340	2,6-Dimethylphenole [2,3]
Nitrogen VARIO, total LR [b]	M280	0.5 - 25 mg/L	-	-	430	430	-	-	410	410	Persulphate-digestion method
Nitrogen VARIO, total HR [b]	M281	5 - 150 mg/L	-	-	430	430	-	-	410	410	Persulphate-digestion method
Oxygen, active	M290	0,1 - 10 mg/L	-	-	530	530	530	-	510	510	DPD
Oxygen, soluble	M292	10 - 800 µg/L 10 - 1100 µg/L	530 -	- -	530 -	530 -	- -	- -	- 547	- 547	Rhodazine D ™
Ozone	M300 M299	0,02 - 1 mg/L 0,02 - 2 mg/L 0,02 - 0,5 mg/L	- 530 -	- 530 -	- 530 -	- 530 -	- 530 -	- 530 -	- 510 510	- 510 510	DPD/Glycine [5]

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[4] Photometrische Analyse, Lange/Vejdelek, Verlag Chemie; 1980
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Tube	Display	Reagent	Reagent-form	Code					
24 mm ø	NO_2	Nitrite VHR L	L					500	**471170**
		Nitrite VHR L	**Set**						
		(Set contains pipette & pipette tips)	L					500	**471160**
24 mm ø	NO_2	VARIO Nitri NT-2 F10	PP	100 Pc	**530280**				
16 mm ø	NO_2 - N NO_2	Nitrite-101	TT	25 Pc	**2419018** without Barcode **2423420** with Barcode				
16 mm ø	NO_2 - N NO_2	Nitrite HR	TT	25 Pc	**2423470** with Barcode				
24 mm ø	NO_2 - N NO_2	VARIO Nitri 3	PP	100 Pc	**530980**				
16 mm ø	N	Digestion Reagent Compensation Reagent Nitrate-111	TT	25 Pc	**2420703** without Barcode				
16 mm ø	N	Digestion Reagent Compensation Reagent Nitrate-111	TT	25 Pc	**2423540** with Barcode				
16 mm ø	N	Digestion Reagent Compensation Reagent Nitrate-111	TT	25 Pc	**2423570** with Barcode				
16 mm ø	N		**Set**		**535550**				
		VARIO TN Hydroxide LR	TT	50 Pc					
		VARIO Persulfate Reagent	PP	50 Pc					
		VARIO TN Reagent A	PP	50 Pc					
		VARIO TN Reagent B	PP	50 Pc					
		VARIO TN Acid LR/HR	TT	50 Pc					
		VARIO Deionised Water (for Zero)	L	100 mL					
16 mm ø	N		**Set**		**535560**				
		VARIO TN Hydroxide HR	TT	50 Pc					
		VARIO Persulfate Reagent	PP	50 Pc					
		VARIO TN Reagent A	PP	50 Pc					
		VARIO TN Reagent B	PP	50 Pc					
		VARIO TN Acid LR/HR	TT	50 Pc					
		VARIO Deionised Water (for Zero)	L	100 mL					
	O_2	DPD No.4 *Evo*	T	100 Pc	**511970BT**	250	**511971BT**	500	**511972BT**
		DPD No.4	T	100 Pc	**511220BT**	250	**511221BT**	500	**511222BT**
13 mm ø	O_2	Vacu-vial® [j]	**Set**	30 Pc	**380450**				
		Adapter for Vacu-vials® [j]		1 Pc	**192075**				
24 mm ø	O_3	DPD No.3 *Evo*	T	100 Pc	**511420BT**	250	**511421BT**	500	**511422BT**
24 mm ø		DPD No.3 HR *Evo*	T	100 Pc	**511920BT**	250	**511921BT**	500	**511922BT**
50 mm ☐		Combi pack# DPD No.1 & DPD No.3 *Evo*	T	100 Pc	**517931BT**	250	**517932BT**		
		DPD No.1	T	100 Pc	**511050BT**	250	**511051BT**	500	**511052BT**
		DPD No.3	T	100 Pc	**511080BT**	250	**511081BT**	500	**511082BT**
		Combi pack# DPD per No.1 & No.3	T	100 Pc	**517711BT**	250	**517712BT**		
		Glycine [f]	T	100 Pc	**512170BT**	250	**512171BT**		

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Reagents

Test	No. Methods	Range	MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Method
			Wave lengths λ / nm								
Ozone PP	M301	0.015 - 2 mg/L	-	-	530	530	-	-	510	510	DPD/Glycine [5]
Phenoles	M315	0.1 - 5 mg/L	-	-	-	-	-	-	507	507	4-Aminoantipyrin [1]
PHMB (Biguanide)	M70	2 - 60 mg/L	-	-	560	560	560	-	560	560	Buffer/Indicator
Phosphate-total LR [b]	M317	0.07 - 3 mg/L 0.2 - 10 mg/L	- -	- -	- -	- -	- -	- -	690 690	690 690	Phosphomolybdenum blue
Phosphate-total HR [b]	M318	1.5 - 20 mg/L 5 - 60 mg/L	- -	- -	- -	- -	- -	- -	690 690	690 690	Phosphomolybdenum blue
Phosphate LR, ortho	M320	0.02 - 1.3 mg/L 0.05 - 4 mg/L	660 660	- -	660 660	660 660	610 610	610 610	710 710	710 710	Phosphomolybdenum blue
Phosphate HR, ortho	M321	0.33 - 26 mg/L 1 - 80 mg/L	- -	- -	430 430	430 430	- -	- -	470 470	470 470	Vanadomolybdate [2]
Phosphate VARIO ortho	M323	0.02 - 0.8 mg/L 0.06 - 2.5 mg/L	660 660	- -	660 660	660 660	- -	- -	890 890	890 890	Phosphomolybdenum blue
Phosphate VARIO ortho	M324	0.02 - 1.6 mg/L 0.06 - 5 mg/L	- -	- -	660 660	660 660	- -	- -	890 890	890 890	Phosphomolybdenum blue
Phosphate-ortho	M322	1 - 20 mg/L 3 - 60 mg/L	- -	- -	- -	- -	- -	- -	438 438	438 438	Vanadomolybdate [2]
Phosphate VARIO [b] acid hydrolyzable	M325 M326	hydrolyzable: 0.02 - 1.6 mg/L 0.06 - 5 mg/L total: 0.02 - 1.1 mg/L 0.06 - 3.5 mg/L	- -	- -	660 660	660 660	- -	- -	890 890	890 890	Acid digestion Phosphomolybdenum blue Acid-/ Persulphate digestion Phosphomolybdenum blue
Phosphate VARIO [b] **total**	M326	0.02 - 1.1 mg/L 0.06 - 3.5 mg/L	- -	- -	660 660	660 660	- -	- -	890 890	890 890	Acid-/Persulphate digestion Phosphomolybdenum blue Ascorbic acid [2]
Phosphate, ortho [c]	M328	0.02 - 1.6 mg/L 0.05 - 5 mg/L	- -	- -	660 660	660 660	- -	- -	660 660	660 660	Stannous chloride [2]

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Tube	Display	Reagent	Reagent-form	Code			
24 mm ø	O_3	Chlorine total DPD F10	PP	100 Pc	**530120**		
		Glycine	T	100 Pc	**512170BT**	250	**512171BT**
24 mm ø	C_6H_5OH	Phenole No.1	T	100 Pc	**515950BT**		
		Phenole No.2	T	100 Pc	**515960BT**		
24 mm ø	PHMB	PHMB Photometer	T	100 Pc	**516100BT**	250	**516101BT**
16 mm ø	PO_4 - P		**Set**		**2419019** with Barcode		
	PO_4	Phosphate-101	TT	25 Pc			
		Phosphate-102	P				
		Phosphate-103	P				
16 mm ø	PO_4 - P		**Set**		**2420700** with Barcode		
	PO_4	Phosphate-101	TT	25 Pc			
		Phosphate-102	P				
		Phosphate-103	P				
24 mm ø	PO_4 - P	Phosphate No.1 LR	T	100 Pc	**513040BT**		
	PO_4	Phosphate No.2 LR	T	100 Pc	**513050BT**		
		Combi pack# Phosphate per No.1 LR & No.2 LR	T	100 Pc	**517651BT**		
24 mm ø	PO_4 - P	Phosphate No.1 HR	T	100 Pc	**515810BT**		
	PO_4	Phosphate No.2 HR	T	100 Pc	**515820BT**		
		Combi pack# Phosphate per No.1 HR & No.2 HR	T	100 Pc	**517661BT**		
24 mm ø	PO_4 - P	VARIO Phosphate Reagent F10	PP	100 Pc	**531550**		
	PO_4						
16 mm ø	PO_4 - P		**Set**		**535200** with Barcode		
	PO_4	VARIO Dilution Vial	TT	50 Pc			
		VARIO Phosphate Reagent F10	PP	50 Pc			
		VARIO Deionised Water (for Zero)	L	100 mL			
16 mm ø	PO_4 - P		TT	25 Pc	**2420701** with Barcode		
	PO_4						
			Set		**535250** with Barcode		
16 mm ø	PO_4 - P	VARIO Acid Reagent Vial	TT	50 Pc			
	PO_4	VARIO Phosphate Reagent F10	PP	50 Pc			
	PO_4 - P	VARIO Deionised Water (for Zero)	L	100 mL			
	PO_4	1N NaOH	L	100 mL			
		1,54 N NaOH	L	100 mL			
		VARIO Potassium Persulfate F10	PP	50 Pc			
16 mm ø	PO_4 - P		**Set**		**535210** with Barcode		
16 mm ø	PO_4	VARIO Acid Reagent Vial	TT	50 Pc			
		VARIO Phosphate Reagent F10	PP	50 Pc			
		VARIO Deionised Water (for Zero)	L	100 mL			
		1,54 N NaOH	L	100 mL			
		VARIO Potassium Persulfate F10	PP	50 Pc			
	PO_4 - P	Vacu-vial® j)	**Set**	30 Pc	**380480**		
	PO_4	Adapter for Vacu-vials® j)		1 Pc	**192075**		

a) determination of free, combined and total
b) Thermoreactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C)
c) MultiDirect: Adapter is necessary for Vacu-vials® (Order code 192075)
d) Spectroquant® is a Merck KGaA Trademark
e) alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
f) additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
i) high range by dilution
j) Vacu-vials® is a Chemetrics Trademark

including stirring rod

Green Chemistry
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L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Reagents

Test	No. Methods	Range	Wave lengths λ / nm								Method
			MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	
Phosphate, ortho [c]	M327	1.6 - 13 mg/L 5 - 40 mg/L	- -	- -	430 430	430 430	- -	- -	430 430	430 430	Vanadomolybdate [2]
Phosphate LR	M334	0.033 - 3.3 mg/L 0.1 - 10 mg/L	- -	- -	660 660	- -	- -	- -	660 660	660 660	Phosphomolybdic acid/ Ascorbic acid [2]
Phosphate HR, ortho	M335	1.63 - 26 mg/L 5 - 80 mg/L	430 430	- -	430 430	- -	- -	- -	430 430	430 430	Vanadomolybdate [2]
Phosphonate PP	M316	0,2 - 125 mg/L	-	-	660	660	-	-	890	890	Persulfate UV-Oxidation
Phosphonate VARIO	M316	0.02 - 125 mg/L	-	-	660	660	-	-	890	890	Persulfate UV-Oxidation
pH value	M329	5.2 - 6.8	-	-	560	560	560	-	560	560	Bromcresol purple [5]
pH-Wert	M330	6.5 - 8.4	560	560	560	560	560	560	558	558	Phenol red [5]
pH value	M331	6.5 - 8.4	560	560	560	560	560	-	558	558	Phenol red [5]
pH value	M332	8.0 - 9.6	-	-	560	560	560	-	560	560	Thymol blue [5]
Polyacrylates	M338	1 - 30 mg/L	530	-	660	-	-	-	660	660	Turbidity
Potassium	M340	0.7 - 16 mg/L	-	-	660	430	-	-	730	730	Tetraphenylborate-Turbidity [4]
PTSA (only MD 640)	M500	10 - 1000 ppb	-	-	395	-	-	-	-	-	Fluorescence
Silica VLR	M349	5 - 500 µg/L	-	-	-	-	-	-	820	820	Heteropolyblue [2]

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Tube	Display	Reagent	Reagent-form		Code			
	PO_4 - P PO_4	Vacu-vial® [j] Adapter for Vacu-vials® [j]	**Set** 30 Pc 1 Pc		**380460** **192075**			
24 mm ø	PO_4 - P PO_4	 KS80 (CRP Reagent) KP119 (Ascorbic acid) Digestion reagents: KS278 (50 % Sulfuric Acid) KS135 (Phenolphthalein Indicator) KS144 (Calcium Hardness Buffer) KP962 (Ammonium Persulfate Powder)	**Set** L P L L L P	 65 mL 20 g 65 mL 65 mL 65 mL 40 g	**56R023765** **56L008065** **56P011920** **56L027865** **56L013565** **56L014465** **56P096240**			
24 mm ø	PO_4 - P PO_4	 KS228 (Ammonium Molybdate) KS229 (Ammonium Metavanadate) Option Poly Phosphate / Phosphate total KS278 (50 % Sulfuric Acid) KS135 (Phenolphthalein Indicator) KS144 (Calcium Hardness Buffer) KP962 (Ammonium Persulfate Powder)	**Set** L L L L L P	 65 mL 65 mL 65 mL 65 mL 65 mL 40 g	**56R019090** **56L022865** **56L022965** **56L027865** **56L013565** **56L014465** **56P096240**			
24 mm ø	PO_4	Phosphonate Set UV Pen Lamp		1 Pc 1 Pc	**535220** **400740**			
24 mm ø	PO_4	 VARIO Potassium Persulfate F10 VARIO Phosphate Reagent F10	**Set** PP PP	100 Pc 200 Pc	**535220**			
24 mm ø	pH	Bromocresol Purple Photometer	T	100 Pc	**515700BT**	250	**515701BT**	
24 mm ø	pH	Phenol Red Photometer	T	100 Pc	**511770BT**	250	**511771BT**	500 **511772BT**
24 mm ø	pH	Phenol Red Solution	L	15 mL	**471040**	100	**471041**	
24 mm ø	pH	Thymol Blue Photometer	T	100 Pc	**515710BT**	250	**515711BT**	
24 mm ø	Polyacryl	KS255 (Polyacrylate Reagent 1) KS256 (Polyacrylate Reagent 2) KS336 (Propan-2-ol) C18 (Cartouche) KS173 (2,4 Dinitrophenol) KT183 (Nitric Acid)	**Set** L L L L L L	 65 mL 65 mL 65 mL 65 mL 65 mL 65 mL	**56R019165** **56L025565** **56L025665** **56L033665** **56A020101** **56L017365** **56L018365**			
24 mm ø	K	Potassium T	T	100 Pc	**515670BT**	250	**515671BT**	
24 mm ø	PTSA	no reagents required						
50 mm ☐	SiO_2	 Hepta Molybdate Reagent Tartaric Acid Reagent Silica Amino Acid F10	**Set** L L PP	 20 mL 20 mL 100 Pc	**5443002** **471070** **471080** **531600**			

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d) Spectroquant® is a Merck KGaA Trademark
e) alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
f) additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
i) high range by dilution
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Reagents

Test	No. Methods	Range	Wave lengths λ / nm								Method
			MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	
Silica	M350	0.05 - 4 mg/L	660	-	660	660	-	-	820	820	Silicomolybdatblue [2,3]
Silica VARIO LR	M351	0.05 - 1.6 mg/L	-	-	-	-	-	-	815	815	Heteropolyblue [2]
Silica VARIO HR	M352	1 - 90 mg/L 1 - 100 mg/L	430 -	- -	430 -	430 -	- -	- -	- 452	- 452	Silicomolybdate [2,3]
Silica	M353	0.1 - 8 mg/L	-	-	660	-	-	-	660	660	Heteropolyblue [2]
Sodiumhypochlorite (Chlorine bleach lye)	M212	0.2 - 16 % 0.2 - 17 %	- -	- -	530 -	530 -	530 -	530 -	- 470	- 470	Potassium iodide [5]
Spectral Absorption-coefficient (S.A.K.)	M344 M345 M346 M347	0.5 - 50 m^{-1}	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- 436 525 620	254 436 525 620	Direct reading [1] ISO 7887:1994
Spectral Absorption-coefficient (S.A.K.)	M344 M345 M346 M347	3 - 250 m^{-1}	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- 436 525 620	254 436 525 620	Direct reading [1] ISO 7887:1994
Sulphate VARIO	M360 M361	5 - 100 mg/L 50 - 1000 mg/L	530 -	- -	530 530	530 530	530 -	- -	530 530	530 530	Bariumsulphate Turbidity [2]
Sulphate	M355	5 - 100 mg/L	-	-	610	610	610	-	610	610	Bariumsulphate Turbidity [2]
Sulphide	M365	0.04 - 0.5 mg/L	-	-	660	660	-	-	668	668	DPD/Catalysator [3, 4]
Sulphite	M370 M368	0.1 - 5 mg/L 0.05 - 4 mg/L 0.1 - 10 mg/L	- - -	- - -	430 - -	430 - -	- - -	- - -	405 - 405	405 - 405	DTNB
Surfactants (anionic)	M376	0.05 - 2 mg/L	-	-	660	660	-	-	660	660	Methylene blue
Surfactants (cationic)	M378	0.05 - 1.5 mg/L	-	-	610	610	-	-	610	610	Disulphine blue

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Tube	Display	Reagent	Reagent-form	Code			
24 mm ø	SiO_2	Silica No.1	T	100 Pc	**513130BT**	250	**513131BT**
		Silica No.2	T	100 Pc	**513140BT**	250	**513141BT**
		Combi pack# Silica per No.1 & No.2	T	100 Pc	**517671BT**	250	**517672BT**
		Silica PR	T	100 Pc	**513150BT**	250	**513151BT**
24 mm ø	SiO_2		**Set**		**535690**		
		VARIO Amino Acid F10	PP	100 Pc			
		VARIO Citric Acid F10	PP	200 Pc			
		VARIO Molybdate 3 (2x)	L	50 mL			
24 mm ø	SiO_2		**Set**		**535700**		
24 mm ø		VARIO Silica HR Molybdate F10	PP	100 Pc			
		VARIO Silica HR Acid Reagent F10	PP	100 Pc			
		VARIO Silica HR Citric Acid F10	PP	100 Pc			
24 mm ø	SiO_2		**Set**		**56R023856**		
		KS104 (Silica Reagent 1)	L	65 mL	**56L010465**		
		KS105 (Silica Reagent 2)	L	65 mL	**56L010565**		
		KP106 (Silica Reagent 3)	P	10 g	**56P010610**		
24 mm ø	NaOCl	Acidifying GP	T	100 Pc	**515480BT**	250	**515481BT**
		Chlorine HR (KI)	T	100 Pc	**513000BT**	250	**513001BT**
		also available in bottle	T	100 Pc	**501210**	250	**501211**
		Combi pack# per Chlorine HR (KI) & Acidifying GP	T	100 Pc	**517721BT**	250	**517722BT**
		Dilution set for sample preparation		1 Pc	**414470**		
50 mm ☐	-	no reagents required	-		-		
10 mm ☐	-	no reagents required	-		-		
24 mm ø	SO_4	VARIO Sulfa 4 F10	PP	100 Pc	**532160**		
24 mm ø	SO_4	Sulfate T	T	100 Pc	**515450BT**	250	**515451BT**
24 mm ø	S	Sulfide No.1	T	100 Pc	**502930**	250	**502931**
		Sulfide No.2	T	100 Pc	**502940**	250	**502941**
24 mm ø 24 mm ø 10 mm ☐	SO_3	Sulfite LR	T	100 Pc	**518020BT**		
16 mm ø	MBAS	Spectroquant® 1.02552.0001	TT	25 Pc	**420763**		
16 mm ø	CTAB	Spectroquant® 1.01764.0001	TT	25 Pc	**420765**		

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d) Spectroquant® is a Merck KGaA Trademark
e) alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
f) additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
g) Reagent recovers most insoluble iron oxides without digestion
h) additionally required for samples with hardness values above 300 mg/l $CaCO_3$
i) high range by dilution
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Reagents

Test	No. Methods	Range	MD100 & MD110	MD200	MD600, MD610 & MD640	MultiDirect	PM620 & PM630	PM600	XD7000	XD7500	Method
			Wave lengths λ / nm								
Surfactants (non ionic)	M377	0.1 - 7.5 mg/L	-	-	610	610	-	-	610	610	TBPE
Suspended solids	M384	10 - 750 mg/L	660	-	660	660	-	-	810	810	Turbidity/Attenuated
	M383	10 - 750 mg/L	660	-	660	660	-	-	810	810	Radiation
TOC [b)]	M380	5 - 80 mg/L	-	-	610	610	-	-	610	610	H_2SO_4 / Persulphate / Indicator
TOC [b)]	M381	50 - 800 mg/L	-	-	610	610	-	-	610	610	H_2SO_4 / Persulphate / Indicator
Total Hardness	M200	2 - 50 mg/L	560	-	560	560	560	-	571	571	Metallphthalein [3]
	M201	20 - 500 mg/L [i)]	560	-	560	560	560	-	571	571	
Triazoles (UV-lamp required)	M388	1 - 16 mg/L	430	-	430	-	-	-	430	430	Catalyzed UV Digestion
Turbidity	M385	5 - 500	-	-	-	-	-	-	860	860	Attenuated Radiation Meth.
	M386	10 - 1000	-	-	530	530	-	-	860	860	Attenuated Radiation Meth.
Urea	M390	0.1 - 2.5 mg/L	610	610	610	610	610	-	676	676	Indophenole / Urease
		0.1 - 2 mg/L	-	-	-	-	-	-	-	-	
	M391	0.2 - 5 mg/L [i)]	610	-	-	-	-	-	-	-	
Zinc	M400	0.02 - 1 mg/L	-	-	610	610	-	-	616	616	Zincon[3]/EDTA
		0.02 - 0.5 mg/L	-	-	-	-	-	-	-	-	
Zinc	M405	0.1 - 2.5 mg/L	610	-	610	-	-	-	610	610	Zincon[3]/EDTA

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Tube	Display	Reagent	Reagent-form	Code			
16 mm ø	Triton® X-100	Spectroquant® 1.01787.0001	TT	25 Pc	**420764**		
24 mm ø 50 mm ☐	TSS	no reagents required	-		-		
16 mm ø	TOC	Spectroquant® 1.14878.0001[d]) Aluminium screwcaps	TT	25 Pc 6 Pc	**420761** **420757**		
16 mm ø	TOC	Spectroquant® 1.14879.0001[d]) Aluminium screwcaps	TT	25 Pc 6 Pc	**420756** **420757**		
24 mm ø	$CaCO_3$	Hardcheck P	T	100 Pc	**515660BT**	250	**515661BT**
24 mm ø	Benzo-triazole	VARIO Triazole Reagent F25 VARIO Rochelle Salt Solution [h)]	PP L	100 Pc 30 mL	**532200** **530640**		
50 mm ☐ 24 mm ø	FAU FAU	no reagents required	-		-		
24 mm ø	CH_4N_2O	Urea Reagent 1 Urea Reagent 2 Ammonia No.1 Ammonia No.2 Combi pack# Ammonia per No.1 & No.2 (without Urea-Reagent 1 & 2, please order seperatly) Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/L) Urea Reagent Set, contains: per Urea Reagent 1&2, Ammonia No.1&2, Urea Pretreat Ammonia conditioning powder (for seawater), for 50 Tests	L L T T T T **Set** 	15 mL 10 mL 100 Pc 100 Pc 100 Pc 100 Pc 100 Pc 26 g	**459300** **459400** **512580BT** **512590BT** **517611BT** **516110BT** **517800BT** **460170**	250 250 250	**512581BT** **512591BT** **517612BT**
24 mm ø	Zn	Copper/Zinc LR EDTA Dechlor (in case of high levels of residual Chlorine)	T T T	100 Pc 100 Pc 100 Pc	**512620BT** **512390BT** **512350BT**	250 250	**512621BT** **512391BT**
24 mm ø	Zn	 KS243 (Zinc Reagent 1) KP244 (Zinc Reagent 2)	**Set** L P	 65 mL 20 g	**56R023965** **56L024365** **56P024420**		

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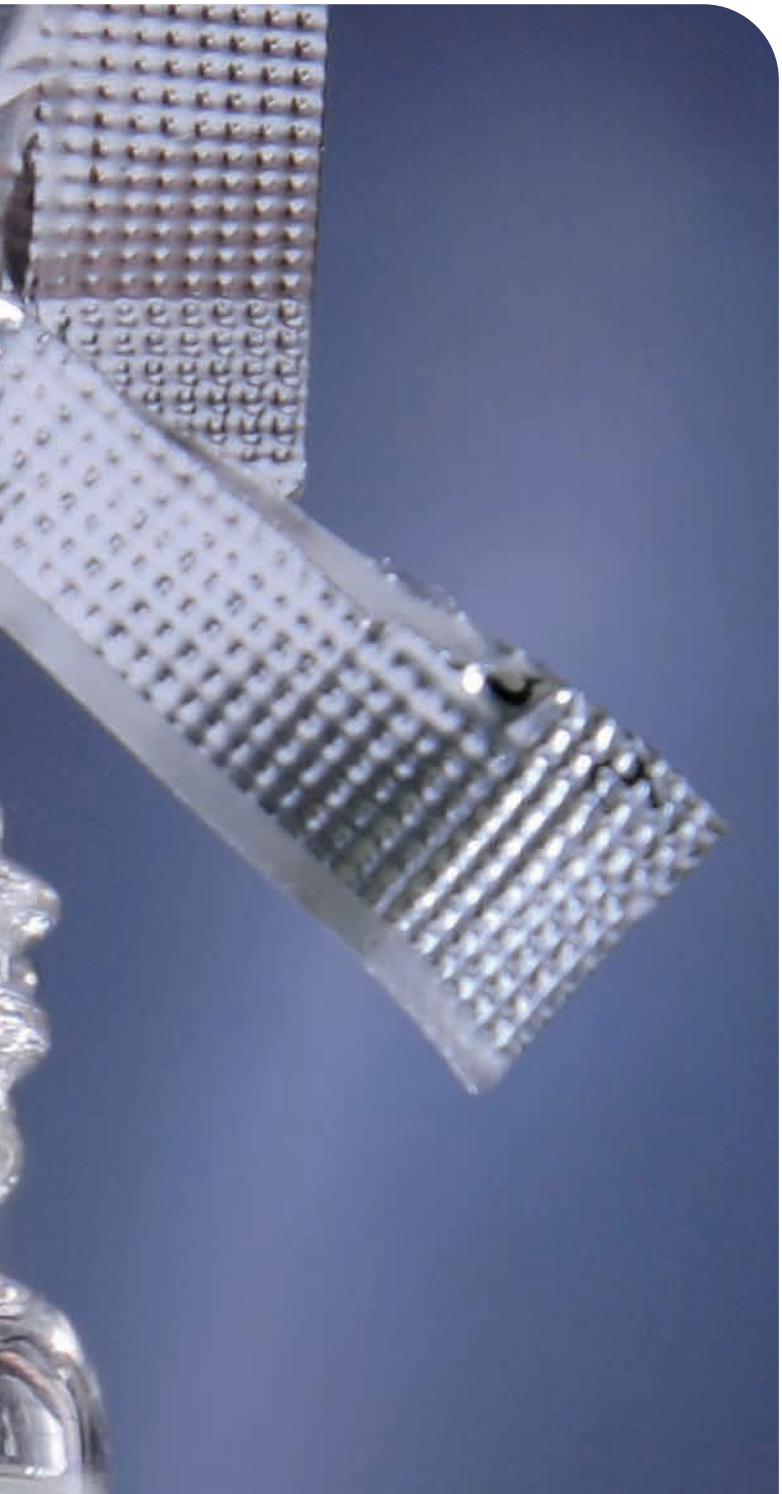
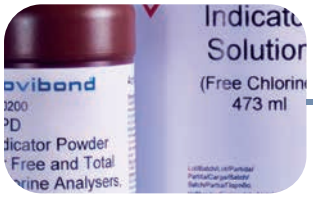
Vario Reagents





Reagents CL 17™

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Powder dispenser PD250

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Vario Reagents

page 112

Process Chlorine Analyser Reagents

Suitable for Hach® CL17™* Chlorine analysers

Chlorine Analyser Reagents are available with the quality and longevity expected of the Lovibond® brand.
That means **highest accuracy** at **low cost**.

These reagents can be used on the online system without additions or updates as they are supplied in compatible bottle size.

Delivery Content

Reagent set for process chlorine analyser in bag

Free Chlorine

- 1 bottle, 473 mL
  DPD Indicator Solution "Free Chlorine"
- 1 bottle, 473 mL
  DPD Buffer Solution "Free Chlorine"
- 1 bottle, DPD Indicator Powder
  Order code: 530210

Total Chlorine

- 1 bottle, 473 mL DPD Indicator Solution "Total Chlorine"
- 1 bottle, 473 mL
  DPD Buffer Solution "Total Chlorine"
- 1 bottle, DPD Indicator Powder
  Order code: 540210

* HACH® is a registered trademark of Hach Company, Loveland, Colorado. The use of the HACH® trademark does not imply any affiliation with or approval by Hach Company regarding the formulation, testing or compatibility of these products for use in HACH® brand spectrophotometers or other instruments or systems.

Chlorine DPD Powder Dispenser PD250

Determination of chlorine according to ISO 7393-2:2000 (free + total)

250 Tests

Easy handling

5 years reagent shelf life (before opening)

Precise dosage

Delivery Content

PD 250 in carton including 1 reagent vial and instruction manual

PD 250 Set 1 - Free Chlorine

- 1 powder dispenser "Free Chlorine"
- 1 reagent vial "Free Chlorine"
- 1 instruction manual
- 1 protective sleeve (rubber)

Order code: 194900

PD 250 Set 2 - Total Chlorine

- 1 powder dispenser "Total Chlorine"
- 1 reagent vial "Total Chlorine"
- 1 instruction manual
- 1 protective sleeve (rubber)

Order code: 194910

Refill Packs

Article	Order code
Chlorine **Free** 10 mL 2 reagent vials	530140
Chlorine **Total** 10 mL 2 reagent vials	530150
Chlorine **Free + Total** 10 mL one reagent vial each	530160
VARIO Chlorine **Free** 10 mL 2 reagent vials	530145
VARIO Chlorine **Total** 10 mL 2 reagent vials	530155
VARIO Chlorine **Free + Total** 10 mL one reagent vial each	530165

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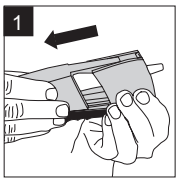
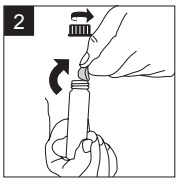
Green Chemistry

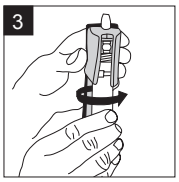
Easy Handling



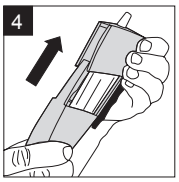
Remove the dispenser cover.



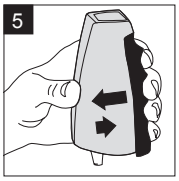
Uncap the reagent vial and remove the seal. Use material within 6 months of removing the seal.



Hold the dispenser with the tip upright and screw the vial on to the dispenser.



Slide the cover into the grooves until the lower end snaps into place.



To use:
Hold with the tip down and press the blue handle towards the dispenser body.

Reagents

VARIO Powder Packs (also compatible in Hach® instruments*)

Test	Hach® * Method No	Method	Applications
Aluminium	8326	Eriochromcyanine R	Water
Ammonia	8155	Salicylate	Water, waste water, seawater
Ammonia LR	10023	Salicylate	Water, waste water, seawater
Ammonia HR	10031	Salicylate	Water, waste water, seawater
Bromine	8016	DPD method: **USEPA** accepted for drinking water analysis	Water, waste water, seawater
Chlorine free, combined and total **Chlorine dioxide**	Visuelles Test Kit	DPD method: **USEPA** accepted for drinking water analysis	Water, waste water, seawater
Chlorine, online free and total	Online Analyzer	DPD method: **USEPA** accepted for drinking water analysis	for use in Hach® CL17 Process Analysers
		DPD method: **USEPA** accepted for drinking water analysis	for use in Hach® CL17 Process Analysers
COD LR	8000	Dichromate Reactor, Digestion	Water, waste water, seawater
COD MR	8000	Dichromate Reactor, Digestion	Water, waste water, seawater
Copper	8506	Bicinchoninate	Water, waste water, seawater
DEHA	8140	PPST	
Hardness, Calcium & Manganese new!	8030	Calmagite	Water, waste water

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MSDS (Material Safety Data Sheets):

Pouches

Our Powder Packs have the right kink:
The powder reagent can be used easily with two fingers in one grip and the right trick

The packaging automatically forms itself into a funnel so nothing is lost.

Reagent	Reagent form		Code			
VARIO Aluminium Reagent	**Set F20**		**535000**			
VARIO Aluminium ECR	PP	100 Pc				
VARIO Aluminium Hexamine	PP	100 Pc				
VARIO Aluminium Masking Rgt	L	25 mL				
VARIO Ammonia Nitrogen,	**Set F10**		**535500**			
VARIO Ammonia Salicylate F10	PP	200 Pc				
VARIO Ammonia Cyanurate F10	PP	200 Pc				
VARIO Am vial test Reagent	**Set LR F5**		**535600**			
VARIO Ammonia Salicylate F5	PP	50 Pc				
VARIO Ammonia Cyanurate F5	PP	50 Pc				
VARIO Am Diluent Reagent Low Range	TT	50 Pc				
VARIO Am vial Test Reagent	**Set HR F5**		**535650**			
VARIO Ammonia Salicylate F5	PP	50 Pc				
VARIO Ammonia Cyanurate F5	PP	50 Pc				
VARIO Am Diluent Reagent High Range	TT	50 Pc				
VARIO Chlorine Total DPD F10	PP	100 Pc	**530190**			1000 **530193**
VARIO Chlorine Free DPD F5	PP	100 Pc	**530090**			1000 **530093**
VARIO Chlorine Total DPD F5	PP	100 Pc	**530080**			1000 **530083**
VARIO Chlorine Free DPD F10	PP	100 Pc	**530180**			1000 **530183**
VARIO Chlorine Total DPD F10	PP	100 Pc	**530190**			1000 **530193**
VARIO Chlorine Free DPD F25	PP	100 Pc	**530110**			1000 **530113**
VARIO Chlorine Total DPD F25	PP	100 Pc	**530130**			1000 **530133**
VARIO Glycine Reagent 10%	L	29 mL	**532210**			
Chlorine Free	**Set**		**530210**			
Chlorine DPD Compound (free & total)	P		**530200**			
Chlorine Free Indicator Solution	L	473 mL	**530222**			
Chlorine Free Buffer Solution	L	473 mL	**530223**			
Chlorine Total	**Set**		**540210**			
Chlorine DPD Compound (free & total)	P		**530200**			
Chlorine Total Indicator Solution	L	473 mL	**540222**			
Chlorine Total Buffer Solution	L	473 m	**540223**			
COD VARIO 0 - 150 mg/L	TT	25 Pc	**2420720**	150	**2420725**	
	TT mercury free	25 Pc	**2420710**			
COD VARIO 0 - 1500 mg/L	TT	25 Pc	**2420721**	150	**2420726**	
	TT mercury free	25 Pc	**2420711**	150	**2420716**	
VARIO CU1 F10	PP	100 Pc	**530300**			1000 **530303**
VARIO DEHA Reagent	**Set**		**536000**			
VARIO Oxyscav 1 RGT	PP	100 Pc				
VARIO DEHA 2 RGT	L	100 mL				
VARIO Calmagite Hardness	**Set**		**535850**			
VARIO Alkali Solution	L	100 mL	**531450**			
VARIO Indicator Solution	L	100 mL	**531460**			
VARIO EDTA Solution	L	50 mL	**531470**			
VARIO EGTA Solution	L	50 mL	**531480**			

Green Chemistry

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Reagents

VARIO Powder Packs (also compatible in Hach® instruments*)

Test	Hach® * Method No	Method	Applications
Hydrazine	8141	4-(Dimethylamino)-benzaldehyde	Water, waste water, seawater
Iron (Fe^{2+}, Fe^{3+}), dissolved	8008 8112	Iron, total: 1,10-Phenanthroline Iron, total: TPTZ	Water, waste water, seawater
Iron, total, Fe in Mo	8365	Fe in Mo	Water, waste water
Manganese LR	8149	PAN	Water, waste water
Manganese HR	8034	Periodate oxidation	Water, waste water
Molybdate LR	8169	Ternary Complex	Water, waste water
Molybdate HR	8036	Mercaptoacetic acid	Water, waste water
Molybdate HR	8036	Mercaptoacetic acid	Water, waste water
Monochloramine & free Ammonia	10171	Indophenole	Water
Monochloramine & free Chlorine	10241	Indophenole	Water
Nitrate	10020	Chromotropic acid	Water, waste water
Nitrite	8153	Ferrous Sulfate	Water, cooling water
Nitrite LR	8507	Diazotiation	Water, waste water
Nitrogen, total HR	10071	Persulphate digestion	Water, waste water

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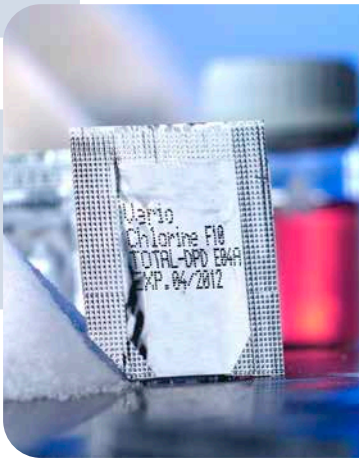
MSDS (Material Safety Data Sheets):

Reagent	Reagent form		Code		
VARIO Hydra2 Reagent	L	100 mL	**531200**		
VARIO Ferro F10	PP	100 Pc	**530560**		
VARIO Iron TPTZ	PP	100 Pc	**530550**		
VARIO (Fe in Mo) Reagent	**Set**		**536010**		
VARIO (Fe in Mo) Reagent 1	PP	100 Pc	**530310**		
VARIO (Fe in Mo) Reagent 2	PP	100 Pc	**530320**		
VARIO Manganese Reagent	**Set LR F10**		**535090**		
VARIO Alkaline-Cyanide Reagent Solution	L	60 mL			
VARIO Ascorbic Acid	PP	100 Pc			
VARIO PAN Indicator Solution	L	60 mL			
VARIO Manganese Reagent	**Set HR F10**		**535100**		
VARIO Manganese Citrate Buffer F10	PP	100			
VARIO Sodiumperiodate F10	PP	100			
VARIO Molybdenum LR	**Set LR**		**535450**		
VARIO Molybdenum 1 LR F20	PP	100 Pc			
VARIO Molybdenum 2 LR	L	50 mL			
VARIO Molybdenum HR	**Set HR F10**		**535300**		
VARIO Molybdenum HR1 F10	PP	100 Pc			
VARIO Molybdenum HR2 F10	PP	100 Pc			
VARIO Molybdenum HR3 F10	PP	100 Pc			
VARIO Molybdenum HR	**Set HR F25**		**535400**		
VARIO Molybdenum HR1 F25	PP	100 Pc			
VARIO Molybdenum HR2 F25	PP	100 Pc			
VARIO Molybdenum HR3 F25	PP	100 Pc			
VARIO Monochloramin	**Set**		**535800**		
VARIO Monochlor F Reagent	PP	100 Pc			
VARIO Free Ammonia Reagent Solution	L	5 mL			
VARIO Monochlor F Reagent	PP	100 Pc	**531810**		
VARIO Free Chlorine Reagent Solution	L	30 mL	**531820**		
VARIO Nitra X Reagent	**Set**		**535580**		
VARIO Nitra X Reagent tube	TT	50 Pc			
VARIO Nitra Nitrogen Nitrate Reagent B	PP	50 Pc			
Deionised water	L	100 mL			
VARIO Nitri NT-2 F10	PP	100 Pc	530280		
VARIO Nitri3 F10	PP	100 Pc	**530980**		
VARIO Nitri3 F25	PP	100 Pc	**530970**		
VARIO Total Nitrogen LR	**Set**		**535550**		
VARIO Total Nitrogen Hydroxid LR	TT	50 Pc			
VARIO Total N Persulfate Reagent	PP	50 Pc			
VARIO Total Nitrogen Acid LR	TT	50 Pc			
VARIO Total Nitrogen Reagent A	PP	50 Pc			
VARIO Total Nitrogen Reagent B	PP	50 Pc			
Deionised water	L	100 mL			



Green Chemistry

L = Liquid/Solution, P = Powder, PP = Powder Pack, T = Tablet, TT = Tube Test

Reagents

VARIO Powder Packs (also compatible in Hach® instruments*)

Test	Hach®* Method No	Method	Applications
Nitrogen, total HR	10072	Persulphate digestion	Water, waste water
Phosphate	8048	Phosphormolybdenum blue/ Ascorbic acid	Water, waste water, seawater
Phosphate, ortho	8048	Phosphormolybdenum blue/ Ascorbic acid	Water, seawater
Phosphate, acid hydrolyzable and total	8180 8190	Phosphormolybdenum blue/ Ascorbic acid	Water, seawater
Phosphat, total	8190	Phosphormolybdenum blue/ Ascorbic acid	Water, seawater
Phosponate	8007	Persulphate UV-Oxidation	Water
Silica, LR	8186	Heteropoly blue	Water, seawater
Silica, HR	8185	Silicomolybdate	Water, seawater
Silica, UHR	8185	Silicomolybdate	Water, seawater
Sulphate	8051	**USEPA** accepted for drinking water analysis	Water, waste water, seawater
Triazoles	8079	Catalyzed UV Digestion	Water

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MSDS (Material Safety Data Sheets):

Reagent	Reagent form		Code
VARIO Total Nitrogen HR	**Set**		**535560**
VARIO Total Nitrogen Hydroxid HR	TT	50 Pc	
VARIO Total N Persulfate Reagent	PP	50 Pc	
VARIO Total Nitrogen Acid HR	TT	50 Pc	
VARIO Total Nitrogen Reagent A	PP	50 Pc	
VARIO Total Nitrogen Reagent B	PP	50 Pc	
Deionised water	L	100 mL	
VARIO Phosphate Reagent F10	PP	100 Pc	**531550**
VARIO Reactive Phosphate Reagent	**Set**		**535200**
VARIO Phosphate Dilution Tube Test	TT	50 Pc	
VARIO Phosphate Reagent F10	PP	50 Pc	
Deionised water	L	100 mL	
VARIO Total & Acid Hydrolyzable Phosphate Reagent	**Set**		**535250**
VARIO Phosphate Acid Reagent	TT	50 Pc	
Deionised water	L	100 mL	
VARIO Phosphate Reagent F10	PP	50 Pc	
VARIO Sodium Hydroxide 1N	L	100 mL	
VARIO Sodium Hydroxide 1,54N	L	100 mL	
VARIO Potassium Persulfate	PP	50 Pc	
VARIO Total Phosphate Reagent	**Set**		**535210**
VARIO Phosphate Acid Reagent	TT	50 Pc	
VARIO Phosphate Reagent F10	PP	50 Pc	
Deionised water	L	100 mL	
VARIO Sodium Hydroxide 1,54N	L	100 mL	
VARIO Potassium Persulfate	PP	50 Pc	
VARIO Phosphonate Reagent	**Set**		**535220**
VARIO Potassium Persulfate F10	PP	100 Pc	
VARIO Phosphate Reagent F10	PP	200 Pc	
VARIO Silica Reagent LR	**Set LR F10**		**535690**
VARIO LR Silica Amino Acid F	PP	100 Pc	
VARIO Silica Citric Acid	PP	200 Pc	
VARIO Molybdate 3 Reagent Solution	L	2 x 50 mL	
VARIO Silica Reagent HR	**Set HR F10**		**535700**
VARIO Silica HR Molybdate F10	PP	100 Pc	
VARIO Silica HR Acid Reagent F10	PP	100 Pc	
VARIO Silica Citric Acid F10	PP	100 Pc	
VARIO Silica Reagent HR	**Set HR F25**		**535900**
VARIO Silica HR Molybdate F25	PP	100 Pc	
VARIO Silica HR Acid Reagent F25	PP	100 Pc	
VARIO Silica HR Citric Acid F25	PP	100 Pc	
VARIO Sulfa 4 F10	PP	100 Pc	**532160**
VARIO Sulfa 4 F25	PP	100 Pc	**532150**
VARIO Triazole Reagent F25	PP	100 Pc	**532200**

Green Chemistry

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Turbidity

TB350 IR/WL
page 120

TB300 IR
page 122

TB211 IR
page 124

T-CAL® Standards
page 125

new!

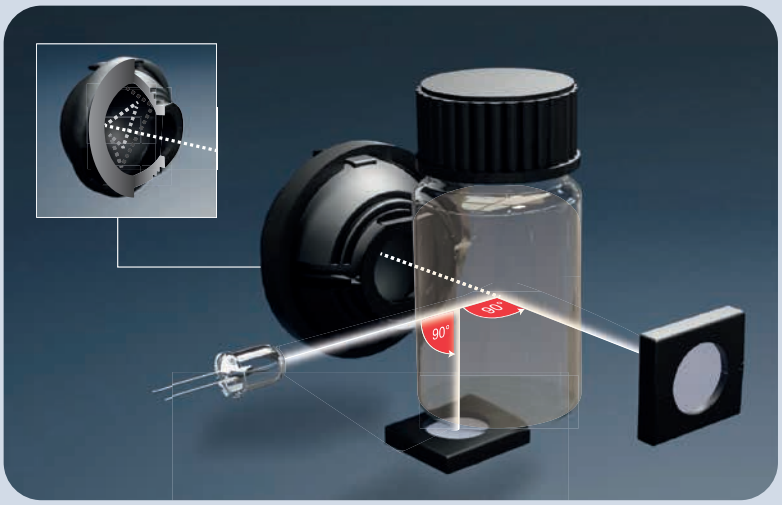
TB350

Get lab accuracy as portable solution

Multipath 90° BLAC® is the new, patented sensor technology. It makes the TB350 unique and the most versatile turbidimeter combining laboratory accuracy in a portable instrument. The special feature: Highest accuracy is guaranteed in the lowest turbidity range from 0.01 NTU and also maintains the outstanding precision level in the highest turbidity range up to 4,000 NTU.

The light-absorbing trap almost completely eliminates unwanted stray light and provides extremely accurate results for low turbidities down to 0.01 NTU. An easy-to-read colour touch screen and straightforward data management protocols ensure easy handling. Animated instructions guide through each step of the sampling to avoid operation errors.

A customised measuring mode for fast settling particles, the "Fast Settling Mode", complements the outstanding instrument performance. It increases the accuracy of the turbidity readings for large and heavy particles from 20 NTU, but especially in the high measuring range up to 4,000 NTU.



The darker the better

Our experts solved two fundamental problems in turbidity measuring in a patented and unprecedented way. The sophisticated arrangement of the two detectors allows the analysis of low and high turbidity samples with unsurpassed accuracy over the complete measuring range up to 4,000 NTU.
The angle of detection stays at 90° over the entire range, so this method remains purely nephelometric. This ensures consistent results at any time, regardless of the size and shape of the turbidity-causing particles. The light-absorbing trap (BLAC®) eliminates stray light perfectly and provides extremely accurate results for low turbidity down to 0.01 NTU.

The new BLAC® technology stands for:
Backscattered **L**ight **A**bsorbing **C**avity.

Data transfer made easy

Plug & play: Share your measurement results via USB flash drive: simply connect the stick to the USB-A port on the back of the unit.

Take it with you or leave it:
The TB350 turbidimeter is ideal for mobile use on site, e.g. for monitoring water supply systems and for laboratories testing a wide range of samples.

Technical data	TB350 IR	TB350 WL
Light source	Infrared LED	White light LED
Conformity	ISO 7027	EPA (approval pending)
Measuring Principle	nephelometric	
Range (NTU)	0 - 4,000	
Resolution (max.)	0.01	
Accuracy	± 1.8 % + Straylight	
Straylight	< 0.014 NTU	
Display	Colour Graphic Touchscreen	
Data Transfer	via USB Interface	
Data logger	250 Measurements + all calibrations, verifications and factory-restore actions	
Power supply	4 x AA batteries (optional: NiMH battery pack, optional: Mains adapter (USB-C)	
Application	Drinking water / Field / Environmental / Laboratories	
Laboratory use	✓	
Portable use	✓	
Dimensions	15.5 x 8.3 x 22.5 cm	
Weight	804 g (without batteries), 898 g (with batteries)	
Code	194300	194310

Delivery Content

- Device in plastic case
- Set of ready-to-use T-CAL® vial calibration standards
- Silicone oil
- Cleaning cloth
- Brush for sample vials
- Sample cells with black lids
- Screwdriver
- Plastic inlay usable as a tray
- Declaration of warranty
- T-CAL® Test Certificate
- Certificate of Compliance
- 4 x AA batteries

Order Codes T-CAL® Turbidity Standard Kits

- **194152** T-CAL® Turbidity Standard Kit for TB350 WL (5 / 20 / 800 / 2,000 / 4,000 NTU)
- **194154** T-CAL® Turbidity Standard Kit for TB350 IR (5 / 20 / 800 / 4,000 NTU)

ISO conform & US EPA (pending)

Laboratory Turbidity Measurement TB300 IR

with infrared light source

Turbidity is measured according to EN ISO 7027 by nephelometric means (90° scattered light). The infrared 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 with an accuracy of ± 2 % up to 500 NTU and ± 5 % thereafter.

A large graphic display, a choice of several different languages and user-friendly operating instructions make the instrument extremely easy to use.

Software updates (for example: languages) can be downloaded free of charge.

Technical data

Principle	nephelometric (90° stray light)
Light source	IR-LED (860 nm)
Keypad	acid and solvent resistant; membrane keypad
Auto - Off	automatic switch off
Display	Graphic-Display
Update	Software update via Internet
Memory	1,000 data sets
Sample vol.	approx. 12 mL
Range	0,01 – 1,100 NTU (Auto range)
Resolution	0,01 from 0,01 - 9,99 (NTU) 0,1 from 10,0 - 99,9 1 from 100 - 1,100
Accuracy	0,01- 500 NTU: 0,01 NTU or ± 2% MV whichever is greater 500 - 1,100 NTU: ±5% MV
Ambient conditions	temperature: 5 - 40 °C at max. 30 - 90 % relative humidity (non condensing)
Interface	RS 232 for printer and PC connection
Power supply	7 NiMH rechargeable batteries (Type AA) ; mains adapter (Input: 100-230V) ; and lithium battery for data storage
Weight	approx. 1,000 g batteries incl.
Dimensions	approx. 265 x 195 x 70 (L x W x H mm)
CE-Conformity	

Accessories

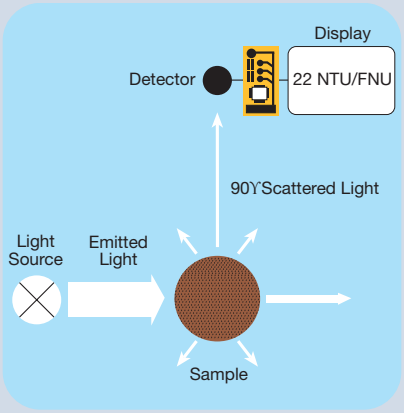
Set of 12 sample vials with black lid, height 55 mm, ø 24 mm	**197655**
Cleaning cloth for vials	**197635**
Rubber seal cap, black for interface and power plug-in	**19801716**
Sample chamber lid, black	**19801119**
Mains charger, 100-240 V, 50-60 Hz, with international adapte	**193010**
Connection cable connection to PC, serial 9-pin	**198198**
AA Battery Mignon; 1,100 mAh, 7 pc.	**1950020**
Lithium battery	**1950017**
Formazin Stock Solution 4,000 NTU 125 mL	**48012912**
Formazin Stock Solution 4,000 NTU 250 mL	**48012950**
T-CAL® Turbidity Standard Kit <0.1, 20, 200, 800 NTU	**194150**
Paper Printer (Adapter and RS 232-Cable inlcuded)	**198077**

Delivery Content

- Instrument in plastic case
- 1 set of turbidity standards T-CAL®
- 7 rechargeable batteries (AA)
- 1 lithium battery
- Mains charger, 100-240 V
- PC connection cable
- 4 cells (ø 24 mm) with lids
- Warranty information
- Certificate of Compliance
- Instruction Manual

Order code: 194000-B
Order code: 194000
(without lithium battery)

i



Turbidity is the haziness in a sample caused by the scattering of incident light on particles and molecules inside the sample.

For this reason turbidity can often be used as a simple indicator to estimate the amount of suspended solids, microorganisms, emulsions or macromolecules in a sample.

Because the scattered light depends on the amount of particles but on it's shape as well, Formazine has been defined as the primary standard in turbidity measurement that defines the scale of this parameter. So the turbidity scale can not be traced back to SI units.

Mobile turbidity measurement

TB211 IR with infrared light source (EN ISO 7027) & USB-Interface

The compact Lovibond® infrared turbidity measuring instrument TB211 IR for fast and accurate on-site analysis. It is measured as provided in EN ISO 7027, the scattered light at an angle of 90 °.

The wide measuring range from 0.01 to 1,100 TE / F = NTU = FNU with a detection limit of 0.01 NTU allows the use of the instrument in different areas, from drinking water to wastewater.

Since the measurements are made by means of infrared light, both coloured and colourless water samples can be measured. A direct transfer of the measurement results to a PC is easy to set up via the USB interface. The required USB cable is a standard part of the sope of the delivery.

Accessories

Item	Code
T-CAL® Turbidity standard Kit < 0.1, 20, 200, 800 NTU	194150
Set empty vials, 24 mm ø, 12 pc.	197655
Cleaning cloth for vials	197635
Sample chamber lid	19801100
Battery, 9 V	1950012
Formazin Stock Solution 4,000 NTU 125 mL	48012912
Formazin Stock Solution 4,000 NTU 250 mL	48012950
USB-Cable 1.5 m	19802509

Technical data

Measurement cycle	approx. 8 seconds
Display	backlit LCD (on keypress)
Optics	temperature-compensated LED (λ = 860 nm) and photosensor amplifier in water proof sample chamber, infrared light
Keypad	polycarbonate membrane, splash proof
Power supply	9 V power block battery
Auto - OF	automatic switch-off
Interface	Micro-USB
Memory	internal ring memory for 125 data sets
Time	real time clock and date
Range	0.01 - 1100 NTU
Resolution	0.01 - 9.99 NTU = 0.01 NTU 10.0 - 99.9 NTU = 0.1 NTU 100 - 1,100 NTU = 1 NTU
Accuracy	0.01 - 500 NTU: 0.01 NTU or 2.5 % MV whichever is greater 500 -1,000 NTU: ±5 % MV
Housing	ABS
Dimensions (mm)	190 x 110 x 55 (L x W x H)
Weight	approx. 0,4 kg (basic unit)
Ambient conditions	Temperature: 5 - 40 °C rel. humidity: 30 - 90 %
Test equipment suitability	Software-supported User adjustment using of T-CAL® standards (see accessories)
CE-Conformity	

Delivery Content

- Instrument in plastic case
- 4 turbidity standards (< 0.1, 20, 200 and 800 NTU)
- 9 V battery
- 2 cells (ø 24 mm) with lids
- USB cable 1.5 m
- Warranty information
- Certificate of Compliance
- Instruction Manual

  Code: 266030

eliminate preparation errors

no need to handle hazardous chemicals

T-CAL® Standards

long time stable turbidity standards

Calibration of turbidimeters has never been easier!

Valid measurement is not only an important requirement for you in drinking water and waste water monitoring, it is a matter of course.
Whether for routine turbidity measurements in the laboratory or directly on site:

use turbidity standards for all turbidimeters to save additional work.

With Lovibond® you get:

- Primary standards based on formazine for all applications
- Ready to use standards straight from the bottle
- Precise solutions to verify or calibrate your instrument
- Stabilised standards with long shelf life
- The perfect tool to assure your analytical quality
- Expert know-how based on about 140 years of experience

T-CAL® long time stable turbidity standards for calibration & verification of any turbidimeter

Get the whole range of formazine based turbidity primary standards for turbidimeters of any manufacturer with our **T-CAL®** series.
Ready to use, prepared in a wide variety of packaging sizes.

Single Standard	Quantity	Code				
T-CAL®-Standard <0.1 NTU	125 mL	**48012012**	500 mL	**48012050**	1,000 mL	**48012099**
T-CAL®-Standard 0.3 NTU			500 mL	**48011050**		
T-CAL®-Standard 1.0 NTU	125 mL	**48011112**	500 mL	**48011150**	1,000 mL	**48011199**
T-CAL®-Standard 5.0 NTU			500 mL	**48012250**		
T-CAL®-Standard 10 NTU	125 mL	**48011212**	500 mL	**48011250**		
T-CAL®-Standard 20 NTU	125 mL	**48012312**	500 mL	**48012350**	1,000 mL	**48012399**
T-CAL®-Standard 100 NTU	125 mL	**48011512**	500 mL	**48011550**		
T-CAL®-Standard 200 NTU	125 mL	**48011612**	500 mL	**48011650**		
T-CAL®-Standard 800 NTU	125 mL	**48011712**	500 mL	**48011750**		
T-CAL®-Standard 1,000 NTU	125 mL	**48011812**	500 mL	**48011850**		
T-CAL®-Standard 4,000 NTU	125 mL	**48012912**	500 mL	**48012950**		

Get the perfect set for your Hach® instrument.
Choose the appropriate composition to meet your requirements:

Standards in Set	Set Quantity	Code
T-CAL®-Standard Set	<0.1 / 20 NTU, each 2x 1000 mL	**48019399**
T-CAL®-Standard Set	<0.1 / 20 / 200 / 1,000 / 4,000 NTU, each 125 mL	**48019712**
T-CAL®-Standard Set	<0.1 / 20 / 200 / 1,000 / 4,000 NTU, each 500 mL	**48019750**
T-CAL®-Standard Set	<0.1 / 20 / 100 / 800 NTU, each 125 mL	**48019412**
T-CAL®-Standard Set	<0.1 / 20 / 100 / 800 NTU, each 500 mL	**48019450**
T-CAL®-Standard Set	10 / 20 / 100 / 800 NTU, each 125 mL	**48019512**
T-CAL®-Standard Set	10 / 20 / 100 / 800 NTU, each 500 mL	**48019550**

Floc-Tester

Floc testers with variable stirring speed for laboratory and field use

Applications

- Flocculant Manufacturer
- Waste Water Treatment Plants
- Laboratories
- Research Centres
- Universities

ET740 (Labor)	
Stirring places	four
Stirring speed control	10 - 300 revolutions/ minute
Resolution	1 revolution/minute
Timer	0 - 999 minutes or 0 - 99 hours (continuous)
Power supply	100 - 240 V, 50 - 60 Hz
Weight	approx. 13 kg
Dimensions	645 L x 347 W x 260 H (mm)
EG-conformity	CE
Code	2419155

ET750 (Labor)	
Stirring places	six
Stirring speed control	10 - 300 evolutions/ minute
Resolution	1 revolution/minute
Timer	0 - 999 minutes or 0 - 99 hours (continuous)
Power supply	100 - 240 V, 50 - 60 Hz
Weight	approx. 17 kg
Dimensions	935 L x 347 W x 260 H (mm)
EG-conformity	CE
Code	2419160

ET730 (Portabel)	
Stirring places	four
Stirring speed control	20 - 40 - 50 - 100 - 200 Revolutions per min
Timer	0 - 30 minutes (continuous)
Netzanschluss	100 - 240 V, 50 - 60 Hz (including adapter for connection in the car)
Weight	approx. 4,8 kg
Dimensions	250 L x 320 W x 250 H (mm)
EG-conformity	CE
Code	2419150

Accessories	
Measuring beaker, glass	419165 low form, 1000 mL
Measuring beaker, PP	419166 low form, 1000 mL
Bag for transport for ET 730	419151

Floc testers are designed for a range of applications – such as testing the efficiency of flocculation or precipitation agents.

The ET740 model with 4 stirring places and the ET750 model with 6 stirring places are fitted with an illuminated back panel for glare-free observation of the samples and are suitable for laboratory use.

The floc tester ET730 with 4 stirring places is primarily designed for field use. The 4 stirring points are arranged in a circle around a lamp making it easier to observe the flocculation process.

State-of-the-art technology ensures maximum operating convenience and makes the unit maintenance-free. The main features of the laboratory floc testers are the continuously variable stirring speed, the digital display of stirring rpm, the timer function, the illuminated back panel, and the height adjustment option for the stirring blades during operation.

For model ET730 beakers with 1000 ml volume, low form can be used.

For models ET740 and ET750 beakers with 1000 ml - 1500 mL volume, low or high form can be used.

The beakers are **not** included, they have to be ordered seperatly.

BOD Measurement System
BD600 & BD600 GLP

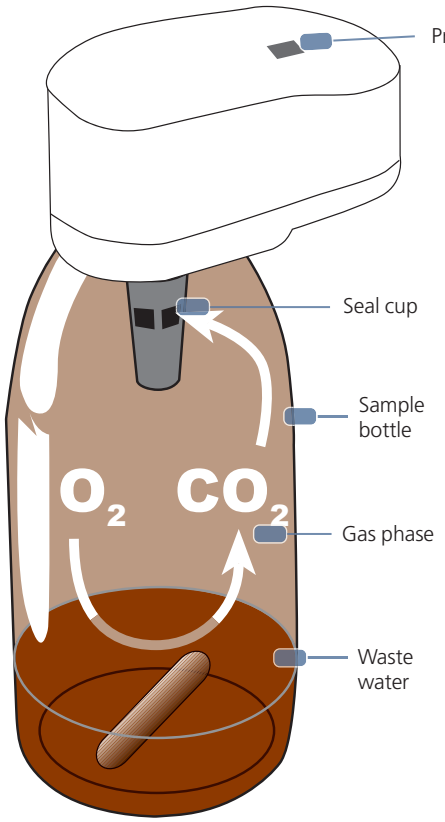
Accurate, automatic and direct control of your waste water samples

References

- APHA, AWWA, WEF Standard Methods 5210 D, OECD 301 F, 301 C, 302 C

Applications

- Waste Water
- Determination of Biological Activity
- Waste Water Treatment Plants
- Analytical Laboratories
- Science & Research



Biochemical Oxygen Demand (BOD)

BOD – biochemical oxygen demand – is an expression for the quantity of oxygen required for biological degradation of organic matter in a waste water sample. BOD measurement is therefore used as a basis for the detection of biologically degradable organic matter in water.
The difference between BOD and chemical oxygen demand (COD) is that COD additionally registers biologically non-degradable organic matter.

BOD measurement is therefore an important measurement of the effects of domestic and industrial waste water on sewage plants and outflow points.

Manometric, respirometric BOD measurement using the Lovibond® BD600

The Lovibond® sensor system BD600 is a 6 sample system that allows precise measurements 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 the modern integral pressure sensors, it is no longer necessary to use mercury for pressure measurements.

i

Respirometric principle

Respirometric methods provide direct measurements of the oxygen consumed by microorganisms from an air or the oxygen-enriched environment in a closed vessel under conditions of constant temperature and agitation. Carbon dioxide produced metabolically by the bacteria is chemically bound by the potassium hydroxide solution contained in the sealed cup in the bottle.

The result is a pressure drop in the system, which is directly proportional to the BOD value and is measured by the BOD sensor. The BOD level is then displayed directly in mg/l.

The BOD values are stored automatically in the sensor memory in regular intervals and can be called up on the large-format display at any time without the need for time-consuming conversion using factors. This means that test series that end on a Sunday can be evaluated during the following week without any problem.
Measurement series can be stored on USB stick/SD card or transfered via the USB cable to evaluate the data on a computer.

The measurement period is user-selectable between 1 and 28 days to suit the application. While short measurement periods are useful for scientific applications, standard BOD measurements typically extend over a period of 5 days – and manometric determination of OECD, for example, generally takes place over a period of 28 days.

Evaluation of measurements

The BD600 measuring system records a measurement once every hour, independent of the length of the measuring period. This way the quality of the series of measurement can be evaluated at an early stage. Current values and stored values may be called up at any time. Stored values can be displayed numerically or graphically. The table/graph on the left illustrates an example of BOD_5 evaluation. The development of BOD over a period of five days is easily seen.

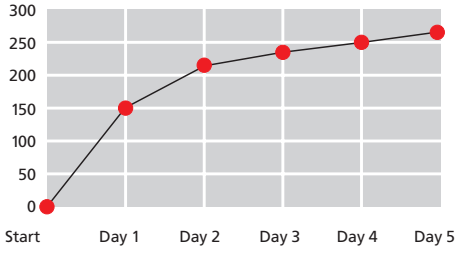
Automatic start function

Variations in sample temperature prior to testing result in pressure variations within the measuring system during the temperature equalisation period in the thermostatically controlled cabinet (if BOD measurement is to take place at 20°C, for example). Such variations would normally cause errors during manometric measurement.
In order to prevent such errors, the Lovibond® BD600 BOD meter is equipped with an automatic start feature:
measurement does not commence until the temperature in the samples is the same as that in the thermostatically controlled cabinet.
This rules out the possibility of temperature (and hence pressure) fluctuations that are not related to the manometric measurement.

Complete measuring system

In addition to the BOD unit for the measurement and storage of BOD levels, the Lovibond® BD600 BOD measuring system includes the sample bottles, measuring sensors, non-wearing inductive stirring system, overflow measuring flasks for metering of sample volumes, nitrification inhibitor and potassium hydroxide as an absorbent.

Day	Display
1. Day	150 mg/L
2. Day	220 mg/L
3. Day	240 mg/L
4. Day	250 mg/L
5. Day	260 mg/L



BOD_5 Diagram

- Supports the requirements for GLP
- Suitable for BOD measurements and tests according to OECD 301F
- Protected, more permanent memory for all data over the lifetime of the instrument (1 GB)
- Long term tests of up to 90 days measurement duration possible
- Simplified data transfer to the PC via USB
- Graphical user interface

Technical data	BD600	BD600 GLP
Meas. principle	Manometric; mercury-free; electronic pressure sensor	
Ranges [mg/l O_2]	0 - 40, 0 - 80, 0 - 200, 0 - 400, 0 - 800, 0 - 2000, 0 - 4000 mg/L	
Applications	BSB_5, BSB_7	OECD 301 F, 301 C, 302 C
Display	128 x 240 Pixel, 45 x 84 mm backlit	Large graphic display
Measurement period	User-selectable, between 1 and 28 days	5, 28, 60 and 90 days
Auto result storage	Up to 744 results, depending on measurement period and amount of sample bottles	up to 50.000 measurements (1GB)
Storage interval	- hourly (1. day) - every 2 hours (2. day) - 1x daily (3.-28. day)	- every 2 hours (5 days) - every 12 hours (28 days) - every 24 hours (60 days) - every 24-48 hours (90 days)
Autostart function	equalisation of samples with a temperature of 15 to 21 °C, can be switched off	-
Power supply	3 alkaline-manganese batteries ("Baby" cells/size "C") or via power supply unit using y-cable with stirring unit	100 - 240 V / 50-60 Hz
Interface	USB-host port (USB-storage medium) USB-Instrument-Port (Computer) SD-card (for BD 600 GLP occupied)	
Clock	Real-time clock with date	
Dimensions (L x W x H)	375 x 181 x 230 mm including stirring unit	
Weight	ca. 4100 g, unit with bottles & batteries approx 5775 g, complete with stirring unit	
Approval	CE	

BD600 GLP

(OECD 301 F, 301 C, 302 C)

Optimized for biodegradability tests under GLP requirements

The REACH provisions stipulate that every chemical with a production volume of more than one tonne / year must be registered and tested.
These tests follow precise guidelines and procedures, which, among other things, examine the residence time of chemicals in the environment. Therefore, the demand for tests for the measurement of biodegradability according to OECD standard 301F is correspondingly high. While performing these tests laboratories need to comply with GLP (Good Laboratory Practice) standards.

With the BD600 GLP, we have developed a new system that combines modern design and up-to-date data exchange via USB with GLP-compliant data management and a lifetime of the instrument's protected resident memory (1 GB).
All settings and changes are registered and logged. Any manipulation is thus prevented, erasure of data is impossible. The sensor heads are validated and delivered with a test certificate.

Delivery Content

- **BD600 (Order code: 2444460)** or **BD600 GLP (Order code: 2444461),** complete unit with 6 sensors and control unit with batteries (BD600 GLP with certificate)
- Power supply unit incl. Y-cable for common power supply of BD600 and stirring unit
- 1 x remote control (without batteries)
- Inductive stirring unit
- 6 sample bottles
- 6 rubber gaskets
- 6 magnetic stirring rods
- 1 overflow flask, 157 mL
- 1 overflow flask, 428 mL
- 1 bottle, 50 ml potassium hydroxide solution
- 1 bottle, 50 mL Nitrifikationshemmstoff
- 1 instruction manual
- 1 x USB cable (BD600 only)
- Warranty

BD606 **Order code: 2444465**

- 2 x BD600 complete unit with 12 sensor heads and control units with batteries
- 2 x Power supply unit incl. Y-cable for common power supply of BD606 and stirring unit
- 2 x USB cable
- 2 x Inductive stirring unit
- 12 sample bottles
- 12 rubber gaskets
- 12 magnetic stirring rods
- 1 overflow flask, 157 mL
- 1 overflow flask, 428 mL
- 1 bottle, 50 mL potassium hydroxide solution
- 1 bottle, 50 mL nitrification inhibitor solution
- 1 instruction manual
- 1 x remote control (without batteries)
- Warranty

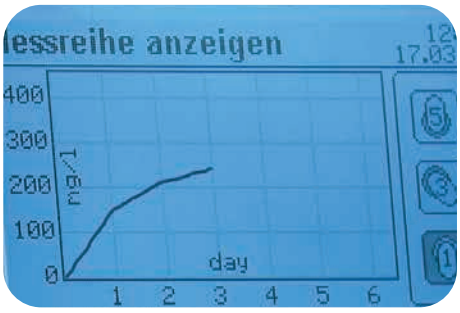
Accessories

Item	BD600	BD600 GLP	Code
BSB-Sensor	•		2444470
Sensor BOD GLP validated with certificate		•	2444470-GLP
Sensor validation with certificate		•	999610-GLP
BOD sample bottle, Brown glass, 500 mL	•	•	418644
BOD sample bottle, Brown glass, 500 mL, set of 6 bottles	•	•	418645
Inductive stirring system for 6 samples, 100-240 V / 50-60 Hz, incl. power supply	•	•	2444456
Power supply unit for inductive stirring system, 100 - 240 V / 50 - 60 Hz	•	•	444454
Magnetic stir bar	•	•	418633
Magnetic stir bar, 100 pc.		•	418633-100
Stir bar remover	•	•	418638
Rubber gasket 4,5 cm	•		418636
Rubber gasket GLP 6,5 cm	•	•	418676
Potassium hydroxide solution 45 %, 50 mL	•	•	2418634
Nitrification inhibitor (N-ATH) 50 mL	•	•	2418642
Overflow flask, 21,7 mL	•	•	418664
Overflow flask, 56 mL	•	•	418655
Overflow flask, 94 mL	•	•	418656
Overflow flask, 157 mL	•	•	418657
Overflow flask, 244 mL	•	•	418658
Overflow flask, 360 mL	•	•	418659
Overflow flask, 428 mL	•	•	418660
Complete set overflow flasks	•	•	418654
Test set, BOD CM test tablets, box with 10 tablets	•	•	2418328
USB cable 3 m	•	•	2444482
Y cable	•	•	2444475
Remote control	•	•	2444481

BOD Accessoires

BOD CM test tablets, order code: 2418328

Inductive stirring system



Graphical representation of measured values

Remote control

Test set for BD600

We also supply a test set to check for the correct operation of the Lovibond® BD600 BOD meter. The set contains 10 BOD CM1 test tablets that cause a defined oxygen consumption.

The tablets are easy to use. Simply place a tablet in the BOD bottle, start the measurement process, read off the BOD value after 5 days, and then compare with the defined value. If this value is within the quoted tolerance, this means that the BOD measuring system is functioning correctly.

Temperature equalisation during BOD measurement

Temperature equalisation is essential prior to biological testing, as temperature has a major effect on biological activity. BOD measurements, for example, are always performed in a thermostatically controlled cabinet at a temperature of 20°C.

For temperature equalisation, we recommend Lovibond® thermostatically controlled cabinets with a user-selectable temperature from 2°C to 40°C.

environmentally friendly coolant!

Thermostatically controlled incubators TC-Series

The TC series of thermostatically controlled cabinets is used for continuous temperature control over a range of 2 °C to 40 °C. This makes them ideal for a wide range of different applications in industrial and research laboratories.

In particular they are ideal for the temperature-controlled storage of samples or BOD determination in effluent analysis work.

The temperature can be set in steps of 0.1 °C and an LED display shows both the set temperature and the current temperature in the cabinets. Instruments such as magnetic agitators, which require a power supply, can be connected to sockets incorporated in the interior of the cabinet.

The integral temperature control unit meets the requirements of the EMC directive issued as IEC 61326: "Electrical instruments for measurement, monitoring and for use in laboratories".

Improved, robust, insulated housing and highly efficient components provide maximum energy efficiency.

There are 3 models available with standard doors from 135 to 445 litres net capacity, and 2 models with glass doors with 140 and 255 litres net capacity, the doors are lockable.

Temperature control unit

The temperature controll unit fulfils the EMC requirements according to IEC 61326 : Electrical equipment for measurement, control and laboratory use.

Applications

- BOD Measurement
- Microbiological Research
- Food Industry
- Dairies
- Laboratories
- Research Centres
- Universities

Technical Data	Models with standard door			Models with glass door	
	TC135 S	TC255 S	TC445 S	TC140 G	TC256 G
Cooling/Heating	Integrated powerful cooling and heating				
Coolant	R600a				
Design	Fully insulated cabinet with universal temperature control unit				
Display	Backlit LED display				
Operation	Splash-proofed keypad, 2 buttons with tactile feedback				
Fan	Axial, output 320 m^3/h				
Control range	+ 2 °C to + 40 °C, steps of 0.1 °C				
Power supply	220 - 240 V / 50 Hz				
Sockets	CEE 7/5, type E with hinged lid, 230 V / 16 A 2p + E, IP 4				
Door	lockable, door hinges changeable				
				Insulating glass door in an ABS frame	
Ceiling lighting				separately switchable	
Temperature tolerance	± 1 °C, specified for a stirred 500 ml water sample. For BOD (T=20 °C ±0.5 °C)				
Lighting				LED light bar	fluorescent tube
Climate class	+ 10 °C to + 32 °C (SN)		+10 to +43 °C (SN-T)	+ 10 °C to + 32 °C (SN)	
Shelf	3 retractable grids + 4 sockets	4 retractable grids + 1 bottom grid + 7 sockets	4 retractable grids + 1 bottom grid + 9 sockets	3 retractable grids + 1 bottom grid + 4 sockets	4 retractable grids + 1 bottom grid + 7 sockets
Energy consumption	approx. 1.41 kWh / 24h*	approx. 1.33 kWh / 24h*	approx. 1.24 kWh / 24h*	approx. 1.61 kWh / 24h**	approx. 1.91 kWh / 24h**
Inside dimensions (approx.) mm	513 W x 441 D x 702 H	470 W x 440 D x 1452 H	600 W x 560 D x 1452 H	513 W x 441 D x 702 H	470 W x 440 D x 1452 H
Overall dimensions (approx.) mm	600 W x 600 D x 850 H with worktop 600 W x 600 D x 819 H without worktop built-under	600 W x 610 D x 1640 H	750 W x 730 D x 1640 H	600 W x 600 D x 850 H with worktop 600 W x 600 D x 819 H without worktop built-under	600 W x 610 D x 1640 H
Net capacity (approx.):	135 L	255 L	445 L	140 L	255 L
Weight	39.0 kg	45 kg	78,5 kg	48,0 kg	77,0 kg
Shelf loading capacity	45 kg		60 kg	45 kg	
Approval	CE				
Code	**2438200**	**2438230**	**2438240**	**2438210**	**2438235**

* Ambient temperature 25 °C, Target temperature 20 °C, Variations possible
** Ambient temperature 25 °C, Target temperature 20 °C with interior lighting switched on (15 W), Variations possible

TC135 S — TC255 S — TC445 S — TC140 G — TC256 G

Spark-free cabinets - EX series

Laboratory cabinets with a spark-free interior

Contents not supplied

The German guidelines „Working Safely in Laboratories BG-I 850-0“ stipulates that interior spaces must be explosion-protected where hazardous, explosive environments can develop (for example, due to the presence of flammable liquids).

The Lovibond® cabinets in the EX range meet the requirements of these guidelines and are fully equipped for daily laboratory use.

The cabinets consist of a sturdy sheet steel housing with impact-proof and jolt-resistant powder coating. Improved, robust, insulated housing and highly efficient components provide maximum energy efficiency.

The robust interior is made of high-quality, strong white plastic material (PS).

The door is lockable and supplied with a right-hand hinge as standard (but can easily be converted to a left-hand hinge). A tight door seal is ensured by an all-round magnetic gasket.

The temperature in the refrigerator can be continuously adjusted over the range +1°C to +15°C; a room thermostat ensures constant control. The digital temperature display enables the interior temperature to be easily read. The high performance fan provides for an even temperature distribution inside.

The models EX220, EX300 and EX490 have a “fan stop” function, which switches the fan off when the door is opened.

Applications

- Laboratories
- Research Centres
- Universities

Technical data	EX160	EX220	EX300	EX490
Cooling	Powerful compressor unit, mounted on low noise, vibration-free bearings			
Coolant	R600a			
Defrost	Automatic defrost - condensation drains into a collection bowl within the refrigerator			
Temperature	1 °C to 15 °C			
Sound Power Level	47 dB			
Shelf loading capacity	40 kg			
EX-safety	Spark-free interior			
Height adjustment	Adjustable front feet			
Door	lockable, door hinges changeable			
Power supply	220 - 240 V / 50 Hz			
Shelf	4 (3 height-adjustable glass shelves)	5 (4 height-adjustable glass shelves)	6 (5 height-adjustable glass shelves)	
Connection value	1 A		1,5 A	
Power consumption	0.898 kWh / 24 h	0.786 kWh / 24 h	0.947 kWh / 24 h	0.983 kWh / 24 h
Climate class	SN, 10 °C to 32 °C	SN-T, 10 °C to 43 °C		
Temperature control	infinitely variable1 °C to 15 °C			
Inside dimensions (approx.) mm	513 W x 441 D x 702 H	470 W x 440 D x 1062 H	470 W x 440 D x 1452 H	600 W x 560 D x 1452 H
Overall dimensions (approx.) mm	600 W x 600 D x 860 H	600 W x 610 D x 1250 H	600 W x 610 D x 1640 H	750 W x 730 D x 1640 H
Net capacity	ca. 160 L	ca. 220 L	ca. 300 L	ca. 490 L
Weight	ca. 41.0 kg	ca. 53.0 kg	ca. 64.0 kg	ca. 84.0 kg
Approval	CE			
Code	**2422105**	**2422115**	**2422125**	**2422135**
Spares / Accessoires				
Safety- and collecting tub (PP)	**422155**	**422156**		**422157**
Glass shelve	**422165**	**422166**		**422167**

The product complies with the following
European directives and regulations: 2006/42/EC, 2014/35/EU, 2014/34/EU, 2014/30/EU, 2011/65/EU.

EX160 — EX220 — EX300 — EX490

Electrochemistry

SD400 Oxi L
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SD335
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SD Series 305, 315, 325
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SD150
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SD110
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SD Pocket Tester
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Optical oxygen measurement SD400 Oxi L

Applications

- Waste Water
- Water Treatment
- Marine Water
- Surface Water
- Drinking/ Potable Water

Users

- Sewage plants
- Research and development
- Institutes, Universities, Schools
- Water protection control
- Laboratories
- Aquaria

The SD400 Oxi L allows the measurement of dissolved oxygen in a convenient and simple manner. The determination of dissolved oxygen in water is based on optical luminescence technology. This is characterized by fast response time and a particularly low maintenance requirement. Combined with high accuracy , this technology offers great benefits to the user.

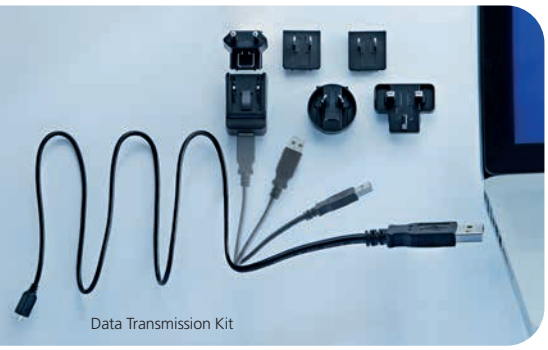
Features of SD400 Oxi L

For oxygen measurement by means of luminescence technology, the following advantages are obtained compared to galvanic sensors and Clark sensors:

- High accuracy
- No sample flow is needed
- Low maintenance
- No oxygen consumption in the measuring medium
- No pollution of ambient medium
- Long-life sensor membrane
- Robust measurement even in sulfide-containing samples

Additional features of SD400 Oxi L

- Waterproof sensor IP 67
- Backlit LCD
- Internal data storage
- Software for monitoring and storage of data
- Micro USB port
- Comfortable fitting to BOD Karlsruhe NS 19 / 26 (16.4 mm ø and above)


Data Transmission Kit


SD 400 Oxi L in case

SD400 Oxi L	
Probe	Optical DO
Protection class	IP 67 (Sensor)
Display	Large LCD display
Data Memory	Micro SD card
Daten Logger	Software for monitoring and storage of data
Software	Pre-installed ex works
Interface	Micro-USB
Auto-Off	After 10 minutes or manual off
Power Supply	Micro USB or 4 x AA batteries
Salinity	0... 50 ppt, auto compensation (after manual input)
Response time	40 sec. to 90 % of final reading
Storage temperature	-5 °C to 50 °C
Working temperature	-5 °C to 50 °C
Dimensions	162 x 98 x 54 mm (L x W x H) unit
Weight	approx. 330 g (unit incl. batteries)
Languages	German, English, Italian, French, Spanish, Portuguese,Dutch, Chinese (simplified)
CE-Conformity	

Accessories

Code	Item
740060	Optical DO probe with 1.5 m cable and bottle for storage and calibration
740070	Optical DO probe with 3 m cable and bottle for storage and calibration
740080	Optical DO probe with 10 m cable and bottle for storage and calibration
740030	SD 400 Oxi L basic instrument
740090	Data Transmission Kit (consists of USB cable and wall mount adapter)
740100	Maintenance Kit (consists of membrane cap and Micro SD card with software and calibration data)
740110	Metal guard (for protection and weight in field-testing)
740120	Bottle for storage and calibrati
1950025	1.5 V Batteries, AA, 4 pc.
197635	Cleaning cloth

Technische Daten

Ranges

Oxygen	0 - 50 mg/L
Saturation	0 - 500 %
Temperature	-5 to 50 °C
Barometer	51 to 112 kPa

Resolution

Oxygen	0,01 mg/L
Saturation	0,1 %
Temperature	0,1 °C
Barometer	0,1 kPa

Accuracy

Oxygen

0 to 200 % or 0 - 20 mg/L:
± 1.0 % of the reading or
± 0.1 mg/L whichever is greater
> 200 % or > 20 mg/L:
± 10 % of reading
- temperature ± 0.2 °C
- barometer ± 0.2 %

Delivery Content

Order Code: 740000
SD400 Oxi L, (Set 1)
instrument, 4 (AA) batteries,
optical DO probe with 1.5 m cable,
bottle for storage and calibration,
Metal protective cap, USB cable
Micro SD Card with calibration data,
software and full user manual,
quick start guide and lanyard in case

Order Code: 740010
SD400 Oxi L, (Set 2)
instrument, 4 (AA) batteries,
optical DO probe with 3 m cable,
bottle for storage and calibration,
Metal protective cap, USB cable
Micro SD Card with calibration data,
software and full user manual,
quick start guide and lanyard in case

Order Code: 740020
SD400 Oxi L, (Set 3)
instrument, 4 (AA) batteries,
optical DO probe with 10 m cable,
bottle for storage and calibration,
Metal protective cap, USB cable
Micro SD Card with calibration data,
software and full user manual,
quick start guide and lanyard in case

new!

Multiparameter Instrument SD335

Applications

- Drinking Water
- Cooling/Boiler Water
- Waste Water
- Surface Water
- Laboratory

Technical Data SD335 Multi

Measurement range / Resolution	**Input 1: pH/ORP/Temp.**		Input 2: Optional oxygen- (a) or conductivity probe (b)			
			Input 2a: DO/Temp.		**Input 2b: Con/Temp.**	Max. Display range
	pH:	-2.00 … 16.00 pH	O_2-Concentration:	0.00 … 50.00 mg/L	Conductivity:	0.000 … 500 mS/cm
	Redox/ORP:	-2000 … + 2000 mV	O_2-Saturation:	0.0 … 500.0 %	TDS:	0.000 … 500 g/L
	Temperature:	-10.0 … +150 °C	O_2-Partial pressure:	0 … 1013 hPa	Salinity:	0.0 … 70.0 PSU (g/kg)
			Temperature:	-10.0 … 110.0 °C	Temperature:	-10.0 … 110.0 °C
					* **Measurement range depending on electrode** • **LC 12 (< 200 mS/cm; cell constant ca. 0.55 cm^{-1})** • **LC 16 (< 1000 mS/cm; cell constant ca. 0.42 cm^{-1}**	
Accuracy	pH:	± 0.25 % FS	O_2-Concentration	± 1.5 % FS	Conductivity:	± 0.5 % FS
	Redox/ORP:	± 0.25 % FS	O_2-Satiratopm:	± 1.5 % FS	TDS:	± 0.5 % FS
	Temperature:	± 0.25 % FS	O_2-Partial pressure:	± 1.5 % FS	Salinity:	± 0.5 % FS
			Temperature:	± 0.5 % FS	Temperature:	± 0.5 % FS
Connection	pH/ORP	BNC-socket	DO/Temperature:	7-pin bayonet socket	Con/Temperature:	7-pin bayonet socket
	Temperature:	banana socket				
Calibration	1 - 5 Point calibration (automatic or manual)		1 Point calibration (automatic)		1 Point calibration (automatic or manual)	
Temperature compensation	Automatic (with temperature probe) or manual		Automatic		Automatic	
Additional Features	Automatic buffer recognition	• Lovibond® standards (pH: 4.01 / 7.00 / 10.01) • DIN 19266 buffers	Salinity correction:	0 … 70 PSU (g/kg)	TDS-Factor:	0.4 ... 1.0
			Pressure compensation:	Automatic	Reference temperature:	25 °C / 20 °C
Operating conditions	Temperature: -25 … +50 °C Rel. Humidity: 0 … 95 % (non-condensing)					
Storage temperature	-25 … +70 °C					
Power supply	3 x AAA NiMH batteries (max. 750 mAh) or via USB-interface					
Dimensions	164 x 100 x 37 mm (L x W x H)					
Weights	310 g (incl. batteries and protective armouring)					
Display	LCD, 52 x 40 mm, 4 1/2 digit 7-segment					
Data storage	Internal mass storage: 8 GB					
Languages	German, English, French, Spanish, Portuguese, Italian, Dutch					
Protection Class	IP 67					
Conformity	CE					

Order info Sets:

	724830	Unit in protective armouring, without electrode		
Set 1	724800	✓	-	✓
Set 2	724810	✓	✓	-
Set 3	724820	✓	✓	✓

Delivery content

All Sets contain:

- Stable plastic case
- instrument in protective armouring
- electrode holders
- pH/Temp.-electrode type 231
- pH buffer: 4.01 / 7.00 / 10.01 (traceable to NIST)
- storage solution for pH/ORP-electrodes
- Micro-USB cable
- AAA NiMH batteries
- instruction manual

Set 1

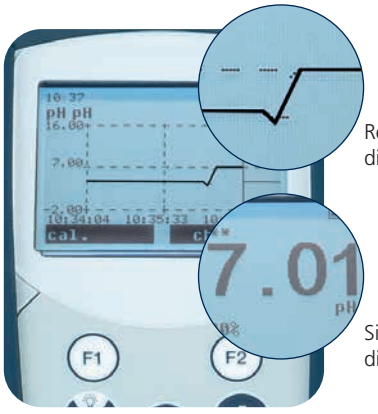
- pH / Con / Temp.
- Conductivity probe LC 12
- Conductivity standard 1413 µS/cm (traceable to NIST)

Set 2

- pH / dissolved O_2 / Temp.
- Oxygen probe type 300, 2 m cable
- Electrolyte & spare membranes
- Calibration bottle

Set 3

- pH / Con / dissolved O_2 / Temp.
- Conductivity probe LC 12
- Conductivity standard 1413 µS/cm (traceable to NIST)
- Oxygen probe type 300, 2 m cable
- Electrolyte & spare membranes
- Calibration bottle



Real time display

Single value display

Accessories from page 152

new!

SD305 pH
SD315 Oxi
SD325 Con

Applications

- Drinking Water
- Cooling/Boiler Water
- Waste Water
- Surface Water
- Laboratory

Functions

SD305 pH	SD315 Oxi	SD325 Con
Display of three different parameters • pH • Redox / ORP • Temperature **Optional 1-, 2- oder 3-point calibration** **Automatic buffer recognition** • Lovibond® standard buffer pH: 4.01 / 7.00 / 10.01 • pH buffer according to DIN 19266 **Status display of pH electrode** • Sensor evaluation after calibration **Redox measurement** • Display as "mV" vs. Ag/AgCl (3 M KCl) • Display as "mVH" vs. SHE according to DIN 38404-6	**Display of three different parameters** • O_2-Concentration • O_2-Saturation • Temperature **Simple calibration against watersaturated air** • recommended according to DIN EN ISO 5814 **Automatic pressure compensation** **Status display of oxygen probe** • Sensor evaluation in % after calibration **Salinity corretion (0.1 ... 70 PSU)** **Galvanic oxygen probe** • Ready for immediate use, no polarization time	**Display of five different parameters** • Conductivity • TDS • Salinity • Resistivity • Temperature **Automatic recognition of conductivity standards to adjust the cell constant** • Lovibond® standards 1413 µS/cm, 12.88 mS/cm **Reference temperature 25 °C or 20 °C** **Conductivity probes for diverse application** • LC 12: < 200 mS/cm, universal use • LC 16: < 1000 mS/cm, high conductivities • LC 10: < 200 µS/cm, pure water

Min-/Max-Value memory
Automatic temperature compensation (ATC)
Automatic power off
Battery status indicator
Alarm functions (optical or with sound)
Auto-Hold function
Shock resistant rubber protective armouring
Robust electrode holder made of ABS
Data logger with real time clock
Data transmission and evaluation: Software GSOFT 350 (optional)

Accessories from page 152

Technical Data	SD305 pH/ORP	SD315 Oxi
Measurement range	pH: -2.000 … 16.000 pH Redox: -2000 … +2000 mV Temperature: -5.0 … +150.0 °C	O_2-Concentration: 0.0 … 70.0 mg/L O_2-Saturation: 0.0 … 600.0 % Temperature: -5.0 … +50.0 °C Operating pressure (sensor): max. 3 bar≈30 m water depth
Accuracy	pH: ± 0.005 pH Redox: ± 0.05 % FS Temperature: ± 0.2 °C	O_2-Konzentration: 0 … 25 mg/L ± 1.5 % v.MW ± 0.2 mg/L 25 …70 mg/L ± 2.5 % v.MW ± 0.3 mg/L Temperatur: ± 0.1 °C
Calibration	1 - 3 Point calibration (automatic or manual)	1 - 3 Point calibration (automatic)
Connection	pH, Redox: BNC-socket Temperature: Banana socket	O_2/Temperature: 7-pin bayonet socket
Operating conditions	Temperature: -25 ... +50 °C; rel. Humidity: 0 ... 95 % (non-condensing)	
Storage temperature	-25 ... +70 °C	
Power supply	2 x AAA batteries (delivery content) or via USB-interface	
Dimensions	164 x 100 x 37 mm (L x W x H)	
Weight	302 g (incl. batteries and protective armouring)	
Display	LCD, 52 x 40 mm, 4 1/2 digit 7-segment	
Data storage	Manual logger: 1000 data sets (value storage on key press) Automatic logger: 10000 data sets (cyclic, time interval: 1 … 3600 s)	
Protection class	IP 67	
Conformity	CE	

Order Info / Delivery content :					
SD305 pH/ORP			**SD315 Oxi**		
Instrument in protective armouring, electrode holder, pH buffer (traceable to NIST): 4.01 / 7.00 / 10.01 (Set-1 / Set-2), redox standard solution 470 mV (Set-3), storage solution for pH/ORP-electrodes, AAA batteries, instruction manual			Instrument in protective armouring, electrode holder, KOH electrolyte, spare membranes, calibration bottle, AAA batteries, instruction manual		
Electrode depending on Set					
Set 1-pH	724640	pH/Temp. electrode type 231	**Set 1-Oxi**	724680	Oxygen probe, Pt/Pb, galvanic, cable length: 2 m
Set 2-pH	724641	pH-electrode type 226, temperature probe Pt1000	**Set 2-Oxi**	724690	Oxygen probe, Pt/Pb, galvanic, cable length: 10 m
Set 3-ORP	724642	ORP-electrode type 240, temperature probe Pt1000	**Set 3-Oxi**	724695	Oxygen probe, Pt/Pb, galvanic, cable length: 30 m
Base unit	724630	without electrode			

SD305 pH in case

SD315 Oxi in case

SD325 Con

Conductivity:	0.000 … 1000 mS/cm (Display range)
TDS:	0.000 … 5000 mg/L
Salinity:	0.0 … 70.0 PSU (Practical Salinity Unit)
Resistivity:	0.000 … 50.0 MΩ*cm
Temperature:	-5.0 ... 100.0 °C

*** Measurement range depending on electrode**
- **LC 12 (< 200 mS/cm; cell constant ca. 0.55 cm^{-1})**
- **LC 16 (< 1000 mS/cm; cell constant ca. 0.42 cm^{-1}**
- **LC 10 (< 200 µS/cm; cell constant ca. 0.1 cm^{-1}**

Conductivity:	± 0.5 % v. MW ± 0.1 % FS
Temperature:	± 0.2 °C

1 Point calibration (automatic or manual)

Con/Temperature: 7-pin bayonet socket

Temperature: -25 ... +70 °C; rel. Humidity: 0 ... 95 % (non-condensing)

-25 ... +70 °C

2 x AAA batteries (delivery content) or via USB-interface

164 x 100 x 37 mm (L x W x H)

302 g (incl. batteries and protective armouring)

LCD, 52 x 40 mm, 4 1/2 digit 7-segment

Manual logger: 1000 data sets (value storage on key press)
Automatic logger: 10000 data sets (cyclic, time interval: 1 … 3600 s)

IP 67

CE

SD325 Con

Instrument in protective armouring, electrode holder (Set-1 / Set-3),
standard solution according (traceable to NIST) 1413 µS/cm / 12.88 mS/cm (Set-1 / Set-2)
flow-cell for low conductivities (Set-3)
AAA batteries, instruction manual

Set 1-Con	724740	Conductivity probe LC 12 (4 pole graphite, < 200 mS/cm)
Set 2-Con	724750	Conductivity probe LC 16 (4 pole graphite < 1000 mS/cm)
Set 3-Con	724760	Conductivity probe LC 10 (2-pole stainless steel < 200 µS/cm)

SD325 Con in case

Accessories from page 152

SensoDirect 150

The SensoDirect 150 combines the features of several hand-held meters. It is designed for multi purpose operation and measures pH/Redox, dissolved oxygen and conductivity/TDS.

All measured values can be conveniently read on the large LCD display

Applications

- Drinking Water
- Cooling/Boiler Water
- Waste Water
- Pool Water
- Surface Water
- Water Treatment Companies
- Industrial and Governmental Laboratories

Technical Data SD150							
Parameter		**pH**	**ORP**	**Oxygen**	**Conductivity**	**TDS**	**Temperature**
Range / Resolution		0.00 … 14.00 pH	-1999 … 1999 mV	O_2 dissolved: 0.0 … 20.0 mg/L Air O_2: 0.0 … 100.0 %	0.0 … 200.0 µS/cm 0.200 ... 2.000 mS/cm 2.00 … 20.00 mS/cm 20.0 … 200.0 mS/cm	0.0 ... 132.0 ppm 132 … 1320 ppm 1320 … 13200 ppm 13200 … 132000 ppm	0.0 … 60.0 °C 32.0 … 140.0 °F
Accuracy		± 0.02 pH	± 0.5% of measured value	O_2 dissolved: ± 0.4 mg/L Air O_2: ± 0.7 %	± 2 % of measured value		± 0.8 °C (± 1.5 °F)
Temperature compensation		automatically (with temperature electrode) and manually	-	automatically	adjustable: 0… 5.0 % / °C		-
Calibration		1-, 2- or 3-point calibration (automatically or custom)	1-point calibration (custom, standards only > +100 mV)	1-point calibration (automatically)	1- or 2-point calibration, manually		-
Standards for automatic detection		USA: 4.01 / 7.00 / 10.01 pH	-	oxygen content air	-		
Salinity correction		-		0 … 39 %, manually	-		
Air Pressure compensation		-		0 … 8900 m, manually	-		
Display		58 x 34 mm LCD					
Data-Hold-Function		Yes					
Automatic Power Off		after 10 min, optional					
Operating conditions		0 … 50 °C, 0 … 80 % relative humidity (non-condensing)					
Power Supply		4 x 1.5 V batteries AA or DC 9V adapter					
Weight		ca. 620 g (battery and protective armouring)					
Dimensions		203 x 76 x 38 mm (battery and protective armouring)					
Protection class		IP 51					
Conformity		CE					
Order Info Sets:							
Set 1	724200	✓	-	✓	✓	✓	✓
Set 2	724210	✓	-	-	✓	✓	✓
Set 3	724220	✓	-	✓	-	-	✓
Set 4	724230	✓	✓	-	-	-	✓

Delivery Content

All Sets include:

- Sturdy plastic case
- Measuring instrument with protective armouring
- 4 x 1.5 V batteries AA
- pH electrode type 226
- Temperature probe Pt1000
- pH 4.01 and 7.00 buffer set, 90 mL each (traceable to NIST)
- Instruction manual

SensoDirect 150 Set 1

- pH / Con / TDS / O_2 dissolved / Temp.
- Conductivity probe type 110/150
- Oxygen sensor type 150
- Electrolyte and membrane heads (2 pc.)

SensoDirect 150 Set 2

- pH / Con / TDS / Temp.
- Conductivity probe type 110/150

SensoDirect 150 Set 3

- pH / O_2 dissolved / Temp.
- Oxygen sensor type 150
- Electrolyte and membrane heads (2 pc.)

SensoDirect 150 Set 4

- pH / Redox / Temp.
- Redox electrode type 242

Accessories from page 152

SensoDirect 110

Battery operated pH meter for the determination of pH, salinity and conductivity.
Variety of applications and user-friendly in operation.

The protective armouring offers not only a secure grip but also protection against fall damage.

A "Hold" function and an automatic battery check rounds off the range of functions.

Delivery Content

- Basic unit
- Battery
- Protective armouring
- Warranty information
- Instruction manual

Applications

- Drinking Water
- Cooling/Boiler Water
- Waste Water
- Pool Water
- Surface Water
- Water Treatment Companies
- Industrial and Governmental Laboratories

Technical Data	SensoDirect 110 pH	SensoDirect 110 Con	SensoDirect 110 Salt
Range / Resolution	0.00 … 14.00 pH	0.000 … 1.999 mS/cm 0.01 … 19.99 mS/cm	0.01 … 10.00 % salt
Accuracy	± 0.07 pH	± 3 % range	± 0.5 % range
Temperature compensation	-	automatically, 2 % / °C	
Calibration	custom (manually with adjusting screws)		
Display	52 x 37 mm LCD		
Data-Hold-Function	Yes		
Operating conditions	0 … 50 °C, 0 … 80 % rel. humidity (non condensing)		
Power Supply	9-V-Block Battery		
Weight	ca. 380 g (battery and protective armouring)		
Dimensions	208 x 110 x 34 mm (protective armouring)		
Protection class	IP 51		
Conformity	CE		
Order Info			
Instrument, electrode and accessories in stable case	721300	722300	723300
Instrument and electrode	721310	722310	-

Accessories from page 152

SD-Pocket Tester

Technical Data	SD50 pH	SD60 ORP
Range / Resolution	0.00 … 14.00 pH	-1000.0 … +1000.0 mV -1800 … +1800 mV
Accuracy	± 0.05 pH	± 2 mV
Calibration	1-, 2- or 3-point calibration (automatically)	1-point calibration (custom)
Standards for automatic recognition	USA: 4.01 / 7.00 / 10.01 pH NIST: 4.01 / 6.86 / 9.18 pH	-
Temperature: Range / Resolution	0,0 … 60,0 °C / 32,0 … 140 °F	
Temperature: Accuracy	± 1 °C / ± 1,8 °F	
Auto-off	8 minutes non-use	20 minutes non-use
Temperature compensation	automatically	-
Battery life	> 350 hours (backlight OFF)	
Display	22 x 22 mm LCD, with backlight	
Memory	25 data sets with time and date	
Data-Hold-Function	Yes	
Operating conditions	0 … 60 °C / 0 … 80 % rel. humidity (non condensing)	
Power supply	2 x 1.5 V batteries, AAA	
Dimensions, Weight	205 x 44 x 33 mm, approx. 155 g with batteries	
Conformity	CE	
Order Info		
Instrument and Accessories in plastic box	194800-16	194801-16
Instrument and Accessories in case	194800-30	-
Replacement electrode	194820	194821

The **SD series** comprises a range of compact, easy-to-use, hand-held instruments for the accurate measurement of pH, ORP, Con, TDS or Salt. With robust housing and fully waterproof (IP 67) casing, these testers are the ideal solution for in-situ testing in environmental, industrial or pool & spa applications.

The intuitive scroll-bar functionality and backlit display enable the easy measurement and simultaneous display of Result, Temperature, Date/Time and other Parameters.

With 25 sets of data storage, each with date and time stamp, the units also enable the easy recalling of data for record keeping requirements.

Designed and manufactured according to Lovibond® quality standards, the instruments are equipped with replaceable electrodes to ensure long-life functionality in the field.

Delivery Content

- Meter in a robust plastic case
- 2 x 1.5 V Batteries, AAA
- Lanyard
- Instruction manual
- pH 4.01; 7.00 and 10.01 Buffer tablets 3 x 10 pc. (SD50 pH only)
- pH 4.01 and 7.00 Calibration buffer and 2 x 100 ml measuring cup (SD50 pH in case only)

SD50in case, Code: 194830-16

Conversion table

1 mS/cm	=	1000 µS/cm
1 ppt	=	1000 ppm
1 ppt	=	0.1 %
1 ppt	≈	1 g/L
1 ppm	≈	1 mg/L
ppt	-	Parts per thousand
ppm	-	Parts per million

SD70 Con	SD80 TDS	SD90 Salt/Salz
0 … 1999 µS/cm 2.00 … 20.00 mS/cm	0 … 1499 ppm 1.50 … 15.00 ppt	0 … 999 ppm 1.00 … 20.00 ppt 0.00 … 2.00 %
± 3 % range		
1- or 2-point calibration (automatically or custom)	1- or 2-point calibration (custom)	
1413 µS/cm and 12.88 mS/cm	-	-
0.0 … 60.0 °C / 32.0 … 140 °F		
± 1 °C / ± 1.8 °F		
8 minutes non-use		
automatically, 2 % / °C		
> 100 hours (backlight OFF)		
22 x 22 mm LCD, with backlight		
25 data sets with time and date		
Yes		
0 … 60 °C / 0 … 80 % rel. humidity (non condensing)		
2 x 1.5 V batteries, AAA		
205 x 44 x 33 mm, approx. 155 g with batteries		
CE		
194802-16	**194803-16**	**194804-16**
-	-	-
194822		

Accessories from page 152

Accessories SD Instruments

Electrodes

Parameter	Article	Description
pH	**SD pH electrode type 226**	0 … 14 pH, gel/plastic, BNC, low conductivities
pH	**SD pH electrode type 330**	0 … 14 pH, gel/plastic, BNC, universal use
pH	**SD pH electrode type 235**	0 … 14 pH, gel/glass, BNC, double junction
pH / T	**SD pH electrode type 231**	0 … 14 pH, gel/plastic, BNC, intergrated temperature probe
pH / T	**SD50 pH Replacement electrode**	0 … 14 pH, gel/plastic, pocket tester
T	**SD Temperature probe type 150**	0 … 60 °C, Pt1000
T	**SD Temperature probe type 300**	-70 … 250 °C, Pt1000
ORP	**SD ORP electrode type 242**	± 2000 mV, platinum, gel/plastic, BNC
ORP/T	**SD 60 ORP Replacement electrode**	± 1800 mV, platinum, gel/plastic, pocket tester
Con / TDS / T	**SD Conductivity probe type LC 8**	< 200 mS/cm, 2-pole graphite, K ≈ 1.0 cm^{-1}
Salt / T	**SD Conductivity probe type LC 9**	< 10 % salt 2-pole graphite, K ≈ 1.0 cm^{-1}
Con / TDS / Salt / Res / T	**SD Conductivity probe type LC 10**	< 200 µS/cm, 2-pole stainless steel, K ≈ 0.1 cm^{-1}, pure water
Con / TDS / Salt / Res / T	**SD Conductivity probe type LC 12**	< 200 mS/cm, 4-pole graphite , K ≈ 0.55 cm^{-1}, universal use
Con / TDS / Salt / Res / T	**SD Conductivity probe type LC 16**	< 1000 mS/cm, 4-pole graphite,K ≈ 0.42 cm^{-1}, high conductivities
Con / T	**SD70 Con Replacement electrode**	< 20 mS/cm, 2-pole graphite, K ≈ 1.0 cm^{-1}, pocket tester
TDS / T	**SD80 TDS Replacement electrode**	< 15 ppt, 2-pole graphite, K ≈ 1.0 cm^{-1}, pocket tester
Salt / T	**SD90 Salt Replacement electrode**	< 2 %, 2-pole graphite, K ≈ 1.0 cm^{-1}, pocket tester
DO / T	**SD Oxygen probe type Oxi 150**	< 20 mg/L, polearographic Au/Ag, 4 m cable
DO / T	**SD Oxygen probe type Oxi 300**	< 70 mg/L, galvanic Pb/Pt, 2 m cable
DO / T	**SD Oxygen probe type Oxi 300**	< 70 mg/L, galvanic Pb/Pt, 10 m cable
DO / T	**SD Oxygen probe type Oxi 300**	< 70 mg/L, galvanic Pb/Pt, 30 m cable
DO / T	**SD Oxygen probe type Oxi L 400**	< 50 mg/L, optical, 1.5 m cable
DO / T	**SD Oxygen probe type Oxi L 400**	< 50 mg/L, optical, 3 m cable
DO / T	**SD Oxygen probe type Oxi L 400**	< 50 mg/L, optical, 10 m cable

Solutions

pH	**Buffer solution pH 4.01 ± 0.01**	90 mL, traceable to NIST
pH	**Buffer solution pH 4.01 ± 0.01**	1 L, traceable to NIST
pH	**Buffer solution pH 7.01 ± 0.015**	90 mL, traceable to NIST
pH	**Buffer solution pH 7.01 ± 0.015**	1 L, traceable to NIST
pH	**Buffer solution pH 10.01 ± 0.03**	90 mL, traceable to NIST
pH	**Buffer solution pH 10.01 ± 0.03**	1 L, traceable to NIST
pH	**Buffer solution Set pH 4 / 7 / 10**	each 90 mL, traceable to NIST
pH	**Buffer tablets pH 4.00 ± 0.05**	100 pcs.
pH	**Buffer tablets pH 4.00 ± 0.05**	250 pcs.
pH	**Buffer tablets pH 7.00 ± 0.05**	100 pcs.
pH	**Buffer tablets pH 7.00 ± 0.05**	250 pcs.
pH	**Buffer tablets pH 10.00 ± 0.05**	100 pcs.
pH	**Buffer tablets pH 10.00 ± 0.05**	250 pcs.
pH / ORP	**Storage solution for pH/ORP electrodes**	25 mL

SD50 pH	SD60 ORP	SD70 Con	SD80 TDS	SD90 Salt	SD110 pH	SD110 Con	SD110 Salt	SD150	SD305 pH/ORP	SD315 Oxi	SD325 Con	SD335 Multi	SD400 Oxi L	Code
				•			•	•			•			721226
				•			•	•			•			721330
				•			•	•			•			721235BNC
								•			•			721231
•														194820
							•							724420
								•			•			721245
							•	•			•			721242
	•													194821
						•	•							724400
							•							724430
										•				19805046
										•	•			19805040
										•	•			19805045
		•												194822
			•											194822
				•										194822
							•							724410
									•		•			19805050
									•		•			19805051
									•		•			19805052
													•	740060
													•	740070
													•	740080
•					•			•	•			•		721247
•					•			•	•			•		721252
•					•			•	•			•		721248
•					•			•	•			•		721254
•					•			•	•			•		721249
•					•			•	•			•		721256
•					•			•	•			•		721250
•					•			•	•			•		515620BT
•					•			•	•			•		515621BT
•					•			•	•			•		515610BT
•					•			•	•			•		515611BT
•					•			•	•			•		515600BT
•					•			•	•			•		515601BT
•	•				•			•	•			•		726402

Accessories SD Instruments

	Parameter	Article	Description
Solutions	pH / ORP	Storage solution for pH/ORP electrodes	100 mL
	ORP	Redox/ORP Standard solution 470 mV	100 mL
	Con	Conductivity solution 1413 µS/cm	500 mL, traceable to NIST
	Con	Conductivity solution 1413 µS/cm	90 mL, traceable to NIST
	Con	Conductivity solution 12.89 mS/cm	90 mL, traceable to NIST
	Con / TDS	Conductivity solution 1413 µS/cm TDS 988 ppm	100 mL
	Con / TDS	Conductivity solution 12.89 mS/cm TDS 9.02 ppth	100 mL
	Salt	0.5 % NaCl Solution (5,8797 µS/cm)	100 mL
	Salt	0.1 % NaCl Solution (1,1990 µS/cm)	100 mL
	DO	Electrolyte for oxygen probe SD150	ca. 30 mL
	DO	Electrolyte for oxygen probe SD300	100 mL
Miscellaneous	DO	Spare membrane oxygen probe type Oxi 150	1 pc.
	DO	Service-Set oxygen probe type Oxi 300	100 mL electrolyte and 3 spare membranes
	DO	Maintenance kit oxygen probe type Oxi L 400	membrane cap and micro SD-card incl. software + calibration data
	DO	Calibration bottle type Oxi 300	1 pc.
	DO	Storage/Calibration bottle type Oxi L 400	1 pc.
	DO	Data transfer Kit SD 400 Oxi L	USB-cable and universal power adapter
	DO	Protaction cap oxygen probe type Oxi 310, PVC	1 pc.
	DO	Protaction cap oxygen probe type Oxi 310, brass	1 pc.
	DO	Protaction cap oxygen probe type Oxi L 400, steel	1 pc.
	Con	Flow-cell, glass, for conductivity probe LC 10	1 pc., Shaft diameter ø12 mm, hose connection ø 6 mm
		Power supply SD150	1 pc.
		USB-cable SD305 - 325	for data transfer and power supply
		GSOFT 3050 Data logger software SD 305 - 325	for Windows
		Electrode holder SD 305 series	1 pc.
		Block battery, 9 V	1 pc.
		AA batteries, 1.5 V	4 pc.
		AAA batteries, 1.5 V	4 pc.
		AAA-NiMH-batteries, 1.2 V	3 pc.
		Plastic beaker, 100 mL	1 pc.
		Cleaning cloth	1 pc.
		Deionised water (DI)	250 mL

pH = potentia Hydrogenii
ORP = Redox potential
T = Temperature
Con = Conductivity
Salt = Salinity
TDS = Total dissolved solids
Res = Resistivity
DO = Dissolved Oxygen

SD50 pH	SD60 ORP	SD70 Con	SD80 TDS	SD90 Salt	SD110 pH	SD110 Con	SD110 Salt	SD150	SD305 pH/ORP	SD315 Oxi	SD325 Con	SD335 Multi	SD400 Oxi L	Code
•	•				•			•	•			•		726404
	•							•	•			•		195070
		•	•			•		•			•	•		722250
		•	•			•		•			•	•		726654
		•	•			•		•			•	•		726684
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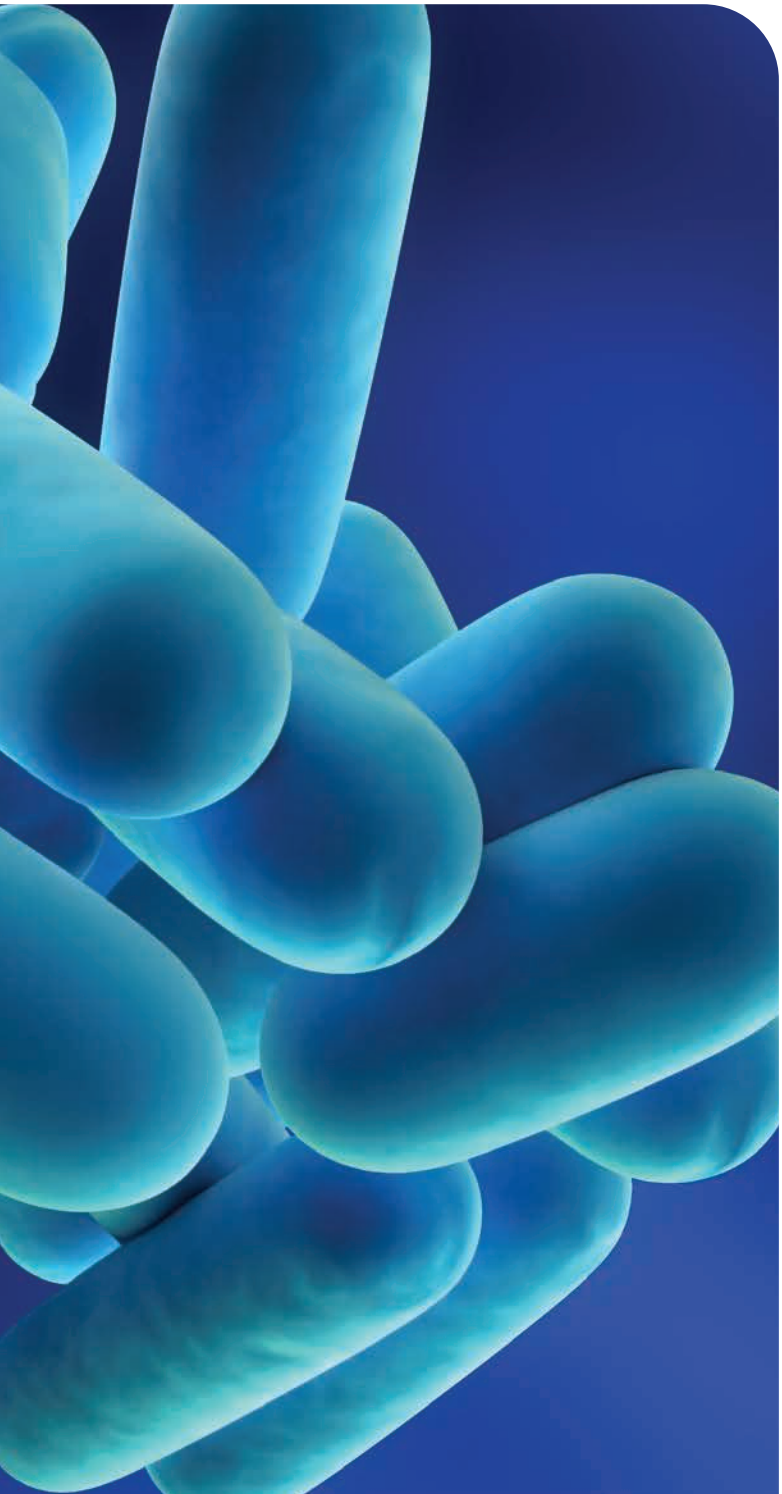
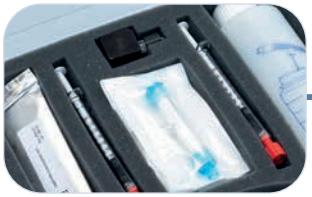
Microbiology



Dipslides
page 158

Dipslide App Coliforme
page 159



Legionellen Test Kits
page 160

Dipslides

Determine aerobic and anaerobic bacteria levels.

- Early indication of bacteria
- Proliferation results in 48 hours
- Inexpensive
- Easy-to-Use
- Excellent for trend analysis

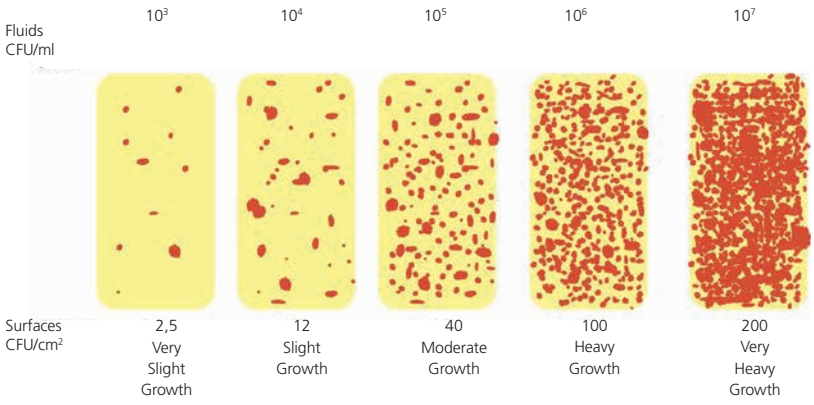
Guidelines to advise on the correct practices to control germs in water systems exist worldwide. Suppressing bacteria levels does substantially reduce the possibility of an outbreak of this often fatal disease. Guidelines recommend introducing a monitoring and control program. This program includes the testing of cooling tower waters with dipslides on a regular basis.

A full range of dipslides is available for semi-quantitative determination of aerobic and anaerobic bacteria populations in industrial and recreational waters. Dipslide accuracy is limited due to the small sample size, but if used correctly and incubated at a constant temperature using the Lovibond® dipslide incubator, they are excellent for trend analysis and can give an early indication of bacteria proliferation.

Dipslides are supplied in a cardboard carton containing 10 slides.

Dipslides have a working shelf life of 6 months.

Results are quantified by comparison to a standard density chart.



Code	Dipslide	Anwendung	Growth
56B010110	D001 TTC/TTC	TVC (Aerobic bacteria)	Red
56B010210	D002 TTC/MALT	TVC/Fungi & Moulds	Red/Green, Black, White: Beige (Yeast)
56B010310	D003 TTC/ROSE	TVC/Fungi & Moulds	Red/Green, Black, White: Beige (Yeast)
56B010410	D004 TTC/MAC	TVC/Coliforms	Red/Red or Yellow
56B010510	D005 TTC/E.COLI	*TVC/ Coliforms & E.coli*	Red/ Red or Yellow (Coliforms) or Blue (*E.coli*) or Cream (*P.aeruginosa*)
56B010610	D006 MAC/PDM	Coliforms/ Pseudomonas	Red/Green (*P.aeruginosa*) or Cream (*P.spp*)
56B010710	D007 TTC/PDM	TVC/ P.aeruginosa	Red/ Green (*P.aeruginosa*) or Cream (*P.spp*)
56B010810	D008 SRB Tube Test	Sulphate Reducing Bacteria	Black Diffusion
56B010910	D009 NRB Tube Test	Nitrite Reducing Bacteria	Pink Diffusion
56B011110	D011 R2A/R2A	Aerobic bacteria	Red

The **DI10** incubator enables reliable incubation of bacterial dipslides on site, in the laboratory or even on the road in the car.

you will find further information on **page 167**.

Lovibond®

Dipslide Comparator App

This easy-to-use app offers a choice of different media-specific comparison pallets to qualify the results, suitable for the entire range of Lovibond® Dipslides.

The app can also be used to capture and quantify all results of the NRB and SRB dipslides.

Easy to use

The app offers a simple but effective method for taking pictures and evaluating a dipslide. The evaluation is done visually with an adjacent colour media-specific quantification palette that can be easily moved. This allows the operator a direct comparison.

There is the ability to load any number of customer addresses with a drop-down menu for easy access.

Information screens provide solutions to frequently asked questions. Automatically, all entered data is graphically displayed on site basis.

Fast e-mail option

All photographically recorded results are stored for a period of 90 days.

The photo of the "compared" dipslide can be sent to one or more e-mail addresses for archiving.

As a result, the compliance is improved because the dipslide result is retrieved at any time and can be displayed.

The charts of historical results can be viewed and emailed to customers.

The Lovibond® app can be downloaded from Apple and Android™ stores.

After downloading the app, the user must enter the Dipslide batch number to enable use.

GET IT ON Google Play

Download on the App Store

iOS® is a registered trademark of Cisco, Inc. and licensed to Apple, Inc.

Android™ is a trademark of Google Inc.

Coliform / *E.coli* Test Kit

- Simple one step procedure
- Coliforms and *E.coli* in one test
- 100 mL sample (regulatory reporting)
- Captures a CFU / 100 mL within 24 h

Coliform and *E.coli* are good indicators of general bacterial contamination and, because they are easy to test for, make ideal indicator bacteria to monitor in water courses, tanks and pipe work. WHO guidelines on potable water quality state that zero Colony Forming Units (CFU) of coliforms and *E.coli* should be present per 100ml of water sample.

The Lovibond® system tests 100 mL samples and will indicate the presence of just one CFU/100 mL.

The presence of only one CFU / 100 mL is indicated by a yellowish staining under UV light within 24 h.

Code: **56K009701**

(Further details on this product can be found in our special catalog "Industrial Water")

The **DI20 incubator** with standard built-in heating and cooling system, is suitable for incubating up to 20 tests.

you will find further information on **page 167**

Lovibond® Legionella Rapid Test Kits

The Lovibond® Legionella Test Kits all contain the fast and accurate test strip, designed to obtain results in 25 mins.

This test is used to detect the presence of Legionella pneumophila serogroup 1 bacteria in water samples from a wide range of sources.

The test operates via a Lateral Flow Immuno-chromatographic Assay (LFICA).

The test strip has an 18 month shelf life from manufacture and is intended for storage at room temperature. 18-22°C (64.4-71.6°F)

The test kits are intended for use as part of an overall water treatment, management and risk reduction approach and, as all testing methods including lab culture testing, should NOT be used as the sole method for assessing risks associated with Legionella bacteria.

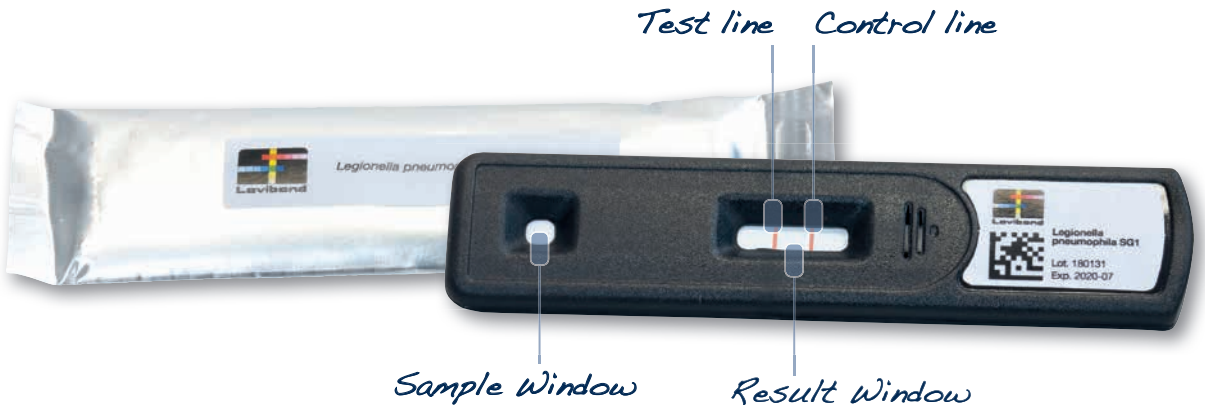
The simple design of the test kit ensure that the test can be used by non technical personnel with little or no training required

Each of the kits have been designed to meet requirements of application and geographical areas.

EU test kits all come with score cards to determine action level:

score of 1 or greater is = ≥ 1000 CFU/L

score of 6 or greater = ≥10,000 CFU/L



Test Kit	Applications	Limit of detection	No of Tests	Code
Field Test Kit	Basic Test, no Filtration	100,000 CFU/L	10	56B006001
Industrial Test Kit	Industrial water	100 CFU/L	5	56B006101
Industrial EU Kit	Industrial water	1000 / 10000 CFU/L	5	56B006106
Industrial Test Kit Refill Pack	Industrial water	100 CFU/L	5	56B006104
Risk Assesment Test Kit	Industrial water	100 CFU/L & 200 CFU/L / Swabbed area	4	56B006501
Risk Assesment EU Test Kit	Industrial water	1000 / 10000 CFU/L & 200 CFU/L / Swabbed area	4	56B006107
Single Syringe Test Kit	Potable Water	100 CFU/L	1	56B006601
Single Syringe EU Test Kit	Potable Water	1000 / 10000 CFU/L	1	56B006105
Swab (Biofilm) Test Kit	Biofilm	200 CFU/L / Swabbed area	5	56B006401
Single Swab Test Kit	Biofilm	200 CFU/L / Swabbed area	1	56B006108


Industrial Legionella Test Kit


Risk assessment Kit


Swab Legionella Test Kit

Applications

- Domestic & industrial hot & cold water systems
- Cooling towers
- Decorative fountains, hot tubs & pools
- Sinks and showers
- Misters, sprinklers, air washers & humidifiers
- Risk assessment

User

- Risk Assessors
- Water Treatment Company
- Facilities Management Company
- Leisure Facility Operator
- Swimming Pool Engineer

Water Safety Kits

Water Safety Kits
page 164

DI10 Incubator
page 167

DI20 Incubator
page 167

Heating & Cooling

as standard in our incubator DI20 giving you the most accurate results possible in the field

Water Safety Kits

Clean water is essential for human health and the Tintometer® Group is dedicated to ensure we can deliver technical solutions for testing, wherever they may be needed.

Lovibond® Water Safety Kits

The Lovibond® Potable Water Test Kits are designed for both microbiological and physio chemical analysis of some of the most critical parameters to determine the suitability of water for drinking.

Their rugged cases with a compact and light-weight design are lockable, waterproof and simple to use. These kits can be used in the field by non technical personnel quickly and easily and so are perfect for emergency response situations.

All kits come with simple pictoral instructions.

Applications

- Drinking water monitoring
- Drinking water supply
- Emergency Response
- Water purifier

User

- Non Profit Organizations (NGO´s)
- Medical research and development
- Institutes, Universities, Schools
- World Health Organization (WHO)

Combined

The Lovibond® Water Safety Kit Combined with the complete equipment for testing potable water quality in **two** cases:

Water Safety Kit Combined

1 case **Water Safety Kit Chemical**
& 1 case **Water Safety Kit Microbiology**
with **one** Incubator

Code: 56K681251

Water Safety Kit Combined Duo

1 case **Water Safety Kit Chemical**
& 1 case **Water Safety Kit Microbiology Duo**
with **two** Incubators

Code: 56K681252

Water Safety Kit Basic

The Lovibond® Basic Potable Water Test Kit is ideal for emergency situations and disaster relief efforts and combines microbiological methods and simple chemical methods for the analysis of indicator para-meters for the assessment of water quality.

The kit can also be used for surveillance and monitoring of water quality at the source, in water storage tanks, in treatment plants, at the consumer level etc.

Its compact design and simplistic tests ensure that the most common tests used for indication of potability are performed rapidly and simply

This test kit incorporates our rapid tester for Chlorine / pH , our pocket conductivity tester (Pocket Tester SD70 Con), a simple turbidity tube and our DI20 incubator for testing *E.Coli* and Coliform into one case.
This allows the kit to be transported easily and used in areas that are otherwise difficult to test in.

Delivery content

- DI20 Incubator
  (incl. Petri dishes & Batteries)
- Chlorine-pH Tester
- Pocket Tester SD70 Con
- Bailer
- Filter flask
- Vacuum pump
- Turbidity test tube
- Solid case

Total weight: 16 kg
Dimensions: 487 x 386 x 229 mm

durable backpack can be used for easy transport in difficult terrain

Water Safety Kit Chemical

The Lovibond® Water Safety Kit Chemical combines some of the most popular Tintometer® water analysis products into one case designed for the analysis of chemical constituents that indicate the potability of water and its effective safety for human consumption.

It comprises our MD600 photometer, TB211 IR turbidity meter and the electrochemical pocket testers SD50 and SD70.

This kit can be used in conjunction with the micrco-biology cases to provide a complete suite of tests for potability of water.

The kit comes with reagents for Chlorine, Ammonia, Nitrite, Nitrate, ph, Conductivity, Turbidity but can be expanded using our reagent packs featured from page 86 to include any of the tests for the MD600.

Delivery content

- Photometer MD600
  (90 more tests possible)
- Turbidity meter TB211 IR
- Pocket Tester SD50 pH & SD70 Con
- Reagents for Ammonia, Chlorine, Nitrate & Nitrite
- Solid case

Total weight: 4.5 kg
Dimensions: 411 x 322 x 168 mm

Water Safety Kits Microbiology

The Lovibond® Water Safety Kits Microbiology contain all the equipment necessary to preform the microbiological analysis component for safe drinking water.

The kits can also be used for surveillance and monitoring of water quality at the source, in water storage tanks, in treatment plants, at the consumer level etc.

The kits are available with 1 or 2 DI20 incubators.

The Water Safety Kit Microbiology Duo allows the simultaneous measurement of *E.Coli* / Coliforms and thermo-tolerant *E.Coli* / Coliforms which require two separate incubation temperatures.

These kits can be used in conjunction with the Water Safety Kit Chemical to complete a superior suite of tests for water potability

This test kit incorporates our new DI20 incubator, vacuum filtration, re-useable stainless steel micro plates.

Delivery content

- DI20 Inkubator,
  depending on kit with 1 or 2 incubators
  (incl. Petri dishes & Batteries)
- Bailer
- Filter flask
- Vacuum pump
- Solid case

Water Safety Kit Microbiology
Total weight: 14.75 kg
Dimensions: 487 x 386 x 229 mm

Water Safety Kit Microbiology Duo
Total weight: 18.75 kg
Dimensions: 487 x 386 x 229 mm

Tests & Ranges

Analysis	Range	Measuring Instrument	No. of tests	Key Features	Code
Water Safety Kit Basic					56K681250
Chlorine	0 - 3 mg/L Cl_2	Chlorine-pH-Tester	270	Emergency Response Kit	
Coliforme	> 1CFU / 100 mL	Plate Count	200		
Conductivity	0.01- 20.00 mS/cm	Pocket Tester SD70 Con	> 250	Contains Basic & Simple Tests for Indicative Tests	
E.coli	>1 CFU / 100 mL	Plate Count	250		
pH value	6.2 - 8.2 pH	Chlorine-pH-Tester	270	Chemical & Microbiological Analysis in one Kit	
Turbidity	30 - 400 NTU	Tube test			
Incubator		DI20			
Water Safety Kit Chemical					56K681253
Ammonia	0.02 - 1 mg/L N	Photometer MD600	250	Chemical Constituent Kit for potable water	
Chlorine	0.01 - 6.0 mg/L Cl_2	Photometer MD600	250		
Conductivity	0.01- 20.00 mS/cm	Pocket Tester SD70 Con	250	Contains accurate Indicative Tests	
Nitrate	0.08 - 1 mg/L N	Photometer MD600	250		
pH value	0 - 14 pH	Pocket Tester SD50 pH	250		
Turbidity	0.01-1100 NTU	Turbidimeter TB211 IR	> 250		
Water Safety Kit Microbiology		DI20 Incubator (1 Incubator)			56K681254
Coliform	>1 CFU / 100 mL	Plate Count	200	Microbiological testing in a single case	
E.Coli	>1 CFU / 100 mL	Plate Count	200	Simple pictographic design	
Water Safety Kit Microbiology Duo		DI20 Incubator (2 Incubators)			56K681255
Coliform	>1 CFU / 100 mL	Plate Count	200	Microbiological testing in a single case	
E.Coli	>1 CFU / 100 mL	Plate Count	200	Simple pictographic design	
				Allows simultaneous measurement of different bacteria species	

durable backpack can be used for easy transport in difficult terrain

Optional

Optional: durable backpack for easy transport in difficult terrain: leaves hands free

Code: 56A014000

Accessories / Replacements	Quantity	Code		Quantity	Code
Nitrate Test Powder	15 g	465230	Media pads & dispenser	200 pc.	56A016330
Nitrate Test Tablet	250 pc.	502810	Petri dishes	10 pc.	400855
Free & Total Chlorine (DPD No.1) Tablet	250 pc.	511051BT	Membrane lauryl sulphate broth	40 g	56P069740
Free & Total Chlorine (DPD No.1 Rapid) Tablet	250 pc.	511311BT	Filters	150 pc.	56A023801
Free & Total Chlorine (DPD No.3) Tablet	250 pc.	511081BT	KS3 - pH 10 Buffer Solution	65 mL	56L000365
Free & Total Chlorine (DPD No.3 Rapid) Tablet	250 pc.	511291BT	KS6 - pH 4 Buffer Solution	65 mL	56L000665
Phenol Red	250 pc.	511771 BT	KS9 - pH 7 Buffer Solution	65 mL	56L000965
Phenol Red Rapid	250 pc.	511791BT	1413 µS Standard Conductivity Solution	65 mL	56L001665
Nitite LR Tablet	250 pc.	512311BT			
Ammonium NR.1 Tablet	250 pc.	512581BT			
Ammonium NR.2 Tablet	250 pc.	512591BT			

Note: Kit does not include sterilisation equipment necessary for microbiological analysis:

- Pressure cookers or portable sterilizer or access to autoclave (nearby hospital or laboratory)
- Methanol (at least 1 -2 ml per test)
- Distilled water

DI10 Incubator

- Robust design
- Holds up to 12 dipslides or 10 petri dishes
- Excellent temperature stability
- In-car operation
- Programmable incubation period setting

The Lovibond® DI10 Incubator is designed for the reliable incubation of bacteriological slides, on-site, in a laboratory or even while mobile in a car or van.

National and European guidelines give practical advice on how to monitor, clean, test and ultimately control harmful legionella bacteria in water systems.

Dipslides provide a crucial part in the testing program, but must be used correctly and regularly as part of a planned regime, week on week to be of any meaningful value.

The incubation period and the incubation temperature should be the same each time the test is performed so that bacteria growth is controlled and consistent each time the test is performed. This allows for week by week comparisons to be made and high counts easier to identify. Dipslides are usually incubated at 30˚C for 48 hours, but this can vary depending upon the specific application.

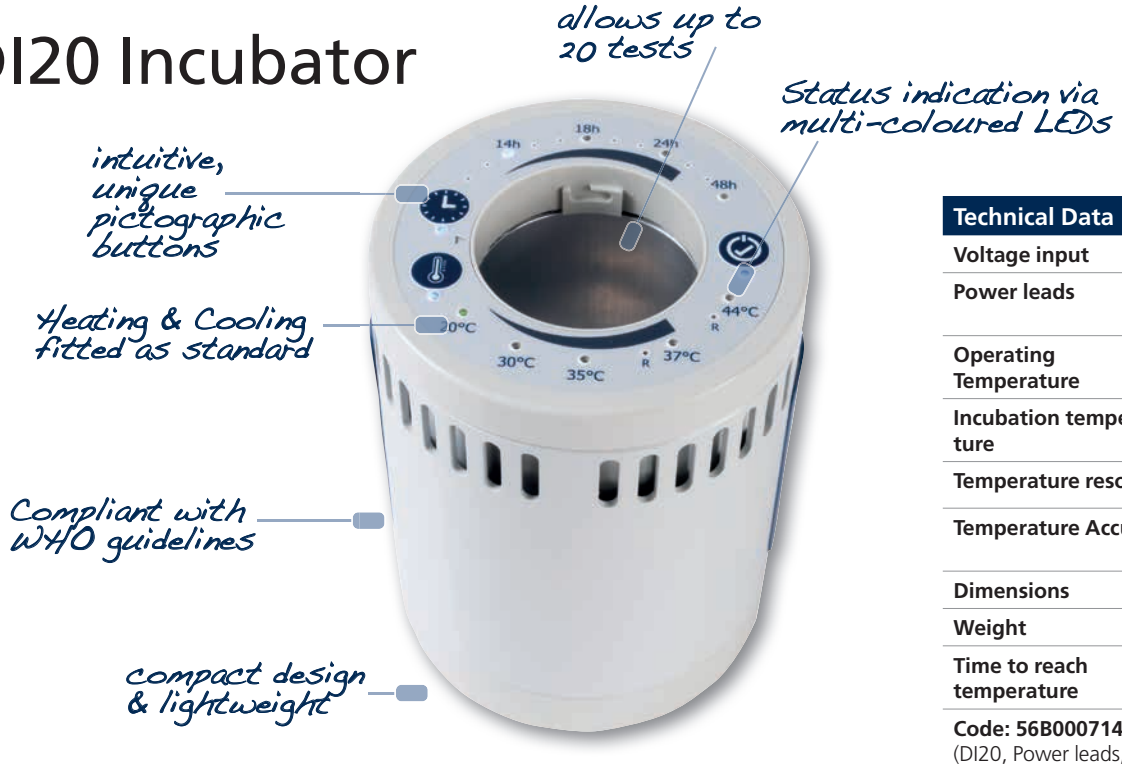
The Lovibond® DI10 Incubator, when used in conjunction with dipslides, enables effective microbiological monitoring of cooling water in accordance with the many European guidelines

Code 56B000701

Technical Data	
Voltage input	12 V DC, 3 A
Power leads	UK, EU, USA
Operating Temperature	5 °C - 40 °C
Temperature resolution	0,1° C
Temperature Accuracy	± 0,5 °C
Dimensions	246 x 215 x 162 mm
Weight	approx. 1,7 kg
Code: 56B000701	

Accessoires	
Code	**Item**
56B000801	Dipslide Holder

DI20 Incubator



Technical Data	
Voltage input	12 V DC, 4 Amps
Power leads	UK, EU, USA and Battery
Operating Temperature	5 °C - 50 °C
Incubation temperature	20 °C - 47 °C
Temperature resolution	0,1° C
Temperature Accuracy	± 0,5 °C
Dimensions	116 x 165 x 116 mm
Weight	approx. 600 g
Time to reach temperature	30 min. max
Code: 56B000714 (DI20, Power leads, 10 Petri dishes, Power Supply)	

Our new DI20 incubator has been designed to allow the user to reach global drinking water standards for testing, even in difficult environments.

The DI20 incubator is a high quality, portable, lightweight incubator for microbiological testing of water using plates. It is the only incubator of its type to come with heating and cooling as standard ensuring the samples are incubated at the correct temperature no matter what ambient conditions.

Its innovative design also includes a small petri dish holder utilising our re-usable stainless steel micro plates, the dishes allow each incubator to perform up to 20 tests.

Its sleek design and intuitive pictographic buttons ensure that it can be used with little or no training and its LED lights allow users to see at a glance how far through a cycle the incubation is, and that the temperature is stable.

Accessoires	
Code	**Item**
197139	Petri Dish Holder
400855	Petri Dishes, 10 pc.
19803550	Power Pack, 12 V, 48 W
136300	Power Cable Set
190630	USB Cable
192345	Lead Acid Battery
19803555	Battery Cable

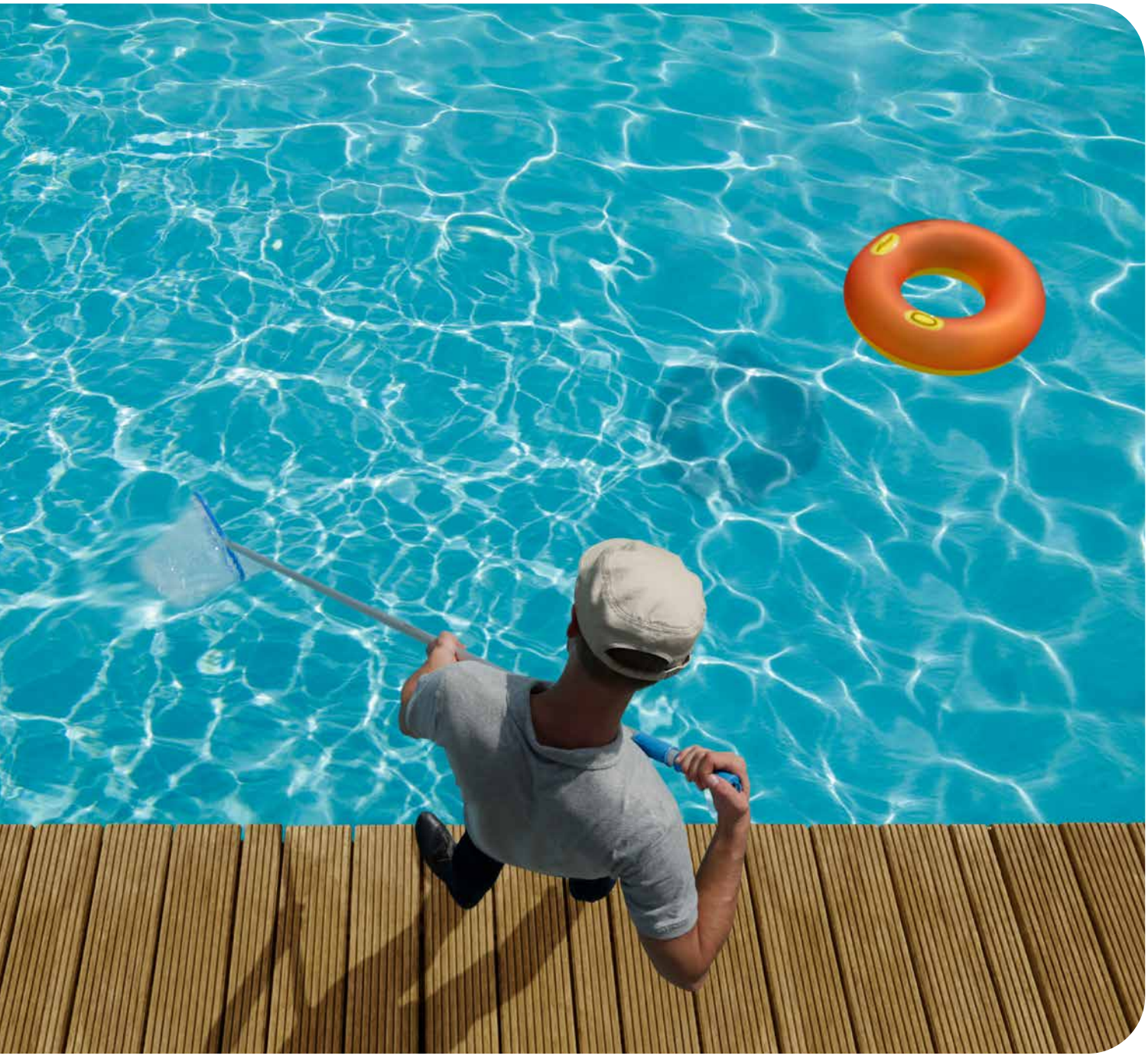

Pool Analytics

Pooltester
page 172

Scuba II
page 174

PM Photometer
page 176

Pooltester



Water Treatment

pH value

The pH value of pool & spa water should generally be between the slightly acidic value of 6.5 and the slightly basic value of 7.6. Due to the use of various water treatment chemicals as well as ambient environmental effects, pool owners have to determine the pH of the water and correct the value as necessary.

Disinfection

Nowadays, pool owners can choose from a range of modern water treatment agents that are often used in combination.

These water treatment chemicals are only effective within a limited pH range. Therefore in addition to checking the concentration of the water treatment chemicals, the owner / operator should also monitor the pH value of pool water and adjust it if necessary.

Safe chlorine test with DPD Rapid

The less potassium iodide the better for your health. For our DPD Rapid tablets we have been using as little of the substance classified as hazardous to health as necessary for a long time. There is no faster and safer way to determine total chlorine in pool water.

Rapid Tests

Three-Chamber Tester

The Three-Chamber Tester is a competitively priced unit for the determination of disinfectants and the pH value. Interferences from the colour of the pool water are eliminated by the third, middle chamber.

Pooltester

The Pooltester is designed for the simultaneous determination of the most popular water treatment agents and the pH value.

Multipooltester

Additionally the Multipooltester allows the determination of cyanuric acid, total alkalinity and calcium hardness.

Rapid Tests

Compact Pool Test Kits

Item	Code
Chlorine / Bromine / pH LR, in mini case [1] Bromine 0.2-6.8 mg/L Chlorine 0.1-3.0 mg/L pH value 6.8 – 8.2	157700
Chlorine / Bromine / pH LR, in blister [2] Bromine 0.2-6.8 mg/L Chlorine 0.1-3.0 mg/L pH value 6.8-8.2	157520
Chlorine / pH HR, in blister [2] Chlorine 0.5-6.0 mg/L pH value 6.8-8.2	158010
Active Oxygen / pH, in blister [2] Acitive Oxygen 0 -10 mg/L pH value 6.8-8.2	157610
Biguanide (PHMB) / pH, in blister [2] Biguanide (PHMB) 10-100 mg/L pH value 6.8-8.2	156150
4 in 1, in plastic case Chlorine LR 0.1-3.0 mg/L pH value 6.8-8.2 Cyanuric acid 20-200 mg/L Alkalinity-m 50-300 mg/L	151700

[1] Packaging unit 10 pcs.

[2] Packaging unit 6 pcs.

Delivery content

- Three-Chamber-Tester in a bubble pack or mini case
- Tablet reagents
- Instruction manual

POOLTESTER

Item	Code
Chlorine / pH LR [4] Chlorine 0.1-3.0 mg/L pH value 6.8-8.2	151600
Chlorine / pH HR [4] Chlorine 0.5-6.0 mg/L pH value 6.8-8.2	151601
Bromine / pH [4] Bromine 1.0-8.0 mg/L pH value 6.8-8.2	151604
Active Oxygen / pH [4] O_2 0-10 mg/L pH value 6.8-8.2	151605
Copper LR/HR / pH [4] Copper LR 0.1-1.0 mg/L & HR 0.5-5.0 mg/L pH value 6.8-8.2	155190
Active Oxygen / Copper / pH [4] O_2 0-10 mg/L Copper 0.1-1.0 mg/L pH value 6.8-8.2	155235
Biguanide (PHMB) / Hydrogen Peroxide (H_2O_2) / pH [4] PHMB 10–100 mg/L H_2O_2 5–50 mg/L pH value 6.8–8.2	156100
Phosphate Test Kit [3] 0-1000 ppb (0-1mg/L PO_4)	157800

[3] Packaging unit 24 pcs.

[4] Packaging unit 6 pc

Delivery content

- Pooltester in a sturdy plastic box
- Tablet reagents for 20 tests
- Instruction manual

Multi Pooltester

Item	Code
5 in 1 Multi-Pooltester [5] Chlorine 0.1 - 3.0 mg/L pH value 6.8 - 8.2 Cyanuric acid 20 - 200 mg/L Alkalinity-m 20 - 800 mg/L Calcium hardness 20 - 800 mg/L	151900

[5] Packaging unit 5 pcs.

Green Chemistry

Evo = Potassium-Iodid reduced

Delivery content

- 5 in 1 Multi Pooltester
- Pooltester Chlorine - pH LR in a robust plastic case
- Cyanuric acid tube
- Dilution / shaker tube, 100 mL
- Dilution / shaker tube, 30 mL
- Cleaning brush
- Stirring rod
- 20 tablet reagents each DPD No.1 Rapid, DPD No.3 Rapid, Phenol Red Rapid
- 10 tablet reagents each CyA-Test, Alk-Test, CAL-Test
- Instruction manual
- Statements (phrases-H and P)

Refill Packs (tablets)

Item	Code
Chlorine / Bromine / pH* 30 DPD No.1 Rapid 30 Phenol Red Rapid	515884
Active Oxygen / pH* 30 DPD No.4 Rapid 30 Phenol Red Rapid	515934
Active Oxygen / Copper / pH* 20 DPD No.4 Rapid 20 Copper No.1 20 Phenol Red Rapid	515865
PHMB / H_2O_2 / pH 20 PHMB 20 H_2O_2 20 Acidifying PT 20 Phenol Red Rapid	515870
PHMB / pH* 30 PHMB 30 Phenol Red Rapid	516155
Copper / pH* 30 Copper No.1 30 Phenol Red Rapid	515778
Combi pack for Three-Chamber-Tester 4 in 1 20 DPD No.1 Rapid 20 Phenol Red Rapid 20 CyA-Test 20 Alk LR	515935
Combi pack for Multipooltester 5 in 1 20 DPD No.1 Rapid 20 DPD No.3 Rapid 20 Phenol Red Rapid 20 CyA-Test 10 Alk Test 10 Cal-Test	515980

* Each pack contains 12 units

Reagents (tablets)

Item	Quantity	Code
Acidifying PT	100 pc. 250 pc.	515490BT 515491BT
Alk LR	100 pc.	516040BT
Alk Test	100 pc.	515570BT
Bromthymol Blue Rapid	100 pc. 250 pc.	511630BT 511631BT
Cal Test	100 pc.	515580BT
Copper No.1	100 pc. 250 pc.	513550BT 513551BT
Cyanuric Acid (CyA-Test)	100 pc. 250 pc.	511370BT 511371BT
DPD No.1 Rapid	100 pc. 250 pc. 500 pc.	511310BT 511311BT 511312BT
DPD No.3 Rapid	100 pc. 250 pc. 500 pc.	511290BT 511291BT 511292BT
DPD No.4 Rapid	100 pc. 250 pc. 500 pc.	511570BT 511571BT 511572BT
Hydrogenperoxide HR	100 pc. 250 pc.	515940BT 515941BT
Phenol Red Rapid (pH)	100 pc. 250 pc. 500 pc.	511790BT 511791BT 511792BT
PHMB (Biguanide)	100 pc. 250 pc.	515890BT 515891BT

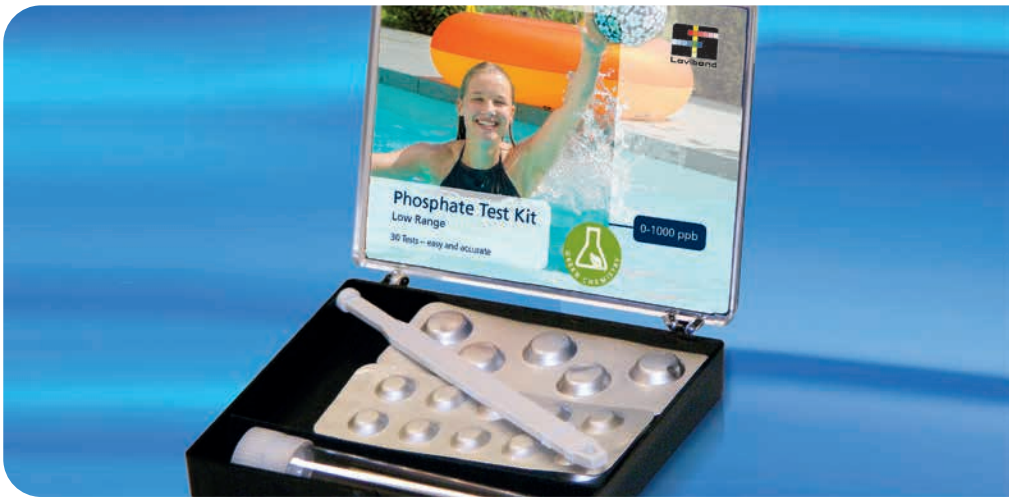
also suitable for seawater

Green Chemistry

Evo = Potassium-Iodid reduced

Lovibond®-Rapid tablets DPD and Phenol Red will dissolve quickly, have a guaranteed 10 year shelf-life and are provided in green-printed foil packaging.

Material Safety Data Sheets:



Scuba II

Electronic Pooltester

Modern, ergonomic design

Watertight housing*

Large display

User-friendly Handling

* as defined in IP 68, 1 hour at 0.1 meter

Scuba II

Every pool owner should check the most important parameters in the pool at regular intervals. This is the only way to ensure that water quality is maintained at the right level and to arrange dosing in an optimum manner.

The Scuba II enables the operator to check the pool water quickly and accurately. The integrated sample chamber is filled by immersing it in the water. A tablet reagent is added and generates a characteristic colour which can be measured using the photometric principle. The result is then displayed on the screen.

Six parameters, **free chlorine**, **total chlorine**, **pH**, **alkalinity**, **cyanuric acid** and **bromine** are measured within a few minutes. Water analysis becomes a pleasure rather than a chore and more time is left for enjoying the pleasure of the pool.

If the Scuba II falls into the water it will simply float and, of course, it is watertight.

Why not try this compact test equipment – after all, the knowledge that you are safe in a thoroughly hygienic pool is worth it.

Technical Data

Optics	temperature-compensated LED (λ = 530 nm) and photo-sensor
Power supply	2 batteries (AAA), capacity approx. 90 tests
Auto-Off	automatic switch-off approx. 5 minutes after last key press
Display	LCD-display
Dimensions (L x W x H)	145 x 70 x 45 mm
Weight	approx. 165 g (incl. batteries)
Operating conditions	temperature: 5 - 40 °C relative humidity: 30 - 90 %, non-condensing
Approval	CE

Refill pack

Article	Code
Refill pack for Scuba II tablets 20 DPD No.1 10 DPD No.3 *Evo* 10 Phenol Red 10 CyA-Test 10 Alka-M Packaging unit = 12 packs	525600

Determination	Range	Resolution	Accuracy
Chlorine free	0.1 - 6 mg/L Cl_2	0.1 mg/L	0 - 1 mg/L ± 0.1 mg/L ; 1 - 2 mg/L ± 0.2 mg/L 2 - 3 mg/L ± 0.4 mg/L ; 3 - 6 mg/L ± 0.5 mg/L
Chlorine total	0.1 - 6 mg/L Cl_2	0.1 mg/L	0 - 1 mg/L ± 0.1 mg/L ; 1 - 2 mg/L ± 0.2 mg/L 2 - 3 mg/L ± 0.4 mg/L ; 3 - 6 mg/L ± 0.5 mg/L
pH-value	6.5 - 8.4 pH	0.1 pH	± 0.2 pH
Cyanuric acid	1 - 160 mg/L	1.0 mg/L	1 - 50 mg/L ± 10 mg/L ; 50 - 160 mg/L ± 20 mg/L
Alkalinity-m	0 - 300 mg/L $CaCO_3$	1.0 mg/L	± 50 mg/L
Bromine	0.2 - 13.5 mg/L Br_2	0.1 mg/L	0 - 2 mg/L ± 0.2 mg/L 2 - 4 mg/L ± 0.4 mg/L 4 - 7 mg/L ± 0.8 mg/L 7 - 13.5 mg/L ± 1.1 mg/L

Delivery content

- Scuba II in a robust plastic box
- Tablet reagents
  20 DPD No.1
  20 Phenol Red
  10 DPD No.3 *Evo*
  10 CyA-Test
  10 Alka-M
- 2 batteries (AAA)
- Stirring rod
- Instruction manual

Order code: 216100-17

Green Chemistry

Evo = Potassium-Iodid reduced

PM Photometer

All pool parameters in one instrument

PM600 / PM620 / PM630

The Lovibond® PM600 series of photometers has simplified the pool water analysis decisively. The PM600 and PM620 Photometers meet all requirements of demanding pool operators for a modern water analysis. The series is extended by the PM630 with **Bluetooth®** data transmission.

The **PM600** focusses on the main pool parameters required for balanced water including: Alkalinity, Bromine, Chlorine, Cyanuric Acid, Iron, Calcium Hardness, Copper, Sodium Hypochlorite, Ozone and pH-value.

The **PM620** also has the following detection methods: Aluminium, Ammonia, Biguanides (PHMB), Chlorine dioxide, Total Hardness, Urea, Iodine, Phosphate, Acid capacity $KS_{4.3}$, Oxygen (active), Sulphate und Hydrogen peroxide.

The **PM630** corresponds to the PM620. It is additionally equipped with a **Bluetooth®** interface. This allows data to be transferred quickly and easily to a smartphone or tablet.

All instruments have a back-lit display. Operator guidance displays information about the measurement range and reagent type, as well as automatic countdown timers for accurate response times. The internal memory is capable of storing up to 1000 results with date, time and sample ID. These results can be retrieved and transmitted at any time.

Technical Data

Display	Graphic-display
Interfaces	Infrared[1] (PM600 / PM620), **Bluetooth®** 4.0 (PM630), RJ45 socket for Internet updates[1]
Optics	LEDs, interference filters and photo sensor
Wavelength Accuracy	± 1 nm
Photometric Accuracy*	2 % FS (T = 20 °C – 25 °C)
Photometric Resolution	0.005 A
Operation	Acid and solvent resistant, touch-sensitive keypad with audible feedback via integrated beeper
Power Supply	4 batteries (Mignon AA/LR6)
Auto-Off	approx. 20 minutes after last keypress with audible signal
Dimensions	approx. 210 x 95 x 45 mm (unit) approx. 395 x 295 x 106 mm (case)
Weight (unit)	approx. 450 g
Ambient Conditions	5-40 °C at max. 30-90 % rel. humidity (non condensing)
Language Selection	German, English, French, Spanish, Italian, Portuguese, Polish, Indonesian
Memory Capacity	approx. 500 data sets (PM630) approx. 1000 data sets (PM600, PM620)
Approval	CE

[1] optional available: connection cable with integrated electronics (RS 232 / RJ-45 plug)

* tested with standard solutions

Reference Standard Kits

The reference standards are used to check the photometric accuracy and reproducibility of the photometer's chlorine method.

An adjustment of the overall system from photometric meter and reagents is not possible with the reference standard kits. Consider using our ValidCheck Chlorine (48105510).

The shelf life is two years from the date of manufacture when used and stored properly.

Reference Standard Kit Chlorine 215630
0.2* and 1.0* mg/L
for tablet and VARIO methods [1)]

Reference Standard Kit Chlorine 215635
0.5* and 2.0* mg/L
for tablet methods only

Reference Standard Kit Chlorine 215636
1.0* and 4.0* mg/L
for tablet methods only

Reference Standard Kit pH 215665
7.45* pH

* Approximate figure, actual figure specified in certificate of analysis enclosed

[1)] The standard values mentioned in kit 215630 for the VARIO method are for photometer PM 620 only, because this method is not available on the PM 600

Verification Standard Kit

The verification standards for the photometer PM600/620/630 are used to check the photometric accuracy and reproducibility of all wavelengths in the instruments. The shelf life of the standards is two years from the date of manufacture when used and stored properly. The measurements are in units of mAbs.

Verification Standard Kit **215680**

Delivery Content

- Instrument in carrying case
- 4 batteries (AA)
- 3 round vials 24 mm ø
- Syringe, brush, stirring rod
- 1 plastic beaker 100 mL
- Reagents for
  Chlorine (free, combined, total)
  pH value
  Calcium Hardness
  Acid capacity $KS_{4.3}$ (Alkalinity-m)
- Instruction Manual
- Certificate of Compliance and Warranty information

PM600 (13 Parameters, Infrared)
Order code: 214060

PM620 (34 Parameters, Infrared)
Order code: 214065

PM630 (34 Parameters, **Bluetooth®**)
Order code: 214070

Green Chemistry

Evo = Potassium-Iodid reduced

Bluetooth® is a wireless technology subject to regional approval. The use of the PM630 with **Bluetooth®** is currently only permitted within Europe, the USA, Japan and in Canada. The use of the PM630 will also be possible in other regions in the future.

Data transfer

PM600 and **PM620** can transfer data via an optional infrared module (IRIM) to the PC.

Code: 214050

For the **PM630**, a set of software and **Bluetooth®** dongle is available for data transfer to the PC.

Code: 2444480

Aqua LX® App

The system is further enhanced by the free Lovibond® App, **AquaLX®**, enabling the immediate review, process and evaluation of measured results directly on-site. Data trends can be monitored with easy-to-view graphical displays with set minimum and maximum values.

Furthermore, additional personalized information, like sample takers or place of sampling can be added. Records can be transferred at the touch of a button by email either as a graphic or database record, simplifying the transfer, management and sharing of results.

PoolM8 App

AquaLX® compliments the Langelier Index App, **PoolM8**, which negates the need for complex calculations for Balanced Water. By simply entering the results of the parameters (pH; Total Alkalinity; Calcium Hardness; Total Dissolved Solid; Temperature.), the App automatically determines and displays the results which can then be saved to create a history and, again, shared via email.

Applications of Lovibond® Reagents

Parameter	Reagent	Application
Acid capacity $K_{S4.3}$	Alka-M-Photometer	
Acid concentration	Acid Concentration	
Alkalinity-m	Alka-M-Photometer	
Alkalinity-p	Alka-P-Photometer	
Aluminium	Aluminium No.1 Aluminium No.2	
Aluminium	VARIO Aluminum ECR/F20 VARIO Aluminum Hexamine/F20 VARIO Aluminum Masking Reagent	
Amine	Amine	B
Ammonia vario	VARIO Ammonia Salicylate F10 VARIO Ammonia Cyanurate F10	
Ammonia	Ammonia No.1 Ammonia No.2 Conditioning powder	
Ammonia LR	VARIO Ammonia Salicylate F5 VARIO Ammonia Cyanurate F5 VARIO Am Diluent Reagent LR	
Ammonia HR	VARIO Ammonia Salicylate F5 VARIO Ammonia Cyanurate F5 VARIO Am Diluent Reagent HR	
Arsenic (III, V)	Chemicals see manual	
Bromine	DPD 1 Buffer solution DPD 1 Reagent solution	
Bromine	DPD No.1 DPD No.1 High Calcium	
Cadmium (Cd^{2+})	Spectroquant® 1.14834.0001	
Chlorine	DPD No.1 Rapid DPD No.3 Rapid DPD No.4 Rapid	
Chlorine	DPD No.1 DPD No.3 *Evo* DPD No.1 High Calcium	
Chlorine	DPD 1 Buffer solution DPD 1 Reagent solution DPD 3 Solution	
Chlorine	VARIO Chlorine Free DPD F10 VARIO Chlorine Total DPD F10	
Chlorine HR (KI)	Acidifying GP Chlorine HR (KI)	

= Drinking water / Raw water
= Waste Water
= Seawater
B = Boiler- and Cooling water related
P = Pool Water related
RT = Reagent Test
KT = Tube Test

Parameter	Reagent	Application
Chlorine dioxide	DPD No.1 DPD No.3 *Evo* Glycine	
Chlorine dioxide	DPD 1 Buffer solution DPD 1 Reagent solution	
Chloride	Chloride T1 Chloride T2	
Chloride	RT (Chloride-51 / Chloride-52)	
Chromium	Persulfate Reagent for CR Chromium Hexavalent	
COD VLR	Reaction tube 2.0 - 60.0 mg/L	
COD LR	Reaction tube 3-150 mg/L	
COD MLR	Reaction tube 15-300 mg/L	
COD MR	Reaction tube 20-1500 mg/L	
COD HR	Reaction tube 200-15000 mg/L	
Colour (Spectral Absorption Coefficient)	---	
Copper	Copper No.1 Copper No.2	
Copper, free	VARIO Cu 1 F 10	
Cyanide	Reagent test set, consists of: Cyanid-11/ -12 / -13	
Cyanuric acid	CyA-Test, CyA-HR Test	
DEHA	DEHA Solution DEHA	B
DEHA	VARIO Oxyscav 1 Reagent VARIO DEHA 2 Reagent Solution	B
Fluoride	SPADNS Reagent Fluoride Standard	
Fluoride	Fluoride A-Z Fluoride Excess Al	
Formaldehyde	Spectroquant® 1.14678.0001	
Formaldehyde	Spectroquant® 1.14500.0001	

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Applications of Lovibond® Reagents

Parameter	Reagent	Application
Hardness, total	Haedcheck P	
Hardness, total	Hardness Yes/No	
Hardness, total	T Hardness-Test	
Hardness, total	Total Hardness	
Hazen (Pt-Co-Scale; APHA)	---	
Hydrazine	Hydrazine Test Powder Spoon	B
Hydrazine	Vacu-vials® / Chemetrics K-5003	B
Hydrogen peroxide	Hydrogenperoxide LR	P
Iodine	DPD No.1	
Iron (II, III) soluble	Vario Ferro F10	
Iron (II, III) soluble	Iron LR Iron (II) LR	
Iron	Iron HR	
Iron (TPTZ)	Vario TPTZ F10	
Lead (Pb^{2+})	Spectroquant® 1.09717.0001	
Lead (Pb^{2+})	Spectroquant® 1.14833.0001	
Manganese	Manganese LR 1 Manganese LR 2	
Manganese	VARIO Ascorbic Acid VARIO Alkaline-Cyanide VARIO PAN Indicator	
Molybdate	Molybdate No.1 HR Molybdate No.2 HR	
Nickel	RT (Nickel-51, Nickel-52)	
Nitrate	KT (Nitrat-111)	
Nitrate	VARIO Nitrate Chromotropic VARIO Nitra X Reagent tube VARIO Deionised water	
Nitrate	Nitrite LR Nitrate Test Tablets Nitrate Test Powder	
Nitrite	KT (Nitrite-101)	
Nitrite	Nitrite LR	

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Parameter	Reagent	Application
Nitrite	Nitrite No.1 Nitrite No.2	
Nitrogen, total	KT (Reagent for digestion, Reagent for compensation, Nitrat-111)	
Nitrogen, total LR	VARIO TN Hydroxide LR tubes VARIO Persulfate Reagent VARIO TN Reagent A VARIO TN Reagent B VARIO TN Acid LR/HR tubes VARIO Deionised water	
Nitrogen, total HR	VARIO TN Hydroxide HR tubes VARIO Persulfate Reagent VARIO TN Reagent A VARIO TN Reagent B VARIO TN Acid LR/HR tubes VARIO Deionised water	
Oxygen, active	DPD No.4 *Evo* DPD No.4	P
Oxygen, active	Indigo Carmine	
Oxygen, dissolved	Vacu-vials® / Chemetrics K-7553	
Ozone	DPD No.1 DPD No.3 *Evo* Glycine	
Ozone	Ozone	
Phenols	Phenole No.1 Phenole No.2	P
PHMB (Biguanide)	PHMB Photometer	P
Phosphate-Organo	Organo Phosphonate No.1 Organo Phosphonate No.2	B
Phosphate HR	Phosphate HR	
Phosphate-total* (PMB)	KT (Phosphate-101, Phosphate-102, Phosphate-103)	
Phosphate-total* (PMB)	KT (Phosphate-101, Phosphate-102, Phosphate-103)	
Phosphate-ortho (VM)	KT	
Phosphate LR, ortho	Phosphate LR No.1 Phosphate LR No.2	
Phosphate HR, ortho	Phosphate HR No.1 Phosphate HR No.2	
Phosphate, ortho	VARIO Phos 3 F10	

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Applications of Lovibond® Reagents

Parameter	Reagent	Application
Phosphate, ortho	VARIO Dilution Vial VARIO Phos 3 F10 VARIO Deionised water	
Phosphate-total*	VARIO Acid Reagent Vial VARIO Phos 3 F10 VARIO Potassium Persulfate VARIO Sodium hydroxide 1,54 N VARIO Deionised water	
Phosphate, acid hydrolyzable	Content see: Phosphate, total, set, additional: VARIO Sodium hydroxide 1,00 N	
pH value	Bromocresol Purple Photometer	
pH value	Phenol Red Photometer	
pH value	Phenol Red Rapid	
pH value	Phenol Red Solution	
pH value	Thymol Blue Photometer	
pH value	Bromthymol Blue	
pH value	Methyl Red	
pH value	Cresol Red	
pH value	Bromophenol Blue	
pH value	Bromocresol Green	
pH value	M-Cresol Purple	
pH value	Universal pH	
Potassium	Potassium T	
QAC	QAC Test	
QAC LR	QAC LR	
QAC HR	QAC HR	
Silica	Silica No.1 Silica No.2 Silica PR	
Silica	VARIO LR Amino Acid F10 VARIO Citric Acid F10 VARIO Molybdate 3 Reagent Solution	B
Silica	VARIO Silica HR Acid Reagent F10 VARIO Silica Citric Acid F10 VARIO Silica Molybdate F10	

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*included determination of total phosphorous need to be modified to be used in sea water

Parameter	Reagent	Application
Sulphate	Sulfate T	
Sulphate	VARIO Sulfa 4 F10	
Sulphate	Sulfate No.1 Sulfate No.2	
Sulphide	Sulfide No.1 Sulfide No.2	
Sulphite	Sulfite LR	
Sulphite	Sulfite No.1 Sulfite No.2 HR Sulfite No.2 LR	B
Surfactants (anionic)	Spectroquant® 1.14697.0001	
Tannin	Tannin No.1 Tannin No.2	B
TOC	Spectroquant® 1.14879.0001	
Turbidity	---	
Urea	Urea Reagent 1 Urea Reagent 2 Ammonia No.1 Ammonia No.2	P
Zinc	Copper / Zinc LR EDTA Dechlor	

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