

# Water, Food & Environmental Analytics

Test Kits, Instruments and Accessories



The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

**MILLIPORE  
SIGMA**

# EMD Millipore + Sigma Aldrich = MilliporeSigma

The life science business of Merck KGaA, Darmstadt, Germany brings together the world-class products and services, innovative capabilities and exceptional talent of EMD Millipore and Sigma-Aldrich to create a global leader in the life science industry. Our exciting transformation is reflected in our striking new design. Bold and distinctive, intriguing and imaginative, warm and confident. **It shows you exactly what you can expect from us: a bright future.**

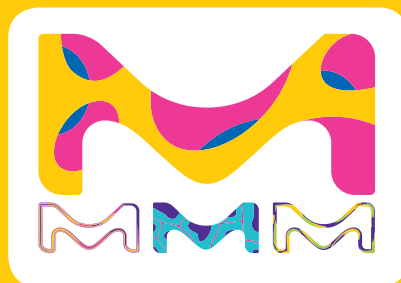
## WE ARE A LEADER IN LIFE SCIENCE

**We aim** to solve the toughest problems in the industry and environments by collaborating with the global scientific community. **We provide** scientists and environmental experts with best-in-class lab materials, technologies and services. **We are dedicated** to making water, food and environmental analysis simpler, faster and more successful.



### Our lively logo

We only have one MilliporeSigma logo. But it can have 8 different, brilliant colors.



### Our vibrant M

Our vibrant M is not a logo. It's a symbol that unites all our businesses worldwide. So you'll always know that you're experiencing our vibrant science and technology.

# THIRSTY FOR CLEAN WATER

We have been leading fast, precise water analysis for more than 100 years. From A for arsenic to Z for zinc, our devices and test kits allow you to analyze virtually any substance. Whether in pipes, bottles or lakes, we help you test water with the utmost precision to make sure it's safe to sip, slurp or splash in.

# HUNGRY FOR FOOD SAFETY

Our instruments, reagents and certified reference standards help you accurately monitor food quality in compliance with international regulations. So wherever, whenever someone bites into your product, they experience nothing but joy.

## Life Science Facts & Figures



### Our core strengths:



Comprehensive portfolio and customer-focused innovation



Balanced geographic reach



Well-differentiated, industry-leading capabilities

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## Application workflows



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**Drinking water workflow**  
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**Bottled water workflow**  
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**Brewery workflow**  
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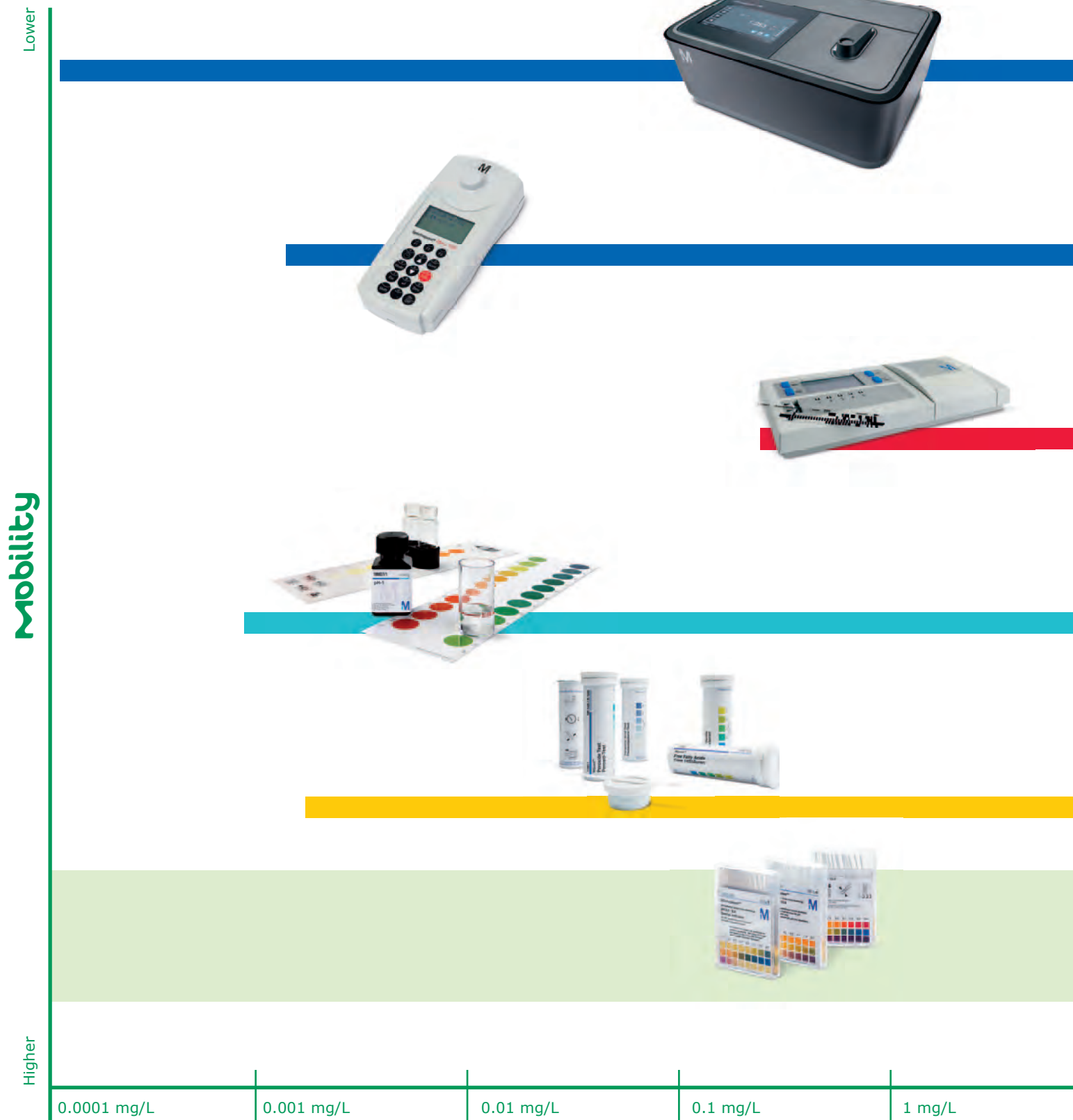
**Food & beverage workflow**  
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# Measuring ranges at a glance

Water and food analytics product portfolio





### Spectroquant® Prove

www.emdmillipore.com/photometry

Secure and durable spectrophotometers with over 200 test kits for easy analysis of wastewater, drinking water or process water

> **Page 36**

0.00025 mg/L – 90,000 mg/L



### Spectroquant® Move 100

www.emdmillipore.com/photometry

Small, portable colorimeter for fast, reliable on-site analysis of every important parameter for drinking and wastewater

> **Page 40**

0.004 mg/L – 90,000 mg/L



### RQflex® reflectometers

www.emdmillipore.com/reflectometry

Complete system with reflectometer, test kits and strips for precise on-site quantitative analysis of critical parameters

> **Page 114**

0.2 mg/L – 2,500 mg/L



### MColortest™ colorimetric test kits

www.emdmillipore.com/colorimetric-test-kits

User-friendly test kits with brilliant, high-quality color cards for precise water analysis within minutes

> **Page 122**

0.002 mg/L – 1,500 mg/L



### MQuant™ test strips

www.emdmillipore.com/test-strips

Easy-to-use, portable test strips for semi-quantitative detection of ions and organic or inorganic substances in a variety of samples

> **Page 138**

0.005 mg/L – 3,000 mg/L



### MColorpHast™ pH test strips

www.emdmillipore.com/pH-tests

High-quality pH test strips and papers for reliable measurement of a broad pH range in all media types – even turbid liquids

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0 – 14 pH

10 mg/L | 100 mg/L | 1,000 mg/L | 10,000 mg/L | 100,000 mg/L

concentration

# Parameters from A-Z

Visual and instrumental test kits at a glance

Our rapid tests offer numerous options for determining the concentration of individual parameters.

## Use the Parameters to find the most suitable test for your application.

- Select your preferred test parameter (arranged alphabetically)
- Find your desired measuring range, then choose the most suitable products for your work
- You can use the order numbers to purchase products directly
- For further information about individual products, please visit [www.emdmillipore.com/test-kits](http://www.emdmillipore.com/test-kits)



## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>A</b> Absorbance	-0.300 – 3.000 A			Physical method	58
Acid Capacity Cell Test to pH 4.3 (total alkalinity)	0.40 – 8.00 mmol/L 20 – 400 mg/L CaCO <sub>3</sub>	120	1.01758.0001	Cell test	58
ADMI Color measurement				Application	58
Alkalinity (total)	see also Acid capacity to pH 4.3			Cell test	58
Alkalinity Test	0.1 – 10 mmol/L	200	1.11109.0007	Titration with pipette	128
Aluminium Cell Test	0.02 – 0.50 mg/L Al	25	1.00594.0001	Cell test	58
Aluminium Test	0.020 – 1.20 mg/L Al	350	1.14825.0001	Reagent test	58
Aluminium Test	0.07 – 0.8 mg/L Al	185	1.14413.0001	Color-card comparator	128
Aluminium Test	0.1 – 6 mg/L Al	150	1.18386.0001	Disk comparator	128
Aluminium Test	10 – 250 mg/L Al	100	1.10015.0001	Test strip	144
Ammonia, free	0.000 – 3.0 mg/L NH <sub>3</sub> -N 0.000 – 3.65 mg/L NH <sub>3</sub>			Application	58
Ammonium Cell Test	0.010 – 2.000 mg/L NH <sub>4</sub> -N 0.01 – 2.58 mg/L NH <sub>4</sub>	25	1.14739.0001	Cell test	58
Ammonium Test	0.010 – 3.00 mg/L NH <sub>4</sub> -N 0.013 – 3.86 mg/L NH <sub>4</sub>	250 500	1.14752.0002 1.14752.0001	Reagent test	58
Ammonium Test	0.025 – 0.4 mg/L NH <sub>4</sub>	70	1.14428.0002	Color-card comparator	128
Ammonium Test	0.05 – 0.8 mg/L NH <sub>4</sub>	100	1.14400.0007	Color-card comparator	128
Ammonium Test	0.2 – 5 mg/L NH <sub>4</sub>	50	1.08024.0001	Sliding comparator	128
Ammonium Test	0.2 – 7 mg/L NH <sub>4</sub>	50	1.16892.0001	Test strip	120
Ammonium Test	0.2 – 8 mg/L NH <sub>4</sub>	200	1.14423.0002	Color-card comparator	128
Ammonium Test	0.2 – 8 mg/L NH <sub>4</sub>	200	1.14750.0002	Disk comparator	128
Ammonium Cell Test	0.20 – 8.00 mg/L NH <sub>4</sub> -N 0.26 – 10.30 mg/L NH <sub>4</sub>	25	1.14558.0001	Cell test	58
Ammonium Test	0.5 – 10 mg/L NH <sub>4</sub>	150	1.11117.0007	Color card	128
Ammonium Test in freshwater and seawater	0.5 – 10 mg/L NH <sub>4</sub>	50	1.14657.0001	Color card	128
Ammonium Cell Test	0.5 – 16.0 mg/L NH <sub>4</sub> -N 0.6 – 20.6 mg/L NH <sub>4</sub>	25	1.14544.0001	Cell test	58
Ammonium Test	2.0 – 150 mg/L NH <sub>4</sub> -N 2.6 – 193 mg/L NH <sub>4</sub>	100	1.00683.0001	Reagent test	58
Ammonium Cell Test	4.0 – 80.0 mg/L NH <sub>4</sub> -N 5.2 – 103.0 mg/L NH <sub>4</sub>	25	1.14559.0001	Cell test	58
Ammonium Test	5.0 – 20.0 mg/L NH <sub>4</sub>	50	1.16899.0001	Test strip	120
Ammonium Test	10 – 400 mg/L NH <sub>4</sub>	100	1.10024.0001	Test strip	144
Ammonium Test	20 – 180 mg/L NH <sub>4</sub>	50	1.16977.0001	Test strip	120
Antimony	0.10 – 8.00 mg/L Sb			Application	58
AOX Cell Test	0.05 – 2.50 mg/L AOX	25	1.00675.0007	Cell test	58
Arsenic Test	0.001 – 0.100 mg/L As	30	1.01747.0001	Reagent test	60
Arsenic Test	0.005 – 0.5 mg/L As	100	1.17927.0001	Test strip	144
Arsenic Test	0.02 – 3 mg/L As	100	1.17917.0001	Test strip	144
Ascorbic Acid Test	25 – 450 mg/L Ascorbic Acid	50	1.16981.0001	Test strip	120
Ascorbic Acid Test RQeasy®	25 – 450 mg/L Ascorbic Acid	50	1.17963.0001	Test strip	120
Ascorbic Acid Test	50 – 2,000 mg/L Ascorbic Acid	100	1.10023.0001	Test strip	144
<b>B</b> BOD Cell Test	0.5 – 3,000 mg/L BOD	50	1.00687.0001	Cell test	60
Boron Test	0.050 – 0.800 mg/L B	60	1.14839.0001	Reagent test	60

# Parameters B-C

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>B</b> Boron Cell Test	0.05 – 2.00 mg/L B	25	1.00826.0001	Cell test	60
Bromate	0.5 – 200.0 µg/L BrO <sub>3</sub> 1.0 – 200.0 µg/L BrO <sub>3</sub>			Application	60
Bromine Test	0.020 – 10.00 mg/L Br <sub>2</sub>	200	1.00605.0001	Reagent test	60
<b>C</b> Cadmium Test	0.0020 – 0.500 mg/L Cd	55	1.01745.0001	Reagent test	60
Cadmium Cell Test	0.025 – 1.000 mg/L Cd	25	1.14834.0001	Cell test	60
Calcium Test	0.20 – 4.00 mg/L Ca	100	1.00049.0001	Reagent test	60
Calcium Test	2 – 200 mg/L Ca	200	1.11110.0001	Titration with pipette	128
Calcium Test	2.5 – 45.0 mg/L Ca	50	1.16993.0001	Test strip	120
Calcium Test	5 – 125 mg/L Ca	50	1.16125.0001	Test strip	120
Calcium Test	5 – 160 mg/L Ca 7 – 224 mg/L CaO 12 – 400 mg/L CaCO <sub>3</sub> 1.0 – 15.0 mg/L Ca 1.4 – 21.0 mg/L CaO 2.5 – 37.5 mg/L CaCO <sub>3</sub>	100	1.14815.0001	Reagent test	60
Calcium Test	10 – 100 mg/L Ca	60	1.10083.0001	Test strip	144
Calcium Cell Test	10 – 250 mg/L Ca 14 – 350 mg/L CaO 25 – 624 mg/L CaCO <sub>3</sub>	25	1.00858.0001	Cell test	62
Carbohydrazide	see Oxygen Scavengers Test			Reagent test	62
Carbonate Hardness Test / Acid capacity to pH 4.3 ("SBV", ANC)	0.25 – 25 °e (ANC 0.1 – 7.2 mmol/L)	300	1.08048.0001	Titration with pipette	128
Carbonate Hardness Test / Acid capacity to pH 4.3 ("SBV", ANC)	1 drop corresponds to 1.25 °e	100	1.11103.0001	Titration with dropping bottle	128
Carbonate Hardness Test in freshwater and seawater	1 drop corresponds to 1.25 °e	50	1.14653.0001	Titration with dropping bottle	128
Carbonate Hardness Test	5 – 30 °e	100	1.10648.0001	Test strip	144
Carbon Dioxide Test	1.25 mg/L CO <sub>2</sub> 2.5 mg/L CO <sub>2</sub> 5 mg/L CO <sub>2</sub>	100	1.17179.0007	Titration with dropping bottle	128
Chloride Test	0.10 – 5.00 mg/L Cl	100	1.01807.0007	Reagent test	62
Chloride Cell Test	0.5 – 15.0 mg/L Cl	25	1.01804.0007	Cell test	62
Chloride Test	2 – 200 mg/L Cl	200	1.11106.0001	Titration with pipette	128
Chloride Test	2.5 – 250 mg/L Cl	100 175	1.14897.0007 1.14897.0008	Reagent test	62
Chloride Test	3 – 300 mg/L Cl	200	1.14753.0007	Disk comparator	128
Chloride Cell Test	5 – 125 mg/L Cl	25	1.14730.0007	Cell test	62
Chloride Test	5 – 300 mg/L Cl	400	1.14401.0007	Color-card comparator	128
Chloride Test	1 drop corresponds to 25 mg/L Cl	100	1.11132.0007	Titration with dropping bottle	128
Chloride Test	500 – 3,000 mg/L Cl	100	1.10079.0001	Test strip	144
Chlorine Test (free chlorine)	0.01 – 0.3 mg/L Cl <sub>2</sub>	400	1.14434.0001	Color-card comparator	128
Chlorine Test (free chlorine)	0.010 – 6.00 mg/L Cl <sub>2</sub>	200 1,200	1.00598.0002 1.00598.0001	Reagent test	62
Chlorine Cell Test (free chlorine)	0.03 – 6.00 mg/L Cl <sub>2</sub>	200	1.00595.0001	Cell test	62

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
Chlorine Test (free chlorine) in freshwater and seawater	0.1 – 2 mg/L Cl <sub>2</sub>	100	1.14670.0001	Color card	128
Chlorine Test (free chlorine) (liquid)	0.1 – 2 mg/L Cl <sub>2</sub>	600	1.14978.0001	Disk comparator	128
Chlorine Test (free chlorine)	0.25 – 15 mg/L Cl <sub>2</sub>	1000	1.14976.0001	Disk comparator	128
Chlorine Test (free chlorine)	0.5 – 10.0 mg/L Cl <sub>2</sub>	50	1.16896.0001	Test strip	120
Chlorine Test (free chlorine)	0.5 – 20 mg/L Cl <sub>2</sub>	75	1.17925.0001	Test strip	144
Chlorine Test (free chlorine)	25 – 500 mg/L Cl <sub>2</sub>	100	1.17924.0001	Test strip	144
Chlorine Test (total chlorine)	0.010 – 6.00 mg/L Cl <sub>2</sub>	200	1.00602.0001	Reagent test	62
		1200	1.00602.0002		
Chlorine Test (free and total chlorine)	0.010 – 6.00 mg/L Cl <sub>2</sub>	200 (100 each)	1.00599.0001	Reagent test	62
Chlorine Cell Test (free and total chlorine)	0.03 – 6.00 mg/L Cl <sub>2</sub>	200 (100 each)	1.00597.0001	Cell test	62
Chlorine Test (liquid) (free and total chlorine)	0.1 – 2 mg/L Cl <sub>2</sub>	800 (400 each)	1.14801.0001	Disk comparator	128
Chlorine Test (free and total chlorine)	0.25 – 15 mg/L Cl <sub>2</sub>	800 (400 each)	1.14826.0001	Disk comparator	130
Chlorine Reagent Cl <sub>2</sub> -1 (liquid)	0.010 – 6.00 mg/L Cl <sub>2</sub>	200	1.00086.0001	Reagent test	62
Chlorine Reagent Cl <sub>2</sub> -2 (liquid)	0.010 – 6.00 mg/L Cl <sub>2</sub>	400	1.00087.0001	Reagent test	62
Chlorine Reagent Cl <sub>2</sub> -3 (liquid)	0.010 – 6.00 mg/L Cl <sub>2</sub>	600	1.00088.0001	Reagent test	62
Chlorine- and pH Test (free chlorine)	0.1 – 1.5 mg/L Cl <sub>2</sub> pH 6.5 – 7.9	150 (chlorine) 150 (pH)	1.11160.0001	Sliding comparator	130
Chlorine- and pH Test (free and total chlorine)	0.1 – 1.5 mg/L Cl <sub>2</sub> pH 6.8 – 7.8	200 (chlorine) 200 (pH)	1.11174.0001	Color-matching vessel	130
Chlorine Dioxide Test	0.020 – 0.55 mg/L ClO <sub>2</sub>	300	1.18754.0001	Color-card comparator	130
Chlorine Dioxide Test	0.020 – 10.00 mg/L ClO <sub>2</sub>	200	1.00608.0001	Reagent test	62
Chlorine Dioxide Test	0.50 – 28 mg/L ClO <sub>2</sub>	300	1.18756.0001	Disk comparator	130
Chlorophyll-a and phaeophytin-a				Application	62
Chlorophyll-a, -b, -c				Application	62
Chromate Test for the determination of chromium (VI)	0.010 – 3.00 mg/L Cr 0.02 – 6.69 mg/L CrO <sub>4</sub>	250	1.14758.0001	Reagent test	64
Chromate Cell Test for the determination of chromium (VI) and chromium (total)	0.05 – 2.00 mg/L Cr 0.11 – 4.46 mg/L CrO <sub>4</sub>	25	1.14552.0001	Cell test	64
Chromate Test	0.01 – 0.22 mg/L CrO <sub>4</sub>	150	1.14402.0001	Color-card comparator	130
Chromate Test	0.2 – 3.6 mg/L CrO <sub>4</sub>	300	1.14441.0001	Color-card comparator	130
Chromate Test	0.2 – 22 mg/L CrO <sub>4</sub>	300	1.14756.0001	Disk comparator	130
Chromate Test	3 – 100 mg/L CrO <sub>4</sub>	100	1.10012.0001	Test strip	144
Chromium in electroplating baths	4 – 400 g/L CrO <sub>3</sub>			Application	64
Cobalt Test	10 – 1,000 mg/L Co	100	1.10002.0001	Test strip	144
COD Cell Test	4.0 – 40.0 mg/L COD	25	1.14560.0007	Cell test	64
COD Cell Test	5.0 – 80.0 mg/L COD		1.01796.0007	Cell test	64
COD Cell Test	10 – 150 mg/L COD	25	1.14540.0007	Cell test	64
COD Cell Test	15 – 300 mg/L COD	25	1.14895.0001	Cell test	64
COD Cell Test	25 – 1,500 mg/L COD	25	1.14541.0007	Cell test	64
COD Cell Test	50 – 500 mg/L COD	25	1.14690.0001	Cell test	64
COD Cell Test	300 – 3,500 mg/L COD	25	1.14691.0007	Cell test	64



# Parameters C-F

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>C</b> COD Cell Test	500 – 10,000 mg/L COD	25	1.14555.0007	Cell test	64
COD Cell Test	5000 – 90,000 mg/L COD	25	1.01797.0007	Cell test	64
COD Cell Test for seawater / high chloride contents	5.0 – 60.0 mg/L COD	25	1.17058.0007	Cell test	64
COD Cell Test for seawater / high chloride contents	50 – 3,000 mg/L COD	25	1.17059.0007	Cell test	64
COD Cell Test (Hg free)	10 – 150 mg/L COD	25	1.09772.0001	Cell test	66
COD Cell Test (Hg free)	100 – 1,500 mg/L COD	25	1.09773.0007	Cell test	66
Color, ADMI				Physical method	66
Color, Hazen				Physical method	66
Color, Hazen				Physical method	66
Color, Spectral Absorption Coefficient				Physical method	66
Color, true color				Physical method	66
Color Test	5 – 150 Hz	no limit	1.14421.0001	Color-card comparator	130
Compact Laboratory for water testing			1.11151.0007	Compact lab	137
Congo red paper	pH <3 blue-violet / >5 red-orange	3 x 4.8 m	1.09514.0003	pH test paper	152
Copper Test	0.02 – 6.00 mg/L Cu	250	1.14767.0001	Reagent test	66
Copper Test	0.05 – 0.5 mg/L Cu	125	1.14414.0001	Color-card comparator	130
Copper Cell Test	0.05 – 8.00 mg/L Cu	25	1.14553.0001	Cell test	66
Copper Test in freshwater and seawater	0.15 – 1.6 mg/L Cu	50	1.14651.0001	Color card	130
Copper Test	0.3 – 5 mg/L Cu	125	1.14418.0001	Color-card comparator	130
Copper Test	0.3 – 10 mg/L Cu	125	1.14765.0001	Disk comparator	130
Copper Test	10 – 300 mg/L Cu	100	1.10003.0001	Test strip	144
Copper in electroplating baths	2.0 – 80.0 g/L Cu			Application	66
Cyanide Test	0.002 – 0.03 mg/L CN	65	1.14417.0001	Color-card comparator	130
Cyanide Test for the determination of free and readily liberated cyanide	0.0020 – 0.500 mg/L CN	100	1.09701.0001	Reagent test	66
Cyanide Cell Test	0.010 – 350 µg/L CN	25	1.02531.0001	Cell test	66
Cyanide Cell Test for the determination of free and readily liberated cyanide	0.010 – 0.500 mg/L CN	25	1.14561.0001	Cell test	66
Cyanide Test	0.03 – 0.7 mg/L CN	200	1.14429.0001	Color-card comparator	130
Cyanide Test	0.03 – 5 mg/L CN	200	1.14798.0001	Disk comparator	130
Cyanide Test	1 – 30 mg/L CN	100	1.10044.0001	Test strip	144
Cyanuric acid Test	2 – 160 mg/L Cyanuric acid	100	1.19253.0001	Reagent test	66
<b>D</b> DEHA (Diethylhydroxylamine)	see Oxygen Scavengers Test			Reagent test	68
Detergents	see Surfactants			Cell test	68
<b>F</b> Fluoride Test	0.02 – 2.00 mg/L F	250 mL	1.00822.0250	Reagent test	68
Fluoride Cell Test	0.10 – 1.80 mg/L F	25	1.00809.0001	Cell test	68
Fluoride Test	0.025 – 0.500 mg/L F				
Fluoride Test	0.10 – 20.0 mg/L F	100	1.14598.0001	Reagent test	68
Fluoride Test		250	1.14598.0002		
Fluoride Test	0.15 – 0.8 mg/L F	100	1.18771.0001	Color card	130
Formaldehyde Test	0.02 – 8.00 mg/L HCHO	100	1.14678.0001	Reagent test	68
Formaldehyde Test	0.1 – 1.5 mg/L HCHO	100	1.08028.0001	Sliding comparator	130

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>F</b> Formaldehyde Cell Test	0.10 – 8.00 mg/L HCHO	25	1.14500.0001	Cell test	68
Formaldehyde Test	1.0 – 45.0 mg/L HCHO	50	1.16989.0001	Test strip	120
Formaldehyde Test	10 – 100 mg/L HCHO	100	1.10036.0001	Test strip	144
Free Fatty Acids	0.5 – 3.0 mg/g KOH	100	1.17046.0001	Test strip	144
<b>G</b> Glucose Test	1 – 100 mg/L Glucose	50	1.16720.0001	Test strip	120
Glucose Test	10 – 500 mg/L Glucose	50	1.17866.0001	Test strip	144
Gold Test	0.5 – 12.0 mg/L Au	75	1.14821.0002	Reagent test	68
<b>H</b> Hardness	see Residual Hardness or Total Hardness			Color card	134
Hazen Color Number (Pt/Co, APHA, Hazen)	0 – 1,000 Pt/Co or Cu			Physical method	68
Hydrazine Test	0.005 – 2.00 mg/L N <sub>2</sub> H <sub>4</sub>	100	1.09711.0001	Reagent test	68
Hydrazine Test	0.1 – 1 mg/L N <sub>2</sub> H <sub>4</sub>	100	1.08017.0001	Color-matching vessel	130
Hydrogen Peroxide	see also Peroxide			Test strip	120
Hydrogen Peroxide Test	0.015 – 6.00 mg/L H <sub>2</sub> O <sub>2</sub>	100	1.18789.0001	Reagent test	68
Hydrogen Peroxide Cell Test	2.0 – 20.0 mg/L H <sub>2</sub> O <sub>2</sub>	25	1.14731.0001	Cell test	68
	0.25 – 5.00 mg/L H <sub>2</sub> O <sub>2</sub>				
Hydrogen sulfide	see Sulfide			Reagent test	68
Hydroquinone	see Oxygen Scavengers Test			Reagent test	68
Hydroxymethylfurfural Test	1.0 – 60.0 mg/L HMF	50	1.17952.0001	Test strip	120
<b>I</b> Iodine Color Number	0.010 – 50.0 IFZ			Physical method	68
Iodine Test	0.050 – 10.00 mg/L I <sub>2</sub>	200	1.00606.0001	Reagent test	68
Iron Test	0.0025 – 5.00 mg/L Fe	250	1.14761.0002	Reagent test	68
		1,000	1.14761.0001		
Iron Test	0.01 – 0.2 mg/L Fe	300	1.14403.0001	Color-card comparator	130
Iron Test	0.010 – 5.00 mg/L Fe	150	1.00796.0007	Reagent test	68
Iron Test in freshwater and seawater	0.05 – 1 mg/L Fe	50	1.14660.0007	Color card	130
Iron Cell Test	0.05 – 4.00 mg/L Fe	25	1.14549.0001	Cell test	68
Iron Test	0.1 – 5 mg/L Fe	500	1.14759.0001	Disk comparator	130
Iron Test	0.1 – 50 mg/L Fe	200	1.11136.0007	Color-matching vessel	130
Iron Test	0.2 – 2.5 mg/L Fe	500	1.14438.0001	Color-card comparator	130
Iron Test	0.25 – 15 mg/L Fe	300	1.14404.0001	Color-card comparator	132
Iron Test	0.5 – 20.0 mg/L Fe(II)	50	1.16982.0001	Test strip	120
Iron Cell Test	1.0 – 50.0 mg/L Fe	25	1.14896.0007	Cell test	68
Iron Test	3 – 500 mg/L Fe(II)	100	1.10004.0001	Test strip	144
Iron Test	20 – 200 mg/L Fe(II)	50	1.16983.0001	Test strip	120
Isoascorbic acid (Erythorbic acid)	see Oxygen Scavengers Test			Reagent test	68
<b>L</b> Lactic Acid Test	3 – 60.0 mg/L Lactic acid	50	1.16127.0001	Test strip	120
Lead Test	0.010 – 5.00 mg/L Pb	50	1.09717.0001	Reagent test	68
Lead Cell Test	0.10 – 5.00 mg/L Pb	25	1.14833.0001	Cell test	68
Lead Test	20 – 500 mg/L Pb	100	1.10077.0001	Test strip	144
Lead(II) acetat paper	Sulfide from 10 mg/L	3 x 4.8 m	1.09511.0003	Reagent paper	146
Litmus paper, blue	pH <7 red / >7 blue	3 x 4.8 m	1.09486.0003	pH test paper	152
Litmus paper, red	pH <7 red / >7 blue	3 x 4.8 m	1.09489.0003	pH test paper	152
<b>M</b> Magnesium Cell Test	5.0 – 75.0 mg/L Mg	25	1.00815.0001	Cell test	70
Magnesium Test	5 – 100 mg/L Mg	50	1.16124.0001	Test strip	120
Magnesium Test	100 – 1,500 mg/L Mg	50	1.11131.0001	Color card	132
Malic Acid Test	5.0 – 60.0 mg/L Malic acid	50	1.16128.0001	Test strip	120

# Parameters M-N

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>M</b> Manganese Test	0.005 – 2.00 mg/L Mn	250	1.01846.0007	Reagent test	70
Manganese Test	0.010 – 10.0 mg/L Mn	250	1.14770.0008	Reagent test	70
		500	1.14770.0007		
Manganese Test	0.03 – 0.5 mg/L Mn	120	1.14406.0007	Color-card comparator	132
Manganese Cell Test	0.10 – 5.00 mg/L Mn	25	1.00816.0007	Cell test	70
Manganese Test	0.3 – 10 mg/L Mn	120	1.14768.0001	Disk comparator	132
Manganese Test	2 – 100 mg/L Mn	100	1.10080.0001	Test strip	144
Mercury	0.025 – 1.000 Hg			Application	70
Methylethylketoxime (2-Butanoneoxime)	see Oxygen Scavengers Test			Reagent test	70
Molybdenum Cell Test	0.02 – 1.00 mg/L Mo 0.03 – 1.67 mg/L MoO <sub>4</sub> <sup>2+</sup> 0.04 – 2.15 mg/L Na <sub>2</sub> MoO <sub>4</sub>	25	1.00860.0001	Cell test	70
Molybdenum Test	5 – 250 mg/L Mo	100	1.10049.0001	Test strip	144
Monochloramine Test	0.050 – 10.00 mg/L Cl <sub>2</sub> 0.036 – 7.26 mg/L NH <sub>2</sub> Cl 0.010 – 1.98 mg/L NH <sub>2</sub> Cl-N	150	1.01632.0001	Reagent test	70
<b>N</b> Nickel Test	0.02 – 0.5 mg/L Ni	125	1.14420.0007	Color-card comparator	132
Nickel Test	0.02 – 5.00 mg/L Ni	250	1.14785.0007	Reagent test	70
Nickel Cell Test	0.10 – 6.00 mg/L Ni	25	1.14554.0001	Cell test	70
Nickel Test	0.5 – 10 mg/L Ni	500	1.14783.0007	Disk comparator	132
Nickel Test	10 – 500 mg/L Ni	100	1.10006.0001	Test strip	144
Nickel in electroplating baths	2.0 – 120 g/L Ni			Application	70
Nitrate (UV)	0.0 – 7.0 mg/L			Application	70
Nitrate Test	0.10 – 25.0 mg/L NO <sub>3</sub> -N 0.4 – 110.7 mg/L NO <sub>3</sub>	100	1.09713.0001	Reagent test	70
		250	1.09713.0002		
Nitrate Test	0.2 – 20.0 mg/L NO <sub>3</sub> -N 0.9 – 88.5 mg/L NO <sub>3</sub>	100	1.14773.0001	Reagent test	70
Nitrate Test	0.3 – 30.0 mg/L 1.3 – 132.8 mg/L	100	1.01842.0007	Reagent test	70
Nitrate Cell Test	0.5 – 18.0 mg/L NO <sub>3</sub> -N 2.2 – 79.7 mg/L NO <sub>3</sub>	25	1.14542.0001	Cell test	70
Nitrate Cell Test	0.5 – 25.0 mg/L NO <sub>3</sub> -N 2.2 – 110.7 mg/L NO <sub>3</sub>	25	1.14563.0001	Cell test	70
Nitrate Test	3 – 90 mg/L NO <sub>3</sub>	50	1.16995.0001	Test strip	120
Nitrate Cell Test	1.0 – 50.0 mg/L NO <sub>3</sub> -N 4 – 221 mg/L NO <sub>3</sub>	25	1.14764.0001	Cell test	70
Nitrate Test	5 – 90 mg/L NO <sub>3</sub>	90	1.18387.0001	Disk comparator	132
Nitrate Test	5 – 225 mg/L NO <sub>3</sub>	50	1.16971.0001	Test strip	120
Nitrate Test RQeasy®	5 – 250 mg/L NO <sub>3</sub>	50	1.17961.0001	Test strip	120
Nitrate Test	10 – 150 mg/L NO <sub>3</sub>	200	1.11170.0007	Sliding comparator	132
Nitrate Test	10 – 500 mg/L NO <sub>3</sub>	25	1.10020.0002	Test strip	144
		100	1.10020.0001		
Nitrate Test	10 – 500 mg/L NO <sub>3</sub>	1,000	1.10092.0021	Individually sealed	144
Nitrate Cell Test	23 – 225 mg/L NO <sub>3</sub> -N 102 – 996 mg/L NO <sub>3</sub>	25	1.00614.0001	Cell test	70

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>N</b> Nitrate Cell Test in seawater	0.10 – 3.00 mg/L NO <sub>3</sub> -N 0.4 – 13.3 mg/L NO <sub>3</sub>	25	1.14556.0001	Cell test	72
Nitrate Test in seawater	0.2 – 17.0 mg/L NO <sub>3</sub> -N 0.9 – 75.3 mg/L NO <sub>3</sub>	50	1.14942.0001	Reagent test	72
Nitrate Test in freshwater	10 – 150 mg/L NO <sub>3</sub>	100	1.11169.0001	Color card	132
Nitrite Test	0.005 – 0.1 mg/L NO <sub>2</sub>	110	1.14408.0001	Color-card comparator	132
Nitrite Test	0.002 – 1.00 mg/L NO <sub>2</sub> -N 0.007 – 3.28 mg/L NO <sub>2</sub>	335 1,000	1.14776.0002 1.14776.0001	Reagent test	72
Nitrite Test	0.025 – 0.5 mg/L NO <sub>2</sub>	200	1.08025.0001	Sliding comparator	132
Nitrite Cell Test	0.010 – 0.700 mg/L NO <sub>2</sub> -N 0.03 – 2.30 mg/L NO <sub>2</sub>	25	1.14547.0001	Cell test	72
Nitrite Test	0.1 – 2 mg/L NO <sub>2</sub>	400	1.14424.0001	Color-card comparator	132
Nitrite Test	0.1 – 10 mg/L NO <sub>2</sub>	400	1.14774.0001	Disk comparator	132
Nitrite Test	0.5 – 10 mg/L NO <sub>2</sub>	75	1.10057.0001	Test strip	144
Nitrite Test	0.5 – 25.0 mg/L NO <sub>2</sub>	50	1.16973.0001	Test strip	120
Nitrite Test	2 – 80 mg/L NO <sub>2</sub>	25 100	1.10007.0002 1.10007.0001	Test strip	144
Nitrite Test in freshwater and seawater	0.05 – 1.0 mg/L NO <sub>2</sub>	100	1.14658.0001	Color card	132
Nitrite Cell Test	1.0 – 90.0 mg/L NO <sub>2</sub> -N 3.3 – 295.2 mg/L NO <sub>2</sub>	25	1.00609.0001	Cell test	72
Nitrite Test	0.03 – 1.00 g/L NO <sub>2</sub>	50	1.16732.0001	Test strip	120
Nitrite Test	0.1 – 3 g/L NO <sub>2</sub>	100	1.10022.0001	Test strip	144
Nitrogen (total) Cell Test	0.5 – 15.0 mg/L N	25	1.00613.0001	Cell test	72
Nitrogen (total) Cell Test	0.5 – 15.0 mg/L N	25	1.14537.0001	Cell test	72
Nitrogen (total) Cell Test	10 – 150 mg/L N	25	1.14763.0001	Cell test	72
<b>O</b> Organic Carbon, Total	see TOC			Cell test	78
Oxifrit-Test®		60	1.10653.0001	Deep-frying fats test	136
Oxygen Test	0.1 – 10 mg/L O <sub>2</sub>	100	1.11107.0001	Titration with pipette	132
Oxygen Cell Test	0.5 – 12 mg/L O <sub>2</sub>	25	1.14694.0001	Cell test	72
Oxygen Test in freshwater and seawater	1 – 12 mg/L O <sub>2</sub>	50	1.14662.0001	Color card	132
Oxygen demand, biochemical	see BOD			Cell test	60
Oxygen demand, chemical	see COD			Cell test	64
Oxygen Scavengers Test	0.020 – 0.500 mg/L DEHA 0.027 – 0.666 mg/L Carbohy 0.05 – 1.32 mg/L Hydro 0.08 – 1.95 mg/L ISA 0.09 – 2.17 mg/L MEKO	200	1.19251.0001	Reagent test	72
Ozone Test	0.007 – 0.20 mg/L O <sub>3</sub>	300	1.18755.0001	Color-card comparator	132
Ozone Test	0.010 – 4.00 mg/L O <sub>3</sub>	200 1,200	1.00607.0001 1.00607.0002	Reagent test	72
Ozone Test	0.15 – 10 mg/L O <sub>3</sub>	300	1.18758.0001	Disk comparator	132

# Parameters P

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
P Palladium	0.05 – 1.25 mg/L Pd			Application	72
Peracetic Acid Test	1.0 – 22.5 mg/L Peracetic acid	50	1.16975.0001	Test strip	120
Peracetic Acid Test	5 – 50 mg/L Peracetic acid	100	1.10084.0001	Test strip	144
Peracetic Acid Test	20 – 100 mg/L Peracetic acid	50	1.17956.0001	Test strip	120
Peracetic Acid Test	75 – 400 mg/L Peracetic acid	50	1.16976.0001	Test strip	120
Peracetic Acid Test	100 – 500 mg/L Peracetic acid	100	1.10001.0001	Test strip	144
Peracetic Acid Test	500 – 2,000 mg/L Peracetic acid	100	1.17922.0001	Test strip	144
Peroxidase Test	yes/no result	100	1.17828.0001	Test strip	144
Peroxide	see also Hydrogen peroxide			Reagent test	68
Peroxide Test	0.2 – 20.0 mg/L H <sub>2</sub> O <sub>2</sub>	50	1.16974.0001	Test strip	120
Peroxide Test	0.5 – 25 mg/L H <sub>2</sub> O <sub>2</sub>	25	1.10011.0002	Test strip	146
		100	1.10011.0001		
Peroxide Test	1 – 100 mg/L H <sub>2</sub> O <sub>2</sub>	100	1.10081.0001	Test strip	146
Peroxide Test	20.0 – 100 mg/L H <sub>2</sub> O <sub>2</sub>	50	1.17968.0001	Test strip	120
Peroxide Test	100 – 1,000 mg/L H <sub>2</sub> O <sub>2</sub>	50	1.16731.0001	Test strip	120
Peroxide Test	100 – 1,000 mg/L H <sub>2</sub> O <sub>2</sub>	100	1.10337.0001	Test strip	146
pH indicator papers	see separate list of pH indicator papers	3 x 4.8 m		pH test paper	152
pH indicator strips	see separate list of pH indicator strips	100		pH test strips	153
pH Test	pH 1.0 – 5.0	50	1.16894.0001	Test strip	120
pH Test	pH 4.0 – 9.0	50	1.16996.0001	Test strip	120
pH Universal indicator liquid	pH 4 – 10	100 mL	1.09175.0100	Color card	132
		1 L	1.09175.1000		
pH Test	pH 4.5 – 9	100	1.08038.0001	Color-matching vessel	132
pH Test	pH 4.5 – 9	400	1.08027.0001	Sliding comparator	132
pH Test in freshwater and seawater	pH 5.0 – 9.0	200	1.18773.0001	Color-card comparator	132
pH Cell Test	pH 6.4 – 8.8	280	1.01744.0001	Cell test	72
pH Test in swimming pool	pH 6.5 – 8.2	200	1.14669.0001	Color card	134
pH Test for Cooling Lubricants	pH 7.0 – 10.0	50	1.16898.0001	Test strip	120
pH indicator liquid	pH 9 – 13	100 mL	1.09176.0100	Color card	132
Phaeophytin-a and Chlorophyll-a				Application	72
Phenol Test	0.002 – 0.100 mg/L Phenol 0.025 – 5.00 mg/L Phenol	50 – 250	1.00856.0001	Reagent test	72
Phenol Cell Test	0.10 – 2.50 mg/L Phenol	25	1.14551.0001	Cell test	72
Phenolphthalein paper	pH <8.5 colorless / >8.5 red	3 x 4.8 m	1.09521.0003	pH test paper	152
Phosphate Test (ortho-phosphate)	0.0025 – 5.00 mg/L PO <sub>4</sub> -P 0.0077 – 15.30 mg/L PO <sub>4</sub> 0.0057 – 11.46 mg/L P <sub>2</sub> O <sub>5</sub>	220 420	1.14848.0008 1.14848.0007	Reagent test	72
Phosphate Test	0.046 – 0.43 mg/L PO <sub>4</sub>	200	1.18394.0001	Color-card comparator	134
Phosphate Test RQflex® plus	0.1 – 5.0 mg/L PO <sub>4</sub>	100	1.17942.0001	Reagent test	120
Phosphate Cell Test (ortho-phosphate)	0.05 – 5.0 mg/L PO <sub>4</sub> -P 0.2 – 15.3 mg/L PO <sub>4</sub> 0.11 – 11.46 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.00474.0007	Cell test	72
Phosphate Cell Test (ortho-phosphate and total phosphorus)	0.05 – 5.00 mg/L PO <sub>4</sub> -P 0.2 – 15.3 mg/L PO <sub>4</sub> 0.11 – 11.46 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.14543.0007	Cell test	74
Phosphate Test in freshwater and seawater	0.25 – 3 mg/L PO <sub>4</sub>	100	1.14661.0007	Color card	134

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>P</b> Phosphate Test	0.6 – 9.2 mg/L PO <sub>4</sub>	200	1.14846.0007	Disk comparator	134
Phosphate Test	1.3 – 13.4 mg/L PO <sub>4</sub>	200	1.11138.0007	Color-matching vessel	134
Phosphate Cell Test (ortho-phosphate)	0.5 – 25.0 mg/L PO <sub>4</sub> -P 1.5 – 76.7 mg/L PO <sub>4</sub> 1.1 – 57.3 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.00475.0007	Cell test	74
Phosphate Cell Test (ortho-phosphate and total phosphorus)	0.5 – 25.0 mg/L PO <sub>4</sub> -P 1.5 – 76.7 mg/L PO <sub>4</sub> 1.1 – 57.3 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.14729.0007	Cell test	74
Phosphate Cell Test (ortho-phosphate)	0.5 – 25.0 mg/L PO <sub>4</sub> -P 1.5 – 76.7 mg/L PO <sub>4</sub> 1.1 – 57.3 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.14546.0001	Cell test	74
Phosphate Test (ortho-phosphate)	0.5 – 30.0 mg/L PO <sub>4</sub> -P 1.5 – 92.0 mg/L PO <sub>4</sub> 1.1 – 68.7 mg/L P <sub>2</sub> O <sub>5</sub>	400	1.14842.0001	Reagent test	74
Phosphate Test	3.1 – 123 mg/L PO <sub>4</sub>	190	1.14449.0001	Color-card comparator	134
Phosphate Test (ortho-phosphate)	1.0 – 100.0 mg/L PO <sub>4</sub> -P 3 – 307 mg/L PO <sub>4</sub> 2 – 229 mg/L P <sub>2</sub> O <sub>5</sub>	100	1.00798.0007	Reagent test	74
Phosphate Test	4.6 – 307 mg/L PO <sub>4</sub>	300	1.18388.0001	Disk comparator	134
Phosphate Test	5 – 120 mg/L PO <sub>4</sub>	50	1.16978.0001	Test strip	120
Phosphate Cell Test (ortho-phosphate)	3.0 – 100.0 mg/L PO <sub>4</sub> -P 9 – 307 mg/L PO <sub>4</sub> 7 – 229 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.00616.0007	Cell test	74
Phosphate Cell Test (ortho-phosphate and total phosphorus)	3.0 – 100 mg/L PO <sub>4</sub> -P 9 – 307 mg/L PO <sub>4</sub> 7 – 229 mg/L P <sub>2</sub> O <sub>5</sub>	25	1.00673.0007	Cell test	74
Phosphate Test	10 – 500 mg/L PO <sub>4</sub>	100	1.10428.0001	Test strip	146
Platinum	0.10 – 1.25 mg/L Pt			Application	74
Platinum-Cobalt Standard Method	see Color			Color-card comparator	130
Potassium Test RQflex® plus	1.0 – 25.0 mg/L K	100	1.17945.0001	Reagent test	120
Potassium Cell Test	5.0 – 50.0 mg/L K	25	1.14562.0001	Cell test	74
Potassium Cell Test	30 – 300 mg/L K	25	1.00615.0001	Cell test	74
Potassium Test	0.25 – 1.20 g/L K	50	1.16992.0001	Test strip	120
Potassium Test	250 – 1,500 mg/L K	100	1.17985.0001	Test strip	146
Potassium iodide-starch paper	Oxidizing agents	3 x 4.8 m	1.09512.0003	Reagent paper	146
Protein-Test	0.01 – 1.4 g/L Protein	200	1.10306.0500	Reagent test	74
Protein-Test	0.5 – 10 g/L Protein	250	1.10307.0500	Reagent test	74
<b>Q</b> Quaternary Ammonium Compounds	see also Surfactants (cationic)			Cell test	76
Quaternary Ammonium Compounds	10 – 500 mg/L Benzalkonium chloride	100	1.17920.0001	Test strip	146
<b>R</b> Residual Hardness Test	0.05 – 0.19 °e 0.7 – 2.7 mg/L CaCO <sub>3</sub>	400	1.11142.0001	Color card	134
Residual Hardness Cell Test	0.50 – 5.00 mg/L Ca 0.070 – 0.700 °d 0.087 – 0.874 °e 0.12 – 1.25 °f 0.70 – 7.00 mg/L CaO 1.2 – 12.5 mg/L CaCO <sub>3</sub>	25	1.14683.0001	Cell test	74

# Parameters S

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>S</b> SAC (Spectral absorption coefficient)	0.5 – 50.0 m <sup>-1</sup>			Physical method	74
Silicate (Silicic Acid) Test	0.0005 – 0.5000 mg/L SiO <sub>2</sub> 0.00012 – 0.2337 mg/L Si	100	1.01813.0007	Reagent test	76
Silicate (Silicic Acid) Test	0.011 – 10.70 mg/L SiO <sub>2</sub> 0.005 – 5.00 mg/L Si	300	1.14794.0007	Reagent test	76
Silicate (Silicic Acid) Test	0.01 – 0.25 mg/L Si 0.02 – 0.53 mg/L SiO <sub>2</sub>	150	1.14410.0007	Color-card comparator	134
Silicate (Silicic Acid) Test	0.3 – 10 mg/L Si 0.6 – 21 mg/L SiO <sub>2</sub>	150	1.14792.0007	Disk comparator	134
Silicate (Silicic Acid) Test	1.1 – 1,070 mg/L SiO <sub>2</sub> 0.5 – 500 mg/L Si	100	1.00857.0001	Reagent test	76
Silicic Acid	see Silicate			Reagent test	76
Silver Test	0.25 – 3.00 mg/L Ag	100	1.14831.0007	Reagent test	76
Sodium Cell Test in nutrient solution for fertilization	10 – 300 mg/L Na	25	1.00885.0001	Cell test	76
Spectral Absorption Coefficient, Color	0.5 – 250 m <sup>-1</sup>			Application	76
Spectral Attenuation Coefficient	0.5 – 250 m <sup>-1</sup>			Application	76
Sucrose Test	0.25 – 2.5 g/L	50	1.16141.0001	Test strip	120
Sulfate Test	0.50 – 50.0 mg/L SO <sub>4</sub>	100	1.01812.0001	Reagent test	76
Sulfate Cell Test	5 – 250 mg/L SO <sub>4</sub>	25	1.14548.0001	Cell test	76
Sulfate Cell Test	5 – 300 SO <sub>4</sub>	100	1.02537.0001	Cell test	76
Sulfate Test	25 – 300 mg/L SO <sub>4</sub>	200	1.14791.0001	Cell test	76
Sulfate Test	25 – 300 mg/L SO <sub>4</sub>	75	1.18389.0001	Disk comparator	134
Sulfate Test	25 – 300 mg/L SO <sub>4</sub>	90	1.14411.0001	Color-card comparator	134
Sulfate Cell Test	50 – 500 mg/L SO <sub>4</sub>	25	1.00617.0001	Cell test	76
Sulfate Cell Test	100 – 1,000 mg/L SO <sub>4</sub>	25	1.14564.0001	Cell test	76
Sulfate Test	200 – 1,600 mg/L SO <sub>4</sub>	100	1.10019.0001	Test strip	146
Sulfide Test	0.02 – 0.25 mg/L S <sup>2-</sup>	100	1.14416.0001	Color-card comparator	134
Sulfide Test	0.020 – 1.50 mg/L S <sup>2-</sup>	220	1.14779.0001	Reagent test	73
Sulfide Test	0.1 – 5 mg/L S <sup>2-</sup>	200	1.14777.0001	Disk comparator	134
Sulfite Test	0.5 – 50 mg/L Na <sub>2</sub> SO <sub>3</sub> (0.3 – 32 mg/L SO <sub>3</sub> )	200	1.11148.0001	Titration with pipette	134
Sulfite Cell Test	1.0 – 20.0 mg/L SO <sub>3</sub> 0.05 – 3.00 mg/L SO <sub>3</sub>	25	1.14394.0001	Cell test	76
Sulfite Test	1.0 – 60.0 mg/L SO <sub>3</sub> 0.8 – 48.0 mg/L SO <sub>2</sub>	150	1.01746.0001	Reagent test	76
Sulfite Test	10 – 200 mg/L SO <sub>3</sub>	50	1.16987.0001	Test strip	120
Sulfite Test	10 – 400 mg/L SO <sub>3</sub>	100	1.10013.0001	Test strip	146
Surfactants (anionic) Cell Test	0.05 – 2.00 mg/L MBAS	25	1.02552.0001	Cell test	76
Surfactants (cationic) Cell Test	0.05 – 1.50 mg/L CTAB	25	1.01764.0001	Cell test	76
Surfactants (nonionic) Cell Test	0.10 – 7.50 mg/L Triton® X-100	25	1.01787.0001	Cell test	76
Suspended Solids	25 – 750 mg/L suspended solids			Physical method	76

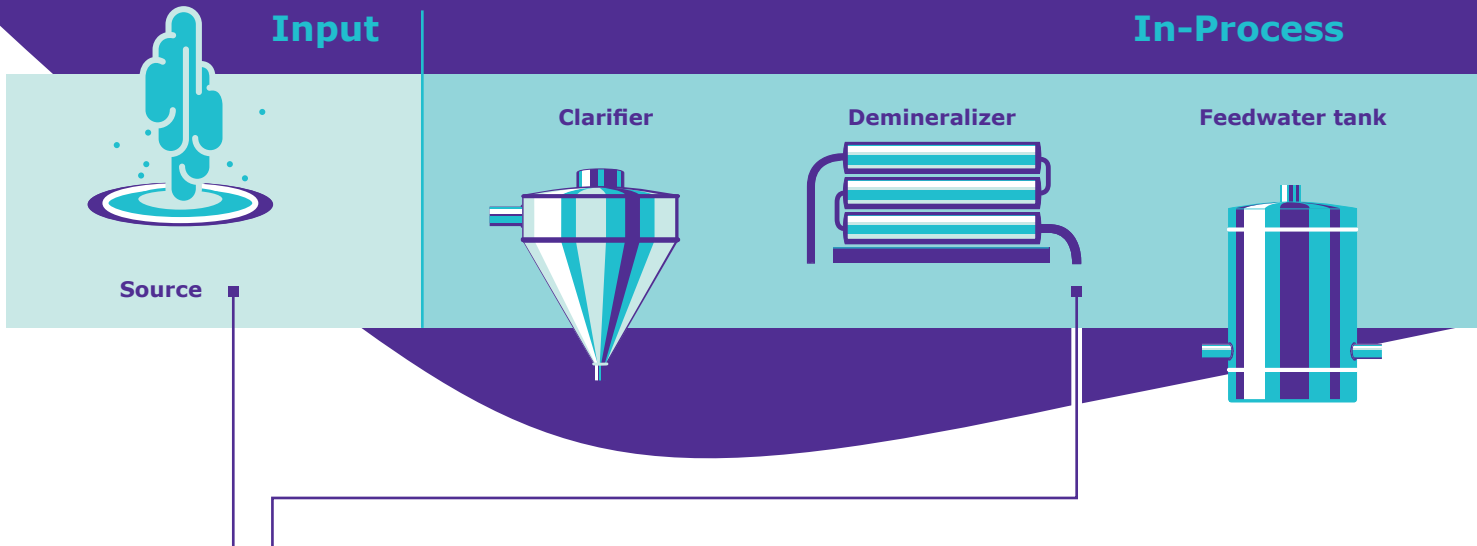


## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>T</b> Tin Cell Test	0.10 – 2.50 mg/L Sn	25	1.14622.0001	Cell test	78
Tin Test	10 – 200 mg/L Sn	50	1.10028.0001	Test strip	146
TOC Cell Test	5.0 – 80.0 mg/L TOC	25	1.14878.0001	Cell test	78
TOC Cell Test	50 – 800 mg/L TOC	25	1.14879.0001	Cell test	78
Total Alkalinity	see Acid capacity to pH 4.3 or Alkalinity			Cell test	58
Total Hardness Test	0.13 – 7 °e (1 – 100 mg/L CaCO <sub>3</sub> )	300	1.08047.0001	Titration with pipette	134
Total Hardness Test	0.1 – 30.0 °d	50	1.16997.0001	Test strip	120
Total Hardness Test	0.25 – 25 °e (0.1 – 3.6 mmol/L)	300	1.08039.0001	Titration with pipette	134
Total Hardness Cell Test	5 – 215 mg/L Ca 0.7 – 30.1 °d 0.9 – 37.6 °e 1.2 – 53.7 °f 7 – 301 mg/L CaO 12 – 537 mg/L CaCO <sub>3</sub>	25	1.00961.0001	Cell test	78
Total Hardness Test	1 drop corresponds to 1.25 °e	100	1.11104.0001	Titration with dropping bottle	134
Total Hardness Test	1 drop corresponds to 20 mg/L CaCO <sub>3</sub>	200	1.08312.0001	Titration with dropping bottle	134
Total Hardness Test in freshwater	1 drop corresponds to 1.25 °e	50	1.14652.0001	Titration with dropping bottle	134
Total Hardness Test	4 – 26 °e	100	1.10025.0001	Test strip	146
Total Hardness Test	4 – 26 °e	1,000	1.10032.0001	Individually sealed	146
Total Hardness Test	4 – 26 °e	5,000	1.10029.0001	Test strip	146
Total Hardness Test	6 – 31 °e	100	1.10046.0001	Test strip	146
Total Hardness Test	6 – 31 °e	25,000	1.10047.0013	Individually sealed	146
Total Hardness Test	<1.5 – >2.5 mmol/L CaCO <sub>3</sub>	100	1.17934.0001	Test strip	146
Total Nitrogen	see Nitrogen (total)			Cell test	72
Total Sugar Test (glucose and fructose)	65 – 650 mg/L total sugar	50	1.16136.0001	Test strip	120
Transmission	0.0 – 100.0 % T			Physical method	78
Turbidity	1 – 100 FAU			Physical method	78
<b>U</b> Urea Test for swimming pools	0.3 – 8 mg/L Urea	100	1.14843.0001	Disk comparator	134
Urea Test in Milk Application	0.2 – 7.0 mg/L NH <sub>4</sub>	50	1.16892.0001	Test strip	120
<b>V</b> Volatile Organic Acids Cell Test	50 – 3,000 mg/L acetic acid	100	1.01749.0007	Cell test	78
Volatile Organic Acids Test	50 – 3,000 mg/L acetic acid	25	1.01809.0007	Reagent test	78
<b>W</b> Water Hardness	see Residual Hardness or Total Hardness			Color card	134
<b>Z</b> Zinc Cell Test	0.025 – 1.000 mg/L Zn	25	1.00861.0007	Cell test	78
Zinc Test	0.05 – 2.50 mg/L Zn	100	1.14832.0001	Reagent test	78
Zinc Test	0.1 – 5 mg/L Zn	120	1.14780.0007	Disk comparator	134
Zinc Test	0.1 – 5 mg/L Zn	120	1.14412.0007	Color-card comparator	134
Zinc Cell Test	0.20 – 5.00 mg/L Zn	25	1.14566.0001	Cell test	78
Zinc Test	4 – 50 mg/L Zn	100	1.17953.0001	Test strip	146



# cooling & boiler water workflow



## Quality Control

### Sample Preparation

- Crack sets  
> **Page 51**
- Syringe filters  
> **Page 163**
- Thermoreactors, e.g. TR 620  
> **Page 52**



### Spectrophotometry

- Spectroquant® Prove 300/600  
> **Page 36**
- Spectroquant® test kits, e.g. chloride, silicate, sulfate  
> **Page 54**
- Sensitive measurements (100-mm cells)  
> **Page 54**



### Physical parameters

- Turbidimeter, e.g. Turbiquant® 3000  
> **Page 108**
- Conductivity meters, pH meters  
> **Page 108**

### Microbial and pathogen testing

- Microbial filtration testing, e.g. EZ family  
> **Page 156**
- Culture media, dehydrated and ready-to-use media  
> **Page 156**



### Water purification system

- Milli-Q® system  
> **Page 163**



### Reference materials

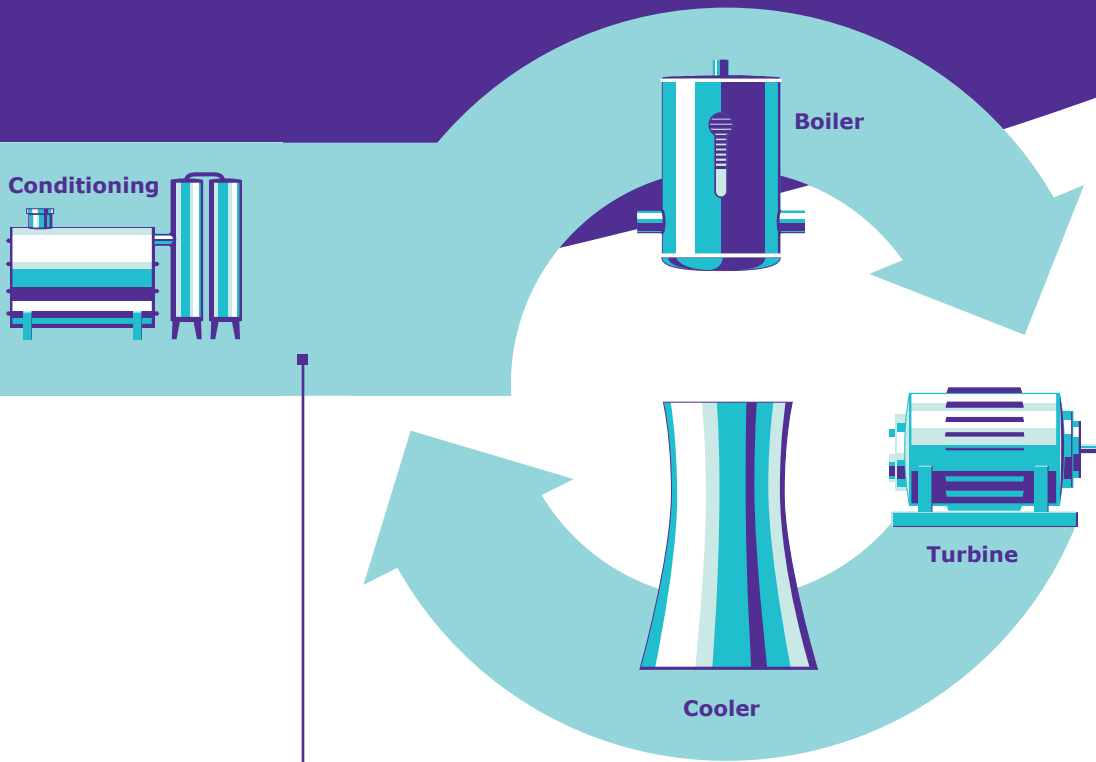
- CRM for test kits  
> **Page 102**
- Certipur®  
> **Page 106**
- CombiCheck  
> **Page 98**



Learn more about workflow steps and products: [www.just-prove-it.com](http://www.just-prove-it.com)  
Find all the products you need: [www.sigma-aldrich.com](http://www.sigma-aldrich.com)

Analyzing cooling and boiler water is essential for power plants and industrial producers such as chemical, pharmaceutical, technical or food and beverage companies. Silicate, calcium and magnesium content is particularly important as they can cause deposit formation and scaling, leading to higher maintenance costs and downtimes.

The workflow diagram shows the products you need to test ultra-low levels of different parameters in process water. In particular, using Spectroquant® Prove 600 with a 100-mm cuvette allows ultra-sensitive measurements of silicate, chloride and iron to protect your system.



## Mobile In-Process Control

### Semi-quantitative testing

- pH strips and paper  
> **Page 148**
- MQuant™ test strips,  
e.g. chlorine  
> **Page 138**
- MColortest™ test kits,  
e.g. phosphate, iron  
> **Page 122**



### Microbial and pathogen testing

- Surface monitoring,  
e.g. HY-LiTE®, HY-RiSE®  
> **Page 157**



### Physical parameters

- Turbidimeter,  
e.g. Turbiquant® 1100  
> **Page 108**



### Quantitative testing

#### Photometry

- Move 100 and Move Cl<sub>2</sub>/O<sub>3</sub>/  
ClO<sub>2</sub>/CyA/pH colorimeters  
> **Page 40**
- Spectroquant® test kits,  
e.g. silicate, chloride,  
oxygen, sulfate  
> **Page 54**



### Reference materials

- CRM  
> **Page 102**
- Certipur®  
> **Page 106**



**MORE ABOUT  
PHOSPHONATES**

*in cooling and boiler water*





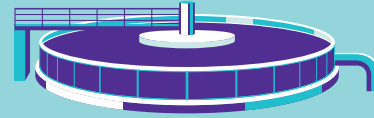
# wastewater workflow

## Input



Wastewater supply

## In-Process



Pre-sedimentation

## Quality Control

### Sample Preparation

- Crack Sets and Thermoreactors, e.g. TR 420  
> **Page 50**
- Syringe filters  
> **Page 163**
- Turbidimeter, e.g. Turbiquant® 1500  
> **Page 108**
- Conductivity meters, pH meters  
> **Page 108**



### Spectrophotometry

- Spectroquant® Prove 100/300  
> **Page 36**
- Spectroquant® test kits, e.g. BOD, COD, nitrogen  
> **Page 54**



### Microbial and pathogen testing

- Microbial filtration testing, e.g. EZ family  
> **Page 156**
- Culture media, dehydrated and ready-to-use media  
> **Page 156**



### Water purification system

- Milli-Q® system  
> **Page 163**



### Reference materials

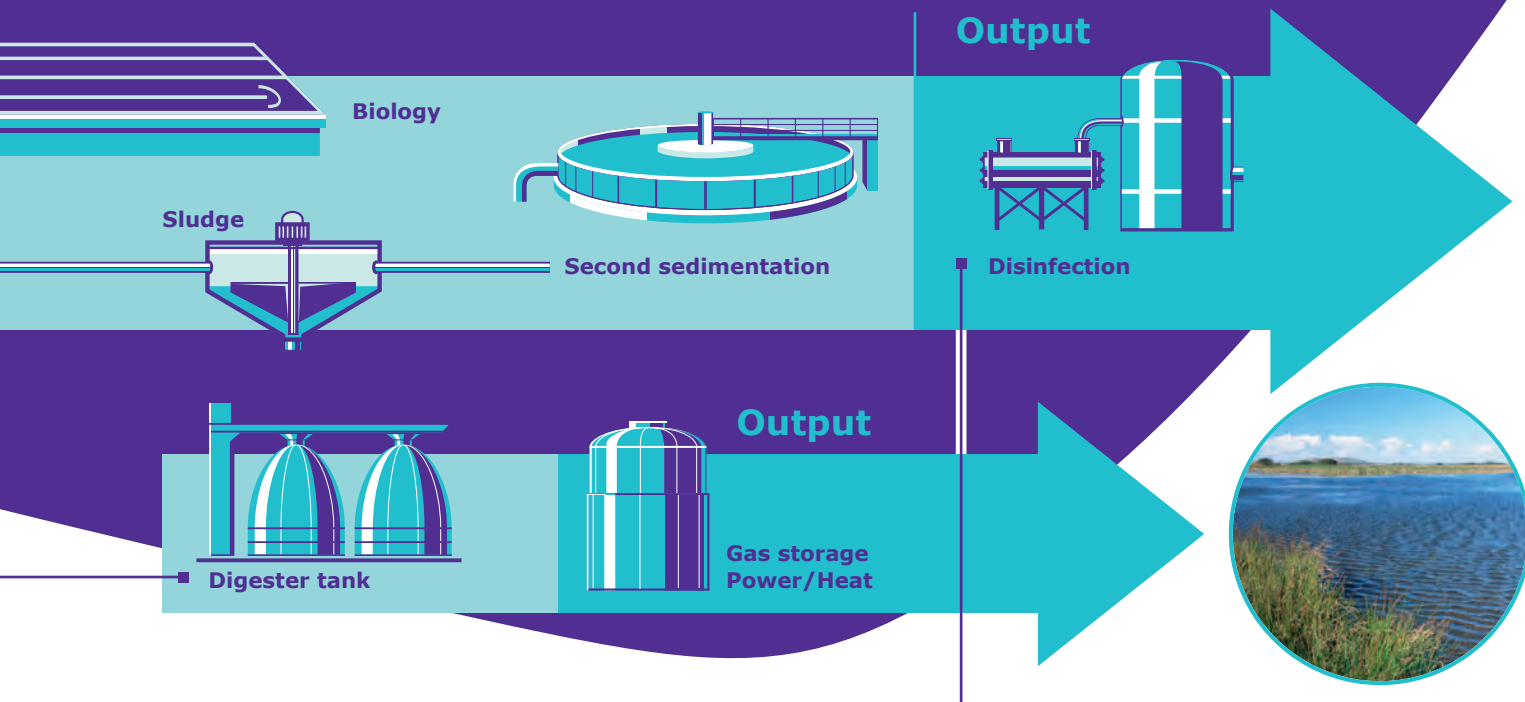
- CRM for test kits  
> **Page 102**
- Certipur®  
> **Page 106**
- CombiCheck  
> **Page 98**



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Find all the products you need: [www.sigma-aldrich.com](http://www.sigma-aldrich.com)

To protect the environment and communities, almost all governments require treatment and testing of municipal wastewater from households, and industrial wastewater from chemical, pharmaceutical, food, beverage and other production facilities.

The workflow diagram shows the products you need to analyze essential chemical parameters, such as COD, BOD, TOC, ammonium, nitrate, nitrite, total phosphorus and total nitrogen, as well as further important parameters like chromium, other heavy metals, and volatile organic acids (VOA).



## Mobile In-Process Control

### Semi-quantitative testing

- pH strips and paper  
> Page 148
- MQuant™ test strips,  
e.g. chloride  
> Page 138
- MColortest™ test kits,  
e.g. phosphate, iron  
> Page 122



### Quantitative testing

#### Photometry

- Move 100 and Move Cl<sub>2</sub>/O<sub>3</sub>/  
ClO<sub>2</sub>/CyA/pH colorimeters  
> Page 40
- Spectroquant® test kits,  
e.g. chlorine,  
phosphate, sulfate  
> Page 54



### Microbial and pathogen testing

- Air sampler,  
e.g. MAS-family  
> Page 157
- Surface monitoring,  
e.g. HY-LITE®, HY-RISE®  
> Page 157



### Physical parameters

- Turbidimeter, e.g. Turbiquant® 1100  
> Page 108
- Conductivity meter, pH meter  
> Page 108

### Reference materials

- CRM  
> Page 102
- Certipur®  
> Page 106

## MORE ABOUT SAMPLE PREPARATION

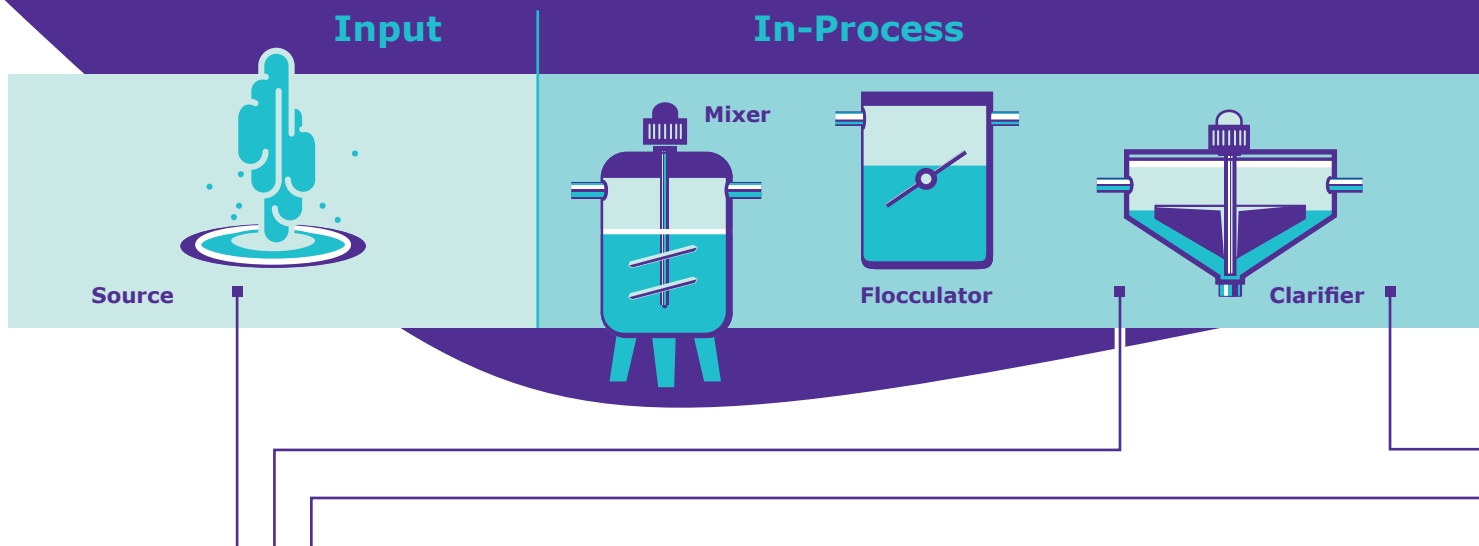


Learn more about  
sample preparation

[www.emdmillipore.com/web-cast\\_asp\\_wfa\\_sampleprep](http://www.emdmillipore.com/web-cast_asp_wfa_sampleprep)



# drinking water workflow



## Quality Control

### Chromatography

- HPLC, GC, TLC  
> **Page 158**
- Syringe filters  
> **Page 163**
- Solvents and inorganic reagents  
> **Page 159**



### Spectrophotometry

- Spectroquant® Prove 300/600  
> **Page 36**
- Spectroquant® test kits, e.g. ammonium, fluoride, nitrate  
> **Page 54**
- For sensitive measurements (100-mm cell)  
> **Page 54**



### Physical parameters

- Turbidimeter, e.g. Turbiquant® 3000  
> **Page 108**
- Conductivity meter, pH meter  
> **Page 108**

### Microbial and pathogen testing

- Microbial filtration testing, e.g. EZ family  
> **Page 156**
- Culture media, dehydrated and ready-to-use media  
> **Page 156**



### Water purification system

- Milli-Q® system  
> **Page 163**



### Reference materials

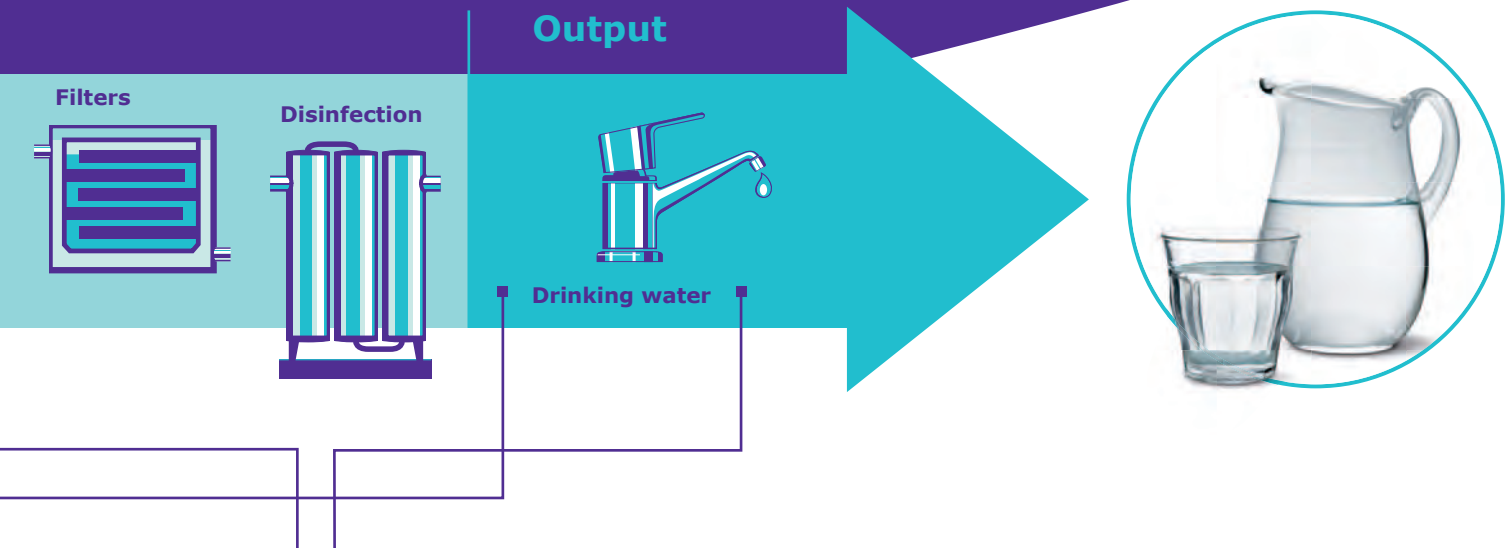
- CRM for test kits  
> **Page 102**
- Certipur®  
> **Page 106**
- Standards for pesticides  
> **Page 160**



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Any industry that produces, uses, or processes drinking water must comply with national regulations and perform regular tests to ensure that drinking water is free of chemical and microbiological contaminations.

The workflow diagram shows the products you need to test important chemical parameters, such as aluminum, ammonium, bromate, iron, manganese, chloride, nitrate, nitrite, sulfate, chromium and other metals, or microbiological contamination.



### Mobile In-Process Control

#### Semi-quantitative testing

- pH strips and paper  
> Page 148
- MQuant™ test strips,  
e.g. peracetic acid  
> Page 138



#### Quantitative testing

##### Photometry

- Move 100 and Move Cl<sub>2</sub>/O<sub>3</sub>/  
ClO<sub>2</sub>/CyA/pH colorimeters  
> Page 40
- Spectroquant® test kits,  
e.g. ozone, chlorine  
> Page 54



#### Physical parameters

- Conductivity meter, pH meter  
> Page 108



#### Microbial and pathogen testing

- Air sampler,  
e.g. MAS-family  
> Page 157
- Surface monitoring,  
e.g. HY-LiTE®, HY-RISE®  
> Page 157



#### Reference materials

- CRM  
> Page 102
- Certipur®  
> Page 106



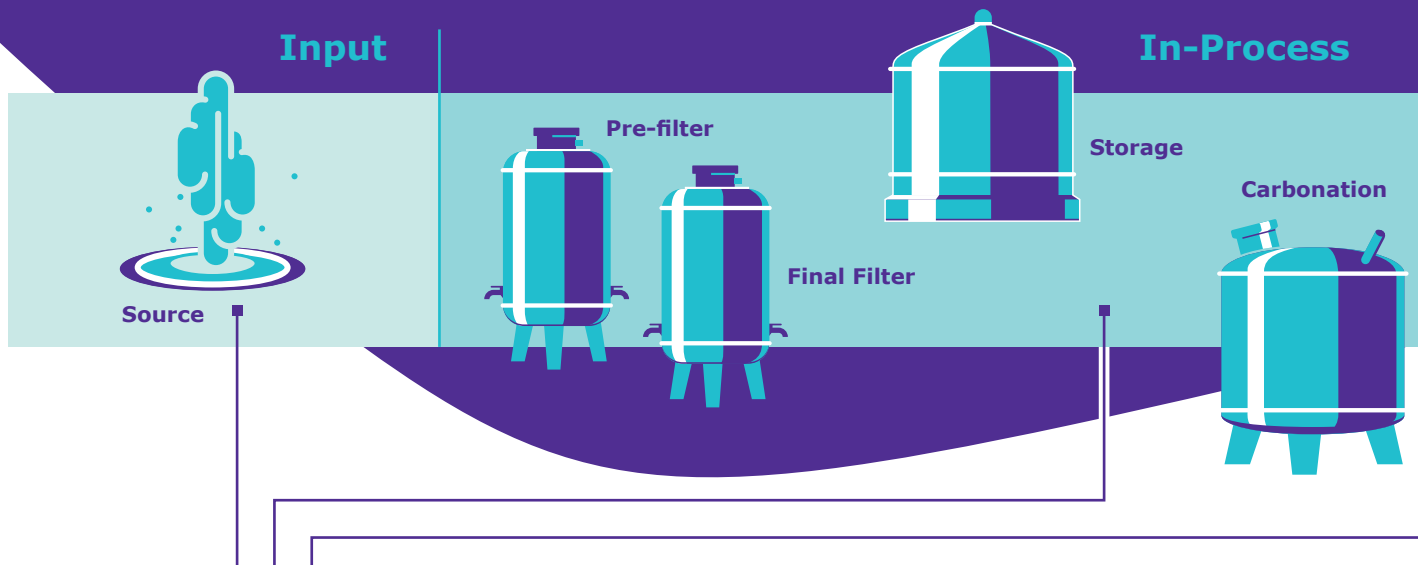
## PARAMETERS FOR DRINKING WATER

Check the range of different parameters in the drinking water guidelines table on page 57





# bottled water workflow



## Quality Control

### Chromatography

- HPLC, GC, TLC  
> Page 158



- Syringe filters  
> Page 163



- Inorganic reagents  
> Page 158

### Spectrophotometry

- Spectroquant® Prove 300/600  
> Page 36



- Spectroquant® test kits, e.g. calcium, bromate  
> Page 54



- For sensitive measurements (100-mm cell)  
> Page 54

### Physical parameters

- Turbidimeter, e.g. Turbiquant® 1500  
> Page 108

### Microbial and pathogen testing

- Microbial filtration testing, e.g. EZ family  
> Page 156



- Culture media, dehydrated and ready-to-use media  
> Page 156



### Water purification system

- Milli-Q® system  
> Page 163



### Reference materials

- CRM for test kits  
> Page 102

- Certipur®  
> Page 106

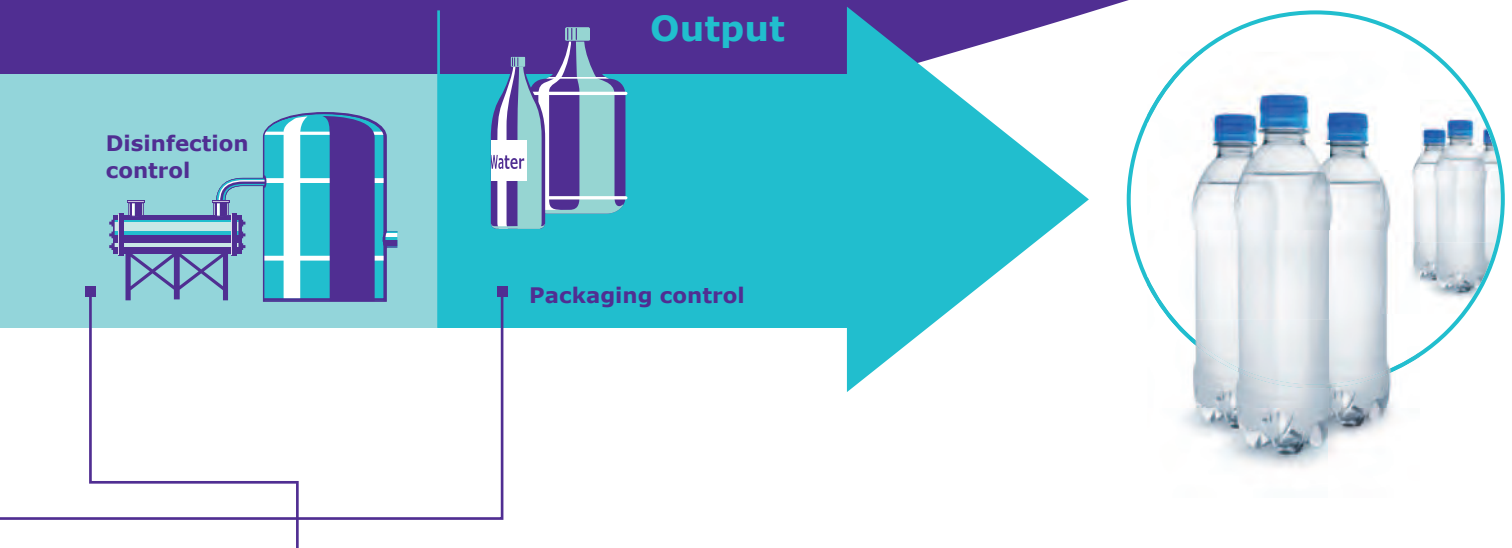


- Standards for pesticides  
> Page 160

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One of the main challenges in processing and producing bottled water is consistently maintaining high product quality to protect consumers and the environment. To ensure this, the efficacy of flocculation and filtration should be tested through parameters such as aluminum, iron, manganese, calcium, fluoride and total hardness.

The workflow diagram shows the products you need for chemical and microbiological analysis of bottled water, including culture media, membranes, filter funnels, filtration devices, hardware, and accessories.



## Mobile In-Process Control

### Semi-quantitative testing

- pH strips and paper  
> [Page 148](#)
- MQuant™ test strips, e.g. chlorine, peracetic acid  
> [Page 138](#)

### Quantitative testing

#### Photometry

- Move 100 and Move Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH colorimeters  
> [Page 40](#)
- Spectroquant® test kits, e.g. ozone, chlorine  
> [Page 54](#)

#### Test strips

- RQflex® 10  
> [Page 114](#)
- Reflectoquant® disinfectant parameter test kits, e.g. chlorine  
> [Page 120](#)

### Microbial and pathogen testing

- Air sampler, e.g. MAS-family  
> [Page 157](#)
- Surface monitoring, e.g. HY-LITE®, HY-RISE®  
> [Page 157](#)

### Physical parameters

- Turbidimeter, e.g. Turbiquant® 1100  
> [Page 108](#)
- Conductivity meter, pH meter  
> [Page 108](#)

### Reference materials

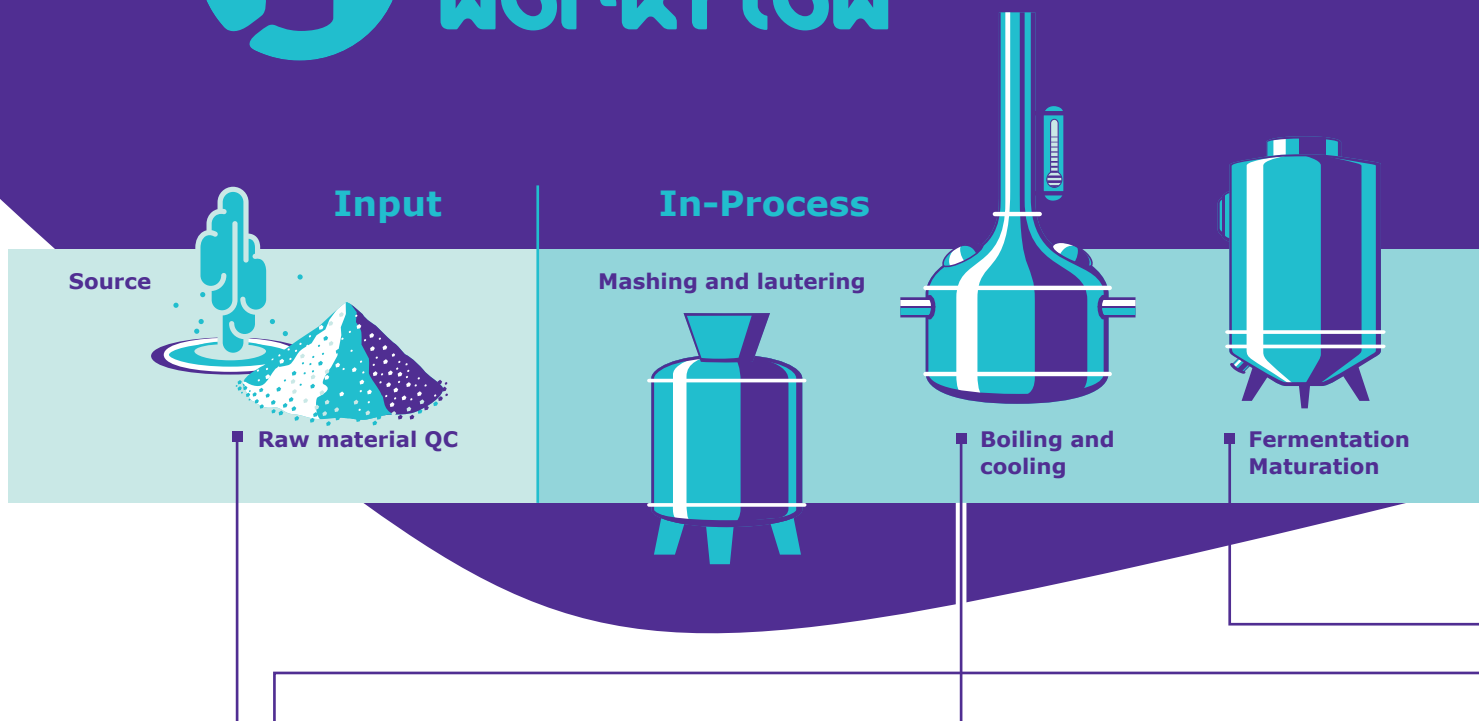
- CRM  
> [Page 102](#)
- Certipur®  
> [Page 106](#)

**MORE ABOUT  
BROMATE  
ANALYSIS**

For more information about bromate analysis of drinking water see [page 32](#)



# BREWERY WORKFLOW



## Quality Control

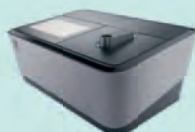
### Chromatography

- HPLC, GC, TLC  
> **Page 158**
- Syringe filters  
> **Page 163**
- Solvents and inorganic reagents  
> **Page 159**



### Spectrophotometry

- Spectroquant® Prove 300  
> **Page 36**
- Brewery methods acc. to international standards  
> **Page 46**



### Reference materials

- CRM for test kits  
> **Page 102**
- Certipur®  
> **Page 106**
- Standards for pesticides  
> **Page 160**



### Microbial and pathogen testing

- Microbial filtration testing, e.g. EZ family  
> **Page 156**
- Culture media, dehydrated and ready-to-use media  
> **Page 156**



### Water purification system

- Milli-Q® system  
> **Page 163**



### Physical parameters

- Turbidimeter, e.g. Turbiquant® 3000  
> **Page 108**
- pH-meters  
> **Page 108**



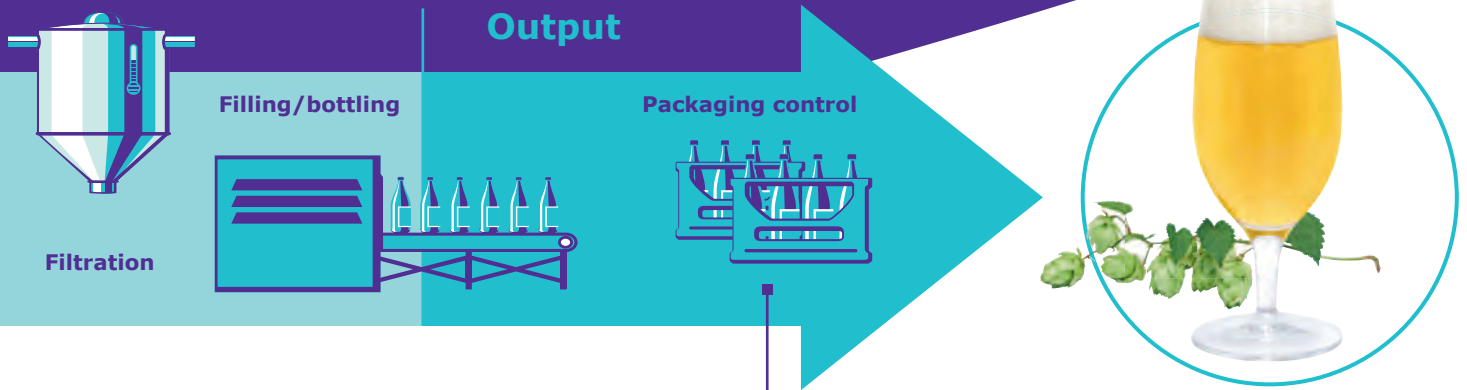
### Ingredient and nutritional testing

- Flavors and fragrances  
> **Page 161**
- Karl Fischer - reagents  
> **Page 162**

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Find all the products you need: [www.sigma-aldrich.com](http://www.sigma-aldrich.com)

Breweries need to carefully monitor all stages of production – from analyzing raw materials and drinking water, to in-process and disinfection controls, and finally testing the finished product and wastewater (see “wastewater workflow” on page 22). Beer quality and consistency are judged through parameters such as bitterness, flavonoids, free amino nitrogen, color, calcium and zinc content, and microbiological contamination.

The workflow diagram shows the products you need for reliable beer analysis. In particular, Spectroquant® Prove spectrophotometers feature pre-programmed methods according to international standards to help you quickly and accurately monitor beer quality and maturity.



## In-Process Control

### Semi-quantitative testing

- pH strips and paper  
> **Page 148**
- MQuant™ test strips,  
e.g. glucose, calcium  
> **Page 138**



### Quantitative testing

#### Test strips

- RQflex® 10  
> **Page 114**
- Reflectoquant® disinfectant  
parameter test kits, e.g. chlorine  
> **Page 120**



#### Photometry

- Move 100 and Move Cl<sub>2</sub>/O<sub>3</sub>/  
ClO<sub>2</sub>/CyA/pH colorimeters  
> **Page 40**
- Spectroquant® test kits,  
e.g. iron, sulfite  
> **Page 54**



### Microbial and pathogen testing

- Air sampler,  
e.g. MAS-family  
> **Page 157**
- Surface monitoring,  
e.g. HY-LiTE®, HY-RISE®  
> **Page 157**



### Reference materials

- CRM  
> **Page 102**
- Certipur®  
> **Page 106**

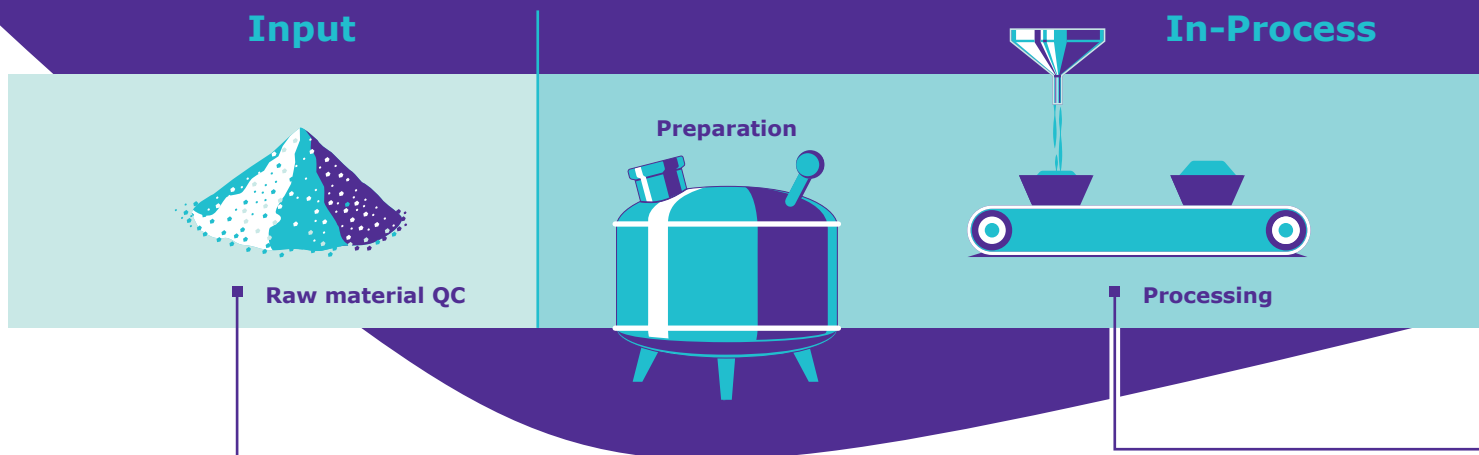


**CHECK  
METHODS  
FOR BEER  
ANALYSIS**

For more information on the preprogrammed methods of beer analysis see page 46



# food & beverage workflow



## Quality Control

### Chromatography

- HPLC, GC, TLC  
> Page 158
- Syringe filters  
> Page 163



### Spectrophotometry

- Spectroquant® Prove 600  
> Page 36
- Spectroquant® test kits,  
e.g. calcium, nitrate, sulfite  
> Page 54



### Reference materials

- CRM for test kits  
> Page 102
- Certipur®  
> Page 106
- Standards  
for pesticides  
> Page 160



### Microbial and pathogen testing

- Microbial filtration  
testing, e.g. EZ family  
> Page 156
- Culture media, dehydrated  
and ready-to-use media  
> Page 156



### Water purification system

- Milli-Q® system  
> Page 163



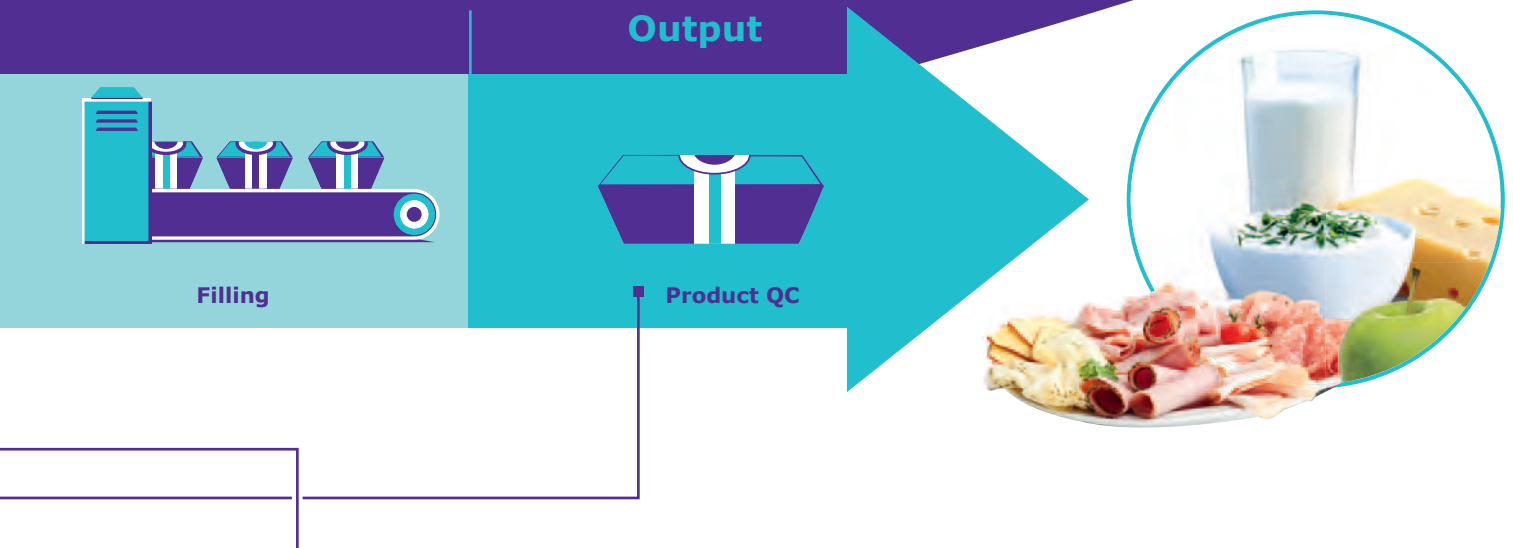
### Ingredient and nutritional testing

- Kjeldahl, total dietary fiber  
> Page 161
- Flavors and fragrances  
> Page 161
- Karl Fischer - reagents  
> Page 162

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Food and beverage producers face increasing safety regulations, and are required to perform detailed analyses of raw materials, in-process controls, quality tests, and hygiene monitoring. As all of these analyses take time, our rapid and on-the-spot tests for chemical and microbiological contamination are designed to help you get your product to the market faster.

The workflow diagram shows the products you need to accurately analyze important chemical parameters in food and beverages, such as the concentration of ascorbic acid, glucose and fructose, or microbiological contamination.



## In-Process Control

### Semi-quantitative testing

- pH strips and paper  
> **Page 148**
- MQuant™ test strips,  
e.g. free fatty acids  
> **Page 138**



### Quantitative testing

#### Test strips

- RQflex® 10  
> **Page 114**
- Reflectoquant® test kits e.g. HMF,  
glucose, sucrose, ascorbic acid  
> **Page 120**



#### Photometry

- Move 100 and Move Cl<sub>2</sub>/O<sub>3</sub>/  
ClO<sub>2</sub>/CyA/pH colorimeters  
> **Page 40**
- Spectroquant® test kits,  
e.g. iron, magnesium, sulfite  
> **Page 54**



### Microbial and pathogen testing

- Air sampler,  
e.g. MAS-family  
> **Page 157**
- Surface monitoring,  
e.g. HY-LiTE®, HY-RISE®  
> **Page 157**



### Reference materials

- CRM  
> **Page 102**
- Certipur®  
> **Page 106**



## ANALYTICAL APPLICATION NOTES FINDER



Interested in more application examples? Visit the analytical application notes finder on our website!

[www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)



# JUST PROVE IT!



## IS your drinking water safe?

### Easy and economical bromate analysis

#### The application

- Bromate is formed when bromide-rich water is treated with ozone during sterilization
- The analysis of bromate in drinking water is essential because it is a toxic, carcinogenic substance
- Limit according to WHO guidelines: 10 µg/L BrO<sub>3</sub><sup>-</sup>

#### Our solution: Spectroquant® Prove 600

Spectroquant® Prove 600 offers a super-sensitive photometric method for bromate analysis. When combined with a 100-mm cell, it allows you to easily and accurately detect very low bromate levels, and check if they are within required limits – without high investments.

#### Benefits

- Easy, accurate and economical solution
- Bromate analysis method acc. to ISO 15061:2001
- Super-sensitive measurement range: 0.5-20 µg/L BrO<sub>3</sub><sup>-</sup> for evaporated samples, 2.5-100 µg/L BrO<sub>3</sub><sup>-</sup> without evaporation



Learn more about hassle-free bromate analysis:  
[www.emdmillipore.com/bromate](http://www.emdmillipore.com/bromate)





**Photometry**  
**Spectroquant®**

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# Spectroquant® Concept

Complete system for photometric analysis

## Test assured

If you want to be certain about your measurements, analytical quality assurance (AQA) is a must. It allows you to prove the validity and reproducibility of your photometric results. With the **Spectroquant® concept**, you can focus on your daily work without worrying about the quality of your results. Our convenient, all-in-one solution includes everything you need for secure analysis, and they work seamlessly together: reliable instruments, high-quality test kits, customized applications, and start-to-finish AQA.

**See how our products support your workflow on pages 20-31.**

## Spectroquant® system

**Instruments & accessories** Spectroquant® colorimeters and photometers combine high measurement quality with simple handling: Spectroquant® Prove | Spectroquant® Move | Spectroquant® Multy | Spectroquant® NOVA

**Sample preparation** Simply effective and comfortable with crack sets and thermoreactors: Spectroquant® Crack Set | Spectroquant® Thermoreactors TR 320 / 420 / 620

**Test kits** More than 200 Spectroquant® test kits offer competent solutions for the widest conceivable range of applications: Reagent test kits | Cell test kits | Test kits for samples with salt content | Test kits for other photometer brands

**Quality certificates** Quality certificates for each test kit confirm the consistent quality of all batches

**Quality assurance** Perfect Analytical Quality Assurance (AQA) thanks to certified standards, GLP-compliant documentation, and tools: Spectroquant® PhotoCheck | Certipur® UV/VIS standards | Spectroquant® PipeCheck | Spectroquant® CombiCheck | Standard solutions (CRM) for photometric applications | Certipur® standard solutions

**choose the  
perfect  
photometer**

*Not sure which photometer is ideal for your daily lab work?  
Find out in our photometer selection guide!*

[www.emdmillipore.com/photometer-selection-guide](http://www.emdmillipore.com/photometer-selection-guide)



## Spectroquant® instruments

Bar-code reading  
No. of test parameters  
Mains operation  
Battery operation

### Colorimeters

#### Spectroquant® Move – Reliable, waterproof colorimeters for rapid, on-site results

Model	Description	Bar-code reading	No. of test parameters	Mains operation	Battery operation
Move Cl <sub>2</sub> /O <sub>3</sub> /ClO <sub>2</sub> /CyA/pH	Perfect colorimeter for disinfection control		5		■
Move 100	Ideal instrument for on-site wastewater and drinking water analysis		>100		■



#### Spectroquant® Multy – Rechargeable mobile lab colorimeter for routine testing

Model	Description	Bar-code reading	No. of test parameters	Mains operation	Battery operation
Multy	Compact and portable for routine measurements of different parameters		>130	■	■



### Photometers

#### Spectroquant® NOVA – Compact, convenient filter photometers for reliable measurements

Model	Description	Bar-code reading	No. of test parameters	Mains operation	Battery operation
NOVA 30 A	Basic instrument for routine measurements in wastewater analysis	■	>60	■	■
NOVA 60	Routine testing of all types of water	■	>180	■	
NOVA 60 A	Same as NOVA 60, but can also be operated with rechargeable powerpack	■	>180	■	■



#### Spectroquant® Prove – Sophisticated touchscreen photometers for sensitive, secure analysis

Model	Description	Bar-code reading	No. of test parameters	Mains operation	Battery operation
Prove 100	Best choice for use with our broad range of Spectroquant® test kits, or for only performing Vis measurements	■	>200		
Prove 300	Equipped with long-lasting xenon lamp for more intensive use, and capable of UV and Vis measurements for greater flexibility in intricate analyses	■	>200		
Prove 600	Designed for high-end UV/Vis optics and cells of up to 100 mm, also offers excellent resolution and sensitivity for use with test kits, complex kinetics or spectral measurements	■	>200		



# Spectroquant® Prove Spectrophotometers

Sophisticated analysis made simple

Our goal was to build the perfect tool for water analysis. One that unites the simplicity you want with the security you need, and durability you expect. Spectroquant® Prove delivers all these and more. It offers intuitive controls, and is pre-programmed for over 200 Spectroquant® test kits and methods to make analysis smoother than ever.

# Just PROVE it.

Long-life lamp with reference beam technology for brilliant durability and economy

Innovative ambient light measurement technology, patent pending

Smart touchscreen for simple navigation in 28 languages

Customize settings set turbidity correction, add dilution factors, or simultaneously display adsorption and concentration

Assign individualized measuring ranges to see if results are within limits

Use the USB or Ethernet ports to connect to your printer or LIMS for fast data transfer

Materials and design are built to last and resistant to most lab chemicals

A small beauty in your lab: 42 cm x 28 cm x 24 cm



Live ID bar codes on cell and reagent tests automatically transfer important data to the spectrophotometer:



- Method recognition
- Lot number
- Expiry date
- Calibration update



Reagent tests include an AutoSelector for automatic test detection and result calculation

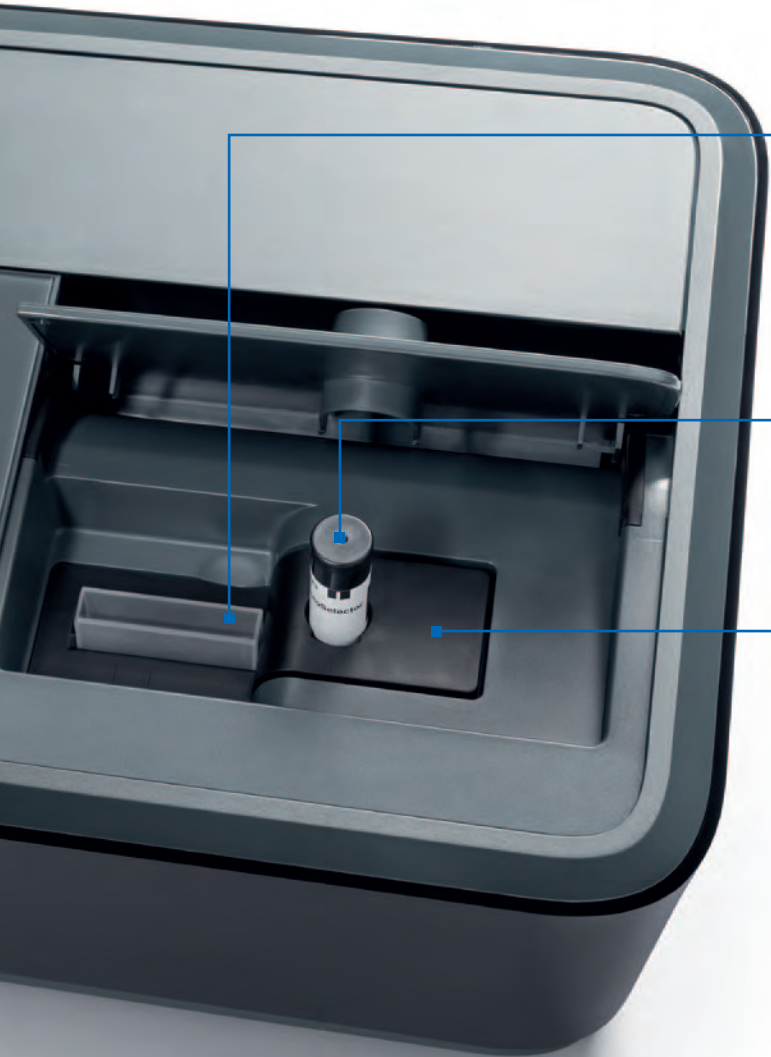


Cells in the test kits contain virtually all reagents necessary for the analysis



100 mm    50 mm    20 mm    10 mm

All Prove models detect 10-, 20-, and 50-mm cells



For even greater sensitivity, Prove 600 is also compatible with 100-mm cells



Cell Test Port allows direct insertion of round cells



Removable cell holder for easy cleaning in case of spills



## choose your test

Choose our convenient cell tests or economical reagent tests  
> Learn more on page 55



# Spectroquant® Prove Spectrophotometers

Three perfect models. Just choose.

## 100



**Spectroquant® Prove 100**  
Ord. No. 1.73016.0001

### For routine applications

Prove 100 is the best choice for those who primarily use our broad range of Spectroquant® test kits, or only perform Vis measurements. High quality and great value for money for your daily analyses.

## 300



**Spectroquant® Prove 300**  
Ord. No. 1.73017.0001

### For sensitive measurements

Thanks to its long-lasting xenon lamp, Prove 300 is ideal for more intensive use. What's more, it is capable of both UV and Vis measurements, so you have greater flexibility for more intricate analyses.

## 600



**Spectroquant® Prove 600**  
Ord. No. 1.73018.0001

### For complex analyses

Designed for high-end UV/Vis optics, and cells of up to 100-mm, Prove 600 packs great power into a compact size. Excellent resolution and sensitivity for use with test kits, complex kinetics or spectral measurements.

Prove 100  
Prove 300  
Prove 600

## Specifications

<b>Measuring technology</b>	Spectrophotometer with reference beam technology	■ ■ ■
<b>Wavelength range</b>	Vis (320 – 1,100 nm)	■ ■ ■
	UV (190 – 320 nm)	■ ■
<b>Lamp type</b>	Tungsten halogen lamp	■
	Xenon flash lamp	■ ■
<b>Ambient light protection</b>	Measurement with open shaft possible due to proprietary solution (patent pending)	■ ■ ■
<b>Spectral bandwidth</b>	4 nm	■ ■
	1.8 nm	■
<b>Smart Screen display</b>	Resistive touch screen	■ ■
	P-cap glass touch screen	■
<b>Live ID system</b>	2-D Bar-code recognition for cell tests and reagent tests	■ ■ ■
	Bar-code contains lot, expiry, and calibration data. Data stored with each measurement	■ ■ ■
<b>Cell size</b>	16-mm round cells, 10-, 20- and 50-mm rectangular cells with automatic recognition	■ ■ ■
	100-mm rectangular cells with automatic recognition	■
<b>Cell holder</b>	Removable for easy cleaning	■ ■ ■
<b>Methods</b>	Programmed methods of all Spectroquant® cell and reagent tests, 99 user defined methods, 20 profiles for kinetics and absorbance scans each	■ ■ ■
<b>Applications</b>	Free preprogrammed applications: Bromate, Brewery packages (MEBAK/EBC/ASBC methods), Sugar (ICUMSA), Oil (DOBI, olive oil)	■ ■ ■
<b>AQA Prime</b>	Individual settings for all methods in AQA 1 (instrument check) and AQA 2 mode (system check) and pipette check	■ ■ ■
<b>Sample matrix check</b>	Easy access through setting menu to perform instrument supported matrix check for each method	■ ■ ■
<b>Software updates</b>	Free method updates on our website	■ ■ ■
<b>Languages</b>	Navigation in 28 built-in languages	■ ■ ■
<b>Communication interfaces</b>	USB: 2 x USB-A (for printer, USB memory devices, keyboard or bar-code reader), 1 x USB-B; Ethernet: LAN connection	■ ■ ■

## Application fields



### Wastewater

Regular testing, and the use of cell test kits are common in wastewater analysis. Prove 100 is the perfect choice for these measurements. The Spectroquant® portfolio offers the broadest selection of COD tests. Just choose the measuring range that best suits your needs, and enjoy precise results.

#### Wastewater workflow

> Page 22



### Drinking water & beverages

Analyzing drinking water and beverages usually involves reagent tests as they offer lower detection limits for parameters like manganese and sulfate. Prove 300 is ideal here as it allows UV/Vis analyses, and is programmed with free applications, like bromate and brewery tests.

#### Drinking water workflow

> Page 24



### Process water

Even low levels of impurities in process water can lead to damages, downtime, and costly repairs. To help you avoid these, we offer the most sensitive silicate and chloride tests with the lowest measuring ranges available. For even greater sensitivity, use the 100-mm cell in Prove 600.

#### Cooling & boiler water workflow

> Page 20

# just ask.

## Service and support

We understand the importance of reliable instruments, and the complexities of documentation. That's why we offer a comprehensive service plan that takes care of both.

#### All Spectroquant® service plans offer the following benefits:

- **Performance check** with reference materials – certificate included
- **Factory-recommended maintenance** to prevent breakdowns
- **Telephone support hotline** connects you to our technical experts
- **Free software upgrades** to keep your instrument up to date
- **Reagent delivery program** for convenient, punctual supply of our high-quality test kits

Contact us today for your personalized Spectroquant® service plan: [www.emdmillipore.com/water-analytics-service](http://www.emdmillipore.com/water-analytics-service)



## visit our e-shop

All our products for water, food and environmental analytics are available online – day or night. For further details and easy shopping, please visit [www.sigma-aldrich.com](http://www.sigma-aldrich.com)



# Spectroquant® Move Colorimeters

Rapid, reliable results on-site

## Spectroquant® Move 100 Take your lab to the sample

**Spectroquant® Move 100** is made for rapid, reliable on-site water analysis. No delays, no risk of sample deterioration and no need for additional instruments. The compact, portable colorimeter covers every important parameter of drinking water and wastewater analysis in one instrument.

- Pre-programmed for over 100 parameters
- Wide choice of measuring ranges for accurate results
- Dust tight and waterproof according to IP 68 classification
- Secure results with simplified AQA and enhanced documentation



# get answers on the MOVE

## Spectroquant® Move Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH Simplify disinfection control

**Spectroquant® Move Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH** is built for easy disinfection control in field tests and process monitoring. The small device is automated for five essential parameters of disinfection control – chlorine, ozone, chlorine dioxide, cyanuric acid, and pH – based on Spectroquant® test kits.

- One instrument for all key parameters in disinfection control
- Dust tight and waterproof according to IP 68 classification
- Pre-programmed for high-quality Spectroquant® test kits
- Complete documentation for streamlined AQA and audits



# data transfer

Easy data transmission (to printer or PC) via the Spectroquant® Data Transfer infrared module.  
Order Number: 1.73633.0001



## Spectroquant® Move colorimeters

Ord. No.

Spectroquant® Move 100 colorimeter

1.73632.0001

Spectroquant® Move Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH colorimeter

1.73635.0001

## Technical data

Move 100    Move Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH

<b>Scope of delivery</b>	Instrument in light carrying case, 4 batteries, 3 round vials each 24- and 16-mm ø, 1 adapter for 16-mm vials, screw driver, guarantee certificate, certificate of compliance, instruction manual	■	■
<b>Display</b>	Backlit graphic-display	■	
	Backlit LCD (on keypress)		■
<b>Interfaces</b>	IR interface for data transfer	■	■
	RJ45 connector for internet updates	■	
<b>Optics</b>	LED, interference filter, photosensor, transparent measurement chamber	■	■
<b>Wavelength</b>	430, 530, 560, 580, 610 and 660 nm	■	
	530 nm		■
<b>Wavelength accuracy</b>	±1 nm	■	■
<b>Photometric accuracy</b>	1.000 Abs ±0.020 Abs		
	2.600 Abs ±0.052 Abs (± 2 % FS) (measured with standard solutions - T = 20 - 25°C)	■	
	1.000 ± 0.030 Abs		
	2.600 Abs ± 0.078 Abs (± 3 % FS) 3 % FS (measured with standard solutions - T = 20 - 25°C)		■
<b>Photometric resolution</b>	0.005 A	■	
	0.001 A		■
<b>Operation</b>	Acid and solvent resistant tactile film keyboard	■	■
<b>Power supply</b>	4 batteries (Type AA/LR6), capacity approx. 26 hours continuous use or 3,500 tests	■	
	4 batteries (Type AAA/LR03), capacity approx. 17 hours continuous use or 5,000 tests		■
<b>Weight</b>	approx. 450 g	■	
	approx. 260 g		■
<b>Dimensions</b>	approx. 210 x 95 x 45 mm (instrument)	■	
	approx. 395 x 295 x 106 mm (case)		
	approx. 155 x 75 x 35 mm (instrument)		
	approx. 340 x 275 x 83 mm (case)		■
<b>IP classification</b>	Dust and waterproof acc. to IP 68	■	■
<b>Storage capacity</b>	approx. 1,000 data sets	■	
	Internal ring memory for 16 data sets		■
<b>Comments</b>	CE-Conformity	■	■
<b>Accessories</b>	>> see page 44 Spectroquant® Accessories	■	■

# Spectroquant® Multy Colorimeter

Economical routine testing

## Spectroquant® Multy

Looking for a comprehensive yet inexpensive colorimeter for photometric water analysis? Spectroquant® Multy is pre-programmed for over 130 Spectroquant® test kits, covering all essential parameters in drinking water and wastewater.

**connection  
port** for printing and data transfer

**PROGRAMMED  
METHODS**

for drinking water and wastewater

**rechargeable  
batteries**

for complete mobility



### Spectroquant® Multy colorimeter

Ord. No. 1.73630.0001

<b>Scope of delivery</b>	Case, colorimeter, adapter unit for 16-mm round cells, lid for adapter unit, 7 rechargeable batteries, lithium battery (to ensure data storage), interface cable for connection to the PC or printer, 3 x 16 mm round cells, 3 x 24-mm round cells, screw driver (for battery compartment), 100 mL plastic beaker, operating manual
<b>Display</b>	Large format graphic display
<b>Optics</b>	6 temperature compensated LED with interference filters, internal reference channel (dual beam technology)
<b>Measuring wavelength</b>	430 nm, 530 nm, 560 nm, 580 nm, 610 nm, 660 nm
<b>Interface</b>	RS 232 for printer and PC connection
<b>Methods</b>	Programming of more than 130 methods for Spectroquant® cell and reagent tests, as well as physical measurements and pre-programmed applications
<b>Keypad</b>	Acid and solvent resistant, touch-sensitive with audible feedback
<b>Power supply</b>	7 Ni-MH-battery pack (AA/Mignon), charged whilst in the unit with integrated mains charger, integrated overload cut-out.
<b>Ambient conditions</b>	up to max. 90 % humidity (non condensing), approx. 5 – 40°C
<b>System check</b>	automatic selfcheck of the instrument
<b>Storage capacity</b>	for 1,000 data sets, with date, time and registration number
<b>CE approval</b>	yes
<b>Dimensions</b>	approx. 265 x 195 x 70 mm (unit), 440 x 370 x 140 mm (case)
<b>Accessories</b>	>> see page 44 Spectroquant® Accessories

# Spectroquant® NOVA Photometers

Convenient, accurate measurements



## Spectroquant® NOVA

Enjoy high measurement quality with great simplicity. Spectroquant® NOVA photometers pack maximum convenience into a minimum size.

- Bar-code reading of Spectroquant® tests for auto-recognition of cell size, method and calculation of results
- Compact and mobile for easy transportation between labs
- Variety of measuring ranges and parameters for accurate results
- Instrument-supported AQA

Spectroquant® NOVA photometers	Ord. No.
Spectroquant® NOVA 30 A	1.09748.0001
Spectroquant® NOVA 60	1.09751.0001
Spectroquant® NOVA 60 A	1.09752.0001

Technical data		NOVA 30 A	60	60 A
<b>Wavelength</b>	6 filters in array-technique with reference beam: 340, 445, 525, 550, 605, 690 nm, ±2 nm half band width 10 nm (30 nm for 340 nm)	■		
	12 filters in array-technique with refer. beam: 340, 410, 445, 500, 525, 550, 565, 605, 620, 665, 690, 820 nm, ±2 nm half band width 10 nm (30 nm for 340 nm)		■	■
<b>Photometric reproducibility</b>	0.001 A at 1.000 A	■	■	■
<b>Photometric resolution</b>	0.001 A	■	■	■
<b>Types of determination</b>	Absorbance, concentration, transmission	■	■	■
<b>Measuring range of absorbance</b>	-0.300 A to 3.200 A	■	■	■
<b>Lamp</b>	Tungsten halogen lamp, preset, no warm-up time, measuring time 2 s	■	■	■
<b>Date/Time</b>	real time clock integrated in the photometer	■	■	■
<b>Cell compartment</b>	16-mm round cells	■		
	10-, 20- and 50-mm rectangular cells and 16-mm round cells		■	■
<b>Test recognition</b>	AutoSelect function (bar-code reading system) automatic cell recognition	■	■	■
<b>Method-update</b>	via Internet	■	■	■
<b>AQA</b>	3 quality control modes	■	■	■
<b>Turbidity correction</b>	simultaneous multiwavelength measurement to correct turbidity	■	■	■
<b>Interface</b>	RS 232 C serial interface for printer and computer	■	■	■
<b>Methods</b>	Programming of more than 60 methods for Spectroquant® cell tests, as well as physical measurements and pre-programmed applications	■		
	Programming of more than 170 methods for Spectroquant® cell and reagent tests, as well as physical measurements and pre-programmed applications		■	■
<b>Storage capacity</b>	up to 500 results	■		
	up to 1,000 results		■	■
<b>Power supply</b>	100 – 240 V~, 50 – 60 Hz	■	■	■
<b>Temperature</b>	Storage: -25°C to +65°C, operations: +5°C to +40°C	■	■	■
<b>Allowable relative humidity</b>	Annual mean: ≤75 %, 30 days/year: 95 %, other days: 85 %	■	■	■
<b>Dimensions</b>	140 x 270 x 260 mm (H x D x W)	■	■	■
<b>Weight</b>	2.8 kg incl. battery	■		■
	2.3 kg	■	■	
<b>Special functions</b>	50 free programmable methods		■	■
<b>Accessories</b>	>> see page 44 Spectroquant® Accessories	■	■	■

# Spectroquant® Accessories

Economical routine testing



## Cells for Spectroquant® instruments

Product	Prove 100	Prove 300	Prove 600	NOVA	Multy	Move	Ord. No.
Empty 16-mm round cells with screw cap	■	■	■	■	■	■	1.14724.0001
Empty 24-mm round cells with screw caps					■	■	1.73650.0001
Rectangular cells 10-mm	■	■	■	■			1.14946.0001
Rectangular cells 20-mm	■	■	■	■			1.14947.0001
Rectangular cells 50-mm	■	■	■	■			1.14944.0001
Rectangular cells 100-mm			■				1.74011.0001
Rectangular cells quartz 10-mm	■	■	■	■			1.00784.0001
Semi-microcells 50 mm	■	■	■	■			1.73502.0001

## Accessories for Spectroquant® instruments

Product	Ord. No. for Prove	Ord. No. for NOVA	Ord. No. for Move
Case	1.73020.0001	1.09769.0001	included
Halogen lamp module	1.74010.0001 (for Prove 100)	1.09749.0001	
Power supply	1.74064.0001	1.09734.0001 1.09779.0001 (EU adapter) 1.20097.0001 (US adapter) 1.20347.0001 (UK adapter) 1.20497.0001 (AUS adapter)	4 batteries included
Positioning aid		1.00787.0001 (for 10 mm cells)	
Data transfer	No accessories needed	1.14964.0001 (PC software)	1.73633.0001 (unit, cable and software)
PC cable		1.14667.0001 (for serial bus)	1.73634.0001 (for updates)



**plug and prove**

Only for Spectroquant® Prove: Commercially available USB hubs, USB handheld bar-code scanners and PC keyboards can be connected via the USB port

# keep it clean!



## Reliable and residue-free cleaning with Extran®

Clean instruments and labware are essential for accurate measurements. Extran® is a reliable and residue-free cleaning agent of consistent composition, so you won't have to frequently modify your process and applications.

### Easy cleaning

- Thoroughly wash labware with water, then rinse with distilled water
- Use a dry cloth to wipe off any stains or marks on surfaces
- Remove grease marks by immersing the vessel in 2-5% Extran®, then rinse with distilled water

### Cleaning agents for cells and glass vessels

#### Extran® detergent MA 02

Ord. No. 1.07553.2500

Neutral, contains phosphates

pH of 2-5 % solutions approx. 7.2-7.5

#### Extran® detergent MA 05

Ord. No. 1.40000.2500

Alkaline, phosphate-free | Not for alkali-sensitive material such as aluminium

pH of a 2-5 % solution approx. 11.6-12.0

## ! cleaning validation

*The Spectroquant® surfactants (non-ionic) cell test (page 76) supports effective cleaning validation.*

# clean enough for chlorine testing?

## Why is it so important to rinse cells with sulfuric acid 25% for chlorine testing?

Reagent 2 of the total chlorine test contains potassium iodide, which has a very high affinity to glass surfaces, and will remain on the glass if only cleaned with distilled water. Due to the residual potassium iodide, results for free chlorine will be too high, and those for total chlorine will be too low.

### Our solution: Sulfuric acid 25%

Cleaning glassware when measuring total chlorine (Ord. No. 1.00597.0001 / 1.00599.0001): After each total chlorine determination, rinse the cell with sulfuric acid 25%, then several times with distilled water.



# Spectroquant® Prove Special applications

## Brewery methods

Determination	Measuring range	Method	Prove		
			100	300	600
<b>A</b> $\alpha$ Acids	0–80 mg/L	Own coloring	■	■	■
Anthocyanogens (Harris and Ricketts method)	0–100 mg/L	Acidic hydrolysis	■	■	■
<b>B</b> Bitterness – Beer (EBC method)	1–80 BU	UV-absorption		■	■
Bitterness – Wort (EBC method)	1–120 BU	UV-absorption		■	■
<b>C</b> Color (EBC method)	0.0–60.0 EBC Units	Own coloring	■	■	■
Copper (EBC method)	0.10–5.00 mg/L Cu	Cuprethol	■	■	■
<b>F</b> Flavonoids (EBC method)	3.0–200.0 mg/L	4-(Dimethylamino)-cinnamaldehyde	■	■	■
Free Amino Nitrogen (Beer/Wort)	0–400 mg/L	Ninhydrin	■	■	■
<b>I</b> Iso- $\alpha$ Acids	0–60 mg/L	UV -absorption		■	■
Iron (EBC method)	0.000–1.000 mg/L Fe	Ferrospectral®	■	■	■
Iron (EBC method)	0.000–0.800 mg/L Fe	Ferrospectral®	■	■	■
<b>N</b> Nickel (EBC method)	0.00–5.00 mg/L Ni	Dimethylglyoxime	■	■	■
<b>P</b> Photometric Iodine Test	0.00–0.80	Iodine	■	■	■
<b>R</b> Reducing Power, spectrophotometric	0–100%	DPI	■	■	■
<b>S</b> Steam-volatile Phenols Malt	0.00–3.00 mg/kg	Aminoantipyrine extractive	■	■	■
Beer	0.00–0.30 mg/kg				
<b>T</b> Thiobarbituric Acid Number (TAN)	0–250 TAN	Thiobarbituric acids	■	■	■
Total Carbohydrates (EBC method)	0.000–6.000 g/100 mL	Anthrone	■	■	■
Total Polyphenols (EBC method)	0–800 mg/L	Iron (III)	■	■	■
<b>V</b> Vicinal Diketones	0.00–1.00 mg/kg	Phenylenediamine	■	■	■



The new Spectroquant® Prove software package, “Analysis methods for the brewery industry”, contains all 21 methods required for complete beer analysis – from raw materials to finished product. The test procedures follow MEBAK (Mitteleuropäische Brautechnische Analysenkommission), EBC (European Brewery Convention) or ASBC (American Society of Brewing Chemists) methods.

To further support your analysis, the accompanying manual provides step-by-step instructions for reagent preparation, sample processing and analysis. The package also includes information about test solution stability and storage, which aren’t provided in the standard MEBAK method description.

## ANALYTICAL APPLICATION NOTES FINDER

Besides test kits, we also provide detailed application notes to support your analysis. Learn more on:  
[www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf) > Photometry





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### Chemical and physical applications

	Determination	Measuring range	Method	Prove		
				100	300	600
<b>A</b>	Ammonia, free	0.00–3.65 mg/L NH <sub>3</sub>	Indophenol blue	■	■	■
<b>B</b>	Bromate in water / drinking water	0.5–200 µg/L BrO <sub>3</sub>	3,3'-dimethylnaphtidine	■	■	■
<b>C</b>	Chlorophyll-a (DIN/ISO)	0–50,000 µg/L Chl-a, Phaeo	Analogous DIN 38412, ISO 10260	■	■	■
	Chlorophyll-a (APHA/ASTM)	0–50,000 mg/m <sup>3</sup> Chl-a, Phaeo	Analogous APHA 10200-H, ASTM D3731-87	■	■	■
	Chlorophyll-a, -b, -c	0–50,000 mg/m <sup>3</sup> Chl-a, Chl-b, Chl-c	Trichromatic method, analogous APHA 10200-H, ASTM D3731-87	■	■	■
	Cobalt in Water	0.5–10.0 mg/L Co	Nitroso-R-Salt	■	■	■
<b>M</b>	Mercury in water / wastewater	0.025–1.000 mg/L Hg	Michler's thioketone	■	■	■
<b>N</b>	Nitrate (UV)	0.0–7.0 mg/L NO <sub>3</sub> -N	Analogous to APHA 4500-NO <sub>3</sub> -B		■	■
<b>P</b>	Palladium in water / wastewater	0.05–1.25 mg/L Pd	Michler's thioketone	■	■	■
	Platinum in water / wastewater	0.10–1.25 mg/L Pt	1,2-phenyldiamine	■	■	■
<b>S</b>	Spectral Absorption Coefficient $\alpha(254)$	0.5–250 m <sup>-1</sup>	Physical measurement according DIN 38404, at 254 nm		■	■
	Spectral Absorption Coefficient $\alpha(436)$	0.5–250 m <sup>-1</sup>	Physical measurement according DIN 7887, at 436 nm	■	■	■
	Spectral Attenuation Coefficient $\mu(254)$	0.5–250 m <sup>-1</sup>	Physical measurement according DIN 38404, at 254 nm		■	■
	Suspended Solids	25–750 mg/L susp. solids	Physical measurement	■	■	■

### ICUMSA and oil determination

Spectroquant® Prove photometers offer special applications for testing the quality of palm oil, olive oil, or sugar, based on methods recommended by the relevant regulatory agencies. In addition to over 180 pre-programmed methods, we provide supplementary application software for more specific requirements in quality control. The packages ensure that you have accurate results in compliance with international standards.

	Determination	Measuring range	Method	Prove		
				100	300	600
<b>C</b>	Carotene Palm Oil	10–7,500 mg/kg $\beta$ -Car	Own coloring	■	■	■
<b>D</b>	DOBI Palm Oil	0.00–4.00 DOBI	UV-absorption		■	■
<b>K</b>	K232 Olive Oil	0.00–4.00 K <sub>232</sub>	UV-absorption		■	■
	K268 Olive Oil	0.00–4.00 K <sub>268</sub>	UV-absorption		■	■
	K270 Olive Oil	0.00–4.00 K <sub>270</sub>	UV-absorption		■	■
	delta K268 Olive Oil	-0.10–1.00 $\Delta K_{268}$	UV-absorption		■	■
	delta K270 Olive Oil	-0.10–1.00 $\Delta K_{270}$	UV-absorption		■	■
<b>I</b>	ICUMSA Color GS1/3-7	0–50,000 IU <sub>7.0</sub>	Own coloring	■	■	■
	ICUMSA Color GS2/3-9	0–600 IU <sub>7.0</sub>	Own coloring	■	■	■
	ICUMSA Color GS2/3-10	0–50 IU <sub>7.0</sub>	Own coloring	■	■	■
	ICUMSA Color GS9/1/2/3-8	0–20,000 IU <sub>7.0</sub>	Own coloring	■	■	■

# Spectroquant® Prove Special applications

## New color determinations

Spectroquant® Prove spectrophotometers support color determination in a variety of samples, such as beer, lubricants, oils or food products.

Determination	Description*	Prove		
		100	300	600
<b>A</b> ASTM Color	Determination of the color of a wide variety of petroleum products (lubricating oils, heating oils, diesel fuel oils, petroleum waxes)			
<b>C</b> Color (ASBC)	Determination of the color of brewery products according to ASBC (American Society of Brewing Chemists)			
Color (436)	Measurement at 436 nm, range 0.1-250 m <sup>-1</sup>	■	■	■
Color (525)	Measurement at 525 nm, range 0.1-250 m <sup>-1</sup>	■	■	■
Color (620)	Measurement at 620 nm, range 0.1-250 m <sup>-1</sup>	■	■	■
Color (410) (EN 7887)	Measurement at 410 nm, range 2-2,500 mg/L Pt	■	■	■
Color, Hazen	Physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2, at 340 nm, range 0.2 – 500 mg/L Pt, Pt/Co, Hazen, CU	■	■	■
Color, Hazen	Physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2, at 445 nm, range 0 – 1,000 mg/L Pt, Pt/Co, Hazen, CU	■	■	■
Color, Hazen	Physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2, at 455 nm, range 0 – 1,000 mg/L Pt, Pt/Co, Hazen, CU	■	■	■
Color, Hazen	Physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2, at 3465 nm, range 0 – 1,000 mg/L Pt, Pt/Co, Hazen, CU	■	■	■
C*ab colorfulness CIE 1976	Evaluation of color coordinates according to the CIELAB color space			
Color difference delta E*ab (CIE)	Evaluation of color differences according to the CIELAB color space			
Color difference delta L* (CIE)				
Color difference delta a* (CIE)				
Color difference delta b* (CIE)				
Color difference delta C*ab (CIE)				
Color difference delta E*ab (Hunter)	Evaluation of color differences according to the HunterLab color space			
Color difference delta L* (Hunter)				
Color difference delta a* (Hunter)				
Color difference delta b* (Hunter)				
Color difference delta C*ab (Hunter)				
<b>G</b> Gardner Color	Estimation of color by the Gardner color scale – clear, yellow-brown liquids, e.g. drying oils, varnishes, solutions of fatty acids, resins etc.			
<b>H</b> Hess-Ives color units	Spectrophotometric determination of the Hess-Ives color units			
<b>I</b> Iodine Color Number, lower range	Measurement at 340 nm, corresponds to DIN 6162 A, range 0.010 – 3.00	■	■	■
Iodine Color Number, higher range	Measurement at 445 nm, corresponds to DIN 6162 A, range 0.2 – 50.0	■	■	■
<b>K</b> Klett color	Spectrophotometric determination of Klett color comparable with the Klett-Summerson colorimeter			
<b>L</b> L*a*b CIE 1976	Evaluation of color coordinates according to CIELAB 1976			
L*u*v CIE 1976				
L * lightness CIE 1976				
L*a*b Hunter	Evaluation of color coordinates according to the HunterLab color space			

Determination	Description*	Prove 100 300 600
<b>S</b> Spectral Attenuation coefficient with turbidity correction	Determination of the spectral attenuation coefficient in the range of UV radiation of an unfiltered sample including turbidity correction	Q3 2017
Saybolt Color	Determination of the color of refined oils (undyed motor & aviation gasoline, jet propulsion fuels, naphthas, kerosene & petroleum waxes & pharmaceutical white oils)	Q1 2017
<b>T</b> Tint index	Determination of Tint index from instrumentally measured Color Coordinates according to ASTM E 313-15e1	Q3 2017
Transmittance	Spectrophotometric characterization of optically clear colored liquids	Q3 2017
<b>U</b> UV absorbing organic constituents	Spectrophotometric determination of UV absorbing organic constituents at 254 nm	Q3 2017
UV absorption	Spectrophotometric determination at 254 nm	Q3 2017
UV transmittance	Spectrophotometric determination at 254 nm	Q3 2017
<b>W</b> Whiteness index	Determination of Whiteness index from instrumentally measured Color Coordinates according to ASTM E 313-15e1	Q3 2017
<b>X</b> xyY color space (CIE color space)	Evaluation of color coordinates according to the CIELAB color space	Q3 2017
<b>Y</b> Yellowness index	Determination of Yellowness index from instrumentally measured Color Coordinates according to ASTM E 313-15e1	Q3 2017

\* Measuring ranges will be determined during application development

# stay up to date

## New anionic surfactants cell test – superior sensitivity, easier handling

Surfactants enter water systems due to extensive use in detergents and industrial processes. As they can be harmful for humans, animals and vegetation, authorities require regular wastewater testing and treatment to confirm that surfactant content is within limits. The three main classes of surfactants are anionic, cationic and nonionic. The anionic are the most challenging as they are only partly digested by bacteria during water treatment. For greater accuracy, the new Spectroquant® cell test for anionic surfactants offers higher sensitivity and easier handling.

### Update to the latest versions:

- Surfactants (anionic) Cell Test [Ord. No 1.02552.0001]
- Surfactants (cationic) Cell Test [Ord. No 1.01764.0001]
- Surfactants (nonionic) Cell Test [Ord. No 1.01787.0001]



# Spectroquant® Sample Preparation

Perfectly prepared

Our test kits already contain all the reagents you need for sample preparation and analysis, when decomposition is required. However, for some parameters digestion is not always required. Then you can choose our economical, reliable **Spectroquant® Crack Sets**. They contain only the digestion chemicals you need with clear, easy instructions. For optimal sample preparation, we also offer a range of **Spectroquant® thermoreactors**. They combine outstanding precision and speed to ensure thorough digestion.

**quick  
and easy**

sample preparation  
for analysis

**step  
by step**

instructions with  
no special training

**All the reagents  
you need** for digestion



# Spectroquant® Crack Sets

Total content determination

## Spectroquant® Crack Sets

We offer a choice of three Crack Sets for determining the total content of different parameters. Each set contains all reagents needed for digestion.



Crack Set **10**

Crack Set **10C**

Crack Set **20**

Spectroquant®	Crack Set 10 Ord. No. 1.14687.0001	Crack Set 10 C Ord. No. 1.14688.0001	Crack Set 20 Ord. No. 1.14963.0001
<b>Digestions</b>	100	25	90
<b>Sample preparation for determination of total content of</b>	Cd, Cr, Co, Fe, Pb, Ni, P, Zn	Cd, Cr, Co, Fe, Pb, Ni, P, Zn	Nitrogen
<b>Contents</b>	Digestion reagent Acid Neutralizing agent for pH adjustment	Digestion reagent prefilled 16 mm ø cells Acid Neutralizing agent for pH adjustment	Digestion reagent Lye
<b>Accessories</b>	Empty cells 16 mm ø with screw caps Ord. No. 1.14724.0001		Empty cells 16 mm ø with screw caps Ord. No. 1.14724.0001

# be sure

### Accurate analysis of all wastewater parameters with Spectroquant® test kits

Each country or region has different regulations and limits regarding wastewater parameters. Where can you get the test parameter you want with the exact limits you need? MilliporeSigma offers the perfect solution: convenient cell tests and economical reagent tests for all wastewater parameters. Combine our high-quality test kits with Spectroquant® Prove spectrophotometers for fast, easy and accurate analysis.

**Parameters:** Ammonium, COD, Nitrate, Nitrite, Nitrogen (total), Phosphorus (total), Lead, Cadmium, Chromium, Copper, Nickel, Chloride, Sulfate

Learn more on pages 58-79

# Spectroquant® Thermoreactors

Consistent, thorough digestion

Developed in practice for practice, **Spectroquant® thermoreactors** offer everything you need for perfect sample preparation: reliability, simplicity, safety and future compatibility. Choose from pre-installed programs to avoid errors in routine use, or program your own methods for complete flexibility.



**Flexible  
selection**

between standard and  
individual programs

**easy  
handling**

with our clear digestion guide

**two  
temperature zones  
in one**

instrument (TR 620)

## Spectroquant® thermoreactors offer 8 pre-installed digestion programs for routine use

Temperature	Time	Method
148°C	120 min	for COD
148°C	20 min	for COD (rapid digestion method)
150°C	120 min	for COD acc. to USEPA
120°C	120 min	for TOC
120°C	60 min	for total nitrogen, total contents of Cr, Cu, Ni, Pb, Cd, Fe, Zn and Ag
120°C	30 min	for AOX and total phosphorus, cyanide
100°C	60 min	
100°C	30 min	

A description of digestion procedures is provided in the instruction sheets included with the test kits. Special digestion variants can be downloaded from: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)



# 320



## Spectroquant® TR 320

Ord. No. 1.71200.0001

### Standard model for basic use

12 holes | 8 pre-installed programmes

# 420



## Spectroquant® TR 420

Ord. No. 1.71201.0001

### Advanced device for frequent use

24 holes | 8 pre-installed and 8 freely selectable programmes

# 620



## Spectroquant® TR 620

Ord. No. 1.71202.0001

### Two-in-one instrument for flexible use

2 x 12 holes | 8 pre-installed and 8 freely selectable programmes | 2 heating zones, which can be controlled separately

Technical data		Spectroquant® thermoreactors		
		TR 320	TR 420	TR 620
<b>Scope of delivery</b>	Incl. integrated protective hood for the determination of COD and TOC, as well as of total contents of cadmium, chromium, copper, cyanide, iron, lead, nickel, nitrogen, phosphorus, silver, and zinc.	■	■	■
<b>Display</b>	LCD display for temperature and time, desired and actual values for heating time and temperature continually shown in the LCD display	■	■	■
<b>Heater</b>	On/off display (the LED blinks red during the heating phase and is permanently on during the digestion phase), contact guard on the surface of the heating-block	■	■	■
<b>Functions</b>	8 pre-installed programs	■	■	■
	8 freely selectable programs		■	■
	Simultaneous digestion of 12 samples	■		
	Simultaneous digestion of 24 samples		■	■
	Free temperature and time selection		■	■
	Two separate temperature-selectable heating zones			■
	Thermosensor and PC cable available		■	■
	AQA documentation for control purposes		■	■
<b>Holes</b>	12 for cell tests ø 16 mm	■		
	24 for cell tests ø 16 mm		■	
	24 (2 x 12) for cell tests ø 16 mm			■
<b>Temperature selection</b>	100°C, 120°C, 148°C and 150°C ±1.0°C	■	■	■
	Room temperature–170°C ±1.0°C		■	■
<b>Controlling accuracy</b>	±1°C ±1 digit	■	■	■
<b>Timer</b>	0 – 180 min freely selectable		■	■
<b>Heating time</b>	8 temperature heating-time programs for simplest possible operation: 148°C (20 min or 120 min), 150°C (120 min), 120°C (30 min, 60 min or 120 min), 100°C (30 + 60 min) automatic power switch-off at the end of the heating time	■	■	■
<b>Mains version</b>	115 V~ / 230 V~, 50 Hz / 60 Hz convertible	■	■	■
<b>Dimensions</b>	180 x 245 x 292 mm (H x W x D)	■	■	■
<b>Weight</b>	2.85 kg	■		
	3.6 kg		■	■
<b>Optional accessories</b>	Thermosensor: heating-block temperature-monitoring option via integrated serial interface and control software for AQA, brass adapter with integrated Pt sensor fitting the holes incl. connector cable (for checking equipment)		■	■

<b>Thermosensor for thermoreactors TR 420/620</b>	<b>Ord. No. 1.71203.0001</b>
The thermosensor measures the current temperature in the bore of the thermoreactor and compares it with the specified temperature. The results can be transmitted to a PC for documentation purposes.	
<b>PC cable for thermoreactors TR 420/620</b>	<b>Ord. No. 1.71204.0001</b>



# Spectroquant® Test Kits

For swift, secure analysis, there's no better choice than Spectroquant® test kits. Consisting of validated, standard-compliant reagents, the kits are pre-programmed for use with Spectroquant® instruments to ensure rapid, reliable results. Thanks to their excellent quality, most of our kits conform to international standards, allowing you to test with absolute confidence.

# Be sensitive

Do you need to detect parameters in ultra low concentrations?  
With Spectroquant® Prove 600 and 100-mm cells, you can accurately measure the lowest analyte concentrations possible photometrically.



#### Super-sensitive test kits

**Iron Test** [Ord. No. 1.14761.0001]

0.0005–5.00 mg/L Fe | 10-, 20-, 50- and 100-mm cells

**Phosphate Test** [Ord. No. 1.14848.0007]

0.0005–5.00 mg/L PO<sub>4</sub>-P | 10-, 20-, 50- and 100-mm cells

**Silicate (Silicic Acid) Test** [Ord. No. 1.01813.0007]

0.00025 – 0.5000 mg/L SiO<sub>2</sub> | 50- and 100-mm cells

## secure analysis

with validated,  
standard-compliant reagents

## bar-code identification

for fast, simple operation

## rapid, reliable results

though pre-programmed blank values

### Reagent test kits

- Contain highly stable, ready-to-use reagent mixtures
- AutoSelector uses bar-code system to automatically select the right analysis method in Spectroquant® NOVA and Prove photometers
- Measuring range can be easily varied by selecting the appropriate cell format
- Package insert explains reaction principle, working procedures and application areas
- Long shelf life of up to three years at room temperature



### Cell test kits

- Contain virtually all reagents necessary for the analysis
- Spectroquant® NOVA and Prove photometers automatically recognize the test and select the correct analysis method
- Test kit label provides all important information regarding contents, safety and batch number
- Package insert explains reaction principle, working procedures and application areas
- Long shelf life of up to three years at room temperature



# Spectroquant® Test Kits

Regulations and approved methods

## Testing water according to national regulations or USEPA methods

Since contaminated water is harmful for humans and the environment, regulatory agencies, like the USEPA (U.S. Environmental Protection Agency), require the use of official methods when testing drinking water and wastewater. To support your analysis, many Spectroquant® test kits are developed according to approved USEPA or ISO standards. This ensures that you have reliable, reproducible results that are in compliance with regulations.

# USEPA

**USEPA-approved:** Methods are identical to those from USEPA methods; a copy of the USEPA acceptance letter is available upon request.

**USEPA-equivalent:** The test kit is validated according to defined procedures; the chemistry is equivalent to USEPA or APHA methods.

**USEPA**

Our "USEPA approved" stamp will help you easily find the right Spectroquant® test kits in the following tables.

The tables also provide references to norms and standards on approved and equivalent methods.



For further information please visit:  
[www.emdmillipore.com/usepa](http://www.emdmillipore.com/usepa)

**! we are the first  
EUROPEAN COMPANY**

*to offer a broad range of approved photometric test kits for drinking water, wastewater and environmental analysis.*

## Do you monitor the quality of drinking water?

The following table provides a comparison of a selection of parameters for concentrations listed by the WHO, European Union and USEPA.

Parameter	WHO Guideline	EU	USEPA
	2011	Oct. 2015	May 2009
<b>A</b> Aluminium (Al)	not provided	0.2 mg/L	0.05–0.2 mg/L
Ammonium (NH <sub>4</sub> )	not provided	0.5 mg/L	
Antimony	0.02 mg/L	0.005 mg/L	0.006 mg/L
Arsenic (As)	0.01 mg/L	0.01 mg/L	0.01 mg/L
<b>B</b> Barium (Ba)	0.7 mg/L		2 mg/L
Boron (B)	2.4 mg/L	1 mg/L	
Bromate	0.01 mg/L	0.01 mg/L	0.01 mg/L
<b>C</b> Cadmium (Cd)	0.003 mg/L	0.005 mg/L	0.005 mg/L
Chloride (Cl <sup>-</sup> )	not provided	250 mg/L	250 mg/L
Chlorine (Cl <sub>2</sub> ) free	0.2 mg/L (minimal residual concentration at the point of delivery)		4 mg/L
Chlorine (total)	0.2–1 mg/L		
Chlorine dioxide (ClO <sub>2</sub> )	not provided		0.8 mg/L
Chromium (Cr)	0.05 mg/L	0.05 mg/L	0.1 mg/L
Coliforms (total) (organisms/100 mL)	0	0	5 %
Color	acceptable	acceptable	15 color units
Conductivity		2500 µS/cm	
Copper (Cu)	2 mg/L	2 mg/L	1 mg/L
Cyanides (Cy)	not provided	0.05 mg/L	0.2 mg/L
<b>F</b> Fluoride (F <sup>-</sup> )	1.5 mg/L	1.5 mg/L	4 mg/L
<b>I</b> Iron (Fe)	not provided	0.2 mg/L	0.3 mg/L
<b>L</b> Lead (Pb)	0.01 mg/L	0.01 mg/L	0.015 mg/L
<b>M</b> Manganese (Mn)	not provided	0.05 mg/L	0.05 mg/L
Mercury (Hg)	0.006 mg/L	0.001 mg/L	0.002 mg/L
Monochloramines (as Cl <sub>2</sub> )	3 mg/L		
Molybdenum (Mo)	not provided		
<b>N</b> Nickel (Ni)	0.07 mg/L	0.02 mg/L	
Nitrates	50 mg/L (as NO <sub>3</sub> <sup>-</sup> )	50 mg/L (as NO <sub>3</sub> )	10 mg/L (as N)
Nitrites	3 mg/L (as NO <sub>2</sub> <sup>-</sup> )	0.5 mg/L (as NO <sub>2</sub> )	1 mg/L (as N)
<b>P</b> pH	not provided	6.5–9.5	6.5–8.5
<b>S</b> Selenium (Se)	0.04 mg/L	0.01 mg/L	0.05 mg/L
Silver (Ag)	not provided		0.1 mg/L
Sodium (Na)	not provided	200 mg/L	
Sulfate (SO <sub>4</sub> )	not provided	250 mg/L	250 mg/L
<b>T</b> Total Dissolved Solids (TDS)	not provided		500 mg/L
Trihalomethans (total)	Chloroform: 0.3 mg/L Bromoform: 0.1 mg/L Dibromochloromethane (DBCM): 0.1 mg/L Bromodichloromethane (BDCM): 0.06 mg/L	0.1 mg/L	0.08 mg/L

**WHO** Guidelines for Drinking Water Quality, 4<sup>th</sup> edition (**not provided** means that the WHO has not provided guidelines for the parameter, as it is not found at levels posing a health concern in drinking water)

**EU** Drinking Water Directive of the European Union (Council Directive 98/83/EC), consolidated with the latest amendments of October 2015

**USEPA** National Primary Drinking Water Regulations and Secondary Drinking Water Standards, May 2009

# Spectroquant® Test Kits

## Parameters A

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>A</b> Absorbance	-3.300 – 3.300 A	-0.300 – 3.000 A	-2.600 – 2.600 A	-2.600 – 2.600 A	-	-	
Acid Capacity Cell Test to pH 4.3 (total alkalinity) <sup>A)</sup>	0.40 – 8.00 mmol/L	0.40 – 8.00 mmol/L	0.40 – 8.00 mmol/L	0.40 – 8.00 mmol/L	CaCO <sub>3</sub>	120	1.01758.0001
ADMI Color measurement							
Alkalinity (total)							
Aluminium Cell Test	0.02 – 0.50	0.02 – 0.50	0.05 – 0.50	0.05 – 0.50	Al	25	1.00594.0001
Aluminium Test	0.020 – 1.20	0.020 – 1.20	20 – 700 µg/L	20 – 700 µg/L	Al	350	1.14825.0001
Ammonia, free	0.000 – 3.0 0.000 – 3.65	-	-	-	NH <sub>3</sub> -N NH <sub>3</sub>	-	-
<b>USEPA</b> Ammonium Cell Test <sup>B.3)</sup>	0.010 – 2.000 0.013 – 2.571 0.010 – 2.000 0.012 – 2.432	0.010 – 2.000 0.01 – 2.58	10 – 2.000 µg/L 10 – 2.576 µg/L	10 – 2.000 µg/L 10 – 2.576 µg/L	NH <sub>4</sub> -N NH <sub>4</sub> NH <sub>3</sub> -N NH <sub>3</sub>	25	1.14739.0001
<b>USEPA</b> Ammonium Test <sup>B.3)</sup>	0.010 – 3.00 0.013 – 3.86 0.010 – 3.00 0.016 – 3.65	0.010 – 3.00 • 0.013 – 3.86 •	0.02 – 1.30 0.03 – 1.67	0.02 – 1.30 0.03 – 1.67	NH <sub>4</sub> -N NH <sub>4</sub> NH <sub>3</sub> -N NH <sub>3</sub>	250 500	1.14752.0002 1.14752.0001
<b>USEPA</b> Ammonium Cell Test <sup>B.3)</sup>	0.20 – 8.00 0.26 – 10.30 0.20 – 8.00 0.24 – 9.73	0.20 – 8.00 0.26 – 10.30	0.20 – 8.00 0.26 – 10.30	0.20 – 8.00 0.26 – 10.30	NH <sub>4</sub> -N NH <sub>4</sub> NH <sub>3</sub> -N NH <sub>3</sub>	25	1.14558.0001
<b>USEPA</b> Ammonium Cell Test <sup>B.3)</sup>	0.5 – 16.0 0.6 – 20.6 0.5 – 16.0 0.6 – 19.5	0.5 – 16.0 0.6 – 20.6	-	-	NH <sub>4</sub> -N NH <sub>4</sub> NH <sub>3</sub> -N NH <sub>3</sub>	25	1.14544.0001
<b>USEPA</b> Ammonium Test <sup>B.3)</sup>	2.0 – 150 2.6 – 193 2.0 – 150 2.4 – 182	2.0 – 150 • 2.6 – 193 •	1.0 – 50.0 1.3 – 64.4	1.0 – 50.0 1.3 – 64.4	NH <sub>4</sub> -N NH <sub>4</sub> NH <sub>3</sub> -N NH <sub>3</sub>	100	1.00683.0001
<b>USEPA</b> Ammonium Cell Test <sup>B.3)</sup>	4.0 – 80.0 5.2 – 103.0 4.0 – 80.0 4.9 – 97.3	4.0 – 80.0 5.2 – 103.0	4.0 – 80.0 5.2 – 103.0	4.0 – 80.0 5.2 – 103.0	NH <sub>4</sub> -N NH <sub>4</sub> NH <sub>3</sub> -N NH <sub>3</sub>	25	1.14559.0001
Antimony	0.10 – 8.00	0.10 – 8.00	-	-	Sb	-	-
AOX Cell Test	0.05 – 2.50	0.05 – 2.50	0.05 – 2.50	0.05 – 2.50	AOX	25	1.00675.0007
AOX Sample Preparation Set	-	-	-	-	-	25	1.00677.0001
AOX Enrichment Set	-	-	-	-	-	2	1.00678.0001

A. The cell test contains three 16 mm cells with a bar-code label. After measurement, the cells can be emptied and cleaned for subsequent measurements. | B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | • Only with NOVA 60



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Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
own coloring	physical measurement	-	10, 20, 50	-	
Indicator	-	4.0 + 1.0 + 0.5	-	±0.29 mmol/L	2, 5, 9, 10, 11, 13, 15, 18
	see Color, ADMI				
	see Acid Capacity Cell Tests to pH 4.3				
Chromazurol S	analogous APHA 3500-Al B, DIN ISO 10566	0.25 + 6.0	-	±0.02	1, 6, 8, 9, 11, 13, 15, 16, 17, 18
Chromazurol S	analogous APHA 3500-Al B, DIN ISO 10566	0.25 + 1.2 + 5.0	10, 20, 50	±0.009	1, 6, 9, 11, 13, 15, 16, 17, 18
-	Application, measurement of free ammonia under consideration of the pH and temperature of the sample after spectrophotometric determination of the ammonium content, additionally required 1.14752	0.6 + 5.0	10, 20, 50	-	2, 9, 13, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	5.0	-	±0.050	1, 2, 5, 9, 11, 12, 13, 15, 17, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.6 + 5.0	10, 20, 50	±0.016	1, 2, 5, 9, 11, 12, 13, 15, 16, 17, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	1.0	-	±0.19	1, 2, 5, 6, 8, 9, 11, 12, 13, 15, 16, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.5	-	±0.4	1, 6, 8, 11, 13, 16, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.1 + 0.2 + 5.0	10	±1.7	1, 4, 8, 9, 12, 13, 16, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.1	-	±1.9	1, 4, 8, 12, 13, 16, 18
Brillant green	Application, see more information in Prove and NOVA manual	4.0 + 1.0 + 5.0	10	-	11, 18
Iron(III)-thiocyanate	adsorption analogous EN ISO 9562	0.2 + 1.0 + 7.0	-	±0.20	5, 8, 9, 10, 11, 13, 15, 18
-	additionally required for AOX measurement	-	-	-	
-	for multiple use, additionally required for AOX measurement	-	-	-	

### Areas of application:

3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater
5 Boiler water, cooling water			

# Spectroquant® Test Kits

## Parameters A-C

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>A</b> AOX Standard 0.2 – 2.0 mg/L	–	–	–	–	–	8 – 16	1.00680.0001
Arsenic Test	0.001 – 0.100	0.001 – 0.100 •	5 – 100 µg/L	5 – 100 µg/L	As	30	1.01747.0001
Arsenic reagent 2: Sulfuric acid 95 – 97 % for analysis EMSURE® ISO	–	–	–	–	–	50	1.00731.1000
Arsenic reagent 7: Zinc granular for analysis, particle size about 3 – 8 mm EMSURE® ISO	–	–	–	–	–	27	1.08780.0500
Absorption Tube for Arsenic with ground joint NS29	–	–	–	–	–	1	1.73501.0001
<b>B</b> BOD Cell Test <sup>A)</sup>	0.5 – 3000	0.5 – 3000	0.5 – 3000	0.5 – 3000	BOD	50	1.00687.0001
BOD Nutrient Salt Mixture (with allyl thiourea)	–	–	–	–	–	12 L	1.00688.0001
BOD (Oxygen) Reaction bottle	–	–	–	–	–	1	1.14663.0001
BOD Standard 210 ±20 mg/L	–	–	–	–	–	10 L	1.00718.0001
Boron Test	0.050 – 0.800	0.050 – 0.800	–	–	B	60	1.14839.0001
Boron Cell Test	0.05 – 2.00	0.05 – 2.00	0.05 – 2.00	0.05 – 2.00	B	25	1.00826.0001
Bromate	0.5 – 200 µg/L <sup>D)</sup> 1.0 – 200 µg/L <sup>E)</sup>	0.003 – 0.120	–	–	BrO <sub>3</sub>	–	–
Bromine Test	0.020 – 10.00	0.020 – 10.00	0.10 – 5.00	0.10 – 5.00	Br <sub>2</sub>	200	1.00605.0001
<b>C</b> Cadmium Test <sup>C)</sup>	0.0020 – 0.500	0.0020 – 0.500 •	5 – 500 µg/L	5 – 500 µg/L	Cd	55	1.01745.0001
Cadmium Cell Test <sup>C)</sup>	0.025 – 1.000	0.025 – 1.000	25 – 1.000 µg/L	25 – 1.000 µg/L	Cd	25	1.14834.0001
Calcium Test	0.20 – 4.00	0.20 – 4.00	–	–	Ca	100	1.00049.0001
Calcium Test	1.0 – 15.0	1.0 – 15.0	5 – 160	5 – 160	Ca	100	1.14815.0001
	1.4 – 21.0	1.4 – 21.0	7 – 224	7 – 224	CaO		
	2.5 – 37.5	2.5 – 37.5	13 – 400	13 – 400	CaCO <sub>3</sub>		
	5 – 160	5 – 160			Ca		
	7 – 224	7 – 224			CaO		
	12 – 400	12 – 400			CaCO <sub>3</sub>		

A. The cell test contains three 16 mm cells with a bar-code label. After measurement, the cells can be emptied and cleaned for subsequent measurements. | C. For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | D. With Prove 600. | E. With Prove 100 and 300. | • Only with NOVA 60





# BROMATE BONUS

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And for more information, visit:  
[www.emdmillipore.com/bromate](http://www.emdmillipore.com/bromate)

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
-	for 8 – 16 quality tests, analogous DIN EN ISO 9562	5.0 / 10.0	-	-	5, 8, 9, 10, 11, 13, 15, 18
Silver DDTC	analogous EPA 206.4, APHA 3500-As B, ASTM D2972-08A	1.0 + 5.0 + 20 (+ 350)	10, 20	±0.003	5, 8, 9, 10, 11, 13, 15, 18
-	additionally required for Arsenic measurement	-	-	-	
-	additionally required for Arsenic measurement	-	-	-	
-	for multiple use, additionally required for Arsenic measurement	-	-	-	
mod. Winkler method	-	-	-	±0.5	2, 8, 9, 10, 11, 13, 16, 18
-	for 12 x 1 L nutrient salt solution, additionally required for BOD measurement, anal. DIN EN 1899	20	-	-	
-	4 bottles are necessary for 1 determination, 6 for 2, 8 for 3 etc.	-	-	-	
-	for 10 x 1 L standard solution, analogous DIN EN 1899	-	-	-	
Rosocyanine	analogous EPA 212.3, ASTM D3082-09, APHA 4500-B B	0.5 + 0.8 + 1.0 + 1.5 + 5.0 + 6.0	10	±0.030	1, 9, 11, 13, 15, 18
Azomethine H	analogous DIN 38405-17	1.0 + 4.0	-	±0.09	1, 9, 11, 13, 15, 16, 18
3,3'- Dimethyl-naphtidine	Application, see more information in Prove and NOVA manual	10 + 0.10 + 0.20	50, 100		7, 9, 13, 15
DPD	-	10	10, 20, 50	±0.047	5, 7, 9, 17, 18
Cadion derivative	-	0.2 + 1.0 + 10	10, 20, 50	±0.0039	5, 8, 9, 10, 11, 13, 15, 18
Cadion derivative	-	0.2 + 5.0	-	±0.025	5, 8, 9, 10, 11, 13, 15, 18
Phthalein derivate	-	0.5 + 5.0	10	±0.11	2, 3, 5, 9, 11, 12, 13
Glyoxalbis-hydroxyanil	for determinations in the low measuring range see manual NOVA / Prove	0.5 + 5.0	10	±1.8	1, 2, 5, 6, 9, 13, 15, 16,
		0.10 + 5.0	10, 20	±3	

<b>Areas of application:</b>	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater

# Spectroquant® Test Kits

## Parameters C

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
 Calcium Cell Test	10 – 250	10 – 250	10 – 250	10 – 250	Ca	25	1.00858.0001
	14 – 350	14 – 350	14 – 350	14 – 350	CaO		
	25 – 624	25 – 624	25 – 625	25 – 625	CaCO <sub>3</sub>		
Carbohydrazide							
Chloride Test	0.10 – 5.00	0.10 – 5.00	0.50 – 5.00	0.50 – 5.00	Cl	100	1.01807.0007
Chloride Cell Test	0.5 – 15.0	0.5 – 15.0	0.5 – 15.0	0.5 – 15.0	Cl	25	1.01804.0007
Chloride Test	2.5 – 250	2.5 – 250 •	10 – 250	10 – 250	Cl	100 175	1.14897.0007 1.14897.0008
Chloride Cell Test	5 – 125	5 – 125	5 – 125	5 – 125	Cl	25	1.14730.0007
 Chlorine Test (free chlorine) <sup>B.2)</sup>	0.010 – 6.00	0.010 – 6.00 •	0.02 – 6.00	0.02 – 6.00	Cl <sub>2</sub>	200 1,200	1.00598.0002 1.00598.0001
 Chlorine Cell Test <sup>A)</sup> (free chlorine) <sup>B.2)</sup>	0.03 – 6.00	0.03 – 6.00	0.05 – 5.00	0.05 – 5.00	Cl <sub>2</sub>	200	1.00595.0001
 Chlorine Test (total chlorine) <sup>B.3)</sup>	0.010 – 6.00	0.010 – 6.00 •	0.02 – 6.00	0.02 – 6.00	Cl <sub>2</sub>	200 1200	1.00602.0001 1.00602.0002
 Chlorine Test 100 tests free chlorine + 100 tests chlorine (total) <sup>B.3)</sup>	0.010 – 6.00	0.010 – 6.00 •	0.02 – 6.00	0.02 – 6.00	Cl <sub>2</sub>	200	1.00599.0001
 Chlorine Cell Test <sup>A)</sup> 100 tests free chlorine + 100 tests chlorine (total) <sup>B.3)</sup>	0.03 – 6.00	0.03 – 6.00	0.05 – 5.00	0.05 – 5.00	Cl <sub>2</sub>	200	1.00597.0001
Chlorine Reagent Cl <sub>2</sub> -1 (liquid) <sup>F)</sup>	0.03 – 6.00	0.03 – 6.00	0.02 – 6.00	0.02 – 6.00	Cl <sub>2</sub>	200	1.00086.0001
Chlorine Reagent Cl <sub>2</sub> -2 (liquid) <sup>F)</sup>	0.03 – 6.00	0.03 – 6.00	0.02 – 6.00	0.02 – 6.00	Cl <sub>2</sub>	400	1.00087.0001
Chlorine Reagent Cl <sub>2</sub> -3 (liquid) <sup>F)</sup>	0.03 – 6.00	0.03 – 6.00	0.02 – 6.00	0.02 – 6.00	Cl <sub>2</sub>	600	1.00088.0001
Cells and accessories for the photometric chlorine measurement with liquid reagents 1.00086, 1.00087 and 1.00088	–	–	–	–	Cl <sub>2</sub>	25	1.00089.0001
 Chlorine Dioxide Test	0.020 – 10.00	0.020 – 10.00 •	0.05 – 10.00	0.05 – 10.00	ClO <sub>2</sub>	200	1.00608.0001
Chlorophyll-a and Phaeophytin-a	–	–	–	–	Chl-a Phaeo	–	–
Chlorophyll-a, -b, -c	–	–	–	–	Chl-a Chl-b Chl-c	–	–

A. The cell test contains three 16 mm cells with a bar-code label. After measurement, the cells can be emptied and cleaned for subsequent measurements. | B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | F. Combination for free or total chlorine, see comment cells and accessories Ord. No. 1.00089.0001. | • Only with NOVA 60

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Phthalein complexone	-	0.5 + 1.0	-	±9	1, 2, 5, 6, 9, 13, 15
	see Oxygen Scavengers Test				
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	0.20 + 10	50	±0.10	2, 5, 6, 9, 12, 13, 15, 18
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	0.25 + 10	-	±0.3	2, 5, 6, 9, 12, 13, 15, 18
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	1.0 + 5.0 + 0.5	10	±1.0	1, 2, 5, 6, 8, 9, 10, 12, 13, 15, 16, 18
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	0.5 + 1.0	-	±5	1, 2, 5, 6, 8, 9, 10, 12, 13, 15, 16, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	10, 20, 50	±0.034	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	5.0	-	±0.15	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	10, 20, 50	±0.032	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	10, 20, 50	±0.032	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	5.0	-	±0.11	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	16, 50	±0.036	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	16, 50	±0.036	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	16, 50	±0.036	2, 5, 7, 9, 13, 17, 18
DPD	additionally required for Chlorine Reagent Cl <sub>2</sub> -1, Cl <sub>2</sub> -2, Cl <sub>2</sub> -3 for free chlorine: Cl <sub>2</sub> -1 and Cl <sub>2</sub> -2 for total chlorine: Cl <sub>2</sub> -1, Cl <sub>2</sub> -2 and Cl <sub>2</sub> -3 Measuring range of NOVA 30: 0.03 – 6.00 mg/L Cl <sub>2</sub>	-	-	-	
DPD	analogous APHA 4500-ClO <sub>2</sub> D, DIN 38408-5	10	10, 20, 50	±0.045	5, 7, 9, 15, 17
-	Application on Prove, analogous APHA 10200 H, ASTM D3731-87, DIN 38412, ISO 10260	-	10, 20, 50	-	1, 2, 13
Trichromatic Method	Application on Prove, analogous APHA 10200 H, ASTM D3731-87	-	10, 50	-	1, 2, 13

<b>Areas of application:</b>	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater

# Spectroquant® Test Kits

## Parameters C

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>C</b> Chromate Test <sup>C</sup> for the determination of chromium (VI)	0.010 – 3.00 0.02 – 6.69	0.010 – 3.00 • 0.02 – 6.69	10 – 1.400 µg/L 22 – 3.123 µg/L	10 – 1.400 µg/L 22 – 3.123 µg/L	Cr CrO <sub>4</sub>	250	1.14758.0001
<b>USEPA</b> Chromate Cell Test for the determination of chromium (VI) and chromium (total) <sup>B.1)</sup>	0.05 – 2.00 0.11 – 4.46	0.05 – 2.00 0.11 – 4.46	0.05 – 2.00 0.11 – 4.46	0.05 – 2.00 0.11 – 4.46	Cr CrO <sub>4</sub>	25	1.14552.0001
Chromium in electroplating baths (inherent color)	4.0 – 400 g/L	4.0 – 400 g/L	–	–	CrO <sub>3</sub>	–	–
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	4.0 – 40.0	4.0 – 40.0	–	–	COD	25	1.14560.0007
<b>USEPA</b> COD Cell Test	5.0 – 80.0	5.0 – 80.0	5.0 – 80.0	5.0 – 80.0	COD	25	1.01796.0007
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	10 – 150	10 – 150	10 – 150	10 – 150	COD	25	1.14540.0007
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	15 – 300	15 – 300	15 – 300	15 – 300	COD	25	1.14895.0001
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	25 – 1,500	25 – 1,500	25 – 1,500	25 – 1,500	COD	25	1.14541.0007
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	50 – 500	50 – 500	50 – 500	50 – 500	COD	25	1.14690.0001
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	300 – 3,500	300 – 3,500	300 – 3,500	300 – 3,500	COD	25	1.14691.0007
<b>USEPA</b> COD Cell Test <sup>B.1)</sup>	500 – 10,000	500 – 10,000	500 – 10,000	500 – 10,000	COD	25	1.14555.0007
<b>USEPA</b> COD Cell Test	5,000 – 90,000	5,000 – 90,000	5,000 – 90,000	5,000 – 90,000	COD	25	1.01797.0007
COD Cell Test for seawater / high chloride contents	5.0 – 60.0	5.0 – 60.0	5.0 – 60.0	5.0 – 60.0	COD	25	1.17058.0007
COD Cell Test for seawater / high chloride contents	50 – 3,000	50 – 3,000	50 – 3,000	50 – 3,000	COD	25	1.17059.0007
COD Cell Test for seawater / chloride: <b>Absorption tube</b>	–	–	–	–		1 piece	1.15955.0001
COD Cell Test for seawater / chloride: <b>Sodalime</b>	–	–	–	–		500 g 2,500 g	1.06733.0501 1.06733.2500
COD Cell Test for seawater / chloride: <b>Sulfuric Acid for COD determ.</b>	–	–	–	–		1 L	1.17048.1000

B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | C. For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | • Only with NOVA 60



# NO Spectroquant® photometer?

To use Spectroquant® test kits with other photometer brands, download our free programming data from: [www.emdmillipore.com/test-kits](http://www.emdmillipore.com/test-kits)

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Diphenylcarbazide	analogous APHA 3500-Cr B, DIN 38405-24	5.0	10, 20, 50	±0.012	2, 5, 6, 8, 9, 10, 11, 13, 14, 15, 16, 18
Diphenylcarbazide	analogous APHA 3500-Cr B, DIN 38405-24	5.0 (+10)	-	±0.04	2, 5, 6, 8, 10, 11, 13, 14, 16, 18
-	Application, see more information in Prove and NOVA manual	5.0 + 4.0	10, 20, 50	-	10
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	3.0	-	±1.5	2, 5, 6, 9, 11, 13, 15, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	-	±1.8	2, 6, 5, 9, 11, 13, 15, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	3.0	-	±7	2, 5, 6, 11, 13, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	-	±8	2, 5, 6, 11, 13, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	3.0	-	±29	2, 8, 10, 11, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	-	±13	2, 8, 10, 11, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	-	±63	8, 10, 11, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	1.0	-	±143	1, 3, 8, 10, 11, 12, 14, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	0.1	-	±1,151	1, 3, 8, 10, 11, 12, 14, 16, 18
Oxidation with chromosulfuric acid, determination as chromate	chloride depletion method corresponds to DIN 38409-41-2, method corresponds to DIN ISO 15705, analogous EPA 410.4, APHA 5220 D and ASTM D1252-06 B	20 + 25 + 5.0	-	±3.0	2, 3, 4, 6, 8, 10, 11, 13, 16, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	chloride depletion method corresponds to DIN 38409-41-2, method corresponds to DIN ISO 15705, analogous EPA 410.4, APHA 5220 D and ASTM D1252-06 B	20 + 25 + 3.0	-	±44	2, 3, 4, 6, 8, 10, 11, 13, 16, 18
-	additionally required for COD Cell Test for seawater / high chloride contents	-	-	-	
-	additionally required for COD Cell Test for seawater / high chloride contents	-	-	-	
-	additionally required for COD Cell Test for seawater / high chloride contents	-	-	-	

- Areas of application:**
- |                                  |                                      |                               |                   |
|----------------------------------|--------------------------------------|-------------------------------|-------------------|
| 3 Beverages                      | 7 Disinfection control               | 11 Environment                | 15 Mineral water  |
| 4 Biotechnology, fermenter       | 8 Disposal drainage water            | 12 Food testing               | 16 Seawater       |
| 1 Agriculture                    | 9 Drinking water                     | 13 Groundwater, surface water | 17 Swimming pools |
| 2 Aquaculture                    | 10 Electroplating surface refinement | 14 Milk dairy products        | 18 Wastewater     |
| 5 Boiler water, cooling water    |                                      |                               |                   |
| 6 Construction-material industry |                                      |                               |                   |

# Spectroquant® Test Kits

## Parameters C

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>C</b> COD Cell Test (Hg free)	10 – 150	10 – 150	10 – 150	10 – 150	COD	25	1.09772.0001
COD Cell Test (Hg free)	100 – 1.500	100 – 1.500	100 – 1.500	100 – 1.500	COD	25	1.09773.0007
Color, ADMI	2.0 – 500	–	–	–	–	–	–
Color, Hazen	0.2 – 500	0.2 – 500 •	–	–	Pt, Pt/Co, Hazen, CU	–	–
Color, Hazen	0 – 1.000 (at 445, 455, 465 nm)	0 – 1.000 • (at 445 nm)	0 – 1.000 (at 430 nm)	25 – 1.000 (at 430 nm)	Pt, Pt/Co, Hazen, CU	–	–
Color, Spectral Absorption Coefficient	0.1 – 250 m <sup>-1</sup>	0.1 – 50.0 m <sup>-1</sup> •	–	–	–	–	–
Color, true color	2 – 2.500	–	–	–	Pt, Pt/Co, CU	–	–
Copper Test <b>C</b>	0.02 – 6.00	0.02 – 6.00 •	0.10 – 6.00	0.10 – 6.00	Cu	250	1.14767.0001
Copper Cell Test <b>C</b>	0.05 – 8.00	0.05 – 8.00	0.05 – 8.00	0.05 – 8.00	Cu	25	1.14553.0001
Copper in electroplating baths (inherent color)	2.0 – 80.0 g/L	2.0 – 80.0 g/L	–	–	Cu	–	–
Cyanide Test (free and readily liberated cyanide)	0.0020 – 0.500	0.0020 – 0.500 •	5 – 200 µg/L	5 – 200 µg/L	CN	100	1.09701.0001
<b>USEPA</b> Cyanide Cell Test (free and readily liberated cyanide) <b>B.1)</b>	0.010 – 0.500	0.010 – 0.500	10 – 350 µg/L	10 – 350 µg/L	CN	25	1.14561.0001
Cyanide Cell test (free cyanide)	0.010 – 0.500	0.010 – 0.500	10 – 350 µg/L	10 – 350 µg/L	CN	25	1.02531.0001
Cyanuric Acid Test	2 – 160	2 – 160 •	2 – 160	2 – 160	Cyanuric acid	100	1.19253.0001



## cyanide okay?

Need to just check free cyanide in water?  
Our cell tests speeds up your time to result with only 2 steps and has fewer reagents, so it lowers your costs and protects the environment.

**B.** This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | **C.** For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | • Only with NOVA 60

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Oxidation with chromosulfuric acid, determination as chromate	-	2.0	-	±8	9, 11, 13, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	-	2.0	-	±32	11, 18
own coloring	physical measurement, analogous to APHA 2120 F	-	10, 50	-	
own coloring	physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2, at 340 nm	-	10, 20, 50	-	
own coloring	physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2	-	50	-	
own coloring	physical measurement according EN ISO 7887, at 445, 525 and 620 nm with NOVA 60, at 436, 525 and 620 nm with Prove 100/300/600	-	10, 20, 50	-	
own coloring	physical measurement according EN ISO 7887, at 410 nm	-	10, 20, 50	-	
Cuprizone	-	5.0	10, 20, 50	±0.034	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18
Cuprizone	-	5.0	-	±0.13	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18
-	Application, see more information in Prove and NOVA manual	25 + 5.0	10, 20, 50		10
Barbituric acid, pyridine-carboxylic acid	analogous EPA 335.2, APHA 4500-CN <sup>-</sup> E, ASTM D2036-09D, ISO 6703, DIN 38405-13	5.0 + 10	10, 20, 50	±0.0025	8, 9, 10, 11, 13, 15, 18
Barbituric acid, pyridine-carboxylic acid	analogous EPA 335.2, APHA 4500-CN <sup>-</sup> E, ASTM D2036-09D, ISO 6703, DIN 38405-13	5.0 + 10	-	±0.013	8, 9, 10, 11, 13, 15, 18
Barbituric acid, pyridine-carboxylic acid	analogous EPA 335.2, APHA 4500-CN <sup>-</sup> E, ASTM D2036-09D, ISO 6703, DIN 38405-13	5.0	-	±0.013	8, 9, 10, 11, 13, 15, 18
Turbidity	-	5.0	20	±5	7, 11, 17



## Analyzing COD

Analyzing COD in water or wastewater?  
Our nine COD cell tests cover the entire measuring range from 4.0 to 90,000 mg/L. Get fast, error-free results – without sample dilution.

<b>Areas of application:</b>	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
1 Agriculture	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
2 Aquaculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater



# Spectroquant® Test Kits

## Parameters D-L

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>D</b> DEHA (Diethylhydroxylamine)							
Detergents							
<b>F</b> Fluoride Cell Test	0.025 - 0.500 0.10 - 1.80	0.025 - 0.500 • 0.10 - 1.80 •	0.10 - 1.80	0.10 - 1.80	F	25	1.00809.0001
Fluoride Test	0.02 - 2.00	0.02 - 2.00 •	0.08 - 2.00	0.08 - 2.00	F	250	1.00822.0250
Fluoride Test	0.10 - 20.0	0.10 - 20.0 •	0.10 - 2.00	0.10 - 2.00	F	100 250	1.14598.0001 1.14598.0002
Formaldehyde Test	0.02 - 8.00	0.02 - 8.00 •	-	-	HCHO	100	1.14678.0001
Formaldehyde Cell Test	0.10 - 8.00	0.10 - 8.00	-	-	HCHO	25	1.14500.0001
<b>G</b> Gold Test	0.5 - 12.0	0.5 - 12.0	-	-	Au	75	1.14821.0002
<b>H</b> Hardness							
Hazen Color Number (Pt/Co / APHA / Hazen)	0 - 1.000	0 - 1.000	0 - 1.000	25 - 1.000	Pt, Pt/Co, Hazen, CU		
Hydrazine Test	0.005 - 2.00	0.005 - 2.00 •	10 - 1.200 µg/L	10 - 1.200 µg/L	N <sub>2</sub> H <sub>4</sub>	100	1.09711.0001
Hydrogen Peroxide Test	0.015 - 6.00	0.015 - 6.00 •	0.02 - 5.50	0.02 - 5.50	H <sub>2</sub> O <sub>2</sub>	100	1.18789.0001
Hydrogen Peroxide Cell Test	2.0 - 20.0 0.25 - 5.00	2.0 - 20.0 • 0.25 - 5.00 •	-	-	H <sub>2</sub> O <sub>2</sub> H <sub>2</sub> O <sub>2</sub>	25	1.14731.0001
Hydrogen sulfide							
Hydroquinone							
<b>I</b> Iodine color number	0.010 - 50.0	0.010 - 50.0 •	-	-	IFZ	-	
Iodine Test	0.050 - 10.00	0.050 - 10.00	0.10 - 5.00	0.10 - 5.00	I <sub>2</sub>	200	1.00606.0001
Iron Test <sup>C</sup>	0.0005 - 0.0100 <sup>D</sup> 0.0025 - 5.00	0.005 - 5.00 •	0.01 - 2.00	0.01 - 2.00	Fe	250 1,000	1.14761.0002 1.14761.0001
Iron Test <sup>C</sup>	0.010 - 5.00	0.010 - 5.00 •	0.10 - 5.00	0.10 - 5.00	Fe	150	1.00796.0007
Iron Cell Test <sup>C</sup>	0.05 - 4.00	0.05 - 4.00	0.05 - 4.00	0.05 - 4.00	Fe	25	1.14549.0001
Iron Cell Test <sup>C</sup>	1.0 - 50.0	1.0 - 50.0	-	-	Fe	25	1.14896.0007
Isoascorbic acid (erythorbic acid)							
<b>L</b> Lead Test <sup>C</sup>	0.010 - 5.00	0.010 - 5.00 •	0.05 - 5.00	0.05 - 5.00	Pb	50	1.09717.0001
Lead Cell Test <sup>C</sup>	0.10 - 5.00	0.10 - 5.00	0.10 - 5.00	0.10 - 5.00	Pb	25	1.14833.0001

<sup>C</sup>. For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | <sup>D</sup>. With Prove 600. | • Only with NOVA 60

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
	see Oxygen Scavengers Test				
	see Surfactants				
Alizarin complexone	analogous EPA 340.3, APHA 4500-F <sup>-</sup> E	10	50	±0.024	9, 10, 11, 13, 15, 18
	for determinations in the low measuring range see manual NOVA / Prove	5.0	-	±0.06	
SPADNS method	analogous to APHA 4500-F <sup>-</sup> D	5.0 + 1.0	50	±0.04	8, 9, 10, 11, 13, 15, 16, 18
Alizarin complexone	analogous EPA 340.3, APHA 4500-F <sup>-</sup> E	0.5 + 2.0 + 5.0	10	±0.12	9, 10, 11, 13, 15, 16, 18
Chromotropic acid	-	3.0 + 4.5	10, 20, 50	±0.03	7, 9, 10, 11, 15, 18
Chromotropic acid	-	2.0	-	±0.18	7, 9, 10, 11, 15, 18
Rhodamine B	-	2.0 + 6.0	10	±0.4	10, 13, 16,
	see Total Hardness or Residual Hardness				
own coloring	see Color, Hazen	-	10, 20, 50	-	5, 9, 10, 11, 12, 13, 15, 18
4-(Dimethylamino)-benzaldehyde	analogous DIN 38413-1	2.0 + 5.0	10, 20, 50	±0.007	5
Neocuproin	-	8.0 + 0.5	10, 20	±0.033	3, 7, 9, 11, 12, 13, 14, 15
Titanyl sulfate	analogous DIN 38409-15	10	-	±0.9	3, 7, 9, 11, 12, 13,
	for determinations in the low measuring range see manual of instrument	10	50		14, 15, 18
	see Sulfide				
	see Oxygen Scavengers Test				
own coloring	corresponds to DIN 6162 A	-	10, 20, 50	-	3, 11, 12
DPD	-	10	10, 20, 50	±0.060	7, 9, 17
Triazine	-	5.0	100	±0.014	1, 2, 5, 6, 8, 9, 10, 11,
			10, 20, 50		12, 13, 15, 16, 17, 18
1,10-Phenanthroline	differentiation between Fe(II) and Fe(III) possible, analogous APHA 3500-Fe B, DIN 38406-1	0.5 + 8.0	10, 20, 50	±0.024	1, 2, 5, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18
Triazine	-	5.0	-	±0.06	1, 2, 6, 8, 9, 10, 11, 12, 13, 15, 16, 18
2,2'-Bipyridine	differentiation between Fe(II) and Fe(III) possible	1.0	-	±0.9	6, 8, 10, 11, 13, 18
	see Oxygen Scavengers Test				
PAR	-	0.5 + 8.0	10, 20, 50	±0.028	2, 5, 8, 9, 10, 11, 15, 18
PAR	-	5.0	-	±0.08	1, 2, 6, 9, 10, 12, 13, 15, 18

## Areas of application:

3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater
5 Boiler water, cooling water			

# Spectroquant® Test Kits

## Parameters M-N

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>M</b> Magnesium Cell Test	5.0 – 75.0	5.0 – 75.0	5.0 – 75.0	5.0 – 75.0	Mg	25	1.00815.0001
Manganese Test	0.005 – 2.00	0.005 – 2.00 •	0.05 – 1.80	0.05 – 1.80	Mn	250	1.01846.0007
Manganese Test	0.010 – 10.00	0.010 – 10.00 •	0.05 – 6.00	0.05 – 6.00	Mn	250 500	1.14770.0008 1.14770.0007
Manganese Cell Test	0.10 – 5.00	0.10 – 5.00	0.10 – 5.00	0.10 – 5.00	Mn	25	1.00816.0007
Mercury	0.025 – 1.000	0.025 – 1.000	–	–	Hg	–	–
Methylethylketoxime (2-Butanoneoxime)							
Molybdenum Cell Test	0.02 – 1.00 0.03 – 1.67 0.04 – 2.15	0.02 – 1.00 • 0.03 – 1.67 • 0.04 – 2.15 •	0.02 – 1.00 0.03 – 1.67 0.04 – 2.15	0.02 – 1.00 0.03 – 1.67 0.04 – 2.15	Mo MoO <sub>4</sub> <sup>2+</sup> Na <sub>2</sub> MoO <sub>4</sub>	25	1.00860.0001
Monochloramine Test	0.050 – 10.00 0.036 – 7.26 0.010 – 1.98	0.050 – 10.00 • 0.036 – 7.26 • 0.010 – 1.98 •	0.10 – 5.00 0.07 – 3.63 0.02 – 0.99	0.10 – 5.00 0.07 – 3.63 0.02 – 0.99	Cl <sub>2</sub> NH <sub>2</sub> Cl NH <sub>2</sub> Cl-N	150	1.01632.0001
<b>N</b> Nickel Test <sup>C</sup>	0.02 – 5.00	0.02 – 5.00 •	0.05 – 5.00	0.05 – 5.00	Ni	250	1.14785.0007
Nickel Cell Test <sup>C</sup>	0.10 – 6.00	0.10 – 6.00	0.10 – 6.00	0.10 – 6.00	Ni	25	1.14554.0001
Nickel in electroplating baths (inherent color)	2.0 – 120 g/L	2.0 – 120 g/L	–	–	Ni	–	–
Nitrate (UV)	0.0 – 7.0	–	–	–	NO <sub>3</sub> -N	–	–
<b>USEPA</b> Nitrate Test <sup>B,3) C</sup>	0.10 – 25.0 0.4 – 110.7	0.10 – 25.0 • 0.4 – 110.7 •	–	–	NO <sub>3</sub> -N NO <sub>3</sub>	100 250	1.09713.0001 1.09713.0002
<b>USEPA</b> Nitrate Test <sup>B,3) C</sup>	0.2 – 20.0 0.89 – 88.5	0.2 – 20.0 • 0.89 – 88.5 •	0.5 – 15.0 2.2 – 66.4	0.5 – 15.0 2.2 – 66.4	NO <sub>3</sub> -N NO <sub>3</sub>	100	1.14773.0001
<b>USEPA</b> Nitrate Test <sup>B,3) C</sup>	0.3 – 30.0 1.3 – 132.8	0.3 – 30.0 • 1.3 – 132.8 •	0.3 – 30.0 1.3 – 132.8	0.3 – 30.0 1.3 – 132.8	NO <sub>3</sub> -N NO <sub>3</sub>	100	1.01842.0007
<b>USEPA</b> Nitrate Cell Test <sup>B,3) C</sup>	0.5 – 18.0 2.2 – 79.7	0.5 – 18.0 2.2 – 79.7	0.5 – 15.0 2.2 – 66.4	0.5 – 15.0 2.2 – 66.4	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.14542.0001
<b>USEPA</b> Nitrate Cell Test <sup>B,3) C</sup>	0.5 – 25.0 2.2 – 110.7	0.5 – 25.0 2.2 – 110.7	–	–	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.14563.0001
<b>USEPA</b> Nitrate Cell Test <sup>B,3) C</sup>	1.0 – 50.0 4 – 221	1.0 – 50.0 4 – 221	–	–	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.14764.0001
<b>USEPA</b> Nitrate Cell Test <sup>B,3)</sup>	23 – 225 102 – 996	23 – 225 102 – 996	–	–	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.00614.0001

B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | C. For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | • Only with NOVA 60

# ANALYTICAL APPLICATION NOTES FINDER

Struggling with sample preparation for nitrate analysis in soil? Check our application notes on [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf) > **Photometry**

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Phthalein complexone	-	1.0	-	±4.0	1, 2, 9, 10, 15, 18
PAN	-	8.0 + 2.0 + 0.25	10, 20, 50	±0.007	1, 2, 9, 10, 13, 15
Formaldioxime	analogous DIN 38406-2	5.0	10, 20, 50	±0.035	1, 2, 9, 10, 13, 15, 18
Formaldioxime	analogous DIN 38406-2	7.0	-	±0.08	1, 2, 10, 13, 18
Michler's thioketone	Application, see more information in Prove and NOVA manual	2.5 + 5.0 + 1.0 + 1.5	50	-	11, 18
see Oxygen Scavengers Test					
Bromopyrogallol red	-	10	-	±0.04	1, 5, 9, 13, 15, 18
Indophenol blue	-	0.6 + 10	10, 20, 50	±0.033	7, 9, 17
Dimethylglyoxime	-	5.0	10, 20, 50	±0.03	3, 5, 8, 9, 10, 11, 13, 15, 18
Dimethylglyoxime	-	5.0	-	±0.11	3, 5, 8, 10, 11, 18
-	Application, see more information in Prove and NOVA manual	5.0	10, 20, 50	-	10
direct measurement in the UV range	Application on Prove 300, analogous to APHA 4500-NO <sub>3</sub> <sup>-</sup> B, quartz cuvette required	50 + 1.0	10	-	9, 13
2,6-Dimethylphenol	analogous DIN 38405-9	0.5 + 4.0	10, 20, 50	±0.11	2, 6, 8, 9, 11, 13, 15, 17, 18
Nitrospectral	-	1.5 + 5.0	10, 20	±0.31	2, 6, 9, 11, 13, 15, 17, 18
Cadmium Reduction	-	10	50	±1.2	1, 2, 6, 8, 9, 10, 11, 13, 15, 17, 18
Nitrospectral	-	1.5	-	±0.5	1, 2, 6, 8, 9, 11, 13, 15, 17, 18
2,6-Dimethylphenol	analogous DIN 38405-9	1.0	-	±0.5	1, 2, 6, 9, 11, 13, 15, 17, 18
2,6-Dimethylphenol	analogous DIN 38405-9	0.5 + 1.0	-	±1.0	1, 2, 8, 9, 11, 13, 15, 18
2,6-Dimethylphenol	analogous DIN 38405-9	0.1 + 1.0	-	±5.0	1, 8, 11, 13, 18

**Areas of application:**

- |                               |                                      |                               |                   |
|-------------------------------|--------------------------------------|-------------------------------|-------------------|
| 3 Beverages                   | 7 Disinfection control               | 11 Environment                | 15 Mineral water  |
| 4 Biotechnology, fermenter    | 8 Disposal drainage water            | 12 Food testing               | 16 Seawater       |
| 1 Agriculture                 | 9 Drinking water                     | 13 Groundwater, surface water | 17 Swimming pools |
| 2 Aquaculture                 | 10 Electroplating surface refinement | 14 Milk dairy products        | 18 Wastewater     |
| 5 Boiler water, cooling water |                                      |                               |                   |

# Spectroquant® Test Kits

## Parameters N-P

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>N</b> Nitrate Cell Test in seawater	0.10 – 3.00	0.10 – 3.00 •	0.10 – 3.00	0.10 – 3.00	NO <sub>3</sub> -N	25	1.14556.0001
	0.4 – 13.3	0.4 – 13.3 •	0.4 – 13.3	0.4 – 13.3	NO <sub>3</sub>		
Nitrate Test in seawater	0.2 – 17.0	0.2 – 17.0 •	–	–	NO <sub>3</sub> -N	50	1.14942.0001
	0.9 – 75.3	0.9 – 75.3 •			NO <sub>3</sub>		
<b>USEPA</b> Nitrite Test <sup>B,3)</sup>	0.002 – 1.00	0.002 – 1.00 •	5 – 400 µg/L	5 – 400 µg/L	NO <sub>2</sub> -N	335	1.14776.0002
	0.007 – 3.28	0.007 – 3.28 •	16 – 1.313 µg/L	16 – 1.313 µg/L	NO <sub>2</sub>	1,000	1.14776.0001
<b>USEPA</b> Nitrite Cell Test <sup>B,3)</sup>	0.010 – 0.700	0.010 – 0.700	10 – 700 µg/L	10 – 700 µg/L	NO <sub>2</sub> -N	25	1.14547.0001
	0.03 – 2.30	0.03 – 2.30	33 – 2.299 µg/L	33 – 2.299 µg/L	NO <sub>2</sub>		
<b>USEPA</b> Nitrite Cell Test <sup>B,3)</sup>	1.0 – 90.0	1.0 – 90.0	1.0 – 90.0	1.0 – 90.0	NO <sub>2</sub> -N	25	1.00609.0001
	3.0 – 295.2	3.3 – 295.2	3.3 – 295.2	3.3 – 295.2	NO <sub>2</sub>		
Nitrogen (total) Cell Test	0.5 – 15.0	0.5 – 15.0	–	–	N	25	1.00613.0001
Nitrogen (total) Cell Test	0.5 – 15.0	0.5 – 15.0	0.5 – 15.0	0.5 – 15.0	N	25	1.14537.0001
Nitrogen (total) Cell Test	10 – 150	10 – 150	–	–	N	25	1.14763.0001
<b>O</b> Organic Carbon, Total							
Oxygen Cell Test	0.5 – 12.0	0.5 – 12.0	0.5 – 12.0	0.5 – 12.0	O <sub>2</sub>	25	1.14694.0001
Oxygen Demand, Biological							
Oxygen Demand, Chemical							
Oxygen Scavengers Test	0.020 – 0.500	0.020 – 0.500 •	0.020 – 0.500	0.020 – 0.500	DEHA	200	1.19251.0001
	0.027 – 0.667	0.027 – 0.667 •	0.027 – 0.667	0.027 – 0.667	Carbohy		
	0.05 – 1.32	0.05 – 1.32 •	0.053 – 1.315	0.053 – 1.315	Hydro		
	0.08 – 1.95	0.08 – 1.95 •	0.078 – 1.950	0.078 – 1.950	ISA		
	0.09 – 2.17	0.09 – 2.17 •	0.087 – 2.170	0.087 – 2.170	MEKO		
Ozone Test	0.010 – 4.00	0.010 – 4.00 •	0.02 – 4.00	0.02 – 4.00	O <sub>3</sub>	200	1.00607.0001
						1,200	1.00607.0002
<b>P</b> Palladium	0.05 – 1.25	0.05 – 1.25 •	–	–	Pd	–	–
Peroxide							
pH Cell Test <sup>A)</sup>	pH 6.4 – 8.8	pH 6.4 – 8.8	pH 6.4 – 8.8	pH 6.4 – 8.8	pH	280	1.01744.0001
Phaeophytin-a and Chlorophyll-a							
Phenol Test	0.002 – 0.100	0.002 – 0.100 •	0.10 – 5.00	0.10 – 5.00	Phenol	50 –	1.00856.0001
	0.025 – 5.00	0.025 – 5.00 •				250	
Phenol Cell Test	0.10 – 2.50	0.10 – 2.50 •	0.10 – 2.50	0.10 – 2.50	Phenol	25	1.14551.0001
Phosphate Test <sup>C)</sup> (ortho-phosphate)	0.0025 – 5.00	0.010 – 5.00 •	0.01 – 2.50	0.01 – 2.50	PO <sub>4</sub> -P	220	1.14848.0008
	0.0077 – 15.30	0.03 – 15.3 •	0.03 – 7.66	0.03 – 7.66	PO <sub>4</sub>	420	1.14848.0007
	0.0057 – 11.46	0.02 – 11.46 •	0.02 – 5.73	0.02 – 5.73	P <sub>2</sub> O <sub>5</sub>		
	0.0005 – 0.0250 <sup>D)</sup>				PO <sub>4</sub> -P		
	0.0015 – 0.0767 <sup>D)</sup>				PO <sub>4</sub>		
0.0007 – 0.0335 <sup>D)</sup>				P <sub>2</sub> O <sub>5</sub>			
Phosphate Cell Test (ortho-phosphate)	0.05 – 5.00	0.05 – 5.00	0.05 – 4.00	0.05 – 4.00	PO <sub>4</sub> -P	25	1.00474.0007
	0.2 – 15.3	0.2 – 15.3	0.15 – 12.26	0.15 – 12.26	PO <sub>4</sub>		
	0.11 – 11.46	0.11 – 11.46	0.11 – 9.17	0.11 – 9.17	P <sub>2</sub> O <sub>5</sub>		

A. The cell test contains three 16 mm cells with a bar-code label. After measurement, the cells can be emptied and cleaned for subsequent measurements. | B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | C. For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | D. With Prove 600. | • Only with NOVA 60



# PHOSPHATE AID

Need help with phosphate or phosphonate analysis? Scan the QR code to learn more.



Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Resorcinol	-	2.0	-	±0.09	1, 2, 8, 9, 11, 13, 15, 16, 18
Resorcinol	-	1.0 + 1.5 + 5.0	10	±0.4	1, 2, 8, 9, 11, 13, 15, 16, 18
Griess' reaction	analogous EPA 354.1, APHA 4500-NO <sub>2</sub> <sup>-</sup> B, DIN EN 26777	5.0	10, 20, 50	±0.005	2, 5, 8, 9, 10, 11, 13, 15, 16, 18
Griess' reaction	analogous EPA 354.1, APHA 4500-NO <sub>2</sub> <sup>-</sup> B, DIN EN 26777	5.0	-	±0.010	2, 5, 8, 9, 10, 11, 13, 15, 16, 18
Iron sulfate	-	8.0	-	±2.6	5, 10, 13, 16, 18
Koroleff digestion, 2,6-dimethylphenol	digestion analogous DIN EN ISO 11905-1, determination analogous DIN 38405-9	1.0 + 10	-	±0.5	1, 2, 5, 8, 11, 13, 14, 18
Koroleff digestion, nitrospectral	digestion analogous to DIN EN ISO 11905-1	1.5 + 10	-	±0.6	1, 2, 5, 8, 11, 13, 14, 18
Koroleff digestion, 2,6-dimethylphenol	digestion analogous DIN EN ISO 11905-1, determination analogous DIN 38405-9	1.0 + 9.0	-	±5.0	1, 8, 11, 14, 18
	see TOC				
mod. Winkler method	analogous DIN EN 25813-21	-	-	±0.3	2, 5, 11, 13, 17
	see BOD				
	see COD				
Iron reduction	-	0.2 + 10	20	±0.022	5
DPD	analogous DIN 38408-3	10	10, 20, 50	±0.023	7, 9, 15, 17
Michlers' thioketone	Application, see more information in Prove and NOVA manual	5.0 + 1.0 + 0.20	10	-	10, 18
	see Hydrogen Peroxide				
Indicator	-	10	-	±0.1 pH	2, 5, 7, 9, 13, 15, 16, 17
	see Chlorophyll-a and Phaeophytin-a				1, 2, 13
4-Aminoantipyrine	analogous EPA 420.1, ASTM D1783-01, APHA 5530 C + D, ISO 6439	5.0 + 10 1.0 + 10	20 10, 20, 50	±0.004 ±0.027	8, 9, 11, 13, 16, 18
MBTH		10	-	±0.11	8, 11, 13, 16, 18
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	5.0	10, 20, 50	±0.015	1, 2, 5, 9, 11, 13, 15, 16, 18
			100		
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	5.0	-	±0.08	1, 2, 5, 9, 11, 13, 15, 16, 18

<b>Areas of application:</b>	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater

# Spectroquant® Test Kits

## Parameters P-S

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
P Phosphate Cell Test (ortho-phosphate and total phosphorus) <sup>B,3)</sup>	0.05 – 5.00	0.05 – 5.00	0.05 – 4.00	0.05 – 4.00	PO <sub>4</sub> -P	25	1.14543.0007
	0.2 – 15.3	0.2 – 15.3	0.15 – 12.26	0.15 – 12.26	PO <sub>4</sub>		
	0.11 – 11.46	0.11 – 11.46	0.11 – 9.17	0.11 – 9.17	P <sub>2</sub> O <sub>5</sub>		
USEPA Phosphate Cell Test (ortho-phosphate)	0.5 – 25.0	0.5 – 25.0	0.5 – 20.0	0.5 – 20.0	PO <sub>4</sub> -P	25	1.00475.0007
	1.5 – 76.7	1.5 – 76.7	1.5 – 61.3	1.5 – 61.3	PO <sub>4</sub>		
	1.1 – 57.3	1.1 – 57.3	1.1 – 45.8	1.1 – 45.8	P <sub>2</sub> O <sub>5</sub>		
USEPA Phosphate Cell Test (ortho-phosphate and total phosphorus) <sup>B,3)</sup>	0.5 – 25.0	0.5 – 25.0	0.5 – 20.0	0.5 – 20.0	PO <sub>4</sub> -P	25	1.14729.0007
	1.5 – 76.7	1.5 – 76.7	1.5 – 61.3	1.5 – 61.3	PO <sub>4</sub>		
	1.1 – 57.3	1.1 – 57.3	1.1 – 45.8	1.1 – 45.8	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate)	0.5 – 25.0	0.5 – 25.0	0.5 – 25.0	0.5 – 25.0	PO <sub>4</sub> -P	25	1.14546.0001
	1.5 – 76.7	1.5 – 76.7	1.5 – 76.7	1.5 – 76.7	PO <sub>4</sub>		
	1.1 – 57.3	1.1 – 57.3	1.1 – 57.3	1.1 – 57.3	P <sub>2</sub> O <sub>5</sub>		
Phosphate Test (ortho-phosphate)	0.5 – 30.0	0.5 – 30.0 •	0.5 – 30.0	0.5 – 30.0	PO <sub>4</sub> -P	400	1.14842.0001
	1.5 – 92.0	1.5 – 92.0 •	1.5 – 92.0	1.5 – 92.0	PO <sub>4</sub>		
	1.1 – 68.7	1.1 – 68.7 •	1.1 – 68.7	1.1 – 68.7	P <sub>2</sub> O <sub>5</sub>		
Phosphate Test (ortho-phosphate)	1.0 – 100.0	1.0 – 100.0 •	1.0 – 60.0	1.0 – 60.0	PO <sub>4</sub> -P	100	1.00798.0007
	3 – 307	3 – 307 •	3.1 – 184	3.1 – 184	PO <sub>4</sub>		
	2 – 229	2 – 229 •	2.3 – 137.5	2.3 – 137.5	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate)	3.0 – 100.0	3.0 – 100.0	3.0 – 100.0	3.0 – 100.0	PO <sub>4</sub> -P	25	1.00616.0007
	9 – 307	9 – 307	9 – 307	9 – 307	PO <sub>4</sub>		
	7 – 229	7 – 229	7 – 229	7 – 229	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate and total phosphorus)	3.0 – 100.0	3.0 – 100.0	3.0 – 100.0	3.0 – 100.0	PO <sub>4</sub> -P	25	1.00673.0007
	9 – 307	9 – 307	9 – 307	9 – 307	PO <sub>4</sub>		
	7 – 229	7 – 229	7 – 229	7 – 229	P <sub>2</sub> O <sub>5</sub>		
Platinum	0.10 – 1.25	0.10 – 1.25 •	-	-	Pt	-	-
Platinum-Cobalt Standard Method							
Potassium Cell Test	5.0 – 50.0	5.0 – 50.0	5.0 – 50.0	5.0 – 50.0	K	25	1.14562.0001
Potassium Cell Test	30 – 300	30 – 300	30 – 300	30 – 300	K	25	1.00615.0001
Protein Test	0.01 – 1.4 g/L	0.01 – 1.4 g/L	-	-	Protein	200	1.10306.0500
Protein Test	0.5 – 10 g/L	0.5 – 10 g/L	-	-	Protein	250	1.10307.0500
R Residual Hardness Cell Test	0.50 – 5.00	0.50 – 5.00	0.50 – 5.00	0.50 – 5.00	Ca	25	1.14683.0001
	0.070 – 0.700	0.070 – 0.700	0.070 – 0.700	0.070 – 0.700	°d		
	0.087 – 0.874	0.087 – 0.874	0.087 – 0.874	0.087 – 0.874	°e		
	0.12 – 1.25	0.12 – 1.25	0.12 – 1.25	0.12 – 1.25	°f		
	0.70 – 7.00	0.70 – 7.00	0.70 – 7.00	0.70 – 7.00	CaO		
	1.2 – 12.5	1.2 – 12.5	1.2 – 12.5	1.2 – 12.5	CaCO <sub>3</sub>		
S SAC (Spectral absorption coefficient)	0.5 – 250 m <sup>-1</sup>	-	-	-	-	-	-

B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater; 2. drinking water 3. drinking water and wastewater. | • Only with NOVA 60



Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	5.0	-	±0.06	1, 2, 5, 9, 11, 13, 15, 16, 18
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	1.0	-	±0.5	1, 2, 4, 8, 11, 13, 16, 18
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	1.0	-	±0.4	1, 2, 4, 8, 11, 13, 16, 18
Vanadato-molybdate	analogous APHA 4500-P C	5.0	-	±0.4	5, 16
Vanadato-molybdate	analogous APHA 4500-P C	1.2 + 5.0	10, 20	±0.2	5, 16
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	0.5 + 8.0	10	±1.4	1, 2, 4, 8, 11, 12, 13, 18
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	0.2	-	±1.2	1, 4, 8, 11, 13, 16, 18
Phosphomolybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	0.2	-	±1.4	1, 4, 8, 11, 13, 16, 18
-	Application, see more information in Prove and NOVA manual see Color	5.0 + 1.0 + 0.50	10	-	10, 18
Kalignost®, turbidimetric	-	2.0	-	±2.2	9, 12, 13, 15, 16
Kalignost®, turbidimetric	-	0.5	-	±13	1, 16
Bradford Method	Method not programmed in the photometers	-	10	-	
Biuret Method	Method not programmed in the photometers	-	10	-	
Phthalein complexone	-	0.2 + 4.0	-	±0.14	2, 5, 9
-	physical measurement according DIN 38404, at 436 nm (Prove 100) and 254 + 436 nm (Prove 300)	-	10, 20, 50	-	9, 15

<b>Areas of application:</b>	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
1 Agriculture	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
2 Aquaculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater

# Spectroquant® Test Kits

## Parameters S

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>S</b> Silicate (Silicic Acid) Test	0.00025 – 0.50000	0.0005 – 0.5000	• 0.004 – 0.500	0.004 – 0.500	SiO <sub>2</sub>	100	1.01813.0007
	0.00012 – 0.23370	0.0002 – 0.2337	• 0.002 – 0.234	0.002 – 0.234	Si		
	0.00025 – 0.02500 <sup>D)</sup>				SiO <sub>2</sub>		
	0.00012 – 0.01168 <sup>D)</sup>				Si		
Silicate (Silicic Acid) Test	0.011 – 10.70	0.011 – 10.70	• 0.11 – 8.56	0.11 – 8.56	SiO <sub>2</sub>	300	1.14794.0007
	0.005 – 5.00	0.005 – 5.00	• 0.05 – 4.00	0.05 – 4.00	Si		
Silicate (Silicic Acid) Test	1.1 – 1,070	1.1 – 1,070	• 11 – 1,070	11 – 1,070	SiO <sub>2</sub>	100	1.00857.0001
	0.5 – 500	0.5 – 500	• 5 – 500	5 – 500	Si		
Silver Test	0.25 – 3.00	0.25 – 3.00	• –	–	Ag	100	1.14831.0007
Sodium Cell Test in nutrient solutions for fertilization	10 – 300	10 – 300	10 – 300	10 – 300	Na	25	1.00885.0001
Spectral Absorption Coefficient, Color	0.1 – 250 m <sup>-1</sup>	–	–	–	–	–	–
Spectral Attenuation Coefficient	0.5 – 250 m <sup>-1</sup>	–	–	–	–	–	–
Sulfate Test	0.50 – 50.0	0.50 – 50.0	• 1.0 – 25.0	1.0 – 25.0	SO <sub>4</sub>	100	1.01812.0001
Sulfate Cell Test	1.0 – 50.0	1.0 – 50.0	2.0 – 50.0	2.0 – 50.0	SO <sub>4</sub>	25	1.02532.0001
<b>USEPA</b> Sulfate Cell Test <sup>B,1)</sup>	5 – 250	5 – 250	5 – 250	5 – 250	SO <sub>4</sub>	25	1.14548.0001
Sulfate Test	5 – 300	5 – 300	• 5 – 300	10 – 300	SO <sub>4</sub>	100	1.02537.0001
						1,000	1.02537.0002
Sulfate Test	25 – 300	25 – 300	• –	–	–	200	1.14791.0001
Sulfate Cell Test	50 – 500	50 – 500	50 – 500	50 – 500	SO <sub>4</sub>	25	1.00617.0001
<b>USEPA</b> Sulfate Cell Test <sup>B,1)</sup>	100 – 1,000	100 – 1,000	100 – 1,000	100 – 1,000	SO <sub>4</sub>	25	1.14564.0001
Sulfide Test	0.020 – 1.50	0.020 – 1.50	• 0.10 – 1.50	0.10 – 1.50	S <sup>2-</sup>	220	1.14779.0001
Sulfite Cell Test	0.8 – 16.00	0.8 – 16.00	• 1.0 – 20.0	1.0 – 20.0	SO <sub>2</sub>	25	1.14394.0001
	1.0 – 20.00	1.0 – 20.00	•		SO <sub>3</sub>		
	0.05 – 3.00	0.05 – 3.00	•		SO <sub>3</sub>		
	0.04 – 2.40	0.04 – 2.40	•		SO <sub>2</sub>		
Sulfite Test	1.0 – 60.0	1.0 – 60.0	• 1.0 – 60.0	1.0 – 60.0	SO <sub>3</sub>	150	1.01746.0001
	0.8 – 48.0	0.8 – 48.0	•		SO <sub>2</sub>		
Surfactants (anionic) Cell Test	0.05 – 2.00	0.05 – 2.00	• 0.05 – 2.00	0.10 – 2.00	MBAS	25	1.02552.0001
Surfactants (cationic) Cell Test	0.05 – 1.50	0.05 – 1.50	• 0.05 – 1.50	–	CTAB	25	1.01764.0001
Surfactants (nonionic) Cell Test	0.10 – 7.50	0.10 – 7.50	0.10 – 7.50	0.10 – 7.50	Triton® X-100	25	1.01787.0001
Suspended solids	25 – 750	25 – 750	50 – 750	50 – 750	susp. solids	–	–

B. This method is officially recognized by the USEPA as an alternative method for the investigation of 1. wastewater, 2. drinking water 3. drinking water and wastewater. | D. With Prove 600. | • Only with NOVA 60

# HIGHER SENSITIVITY

New cell test for anionic surfactants:  
now with even higher sensitivity!



Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Silicomolybdenum blue	analogous APHA 4500-SiO <sub>2</sub> D+E, ASTM D859-10, DIN 38405-21	10 + 0.5	50 100	±0.00449	5, 9, 13, 15
Silicomolybdenum blue	analogous APHA 4500-SiO <sub>2</sub> D+E, ASTM D859-10, DIN 38405-21	5.0 + 0.5	10, 20, 50	±0.024	5, 6, 9, 13, 16
Molybdosilicate	analogous APHA 4500-SiO <sub>2</sub> C	0.5 + 2.0 + 4.0 + 5.0	10	±2.1	5, 6, 9, 13, 15
Eosine, 1,10-phenanthroline	reagents for the digestion in the thermoreactor are included in the test kit	1.0 + 10	10, 20	±0.07	10, 18
Iron(III)-thiocyanate	determination as chloride	0.5	-	±13	1
-	see Color, Spectral Absorption Coefficient	-	-	-	
-	physical measurement according DIN 38404, at 254 nm	-	10, 20, 50	-	
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	0.5 + 10	10, 20, 50	±0.90	1, 2, 6, 9, 11, 13, 15, 18
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	10	-	±1.1	1, 6, 9, 11, 13, 15, 18
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	5.0	-	±8	1, 6, 9, 11, 13, 15, 16
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	0.5 + 5	10	±7	1, 6, 9, 11, 13, 15, 16, 18
Tannic acid	-	2.5	10	±14	6, 9, 11, 13, 15
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	2.0 + 5.0	-	±16	1, 6, 9, 11, 13, 15, 16
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	1.0 + 5.0	-	±33	1, 4, 6, 8, 9, 11, 13, 15, 16, 18
Dimethyl-p-phenylenediamine	analogous EPA 376.2, APHA 4500-S <sup>2-</sup> D, ISO 10530, DIN 38405-26	5.0	10, 20, 50	±0.017	2, 8, 9, 11, 13, 15, 18
Ellman's reagent	for determinations of the low measuring range see manual NOVA / Prove	3.0 + 7.0	- 50 50	±0.4	1, 3, 5, 12, 15, 18
Ellman's reagent	-	2.0 + 3.0 + 5.0	10	±1.0	3, 5, 12, 13, 15, 18
Methylene blue	analogous EPA 425.1, APHA 5540 C, ASTM 2330-02, DIN EN 903, ISO 7875-1	5.0	-	±0.09	9, 11, 13, 18
Disulfine blue	analogous DIN 38409-20	0.5 + 5.0	-	±0.06	9, 11, 13, 18
TBPE	-	4.0	-	±0.26	9, 11, 13, 18
-	physical measurement	-	20	-	

<b>Areas of application:</b>	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater

# Spectroquant® Test Kits

## Parameters T-Z

Parameter	Measuring range of the Spectroquant® instruments [mg/L]				Citation form	No. of tests	Ord. No.
	Prove 100/300/600	NOVA 30/60	Multy	Move 100			
<b>T</b> Tin Cell Test	0.10 – 2.50	0.10 – 2.50 •	0.10 – 2.50	0.10 – 2.50	Sn	25	1.14622.0001
TOC Cell Test	5.0 – 80.0	5.0 – 80.0	5.0 – 80.0	–	TOC	25	1.14878.0001
TOC Cell Test	50 – 800	50 – 800	50 – 800	–	TOC	25	1.14879.0001
Screw caps for Spectroquant® TOC digestion	–	–	–	–	–	6	1.73500.0001
TOC-Standard 1000 ±10 mg/L	–	–	–	–	–	100 mL	1.09017.0100
Total Alkalinity							
Total Hardness Cell Test	5 – 215	5 – 215	5 – 215	5 – 215	Ca	25	1.00961.0001
	0.7 – 30.1	0.7 – 30.1	0.7 – 30.1	0.7 – 30.1	°d		
	0.9 – 37.6	0.9 – 37.6	0.9 – 37.6	0.9 – 37.6	°e		
	1.2 – 53.7	1.2 – 53.7	1.2 – 53.7	1.2 – 53.7	°f		
	7 – 301	7 – 301	7 – 301	7 – 301	CaO		
	12 – 537	12 – 537	12 – 537	12 – 537	CaCO <sub>3</sub>		
Total Nitrogen							
Transmission	0.0 – 100.0 %	0.0 – 100.0 %	–	–	T	–	–
Turbidity	1 – 100	1 – 100 •	1 – 100	1 – 100	FAU	–	–
<b>V</b> Volatile Organic Acid Cell Test	50 – 3.000	50 – 3.000	50 – 3.000	50 – 3.000	acetic acid	25	1.01749.0007
	71 – 4,401	71 – 4,401	71 – 4,401	71 – 4,401	butyric acid		
Volatile Organic Acid Test <sup>A)</sup>	50 – 3.000	50 – 3.000	50 – 3.000	50 – 3.000	acetic acid	100	1.01809.0007
	71 – 4,401	71 – 4,401	71 – 4,401	71 – 4,401	butyric acid		
<b>W</b> Water Hardness							
<b>Z</b> Zinc Cell Test <sup>C)</sup>	0.025 – 1.000	0.025 – 1.000	25 – 1.000 µg/L	25 – 1.000 µg/L	Zn	25	1.00861.0007
Zinc Test <sup>C)</sup>	0.05 – 2.50	0.05 – 2.50 •	–	–	Zn	100	1.14832.0001
Zinc Reagent 6 (Isobutylmethylketone GR)	–	–	–	–	–	200	1.06146.1000
Zinc Cell Test <sup>C)</sup>	0.20 – 5.00	0.20 – 5.00	0.20 – 5.00	0.20 – 5.00	Zn	25	1.14566.0001



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[www.sigma-aldrich.com](http://www.sigma-aldrich.com)

A. The cell test contains four 16 mm cells with a bar-code label. After measurement, the cells can be emptied and cleaned for subsequent measurements. | C. For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see page 51. | • Only with NOVA 60



## TOC TEST

Easily check total organic carbon with our TOC cell test

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Cell size [mm] NOVA/Prove	Accuracy [mg/L]	Areas of application
Pyrocatechol violet	-	5.0	-	±0.08	5, 10, 16, 18
Indicator	Oxidation analogous APHA 5310 D	3.0 + 25	-	±3.6	9, 11, 13, 15, 18
Indicator	Oxidation analogous APHA 5310 D	1.0 + 3.0 + 9.0	-	±40	8, 11, 13, 18
-	for multiple use, additionally required for TOC measurement	-	-	-	
-	analogous EN 1484-H43, DIN 38409-H3 see Acid Capacity to pH 4.3	-	-	-	
Phthalein complexone	-	1.0	-	±8	2, 9, 13, 15
-	see Nitrogen (total)				
-	-	10, 20, 50	-	-	
-	analogous to EN ISO 7027	-	50	-	
Hydroxamic acids / iron(III) salt	-	0.5 + 5.0	-	±69	4, 8, 11, 18
Hydroxamic acids / iron(III) salt	-	0.75 + 0.5 + 5.0	-	±85	4, 8, 11, 18
-	see Total Hardness or Res. Hardness				
PAR	-	0.5 + 2.0 + 10	-	±0.033	1, 5, 9, 10, 11, 13, 15, 18
Cl-PAN	-	5.0	10	±0.07	5, 6, 8, 9, 10, 11, 15, 18
-	Extracting agent for Zinc Test 1.14832.0001	-	-	-	
PAR	-	0.5	-	±0.18	5, 6, 8, 9, 10, 11, 15, 18

### Areas of application:

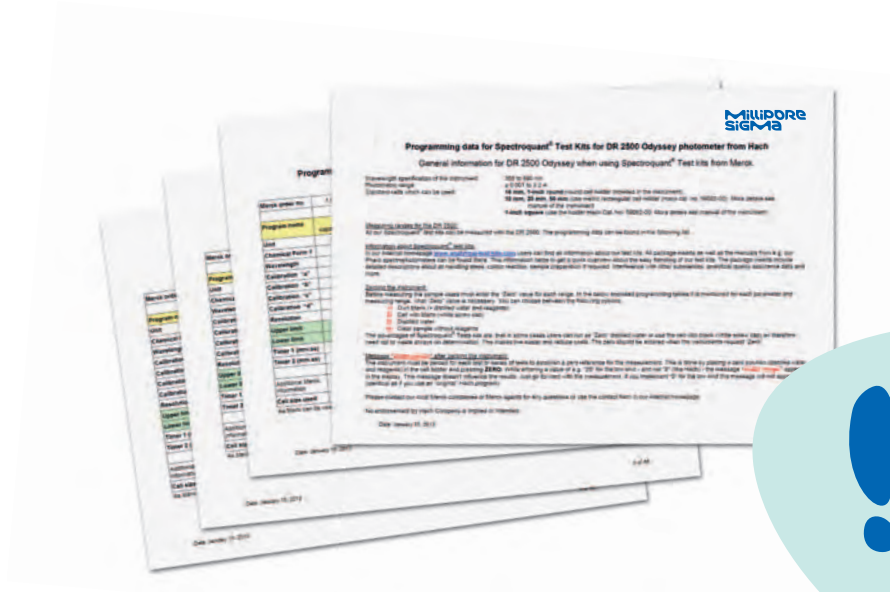
3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater
5 Boiler water, cooling water			
6 Construction-material industry			

# Spectroquant® Test Kits for other photometer brands

We also offer **Spectroquant® test kits** that work seamlessly with other photometer brands. The tests don't need device-specific calibration as they use the original programs installed by the manufacturers, and work according to the instrument's operation manual. This means you can still benefit from our quality documentation when using other photometer brands. Simply download the batch certificate from: [www.emdmillipore.com/coa](http://www.emdmillipore.com/coa).

## Test kits for other photometer brands | Overview A-Z

Parameter	Measuring range [mg/L]	No. of tests	MilliporeSigma Ord. No.	Hach Ord. No.	
C Chlorine Powder Packs for photometers of other manufacturers for 10-mL-samples (free Chlorine)	0 – 2.00 Cl <sub>2</sub>	100	1.19254.0001	21055-69 21055-28	
	Chlorine Powder Packs for photometers of other manufacturers for 25-mL-samples (free Chlorine)	0 – 10.00 Cl <sub>2</sub>	100	1.19256.0001	14070-99 14070-28
	Chlorine Powder Packs for photometers of other manufacturers for 10-mL-samples (total Chlorine)	0 – 2.00 Cl <sub>2</sub>	100	1.19257.0001	21056-69 21056-28
	Chlorine Powder Packs for photometers of other manufacturers for 25-mL-samples (total Chlorine)	0 – 10.00 Cl <sub>2</sub>	100	1.19258.0001	14064-99 14064-28
USEPA COD Cell Tests for photometers of other manufacturers	0 – 40.0 COD	25	1.18750.0007	24158-25 24158-15 24158-51	
USEPA COD Cell Tests for photometers of other manufacturers	0 – 150.0 COD	25	1.18751.0007	21258-25 21258-15 21258-51	
USEPA COD Cell Tests for photometers of other manufacturers	0 – 1,500 COD	25	1.18752.0007	21259-25 21259-15 21259-51	
USEPA COD Cell Tests for photometers of other manufacturers	0 – 15,000 COD	25	1.18753.0007	24159-25 24159-15 24159-51	
O Oxygen Scavengers Test	0.020 – 0.500 DEHA 0.027 – 0.667 Carbohy 0.053 – 1.315 Hydro 0.078 – 1.950 ISA 0.087 – 2.170 MEKO	200	1.19251.0001	24466-00	
S Sulfate Powder Packs for photometers of other manufacturers for 25-mL-samples	0 – 70.0 SO <sub>4</sub>	100	1.73015.0001	12065-99 12065-28	



**By the way ...**

All Spectroquant® test kits can be programmed to work with any manufacturer's photometer. Simply download the programming data from: [www.emdmillipore.com/test-kits](http://www.emdmillipore.com/test-kits)

Method	Reference to norms and standards / Comments	Pipette-volume	Cell size Hach	Areas of application
DPD	analogous EPA 330.5, APHA 4500-CI G	10 mL	1 inch	2, 7, 9, 11, 13, 16, 17, 18
DPD	analogous EPA 330.5, APHA 4500-CI G	25 mL	1 inch	2, 7, 9, 11, 13, 16, 17, 18
DPD	analogous EPA 330.5, APHA 4500-CI G	10 mL	1 inch	2, 7, 9, 11, 13, 16, 17, 18
DPD	analogous EPA 330.5, APHA 4500-CI G	25 mL	1 inch	2, 7, 9, 11, 13, 16, 17, 18
Oxidation with Chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ISO 15705 and ASTM D1252-06B	2.0 mL	16 mm	5, 9, 10, 11, 13, 15, 17, 18
Oxidation with Chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ISO 15705 and ASTM D1252-06B	2.0 mL	16 mm	5, 9, 10, 11, 13, 15, 17, 18
Oxidation with Chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ISO 15705 and ASTM D1252-06B	2.0 mL	16 mm	3, 4, 5, 8, 10, 11, 13, 18
Oxidation with Chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ISO 15705 and ASTM D1252-06B	0.2 mL	16 mm	3, 4, 5, 8, 10, 11, 13, 18
Iron Reduction		2.0 mL + 10 mL	1 inch	5
Barium chloride	analogous EPA 375.4	25 mL	1 inch	1, 5, 6, 7, 8, 9, 10, 11, 13, 15, 18

Areas of application:	3 Beverages	7 Disinfection control	11 Environment	15 Mineral water
	4 Biotechnology, fermenter	8 Disposal drainage water	12 Food testing	16 Seawater
1 Agriculture	5 Boiler water, cooling water	9 Drinking water	13 Groundwater, surface water	17 Swimming pools
2 Aquaculture	6 Construction-material industry	10 Electroplating surface refinement	14 Milk dairy products	18 Wastewater



# Spectroquant® Test Kits for samples with high salt content

Higher salt content may interfere with the reagents of test kits developed for drinking water and wastewater. The following tables help you choose the most **suitable Spectroquant® test kits for analyzing seawater and samples with high salt content**. Select the test kit with your required parameter to learn about its tolerance limits for neutral salts, and its suitability for analyzing seawater.

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methods for your convenience

# BE unlimited



#### **COD test for seawater/high chloride content**

- First COD test with unlimited chloride tolerance
- No need to titrate or dilute samples
- Suitable for testing seawater, and municipal or industrial wastewater
- Lower range: 5 – 60 mg/L COD [Ord. No. 1.17058.0007]
- Higher range: 50 – 3,000 mg/L COD [Ord. No. 1.17059.0007]
- Easy, fast and precise

**More details on pages 64 and 84**

## Suitability of test kits for testing seawater and tolerance limits for neutral salts | Overview A-C

Test kit	Ord. No.	Seawater	Tolerance limit, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>A</b> Acid Capacity Cell Test	1.01758.0001	no	–	–	–
Aluminium Cell Test	1.00594.0001	yes	20	20	20
Aluminium Test	1.14825.0001	yes	10	20	20
Ammonium Cell Test	1.14739.0001	no	5	5	5
Ammonium Cell Test	1.14558.0001	yes	20	10	15
Ammonium Cell Test	1.14544.0001	yes	20	15	20
Ammonium Cell Test	1.14559.0001	yes	20	20	20
Ammonium Test	1.14752.0001	no <sup>1)</sup>	10	10	20
	1.14752.0002				
Ammonium Test	1.00683.0001	yes	20	20	20
AOX Cell Test	1.00675.0007	no	0.4	20	20
Arsenic Test	1.01747.0001	no	10	10	10
<b>B</b> BOD Cell Test	1.00687.0001	yes	20	20	20
Boron Cell Test	1.00826.0001	yes	10	20	20
Boron Test	1.14839.0001	no	20	5	20
Bromine Test	1.00605.0001	no	10	10	10
<b>C</b> Cadmium Cell Test	1.14834.0001	no	1	10	1
Cadmium Test	1.01745.0001	no	1	10	1
Calcium Cell Test	1.00858.0001	no	2	2	1
Calcium Test	1.14815.0001	yes	20	20	10
Calcium Test	1.00049.0001	no	–	–	–
Chloride Test	1.01807.0007	no	–	0.5	0.05
Chloride Cell Test	1.01804.0007	no	–	0.5	0.05
Chloride Cell Test	1.14730.0007	yes	–	20	1
Chloride Test	1.14897.0007	yes	–	10	0.1
	1.14897.0008				
Chlorine Cell Test	1.00595.0001	no	10	10	10
Chlorine Cell Test	1.00597.0001	no	10	10	10
Chlorine Test	1.00598.0001	no	10	10	10
	1.00598.0002				
Chlorine Test	1.00602.0001	no	10	10	10
	1.00602.0002				
Chlorine Test	1.00599.0001	no	10	10	10
Chlorine Reagent (liquid) (free and total)	1.00086.0001				
	1.00087.0001				
	1.00088.0001	no	10	10	10
Chlorine dioxide Test	1.00608.0001	no	10	10	10
Chromate Cell Test (Chromium VI)	1.14552.0001	yes	10	10	10
Chromium (total) Cell Test	1.14552.0001	no	1	10	10
Chromate Test	1.14758.0001	yes	10	10	10

<sup>1)</sup> This test kit is also suitable for testing seawater after the addition of sodium hydroxide solution (see package insert).

# Spectroquant® Test Kits for samples with high salt content

## Suitability of test kits for testing seawater and tolerance limits for neutral salts | Overview C-L

Test kit	Ord. No.	Seawater	Tolerance limit, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>C</b> COD Cell Test	1.14560.0007	no	0.4	10	10
COD Cell Test	1.01796.0007	no	0.4	10	10
COD Cell Test	1.14540.0007	no	0.4	10	10
COD Cell Test	1.14895.0001	no	0.4	10	10
COD Cell Test	1.14690.0001	no	0.4	20	20
COD Cell Test	1.14541.0007	no	0.4	10	10
COD Cell Test	1.14691.0007	no	0.4	20	20
COD Cell Test	1.14555.0007	no	1.0	10	10
COD Cell Test	1.01797.0007	no	10	20	20
COD Cell Test for seawater / high chloride contents	1.17058.0007	yes	35	10	10
COD Cell Test for seawater / high chloride contents	1.17059.0007	yes	35	10	10
COD Cell Test (Hg free)	1.09772.0001	no	0	10	10
COD Cell Test (Hg free)	1.09773.0007	no	0	10	10
Copper Cell Test	1.14553.0001	yes	15	15	15
Copper Test	1.14767.0001	yes	15	15	15
Cyanide Cell Test	1.02531.0001	no	10	10	10
Cyanide Cell Test	1.14561.0001	no	10	10	10
Cyanide Test	1.09701.0001	no	10	10	10
Cyanuric Acid Test	1.19253.0001	yes	-	-	-
<b>F</b> Fluoride Test	1.00822.0250	yes <sup>2)</sup>	0.05	0.05	0.001
Fluoride Cell Test	1.00809.0001	no	10	10	10
Fluoride Test	1.14598.0001	yes	20	20	20
	1.14598.0002				
Formaldehyde Cell Test	1.14500.0001	no	5	0	10
Formaldehyde Test	1.14678.0001	no	5	0	10
<b>G</b> Gold Test	1.14821.0002	yes	10	20	5
<b>H</b> Hardness, see Total Hardness Cell Test					
Hydrazine Test	1.09711.0001	no	20	5	2
Hydrogen Peroxide Cell Test	1.14731.0001	yes	20	20	20
Hydrogen Peroxide Test	1.18789.0001	no	0.1	1	5
<b>I</b> Iodine Test	1.00606.0001	no	10	10	10
Iron Cell Test	1.14549.0001	yes	20	20	20
Iron Cell Test	1.14896.0007	no	5	5	5
Iron Test	1.14761.0001	yes	20	20	20
	1.14761.0002				
Iron Test	1.00796.0007	yes	20	20	20
<b>L</b> Lead Cell Test	1.14833.0001	no	20	20	1
Lead Test	1.09717.0001	no	20	5	15

<sup>2)</sup> Distill beforehand as per APHA 4400-F B



# ANALYTICAL APPLICATION NOTES FINDER

Interested in more application examples?  
Visit: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf) > Photometry

## Suitability of test kits for testing seawater and tolerance limits for neutral salts | Overview M-P

Test kit	Ord. No.	Seawater	Tolerance limit, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>M</b> Magnesium Cell Test	1.00815.0001	yes	2	2	1
Manganese Test	1.00816.0007	no	20	20	20
Manganese Test	1.01846.0007	no	20	25	5
Manganese Test	1.14770.0007	yes	20	20	20
	1.14770.0008				
Molybdenum Cell Test	1.00860.0001	no	20	20	5
Monochloramine Test	1.01632.0001	no	10	10	20
<b>N</b> Nickel Cell Test	1.14554.0001	no	20	20	20
Nickel Test	1.14785.0007	no	20	20	20
Nitrate Cell Test	1.14542.0001	no	0.4	-	20
Nitrate Cell Test	1.14563.0001	no	0.2	-	20
Nitrate Cell Test	1.14764.0001	no	0.5	-	20
Nitrate Cell Test	1.00614.0001	no	2	-	20
Nitrate Test	1.01842.0007	no	0.001	-	0.001
Nitrate Test	1.14773.0001	no	0.4	-	20
Nitrate Test	1.09713.0001	no	0.2	-	20
	1.09713.0002				
Nitrate Cell Test (seawater)	1.14556.0001	yes	20	-	20
Nitrate Test (seawater)	1.14942.0001	yes	20	-	20
Nitrite Cell Test	1.14547.0001	yes	20	20	15
Nitrite Cell Test	1.00609.0001	yes	20	20	15
Nitrite Test	1.14776.0001	yes	20	20	15
	1.14776.0002				
Nitrogen (total) Cell Test	1.14537.0001	no	0.5	-	10
Nitrogen (total) Cell Test	1.00613.0001	no	0.2	-	10
Nitrogen (total) Cell Test	1.14763.0001	no	2	-	20
<b>O</b> Oxygen Cell Test	1.14694.0001	no	10	5	1
Oxygen Scavengers Test	1.19251.0001	no	-	-	-
Ozone Test	1.00607.0001	no	10	10	10
	1.00607.0002				
<b>P</b> pH Cell Test	1.01744.0001	yes	-	-	-
Phenol Cell Test	1.14551.0001	yes	20	20	15
Phenol Test	1.00856.0001	yes	20	20	20
Phosphate (ortho-phosphate) Cell Test	1.00475.0007	yes	20	20	20
Phosphate (ortho-phosphate) Cell Test	1.14543.0007	yes	5	10	10
Phosphorus (total) Cell Test	1.14543.0007	no	1	10	10
Phosphate (ortho-phosphate) Cell Test	1.00474.0007	yes	5	10	10
Phosphate (ortho-phosphate) Cell Test	1.14729.0007	yes	20	20	20
Phosphorus (total) Cell Test	1.14729.0007	yes	5	20	20

# Spectroquant® Test Kits for samples with high salt content

## Suitability of test kits for testing seawater and tolerance limits for neutral salts | Overview P-Z

Test kit	Ord. No.	Seawater	Tolerance limit, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>P</b> Phosphate (ortho-phosphate) Cell Test	1.00616.0007	yes	20	20	20
Phosphate (ortho-phosphate) Cell Test	1.00673.0007	yes	20	20	20
Phosphorus (total) Cell Test	1.00673.0007	yes	20	20	20
Phosphate Test	1.14848.0007	yes	5	10	10
	1.14848.0008				
Phosphate Test	1.00798.0007	yes	15	20	10
Phosphate Cell Test	1.14546.0001	yes	20	20	20
Phosphate Test	1.14842.0001	yes	20	20	20
Potassium Cell Test	1.14562.0001	yes	20	20	20
Potassium Cell Test	1.00615.0001	yes	20	20	20
<b>R</b> Residual Hardness Cell Test	1.14683.0001	no	0.01	0.01	0.01
<b>S</b> Silicate (Silicic Acid) Test	1.01813.0007	no	0.5	1	0.2
Silicate (Silicic Acid) Test	1.14794.0007	yes	5	10	5
Silicate (Silicic Acid) Test	1.00857.0001	no	5	10	2.5
Silver Test	1.14831.0007	no	0	1	5
Sodium Cell Test	1.00885.0001	no	–	10	1
Sulfate Test	1.01812.0001	no	2	0.007	–
Sulfate Cell Test	1.14548.0001	yes	10	0.1	–
Sulfate Cell Test	1.00617.0001	yes	10	0.1	–
Sulfate Cell Test	1.14564.0001	yes	10	0.5	–
Sulfate Cell Test	1.02537.0001	yes	10	0.015	–
	1.02537.0002				
Sulfate Test	1.02532.0001	no	2	0.007	–
Sulfate Test	1.14791.0001	no	0.2	0.2	–
Sulfide Test	1.14779.0001	no	0.5	1	1
Sulfite Cell Test	1.14394.0001	no	20	20	20
Sulfite Test	1.01746.0001	no	20	20	20
Surfactants (anionic) Cell Test	1.02552.0001	no	0.1	0.01	10
Surfactants (cationic) Cell Test	1.01764.0001	no	0.1	0.1	20
Surfactants (nonionic) Cell Test	1.01787.0001	no	2	5	2
<b>T</b> Tin Cell Test	1.14622.0001	yes	20	20	20
TOC Cell Test	1.14878.0001	no	0.5	10	10
TOC Cell Test	1.14879.0001	no	5	20	20
Total Hardness Cell Test	1.00961.0001	no	2	2	1
<b>V</b> Volatile Organic Acid Cell Test	1.01749.0007	no	20	20	10
Volatile Organic Acid Test	1.01809.0007	no	20	20	10
<b>Z</b> Zinc Cell Test	1.00861.0007	no	20	20	1
Zinc Cell Test	1.14566.0001	no	10	10	10
Zinc Test	1.14832.0001	no	5	15	15

# Be flexible



## Broad measuring range for flexible sulfate testing

- Sulfate is essential for human health
- But high sulfate levels in tap water can cause pipe corrosion or bursting, and diminish water quality
- Maximum limit set by regulatory agencies: approx. 250 mg/L
- Spectroquant® sulfate test with range of 5–300 mg/L is ideal for testing low sulfate in bottled water or high content in tap water
- Cost-efficient test with 100 or 1000 determinations per pack
- Alternatively, Spectroquant® cell test contains 25 prefilled cells for greater convenience

- **Spectroquant® Sulfate Test** [Ord. No. 1.02537.0001]
- **Spectroquant® Sulfate Cell Test** [Ord. No. 1.02532.0001]

More applications for your convenience can be downloaded from our Application Notes Finder: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)

# Be sure

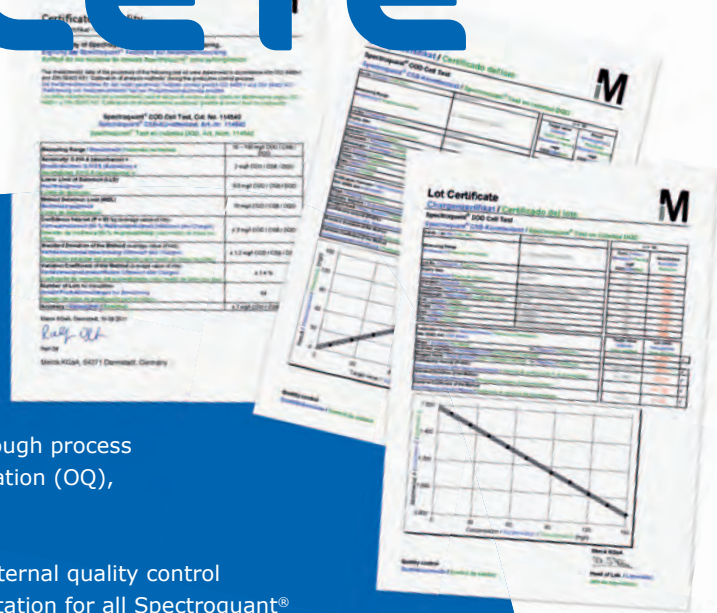
## Sensitive, secure measurement of phosphate

- Phosphate is essential for plants and animals
- But phosphate content in ground and surface water should be as low as possible to avoid eutrophication (excess algal growth) and environmental risks
- With Spectroquant® Prove 600 and 100-mm cells, levels as low as 2.5 µg/L PO<sub>2</sub>-P can be measured, corresponding to DIN EN ISO 6878, 4500 P and EPA 365.2+3
- Spectroquant® Phosphate Test [Ord. No. 1.14848.0007]



Learn more on page 74 and 85

## SIMPLY COMPLETE



**Analytical Quality Assurance [AQA]** is the practice of ensuring that your results are reliable and conform with Good Laboratory Practice (GLP) guidelines. This thorough process includes installation qualification (IQ), operational qualification (OQ), and performance qualification (PQ).

**The Spectroquant® AQA concept** covers all stages of internal quality control (IQC). We also provide complete IQ, OQ and PQ documentation for all Spectroquant® instruments. Target values and tolerances are either supplied in certificates or pre-programmed in the instruments.

**Installation Qualification [IQ]** aims to verify that instrument delivery matches the purchase order, and to assure that it is installed correctly.

## AQA 3 steps to great quality

# 1

**PHOTOMETER CHECK:** Operational qualification (OQ)  
Easy to perform with certified color standards, or Certipur® UV/Vis standards

# 2

**SYSTEM CHECK:** Performance qualification (PQ)  
Recovery measurement using CombiCheck standard solution, certified reference material (CRM) standard solutions, or Certipur® standard solutions

# 3

**MATRIX CHECK:** Performance qualification (PQ)  
One-time spiking with CombiCheck R-2 solution, or multiple dilution/spiking with certified reference material (CRM) standard solutions or self-prepared solutions.



# PHOTOMETER CHECK

# AQA 1

## Operational qualification (OQ) – Checking the instrument

The aim of OQ is to assure the instrument's functionality over the entire operating range, according to defined procedures.

### Photometer Check

All Spectroquant® instruments are checked using certified color standards, or Certipur® UV/Vis standards.

### Spectroquant® NOVA and Spectroquant® Prove photometers

These photometers offer an instrument-supported AQA concept that combines the three essential components of quality control. For effortless, accurate AQA – **target values and tolerances are on the certificate, and can be stored and used for further checks.**



100 | 300 | 600  
30 | 60 | 60A  
100  
Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CYA/pH

Photometer Check	Information	Content	Ord. No.	Prove	NOVA	Move	Multy
<b>Spectroquant® Zero Cell</b>	We recommend replacing the zero cell every 2 years.	<ul style="list-style-type: none"> <li>One 16-mm cell filled with distilled water</li> </ul>	<b>1.73503.0001</b>	■	■		
<b>Spectroquant® PhotoCheck</b>	Secondary standards are compliant with ISO 9001, ISO 14001 and ISO 17205 guidelines, and calibrated with instrument qualified with NIST standards.	<ul style="list-style-type: none"> <li>Check solutions for 3 different wavelengths</li> <li>2 zero cells</li> <li>2 cells for checking the bar-code reader (only for Spectroquant® NOVA photometers)</li> </ul>	<b>1.14693.0001</b>	■	■		
<b>Spectroquant® Verification Standards</b>	Standards are supplied in sealed vials, which are individually calibrated on instruments traceable to NIST SRM 2032, 935a.	<ul style="list-style-type: none"> <li>1 zero standard</li> <li>6 cells for checking 6 different wavelengths of the instrument</li> </ul>	<b>1.19302.0001</b>			■	■
<b>Spectroquant® Reference Standards</b>	Standards are supplied in sealed vials, which are individually calibrated on instruments traceable to NIST SRM 2032, 935a.	<ul style="list-style-type: none"> <li>1 zero standard</li> <li>3 cells for checking 3 different concentrations for chlorine, chlorine dioxide and ozone method in the instrument</li> </ul>	<b>1.19301.0001</b>			■	
<b>Spectroquant® PipeCheck</b>	For checking pipettes and documenting results, without the need for a precise balance.	<ul style="list-style-type: none"> <li>24 cells with check solutions</li> <li>4 cells with corresponding reference solutions</li> </ul>	<b>1.14962.0001</b>	■	■	■	■

# Spectroquant® Analytical Quality Assurance

## Certipur® UV/Vis standards

Certipur® UV/Vis standards can be used to verify the consistent and correct operation of your UV/Vis spectrophotometer. The solutions are suitable for checking the following parameters as per Ph Eur:

- Absorption
- Stray light
- Wavelength accuracy

Operations as per GLP, GMP, USP and ISO 9001 or ISO 45001 demand these regular controls. All standards are traceable to NIST.



Designation	Content	Ord. No.	Prove 100	Prove 300	Prove 600
UV/Vis Standard 1	Potassium dichromate solution for absorbance acc. to DAB and Ph Eur Certipur®   2 x 10 mL K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> – 60.06 mg/L in H <sub>2</sub> SO <sub>4</sub> – 0.01 N and 6 x 10 mL H <sub>2</sub> SO <sub>4</sub> – 0.01 N	1.08160.0001	■	■	■
UV/Vis Standard 1A	Potassium dichromate solution for absorbance at 430 nm acc. to DAB and Ph Eur Certipur®   2 x 10 mL K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> – 600.06 mg/L in H <sub>2</sub> SO <sub>4</sub> – 0.01 N and 6 x 10 mL H <sub>2</sub> SO <sub>4</sub> – 0.01 N	1.04660.0001	■	■	■
UV/Vis Standard 2	Sodium nitrite solution for stray light testing acc. to DAB and Ph Eur Certipur®   3 x 10 mL NaNO <sub>2</sub> – 50 g/L in H <sub>2</sub> O	1.08161.0001	■	■	■
UV/Vis Standard 3	Sodium iodide solution for stray light testing acc. to DAB and Ph Eur Certipur®   3 x 10 mL NaI – 10 g/L in H <sub>2</sub> O	1.08163.0001			■
UV/Vis Standard 4	Potassium chloride solution for stray light testing acc. to DAB and Ph Eur Certipur®   3 x 10 mL KCl – 12 g/L in H <sub>2</sub> O	1.08164.0001			■
UV/Vis Standard 5	Toluene solution in n-hexane for testing the resolution power acc. to DAB and Ph Eur Certipur®   2 x 10 mL 0.02 % (v/v) toluene and 6 x 10 mL n-hexane	1.08165.0001			■
UV/Vis Standard 6	Holmium oxide solution reference material for wavelength testing acc. to DAB and Ph Eur Certipur®   3 x 10 mL Ho <sub>2</sub> O <sub>3</sub> – 40 g/L in HClO <sub>4</sub> (10 % v/v)	1.08166.0001	■	■	■

## SYSTEM CHECK

## AQA 2

### Performance qualification [PQ] – Checking the complete system and sample matrix

Verifying product-related functionalities is the most comprehensive step in the process, and involves the measurement of both method-specific standards and real samples. PQ consists of two components: System Check and Matrix Check.

### System Check

System Check covers all components of the analysis (instrument, test kit, standard, pipette and/or cell, and operator).

▶ The recommended standard solutions for each Spectroquant® test kit are listed on page 92 – 97.

▶ Spectroquant® CombiCheck Product information see page 98 – 101

▶ Standard solutions (CRM) for photometric applications Product information see page 102

▶ Certipur® standard solution Product information see page 106

## MATRIX CHECK

# AQA 3

**What:** Matrix Check, identifies measurement errors due to interferences from foreign substances in the sample. As they can significantly interfere with results, various foreign substances have been investigated to define the maximum concentration at which they may be present in samples without causing errors. These limits are stated in the package insert of each Spectroquant® test kit.

**Why:** For samples with very complex or unknown compositions, interferences can be analyzed based on recovery rates, and rectified through appropriate countermeasures, such as sample pre-treatment.

**How:** Depending on the sample concentration, there are two methods to choose from:

### 1. One-time standard addition (spiking) with CombiCheck R-2 addition solution

▶ Spectroquant® CombiCheck

Product information see page 98 – 101

### 2. Multiple dilutions or spiking with self-prepared spiking solutions

To avoid changing the sample matrix, spiking solutions should be highly concentrated standards, and used in small quantities relative to the sample portion.

▶ Standard solutions (CRM) for photometric applications

Product information see page 102

▶ Certipur® standard solution

Product information see page 106

Comprehensive quality assurance using IQ, OQ, and PQ documents will transform your measurements into proven, verifiable analytical results. **Please contact your local MilliporeSigma representative to learn more about our quality assurance service.**

# PROTECT YOUR DATA

### Password-protected control of the complete system

- Ensure AQA intervals are observed by issuing a password (NOVA photometers), or defining hierarchical user groups (Prove spectrophotometers)
- Measurements and methods are only possible if quality control checks and intervals are adhered to
- Documentation of AQA results are provided in the final report, proving GLP compliance and ensuring that the system is tested



# Spectroquant® Analytical Quality Assurance

The following tables show you the most suitable test kits for different quality assurance parameters. In cases where a parameter is not stable (e.g. chlorine), we provide application instructions for preparing the standard. These can be found in the preface of our photometer and colorimeter manuals, or on [www.emdmillipore.com/photometry](http://www.emdmillipore.com/photometry). Comprehensive overview of standard solutions you can find from our e-shop [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and page 104.

## Parameters A-B

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>A</b> Acid Capacity Cell Test to pH 4.3 (total alkalinity)	1.01758.0001			38227 <sup>2)</sup>	
Aluminium Cell Test	1.00594.0001	1.18701.0001	1.32226.0100	<sup>1)</sup>	1.19770.0100
Aluminium Test	1.14825.0001	1.18701.0001	1.32225.0100	<sup>1)</sup>	1.19770.0100
Ammonium Cell Test	1.14739.0001	1.14695.0001	1.25022.0100 1.25023.0100	<sup>1)</sup>	1.19812.0500
Ammonium Cell Test	1.14558.0001	1.14676.0001	1.25022.0100 1.25023.0100 1.25024.0100 1.25025.0100	<sup>1)</sup>	1.19812.0500
Ammonium Cell Test	1.14544.0001	1.14675.0001	1.25023.0100 1.25024.0100 1.25025.0100 1.25026.0100	<sup>1)</sup>	1.19812.0500
Ammonium Cell Test	1.14559.0001	1.14689.0001	1.25025.0100 1.25026.0100 1.25027.0100	<sup>1)</sup>	1.19812.0500
Ammonium Test	1.14752.0001 1.14752.0002	1.14695.0001	1.25022.0100 1.25023.0100 1.25024.0100	<sup>1)</sup>	1.19812.0500
Ammonium Test	1.00683.0001	1.14689.0001	1.25025.0100 1.25026.0100 1.25027.0100	<sup>1)</sup>	1.19812.0500
AOX Cell Test	1.00675.0007			0.2 – 2.0 mg/L AOX 1.00680.0001	
Arsenic Test	1.01747.0001			<sup>1)</sup>	1.19773.0100
<b>B</b> BOD Cell Test	1.00687.0001			EN 1899, 210 mg/L 1.00718.0001	
Boron Cell Test	1.00826.0001		1.33005.0100	<sup>1)</sup>	1.19500.0100
Boron Test	1.14839.0001			<sup>1)</sup>	1.19500.0100
Bromate			1.33006.0100 1.33007.0100	<sup>2)</sup>	
Bromine Test	1.00605.0001			DIN EN ISO 7393 <sup>2)</sup>	

**1)** Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see Ord. No. Certipur® standard solution) | **2)** Own standards. Worksheets how to prepare these standards can be downloaded from our website [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf) > Photometry > Field of Activity/Sample = Standard | **3)** For photometers of other manufacturers

## Parameters C

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
Cadmium Cell Test	1.14834.0001	1.18700.0001	1.32228.0100	<sup>1)</sup>	1.19777.0100
Cadmium Test	1.01745.0001	1.18700.0001	1.32228.0100		1.19777.0100
Calcium Cell Test	1.00858.0001			NIST3109A <sup>2)</sup>	
Calcium Test	1.00049.0001			<sup>1)</sup>	1.19778.0100
Calcium Test	1.14815.0001			<sup>1)</sup>	1.19778.0100
Chloride Cell Test	1.01804.0007		1.33010.0100	<sup>1)</sup>	1.19897.0500
Chloride Cell Test	1.14730.0007	1.14676.0001 1.14675.0001	1.32229.0100 1.32230.0100	<sup>1)</sup>	1.19897.0500
Chloride Test	1.01807.0007		1.33010.0100	<sup>1)</sup>	1.19897.0500
Chloride Test	1.14897.0007 1.14897.0008	1.14696.0001	1.32229.0100 1.32230.0100	<sup>1)</sup>	1.19897.0500
Chlorine Cell test (free)	1.00595.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Test (free)	1.00598.0002 1.00598.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Test (total)	1.00602.0001 1.00602.0002			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Cell Test (free and total)	1.00597.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Test (free and total)	1.00599.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Powder Packs <sup>3)</sup> (free)	1.19254.0001 1.19256.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Powder Packs <sup>3)</sup> (total)	1.19257.0001 1.19258.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Dioxide Test	1.00608.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chromate Cell Test	1.14552.0001		1.33013.0100	<sup>1)</sup>	1.19780.0500
Chromate Test	1.14758.0001		1.33012.0100	<sup>1)</sup>	1.19780.0500
COD Cell Test	1.14560.0007	1.14695.0001	1.25028.0100	<sup>2)</sup>	
COD Cell Test	1.01796.0007	1.14695.0001	1.25028.0100	<sup>2)</sup>	
COD Cell Test	1.14540.0007	1.14676.0001	1.25029.0100	<sup>2)</sup>	
COD Cell Test	1.14895.0001	1.14696.0001	1.25029.0100 1.25030.0100	<sup>2)</sup>	
COD Cell Test	1.14690.0001	1.14696.0001	1.25029.0100 1.25030.0100 1.25031.0100	<sup>2)</sup>	
COD Cell Test	1.14541.0007	1.14675.0001	1.25029.0100 1.25030.0100 1.25031.0100 1.25032.0100	<sup>2)</sup>	
COD Cell Test	1.14691.0007	1.14738.0001	1.25031.0100 1.25032.0100 1.25033.0100	<sup>2)</sup>	
COD Cell Test	1.14555.0007	1.14689.0001	1.25032.0100 1.25033.0100 1.25034.0100	<sup>2)</sup>	
COD Cell Test	1.01797.0007		1.25035.0100	<sup>2)</sup>	

# Spectroquant® Analytical Quality Assurance

## Parameters C-M

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>C</b> COD Cell Test (Hg-free)	1.09772.0001		1.25028.0100 1.25029.0100	2)	
COD Cell Test (Hg-free)	1.09773.0007		1.25030.0100 1.25031.0100 1.25032.0100	2)	
COD Cell Test <sup>3)</sup>	1.18750.0007	1.14695.0001	1.25028.0100	2)	
COD Cell Test <sup>3)</sup>	1.18751.0007	1.14676.0001	1.25029.0100	2)	
COD Cell Test <sup>3)</sup>	1.18752.0007	1.14675.0001	1.25029.0100	2)	
COD Cell Test <sup>3)</sup>	1.18753.0007	1.14689.0001	1.25032.0100	2)	
COD Cell Test for seawater / high chloride contents	1.17058.0007			2)	
COD Cell Test for seawater / high chloride contents	1.17059.0007			2)	
Copper Cell Test	1.14553.0001	1.18700.0001		1)	1.19786.0100
Copper Test	1.14767.0001	1.18700.0001			1.19786.0100
Cyanide Cell Test	1.02531.0001			1)	1.19533.0500
Cyanide Cell Test	1.14561.0001			1)	1.19533.0500
Cyanide Test	1.09701.0001			1)	1.19533.0500
Cyanuric Acid Test	1.19253.0001			2)	
<b>F</b> Fluoride Cell Test	1.00809.0001		1.32234.0100	1)	1.19814.0500
Fluoride Test	1.00822.0250		1.32234.0100	1)	1.19814.0500
Fluoride Test	1.14598.0001 1.14598.0002		1.32234.0100	1)	1.19814.0500
Formaldehyde Cell Test	1.14500.0001			2)	
Formaldehyde Test	1.14678.0001			2)	
<b>G</b> Gold Test	1.14821.0002			1)	1.70216.0100
<b>H</b> Hydrazine Test	1.09711.0001			2)	
Hydrogen Peroxide Cell Test	1.14731.0001			2)	
Hydrogen Peroxide Test	1.18789.0001			2)	
<b>I</b> Iodine Test	1.00606.0001			DIN EN ISO 7393 <sup>2)</sup>	
Iron Cell Test	1.14549.0001	1.18700.0001	1.33018.0100 1.33019.0100	1)	1.19781.0100
Iron Cell Test	1.14896.0007			1)	1.19781.0100
Iron Test	1.14761.0002 1.14761.0001	1.18700.0001	1.33014.0100 1.33018.0100	1)	1.19781.0100
Iron Test	1.00796.0007	1.18700.0001	1.33014.0100 1.33018.0100	1)	1.19781.0100
<b>L</b> Lead Cell Test	1.14833.0001	1.18701.0001		1)	1.19776.0100
Lead Test	1.09717.0001	1.18701.0001	1.33003.0100 1.33004.0100	1)	1.19776.0100
<b>M</b> Magnesium Cell Test	1.00815.0001		NIST 3131A	2)	
Manganese Cell Test	1.00816.0007	1.18700.0001	1.32238.0100	1)	1.19789.0100

1) Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see Ord. No. Certipur® standard solution) | 2) Own standards. Worksheets how to prepare these standards can be downloaded from our website [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf) > Photometry > Field of Activity/Sample = Standard | 3) For photometers of other manufacturers



# ANALYTICAL APPLICATION NOTES FINDER

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## Parameters M-O

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.	
M Manganese Test	1.01846.0007	1.18700.0001		1)	1.19789.0100	
	1.14770.0007	1.18700.0001	1.32237.0100	1)	1.19789.0100	
	1.14770.0008		1.32238.0100			
	Molybdenum Cell Test	1.00860.0001		1)	1.70227.0001	
Monochloramine Test	1.01632.0001			2)		
N Nickel Cell Test	1.14554.0001	1.18701.0001		1)	1.09989.0001	
	Nickel Test	1.14785.0007	1.18701.0001	1)	1.09989.0001	
	Nitrate Cell Test	1.14542.0001	1.14675.0001	1.25037.0100	1)	1.19811.0500
				1.25038.0100		
	Nitrate Cell Test	1.14563.0001	1.14675.0001	1.25037.0100	1)	1.19811.0500
				1.25038.0100		
	Nitrate Cell Test	1.14764.0001	1.14738.0001	1.25037.0100	1)	1.19811.0500
				1.25038.0100		
				1.25039.0100		
	Nitrate Cell Test	1.00614.0001		1.25039.0100	1)	1.19811.0500
				1.25040.0100		
	Nitrate Test	1.01842.0007		1.32241.0100	1)	1.19811.0500
				1.32242.0100		
	Nitrate Test	1.14773.0001	1.14676.0001	1.25036.0100	1)	1.19811.0500
			1.14675.0001	1.25037.0100		
				1.25038.0100		
	Nitrate Test	1.09713.0001	1.14676.0001	1.25036.0100	1)	1.19811.0500
		1.09713.0002	1.14675.0001	1.25037.0100		
	Nitrate Cell Test in seawater	1.14556.0001	1.14676.0001	1.25036.0100	1)	1.19811.0500
				1.25037.0100		
Nitrate Test in seawater	1.14942.0001	1.14675.0001	1.25036.0100	1)	1.19811.0500	
			1.25037.0100			
			1.25038.0100			
Nitrite Cell Test	1.14547.0001		1.25041.0100	1)	1.19899.0500	
Nitrite Test	1.14776.0002		1.25041.0100	1)	1.19899.0500	
	1.14776.0001		1.33021.0100			
Nitrite Cell Test	1.00609.0001		1.25042.0100	1)	1.19899.0500	
Nitrogen (total) Cell Test	1.14537.0001	1.14695.0001	1.25043.0100	2)		
			1.25044.0100			
Nitrogen (total) Cell Test	1.00613.0001	1.14695.0001	1.25043.0100	2)		
			1.25044.0100			
Nitrogen (total) Cell Test	1.14763.0001	1.14689.0001	1.25044.0100	2)		
			1.25045.0100			
Oxygen Cell Test	1.14694.0001			2)		
Oxygen Scavengers Test	1.19251.0001			2)		
Ozone-Test	1.00607.0001			DIN EN ISO 7393 2)		
	1.00607.0002					



# Spectroquant® Analytical Quality Assurance

## Parameters P-S

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>P</b> pH Cell Test	1.01744.0001			Buffer solution pH 7.00 / 1.09439.1000	
Phenol Cell Test	1.14551.0001			1524806 <sup>2)</sup>	
Phenol Test	1.00856.0001			1524806 <sup>2)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00474.0007	1.14676.0001		<sup>1)</sup>	1.19898.0500
Phosphate (ortho-phosphate) Cell Test	1.14543.0007	1.14676.0001		<sup>1)</sup>	1.19898.0500
Phosphorus (total) Cell Test	1.14543.0007	1.14676.0001	1.25046.0100 1.25047.0100	<sup>1)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00475.0007	1.14675.0001 1.14738.0001		<sup>1)</sup>	1.19898.0500
Phosphate (ortho-phosphate) Cell Test	1.14729.0007	1.14675.0001 1.14738.0001		<sup>1)</sup>	1.19898.0500
Phosphorus (total) Cell Test	1.14729.0007	1.14676.0001	1.25047.0100 1.25048.0100	<sup>1)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00616.0007			<sup>1)</sup>	1.19898.0500
Phosphorus (total) Cell Test	1.00673.0007		1.25048.0100 1.25049.0100	<sup>1)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00673.0007			<sup>1)</sup>	1.19898.0500
Phosphate (ortho-phosphate) Cell Test	1.14546.0001			<sup>1)</sup>	1.19898.0500
Phosphate Test (ortho-phosphate)	1.14848.0007 1.14848.0008	1.14676.0001		<sup>1)</sup>	1.19898.0500
Phosphate Test (ortho-phosphate)	1.00798.0007			<sup>1)</sup>	1.19898.0500
Phosphate Test (ortho-phosphate)	1.14842.0001			<sup>1)</sup>	1.19898.0500
Potassium Cell Test	1.14562.0001			<sup>1)</sup>	1.70230.0100
Potassium Cell Test	1.00615.0001			<sup>1)</sup>	1.70230.0100
<b>R</b> Residual Hardness Cell Test	1.14683.0001			<sup>1)</sup>	1.19778.0100
<b>S</b> Silicate (silicic acid) Test	1.01813.0007		1.32244.0100	<sup>1)</sup>	1.70236.0100
Silicate (silicic acid) Test	1.14794.0007			<sup>1)</sup>	1.70236.0100
Silicate (silicic acid) Test	1.00857.0001			<sup>1)</sup>	1.70236.0100
Silver Test	1.14831.0007			<sup>1)</sup>	1.19797.0100
Sodium Cell Test	1.00885.0001			<sup>2)</sup>	1.19897.0500
Sulfate Cell Test	1.14548.0001	1.14676.0001	1.25050.0100 1.25051.0100	<sup>1)</sup>	1.19813.0500
Sulfate Cell Test	1.00617.0001	1.14676.0001	1.25051.0100 1.25052.0100	<sup>1)</sup>	1.19813.0500

**1)** Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see Ord. No. Certipur® standard solution) | **2)** Own standards. Worksheets how to prepare these standards can be downloaded from our website [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf) > Photometry > Field of Activity/Sample = Standard | **3)** For photometers of other manufacturers

## Parameters S-Z

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>S</b> Sulfate Cell Test	1.14564.0001	1.14675.0001	1.25051.0100 1.25052.0100 1.25053.0100	<sup>1)</sup>	1.19813.0500
Sulfate Cell Test	1.02532.0001			<sup>1)</sup>	1.19813.0500
Sulfate Test	1.02537.0001 1.02537.0002	1.14676.0001	1.25050.0100 1.25051.0100	<sup>1)</sup>	1.19813.0500
Sulfate Test	1.01812.0001			<sup>1)</sup>	1.19813.0500
Sulfate Test	1.14791.0001	1.14676.0001	1.25050.0100 1.25051.0100	<sup>1)</sup>	1.19813.0500
Sulfide Test	1.14779.0001			<sup>2)</sup>	
Sulfite Cell Test	1.14394.0001			<sup>2)</sup>	
Sulfite Test	1.01746.0001			<sup>2)</sup>	
Surfactants (anionic) Cell Test	1.02552.0001			<sup>2)</sup>	
Surfactants (cationic) Cell Test	1.01764.0001			1102974 <sup>2)</sup>	
Surfactants (nonionic) Cell Test	1.01787.0001		1.33022.0100 1.33023.0100	<sup>2)</sup>	
<b>T</b> Tin Cell Test	1.14622.0001			<sup>2)</sup>	1.70242.0100
TOC Cell Test	1.14878.0001		1.32247.0100 1.32248.0100 1.32249.0100	<sup>1)</sup>	1.09017.0100
TOC Cell Test	1.14879.0001		1.32251.0100 1.32252.0100 1.32253.0100	<sup>1)</sup>	1.09017.0100
Total Hardness Cell Test	1.00961.0001			NIST3109A <sup>2)</sup>	
Total Nitrogen Cell Test	1.00613.0001	1.14695.0001	1.25043.0100 1.25044.0100	<sup>2)</sup>	
Total Nitrogen Cell Test	1.14537.0001	1.14695.0001	1.25043.0100 1.25044.0100	<sup>2)</sup>	
Total Nitrogen Cell Test	1.14763.0001	1.14689.0001	1.25044.0100 1.25045.0100	<sup>2)</sup>	
<b>V</b> Volatile Organic Acid Cell Test	1.01749.0007			<sup>2)</sup>	
Volatile Organic Acid Test	1.01809.0007			<sup>2)</sup>	
<b>Z</b> Zinc Cell Test	1.00861.0007	1.18701.0001		<sup>1)</sup>	1.19806.0100
Zinc Cell Test	1.14566.0001			<sup>1)</sup>	1.19806.0100
Zinc Test	1.14832.0001	1.18701.0001		<sup>1)</sup>	1.19806.0100



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# Spectroquant® CombiCheck Analytical Quality Assurance

CombiCheck contains multi-parameter standard solutions for checking the overall system – from test kits and instruments to individual working procedures. Each pack contains one standard solution and one addition solution, both of which are directly traceable to NIST primary standards.

When the specified concentration of the standard solution is achieved, the entire analysis system is in order. If there are deviations from the stated value, use the addition solution to identify errors due to interfering substances in the sample matrix. In case the recovery rate is insufficient (beyond specified tolerances), analyze and eliminate the cause through appropriate countermeasures, such as sample pre-treatment.



## Ord. No. 1.14676.0001 Spectroquant® CombiCheck 10

	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks
<b>Standard Solution Reagent R-1</b>	Ammonium	4.00 ±0.30 mg/L NH <sub>4</sub> -N	1.14558.0001	1.0	96
	Chloride	25 ±6 mg/L Cl	1.14730.0007	1.0	96
	COD	80 ±12 mg/L COD	1.14540.0007	3.0	32
		80 ±12 mg/L COD	1.18751.0007	2.0	48
	Nitrate	2.50 ±0.25 mg/L NO <sub>3</sub> -N	1.14556.0001	2.0	48
		2.50 ±0.25 mg/L NO <sub>3</sub> -N	1.14773.0001 <sup>2)</sup>	1.5	64
		2.50 ±0.25 mg/L NO <sub>3</sub> -N	1.09713.0001 <sup>3)</sup>	1.0	96
	Phosphate <sup>4)</sup>	0.80 ±0.08 mg/L PO <sub>4</sub> -P	1.00474.0007	5.0	19
		0.80 ±0.08 mg/L PO <sub>4</sub> -P	1.14543.0007	5.0	19
		0.80 ±0.08 mg/L PO <sub>4</sub> -P	1.14848.0007/ .0008 <sup>2)</sup>	5.0	19
		0.80 ±0.08 mg/L PO <sub>4</sub> -P	1.14848.0007 <sup>3)</sup> / .0008 <sup>3)</sup>	10.0	9
	Sulfate	100 ±15 mg/L SO <sub>4</sub> <sup>2-</sup>	1.14548.0001	5.0	19
		100 ±15 mg/L SO <sub>4</sub> <sup>2-</sup>	1.00617.0001	2.0	48
		100 ±15 mg/L SO <sub>4</sub> <sup>2-</sup>	1.14791.0001	2.5	38
100 ±15 mg/L SO <sub>4</sub> <sup>2-</sup>		1.02537.0001	5.0	19	
<b>Addition Solution Reagent R-2</b> (for spiking of samples)	Ammonium	3.00 ±0.25 mg/L NH <sub>4</sub> -N	1.14558.0001	0.10	280
	Chloride	25 ±6 mg/L Cl	1.14730.0007	0.10	280
	COD	30 ±8 mg/L COD	1.14540.0007	0.10	280
		45 ±8 mg/L COD	1.18751.0007	0.10	280
	Nitrate	1.50 ±0.20 mg/L NO <sub>3</sub> -N	1.14556.0001	0.10	280
		2.00 ±0.40 mg/L NO <sub>3</sub> -N	1.14773.0001 <sup>2)</sup>	0.10	280
		3.00 ±0.50 mg/L NO <sub>3</sub> -N	1.09713.0001 <sup>3)</sup>	0.10	280
		6.0 ±1.0 mg/L NO <sub>3</sub> -N	1.09713.0001 <sup>1) 2)</sup>	0.10	280
	Phosphate <sup>4)</sup>	0.60 ±0.07 mg/L PO <sub>4</sub> -P	1.00474.0007	0.10	280
		0.60 ±0.07 mg/L PO <sub>4</sub> -P	1.14543.0007	0.10	280
		0.30 ±0.05 mg/L PO <sub>4</sub> -P	1.14848.0007/ .0008 <sup>3)</sup>	0.10	280
	Sulfate	40 ±5 mg/L SO <sub>4</sub> <sup>2-</sup>	1.14548.0001	0.10	280
		100 ±15 mg/L SO <sub>4</sub> <sup>2-</sup>	1.00617.0001	0.10	280
		80 ±10 mg/L SO <sub>4</sub> <sup>2-</sup>	1.14791.0001 <sup>1)</sup>	0.10	280
		40 ±5 mg/L SO <sub>4</sub> <sup>2-</sup>	1.02537.0001	0.10	280

1) using a 10-mm rectangular cell, Ord. No. 1.14946.0001

2) using a 20-mm rectangular cell, Ord. No. 1.14947.0001

3) using a 50-mm rectangular cell, Ord. No. 1.14944.0001

4) only the determination of ortho-phosphate can be checked

CombiCheck **20**

## Spectroquant® CombiCheck 20

Ord. No. 1.14675.0001

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks	
Ammonium	12.0 ±1.0 mg/L NH <sub>4</sub> -N	1.14544.0001	0.50	192	<b>Standard Solution Reagent R-1</b>
Chloride	60 ±10 mg/L Cl	1.14730.0007	1.0	96	
COD	750 ±75 mg/L COD	1.14541.0007	3.0	32	
	750 ±75 mg/L COD	1.18752.0007	2.0	48	
Nitrate	9.0 ±0.9 mg/L NO <sub>3</sub> -N	1.14563.0001	1.0	96	
	9.0 ±0.9 mg/L NO <sub>3</sub> -N	1.14542.0001	1.5	64	
	9.0 ±0.9 mg/L NO <sub>3</sub> -N	1.09713.0001/ .0002 <sup>1)</sup>	0.50	192 <sup>1)</sup>	
	9.0 ±0.9 mg/L NO <sub>3</sub> -N	1.14773.0001 <sup>1)</sup>	1.5	64	
	9.0 ±0.9 mg/L NO <sub>3</sub> -N	1.14942.0001	1.0	96	
Phosphate <sup>4)</sup>	8.0 ±0.7 mg/L PO <sub>4</sub> -P	1.00475.0007	1.0	96	
	8.0 ±0.7 mg/L PO <sub>4</sub> -P	1.14729.0007	1.0	96	
Sulfate	500 ±75 mg/L SO <sub>4</sub> <sup>2-</sup>	1.14564.0001	1.0	96	
Ammonium	8.0 ±0.8 mg/L NH <sub>4</sub> -N	1.14544.0001	0.10	280	<b>Addition Solution Reagent R-2</b> (for spiking of samples)
Chloride	40 ±7 mg/L Cl	1.14730.0007	0.10	280	
COD	200 ±40 mg/L COD	1.14541.0007	0.10	280	
	300 ±40 mg/L COD	1.18752.0007	0.10	280	
Nitrate	7.5 ±0.8 mg/L NO <sub>3</sub> -N	1.14563.0001	0.10	280	
	5.0 ±0.6 mg/L NO <sub>3</sub> -N	1.14542.0001	0.10	280	
	15.0 ±1.5 mg/L NO <sub>3</sub> -N	1.09713.0001/ .0002	0.10	280	
	5.0 ±0.6 mg/L NO <sub>3</sub> -N	1.14773.0001 <sup>1)</sup>	0.10	280	
	7.5 ±0.8 mg/L NO <sub>3</sub> -N	1.14942.0001 <sup>1)</sup>	0.10	280	
Phosphate <sup>4)</sup>	5.0 ±0.5 mg/L PO <sub>4</sub> -P	1.00475.0007	0.10	280	
	5.0 ±0.5 mg/L PO <sub>4</sub> -P	1.14729.0007	0.10	280	
Sulfate	150 ±30 mg/L SO <sub>4</sub> <sup>2-</sup>	1.14564.0001	0.10	280	

CombiCheck **50**

## Spectroquant® CombiCheck 50

Ord. No. 1.14695.0001

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks	
Ammonium	1.000 ±0.100 mg/L NH <sub>4</sub> -N	1.14739.0001	5.0	19	<b>Standard Solution Reagent R-1</b>
	1.00 ±0.10 mg/L NH <sub>4</sub> -N	1.14752.0002/ .0001 <sup>1)</sup>	5.0	19	
COD	20.0 ±4.0 mg/L COD	1.14560.0007	3.0	32	
	20.0 ±4.0 mg/L COD	1.01796.0007	2.0	48	
	20.0 ±4.0 mg/L COD	1.18750.0007	2.0	48	
Nitrogen	5.0 ±0.7 mg/L N	1.00613.0001	10	9	
	5.0 ±0.7 mg/L N	1.14537.0001	10	9	
Ammonium	1.000 ±0.100 mg/L NH <sub>4</sub> -N	1.14739.0001	0.10	280	<b>Addition Solution Reagent R-2</b> (for spiking of samples)
	1.00 ±0.10 mg/L NH <sub>4</sub> -N	1.14752.0002/ .0001 <sup>1)</sup>	0.10	280	
COD	10.0 ±3.0 mg/L COD	1.14560.0007	0.10	280	
	15.0 ±3.0 mg/L COD	1.01796.0007	0.10	280	
	15.0 ±3.0 mg/L COD	1.18750.0007	0.10	280	
Nitrogen	3.0 ±0.5 mg/L N	1.00613.0001	0.10	280	
	3.0 ±0.5 mg/L N	1.14537.0001	0.10	280	

# Spectroquant® CombiCheck Analytical Quality Assurance

CombiCheck **60**

Ord. No. 1.14696.0001

Spectroquant® CombiCheck 60

	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks
<b>Standard Solution Reagent R-1</b>	Chloride	125 ±13 mg/L Cl <sup>-</sup>	1.14897.0007/ .0008	1.0	96
	COD	250 ±25 mg/L COD	1.14690.0001	2.0	48
		250 ±20 mg/L COD	1.14895.0001	2.0	48
<b>Addition Solution Reagent R-2</b> (for spiking of samples)	Chloride	50 ±7 mg/L Cl <sup>-</sup>	1.14897.0007/ .0008	0.10	280
	COD	75 ±15 mg/L COD	1.14690.0001	0.10	280
		75 ±10 mg/L COD	1.14895.0001	0.10	280

CombiCheck **70**

Ord. No. 1.14689.0001

Spectroquant® CombiCheck 70

	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks
<b>Standard Solution Reagent R-1</b>	Ammonium	50.0 ±5.0 mg/L NH <sub>4</sub> -N	1.14559.0001	0.10	960
	Ammonium (2.0 – 75.0 mg/L)	50.0 ±5.0 mg/L NH <sub>4</sub> -N	1.00683.0001 <sup>1) 5)</sup>	0.20	480
	Ammonium (5 – 150 mg/L)	50 ±5 mg/L NH <sub>4</sub> -N	1.00683.0001 <sup>1) 5)</sup>	0.10	960
	COD	5,000 ±400 mg/L COD	1.14555.0007	1.0	96
		5,000 ±400 mg/L COD	1.18753.0007	0.20	480
Nitrogen	50 ±7 mg/L N	1.14763.0001	1.0	96	
<b>Addition Solution Reagent R-2</b> (for spiking of samples)	Ammonium	20.0 ±2.0 mg/L NH <sub>4</sub> -N	1.14559.0001	0.10	280
	Ammonium (2.0 – 75.0 mg/L)	10.0 ±1.0 mg/L NH <sub>4</sub> -N	1.00683.0001 <sup>1) 5)</sup>	0.10	280
	Ammonium (5 – 150 mg/L)	20 ±2 mg/L NH <sub>4</sub> -N	1.00683.0001 <sup>1) 5)</sup>	0.10	280
	COD	2,000 ±200 mg/L COD	1.14555.0007	0.10	280
	Nitrogen	20 ±6 mg/L N	1.14763.0001	0.10	280

CombiCheck **80**

Ord. No. 1.14738.0001

Spectroquant® CombiCheck 80

	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks
<b>Standard Solution Reagent R-1</b>	COD	1,500 ±150 mg/L COD	1.14691.0007	2.0	48
	Nitrate	25.0 ±2.5 mg/L NO <sub>3</sub> -N	1.14764.0001	0.50	190
	Phosphate <sup>4)</sup>	15.0 ±1.0 mg/L PO <sub>4</sub> -P	1.00475.0007	1.0	96
		15.0 ±1.0 mg/L PO <sub>4</sub> -P	1.14729.0007	1.0	96
<b>Addition Solution Reagent R-2</b> (for spiking of samples)	COD	1,000 ±100 mg/L COD	1.14691.0007	0.10	280
	Nitrate	10.0 ±1.5 mg/L NO <sub>3</sub> -N	1.14764.0001	0.10	280
	Phosphate <sup>4)</sup>	5.0 ±0.5 mg/L PO <sub>4</sub> -P	1.00475.0007	0.10	280
		5.0 ±0.5 mg/L PO <sub>4</sub> -P	1.14729.0007	0.10	280

1) using a 10-mm rectangular cell, Ord. No. 1.14946.0001  
 2) using a 20-mm rectangular cell, Ord. No. 1.14947.0001  
 3) using a 50-mm rectangular cell, Ord. No. 1.14944.0001

4) only the determination of ortho-phosphate can be checked  
 5) when using AutoSelector, measuring range 5 - 150 mg/L NH<sub>4</sub>-N is used

CombiCheck **90**

## Spectroquant® CombiCheck 90

Ord. No. 1.18700.0001

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks	
Cadmium	0.250 ±0.030 mg/L Cd	1.01745.0001 <sup>1)</sup>	10.0	9	<b>Standard Solution Reagent R-1</b>
	0.250 ±0.030 mg/L Cd	1.14834.0001	5.0	19	
Iron	1.00 ±0.15 mg/L Fe	1.14549.0001	5.0	19	
	1.00 ±0.15 mg/L Fe	1.14761.0001 <sup>1)</sup>	5.0	19	
	1.00 ±0.15 mg/L Fe	1.00796.0007 <sup>1)</sup>	8.0	12	
Copper	2.00 ±0.20 mg/L Cu	1.14553.0001	5.0	19	
	2.00 ±0.20 mg/L Cu	1.14767.0001 <sup>1)</sup>	5.0	19	
Manganese	1.00 ±0.15 mg/L Mn	1.00816.0007	7.0	13	
	1.00 ±0.15 mg/L Mn	1.14770.0007 <sup>3)</sup>	10.0	9	
	1.00 ±0.15 mg/L Mn	1.01846.0007 <sup>1)</sup>	8.0	12	
Cadmium	0.100 ±0.015 mg/L Cd	1.01745.0001 <sup>1)</sup>	0.10	280	<b>Addition Solution Reagent R-2</b> (for spiking of samples)
	0.200 ±0.030 mg/L Cd	1.14834.0001	0.10	280	
Iron	3.00 ±0.30 mg/L Fe	1.14549.0001	0.10	280	
	3.00 ±0.30 mg/L Fe	1.14761.0001 <sup>1)</sup>	0.10	280	
	1.88 ±0.20 mg/L Fe	1.00796.0007 <sup>1)</sup>	0.10	280	
Copper	3.00 ±0.30 mg/L Cu	1.14553.0001	0.10	280	
	3.00 ±0.30 mg/L Cu	1.14767.0001 <sup>1)</sup>	0.10	280	
Manganese	1.43 ±0.15 mg/L Mn	1.00816.0007	0.10	280	
	1.00 ±0.15 mg/L Mn	1.14770.0007 <sup>3)</sup>	0.10	280	
	1.25 ±0.15 mg/L Mn	1.01846.0007 <sup>1)</sup>	0.10	280	

CombiCheck **100**

## Spectroquant® CombiCheck 100

Ord. No. 1.18701.0001

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [mL]	Number of quality checks	
Aluminium	0.40 ±0.05 mg/L Al	1.00594.0001	6.0	16	<b>Standard Solution Reagent R-1</b>
	0.40 ±0.05 mg/L Al	1.14825.0001 <sup>1)</sup>	5.0	19	
Lead	2.00 ±0.20 mg/L Pb	1.14833.0001	5.0	19	
	2.00 ±0.20 mg/L Pb	1.09717.0001 <sup>1)</sup>	8.0	11	
Nickel	2.00 ±0.20 mg/L Ni	1.14554.0001	5.0	19	
	2.00 ±0.20 mg/L Ni	1.14785.0007 <sup>1)</sup>	5.0	19	
Zinc	0.750 ±0.150 mg/L Zn	1.00861.0007	10.0	9	
	0.75 ±0.15 mg/L Zn	1.14832.0001	5.0	19	
Aluminium	0.20 ±0.03 mg/L Al	1.00594.0001	0.10	280	
	0.24 ±0.04 mg/L Al	1.14825.0001 <sup>1)</sup>	0.10	280	
Lead	1.00 ±0.15 mg/L Pb	1.14833.0001	0.10	280	
	0.63 ±0.10 mg/L Pb	1.09717.0001 <sup>1)</sup>	0.10	280	
Nickel	2.00 ±0.20 mg/L Ni	1.14554.0001	0.10	280	
	2.00 ±0.20 mg/L Ni	1.14785.0007 <sup>1)</sup>	0.10	280	
Zinc	0.250 ±0.050 mg/L Zn	1.00861.0007	0.10	280	
	0.50 ±0.10 mg/L Zn	1.14832.0001	0.10	280	

Certified Reference Materials  
for photometric applications

**NO DILUTION.  
NO DOUBTS.  
NO DELAYS.**

**PRECISE  
ANALYTICAL  
QUALITY  
CONTROL**

**NO DILUTION  
NEEDED**

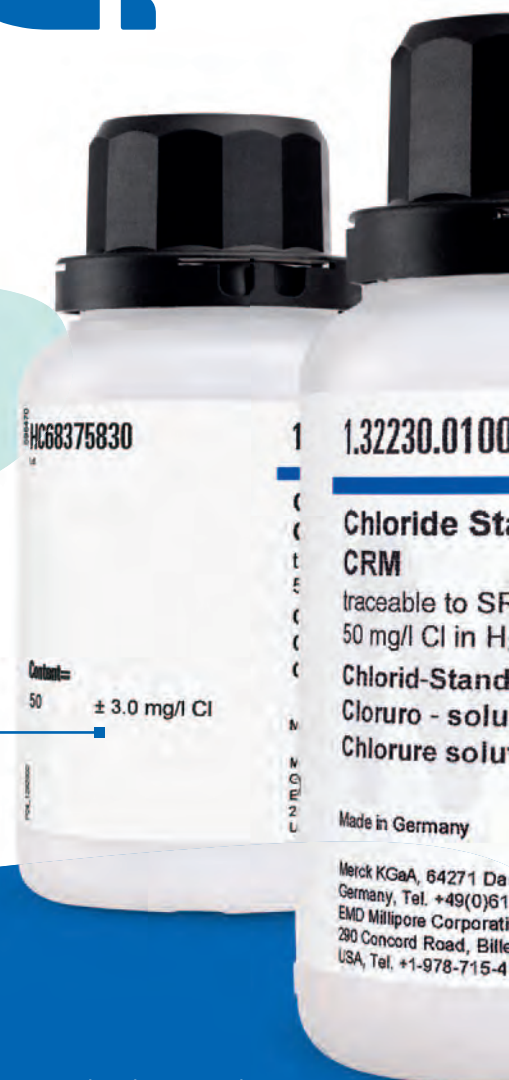
**DIRECTLY  
TRACEABLE  
TO NIST**

Exact, batch-specific concentration,  
and expanded measurement uncertainty

Also see our

**KROMega  
CRMS** (page 107)

Experience absolute precision in photometric quality control with our ready-to-use diluted certified reference materials (CRMs). Thanks to their exact concentrations, expanded measurement uncertainty, and direct traceability to NIST primary reference materials, our CRMs ensure that your results are correct and comparable worldwide.





Complete range with all parameters for analytical quality control of wastewater, drinking water and process water

Detailed Certificate of Analysis for each CRM simplifies accreditation

Compatible with Spectroquant® test kits or those from other suppliers

Ready-to-use, diluted CRMs save time and prevent dilution errors

Long shelf life of 24 months

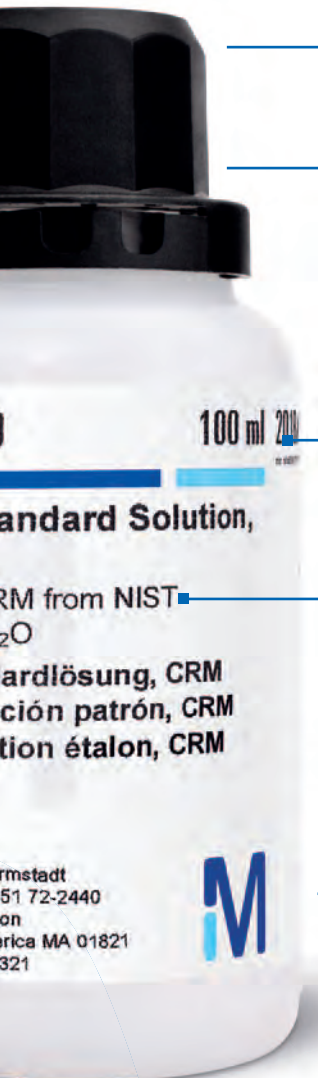
Directly traceable to NIST primary measurement standards

Ideal for validating international norm methods: ISO, EN, EPHA, and EPA

## Even better together

The perfect combination for water analysis: use our certified standard solutions with Spectroquant® Prove spectrophotometers.

Learn more about: Prove (page 36) and CRMs (page 104)



### Definitions

#### Traceability

"Property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty." <sup>1)</sup>

#### Certified reference material (CRM)

"Reference material (RM) characterized by a metrologically valid procedure for one or more specified properties, accompanied by an RM certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability." <sup>2)</sup>

#### Primary measurement standard

"Measurement standard that is designated or widely acknowledged as having the highest metrological qualities and whose property value is accepted without reference to other standards of the same property or quantity, within a specified context." <sup>2)</sup>

#### Secondary measurement standard

"Measurement standard whose property value is assigned by comparison with a primary measurement standard of the same property or quantity." <sup>2)</sup>

<sup>1)</sup> ISO Guide 99:2007; International Vocabulary of Metrology – Basic and General Concepts and Associated Terms (VIM)

<sup>2)</sup> ISO/Guide 30:2015; Reference Materials – Selected Terms and Definitions

# Certified Reference Materials for photometric applications

Standard Solutions (100 mL in H<sub>2</sub>O), traceable to SRM from NIST

Product	Concentration	Expanded Measurement Uncertainty	Ord. No.
<b>A</b> Aluminium Standard Solution	0.0500 mg/L Al	± 0.0020 mg/L Al	1.32226.0100
Aluminium Standard Solution	0.200 mg/L Al	± 0.006 mg/L Al	1.32225.0100
Ammonium Standard Solution	0.250 mg/L NH <sub>4</sub>	± 0.011 mg/L NH <sub>4</sub>	1.32227.0100
Ammonium Standard Solution	0.400 mg/L NH <sub>4</sub> -N	± 0.012 mg/L NH <sub>4</sub> -N	1.25022.0100
Ammonium Standard Solution	1.00 mg/L NH <sub>4</sub> -N	± 0.04 mg/L NH <sub>4</sub> -N	1.25023.0100
Ammonium Standard Solution	2.00 mg/L NH <sub>4</sub> -N	± 0.07 mg/L NH <sub>4</sub> -N	1.25024.0100
Ammonium Standard Solution	6.00 mg/L NH <sub>4</sub> -N	± 0.13 mg/L NH <sub>4</sub> -N	1.25025.0100
Ammonium Standard Solution	12.0 mg/L NH <sub>4</sub> -N	± 0.4 mg/L NH <sub>4</sub> -N	1.25026.0100
Ammonium Standard Solution	50.0 mg/L NH <sub>4</sub> -N	± 1.2 mg/L NH <sub>4</sub> -N	1.25027.0100
Arsenic Standard Solution	1.00 mg/L As	± 0.05 mg/L As	1.33002.0250 <sup>1) 2)</sup>
<b>B</b> Boron Standard Solution	1.00 mg/L B	± 0.06 mg/L B	1.33005.0100
Bromate Standard Solution	0.0100 mg/L BrO <sub>3</sub>	± 0.0006 mg/L BrO <sub>3</sub>	1.33006.0100
Bromate Standard Solution	0.1000 mg/L BrO <sub>3</sub>	± 0.0040 mg/L BrO <sub>3</sub>	1.33007.0100
<b>C</b> Cadmium Standard Solution	0.00500 mg/L Cd	± 0.00020 mg/L Cd	1.33008.0100 <sup>1)</sup>
Cadmium Standard Solution	0.100 mg/L Cd	± 0.003 mg/L Cd	1.32228.0100
Chloride Standard Solution	0.100 mg/L Cl	± 0.006 mg/L Cl <sup>-</sup>	1.33009.0100
Chloride Standard Solution	1.00 mg/L Cl	± 0.04 mg/L Cl <sup>-</sup>	1.33010.0100
Chloride Standard Solution	2.50 mg/L Cl	± 0.08 mg/L Cl <sup>-</sup>	1.33011.0100
Chloride Standard Solution	10.0 mg/L Cl	± 0.5 mg/L Cl <sup>-</sup>	1.32229.0100
Chloride Standard Solution	50 mg/L Cl	± 3 mg/L Cl <sup>-</sup>	1.32230.0100
Chloride Standard Solution	250 mg/L Cl	± 8 mg/L Cl <sup>-</sup>	1.32231.0100
Chromium Standard Solution	0.050 mg/L Cr(VI)	± 0.002 mg/L Cr(VI)	1.33012.0100
Chromium Standard Solution	1.00 mg/L Cr(VI)	± 0.03 mg/L Cr(VI)	1.33013.0100
COD Standard Solution	20.0 mg/L	± 0.7 mg/L	1.25028.0100
COD Standard Solution	100 mg/L	± 3 mg/L	1.25029.0100
COD Standard Solution	200 mg/L	± 4 mg/L	1.25030.0100
COD Standard Solution	400 mg/L	± 5 mg/L	1.25031.0100
COD Standard Solution	1,000 mg/L	± 11 mg/L	1.25032.0100
COD Standard Solution	2,000 mg/L	± 32 mg/L	1.25033.0100
COD Standard Solution	8,000 mg/L	± 68 mg/L	1.25034.0100
COD Standard Solution	50,000 mg/L	± 894 mg/L	1.25035.0100
<b>F</b> Fluoride Standard Solution	0.200 mg/L F	± 0.012 mg/L F	1.32234.0100
Fluoride Standard Solution	0.50 mg/L F	± 0.02 mg/L F	1.32233.0100
Fluoride Standard Solution	1.00 mg/L F	± 0.03 mg/L F	1.32235.0100
Fluoride Standard Solution	1.50 mg/L F	± 0.04 mg/L F	1.32236.0100
<b>I</b> Iron Standard Solution	0.0500 mg/L Fe	± 0.0015 mg/L Fe	1.33014.0100 <sup>1)</sup>
Iron Standard Solution	0.1000 mg/L Fe	± 0.0030 mg/L Fe	1.33018.0100 <sup>1)</sup>
Iron Standard Solution	0.300 mg/L Fe	± 0.009 mg/L Fe	1.33019.0100 <sup>1)</sup>
Iron Standard Solution	1.00 mg/L Fe	± 0.04 mg/L Fe	1.33020.0100 <sup>1)</sup>
<b>L</b> Lead Standard Solution	0.0500 mg/L Pb	± 0.0040 mg/L Pb	1.33003.0100 <sup>1)</sup>
Lead Standard Solution	0.100 mg/L Pb	± 0.005 mg/L Pb	1.33004.0100 <sup>1)</sup>
<b>M</b> Manganese Standard Solution	0.050 mg/L Mn	± 0.004 mg/L Mn	1.32237.0100
Manganese Standard Solution	0.200 mg/L Mn	± 0.005 mg/L Mn	1.32238.0100
Manganese Standard Solution	1.00 mg/L Mn	± 0.03 mg/L Mn	1.32239.0100

Standard Solutions (100 mL in H<sub>2</sub>O), traceable to SRM from NIST

Product	Concentration	Expanded Measurement Uncertainty	Ord. No.
<b>N</b> Nitrate Standard Solution	1.00 mg/L NO <sub>3</sub>	± 0.03 mg/L NO <sub>3</sub>	1.32240.0100
Nitrate Standard Solution	10.0 mg/L NO <sub>3</sub>	± 0.3 mg/L NO <sub>3</sub>	1.32241.0100
Nitrate Standard Solution	50.0 mg/L NO <sub>3</sub>	± 2.0 mg/L NO <sub>3</sub>	1.32242.0100
Nitrate Standard Solution	0.50 mg/L NO <sub>3</sub> -N	± 0.05 mg/L NO <sub>3</sub> -N	1.25036.0100
Nitrate Standard Solution	2.50 mg/L NO <sub>3</sub> -N	± 0.06 mg/L NO <sub>3</sub> -N	1.25037.0100
Nitrate Standard Solution	15.0 mg/L NO <sub>3</sub> -N	± 0.4 mg/L NO <sub>3</sub> -N	1.25038.0100
Nitrate Standard Solution	40.0 mg/L NO <sub>3</sub> -N	± 1 mg/L NO <sub>3</sub> -N	1.25039.0100
Nitrate Standard Solution	200 mg/L NO <sub>3</sub> -N	± 5 mg/L NO <sub>3</sub> -N	1.25040.0100
Nitrite Standard Solution	0.0100 mg/L NO <sub>2</sub> <sup>-</sup>	± 0.0012 mg/L NO <sub>2</sub> <sup>-</sup>	1.33021.0100 <sup>3)</sup>
Nitrite Standard Solution	0.200 mg/L NO <sub>2</sub> -N	± 0.009 mg/L NO <sub>2</sub> -N	1.25041.0100
Nitrite Standard Solution	40.0 mg/L NO <sub>2</sub> -N	± 1.3 mg/L NO <sub>2</sub> -N	1.25042.0100
Nitrogen (total) Standard Solution	2.50 mg/L N	± 0.06 mg/L N	1.25043.0100
Nitrogen (total) Standard Solution	12.0 mg/L N	± 0.3 mg/L N	1.25044.0100
Nitrogen (total) Standard Solution	100 mg/L N	± 3 mg/L N	1.25045.0100
<b>P</b> Phosphorus Standard Solution	0.400 mg/L PO <sub>4</sub> -P	± 0.016 mg/L PO <sub>4</sub> -P	1.25046.0100
Phosphorus Standard Solution	4.00 mg/L PO <sub>4</sub> -P	± 0.08 mg/L PO <sub>4</sub> -P	1.25047.0100
Phosphorus Standard Solution	15.0 mg/L PO <sub>4</sub> -P	± 0.4 mg/L PO <sub>4</sub> -P	1.25048.0100
Phosphorus Standard Solution	75.0 mg/L PO <sub>4</sub> -P	± 1.6 mg/L PO <sub>4</sub> -P	1.25049.0100
<b>S</b> Silicate Standard Solution	0.1000 mg/L SiO <sub>2</sub>	± 0.0040 mg/L SiO <sub>2</sub>	1.32244.0100
Silicate Standard Solution	0.500 mg/L SiO <sub>2</sub>	± 0.025 mg/L SiO <sub>2</sub>	1.32243.0100
Silicate Standard Solution	1.000 mg/L SiO <sub>2</sub>	± 0.030 mg/L SiO <sub>2</sub>	1.32245.0100
Sulfate Standard Solution	40 mg/L SO <sub>4</sub>	± 6 mg/L SO <sub>4</sub>	1.25050.0100
Sulfate Standard Solution	125 mg/L SO <sub>4</sub>	± 6 mg/L SO <sub>4</sub>	1.25051.0100
Sulfate Standard Solution	400 mg/L SO <sub>4</sub>	± 20 mg/L SO <sub>4</sub>	1.25052.0100
Sulfate Standard Solution	800 mg/L SO <sub>4</sub>	± 27 mg/L SO <sub>4</sub>	1.25053.0100
Surfactants (nonionic) Standard Solution <sup>4)</sup>	1.00 mg/L Triton® X-100	± 0.16 mg/L Triton® X-100	1.33022.0100
Surfactants (nonionic) Standard Solution <sup>4)</sup>	5.00 mg/L Triton® X-100	± 0.30 mg/L Triton® X-100	1.33023.0100
Surfactants (nonionic) Standard Solution <sup>4)</sup>	10.00 mg/L Triton® X-100	± 0.60 mg/L Triton® X-100	1.33024.0100
<b>T</b> TOC Standard Solution	5.00 mg/L TOC	± 0.10 mg/L TOC	1.32246.0100
TOC Standard Solution	10.0 mg/L TOC	± 0.2 mg/L TOC	1.32247.0100
TOC Standard Solution	25.0 mg/L TOC	± 0.5 mg/L TOC	1.32248.0100
TOC Standard Solution	50.0 mg/L TOC	± 1.0 mg/L TOC	1.32249.0100
TOC Standard Solution	100 mg/L TOC	± 2 mg/L TOC	1.32251.0100
TOC Standard Solution	200 mg/L TOC	± 4 mg/L TOC	1.32252.0100
TOC Standard Solution	500 mg/L TOC	± 10 mg/L TOC	1.32253.0100

1) 100 mL in HNO<sub>3</sub> 2) 250 mL bottle 3) 100 mL in NaOH 4) traceable to USP

**FREE COA**

Certificates of Analysis (COA) for all our standard solutions can be downloaded free of charge on:  
[www.emdmillipore.com/coa](http://www.emdmillipore.com/coa)



# Certipur® standard solutions

## Parameters A-Z

### Certipur® standard solutions, concentration 1,000 mg/L

Certipur® standard solutions are **traceable to standard reference materials from NIST**, and accredited according to ISO/IEC 17025 guidelines. They can be easily diluted to different concentrations to suit your needs.

Parameter	Volume	Ord. No.	Parameter	Volume	Ord. No.
<b>A</b> Aluminium	100 mL	1.19770.0100	<b>N</b> Nickel*	1,000 mL	1.09989.0001
Ammonium	500 mL	1.19812.0500	Nitrate	500 mL	1.19811.0500
Antimony	100 mL	1.70204.0100	Nitrite	500 mL	1.19899.0500
Arsenic	100 mL	1.19773.0100	<b>P</b> Palladium	100 mL	1.14282.0100
<b>B</b> Boron	100 mL	1.19500.0100	Phosphate	500 mL	1.19898.0500
<b>C</b> Cadmium	100 mL	1.19777.0100	Platinum	100 mL	1.70219.0100
Calcium	100 mL	1.19778.0100	Potassium	100 mL	1.70230.0100
Chloride	500 mL	1.19897.0500	<b>S</b> Silicon	100 mL	1.70236.0100
Chromate	500 mL	1.19780.0500	Silver	100 mL	1.19797.0100
Chromium	100 mL	1.19779.0100	Sulfate	500 mL	1.19813.0500
Cobalt	100 mL	1.19785.0100	<b>T</b> Tin	100 mL	1.70242.0100
Copper	100 mL	1.19786.0100	TOC	100 mL	1.09017.0100
Cyanide	500 mL	1.19533.0500	<b>V</b> Vanadium	100 mL	1.70245.0100
<b>F</b> Fluoride	500 mL	1.19814.0500	<b>Z</b> Zinc	100 mL	1.19806.0100
<b>G</b> Gold	100 mL	1.70216.0100			
<b>I</b> Iron	100 mL	1.19781.0100			
<b>L</b> Lead	100 mL	1.19776.0100			
<b>M</b> Magnesium	100 mL	1.19788.0100			
Manganese	100 mL	1.19789.0100			
Mercury	100 mL	1.70226.0100			
Molybdenum	100 mL	1.70227.0100			

\* Titrisol®



### Proficiency testing (PT) process

- 1. Registration & order** – Prior to your first order, you must obtain a lab code by registering on the PT portal.
- 2. Delivery** – Participating labs receive blind samples according to schedule.
- 3. Open study** – Each lab analyzes the blind samples.
- 4. Reporting** – Labs report results on the PT portal before the study closes.
- 5. Data processing** – Data is processed to issue individual evaluation reports.
- 6. Evaluation report** – Reports are sent via the PT portal. If requested, a copy is sent to your accreditation body.

### Proficiency testing products

Proficiency testing products accredited by ACLASS to ISO/IEC 17043:2010, Certificate No. AP-1469 and recognized by accreditation bodies worldwide

Application fields	Metals and Inorganics	Organics	Gases	Physical Properties
Drinking Water	■	■		■
Wastewater	■	■		■
Contaminated Land	■	■		
Air Quality and Emissions	■	■	■	
Microbiology		■		

# Certified Reference Materials for instrument qualification

## Kromega CRMs for UV/Vis spectrophotometers

Ready-to-use Kromega certified reference materials are designed to facilitate qualification of UV/Vis spectrophotometers for compliance with GLP regulations.

- Meet European Pharmacopoeia requirements for the calibration of UV/Vis spectrophotometers
- Reliable, traceable instrument qualification with audit trail supported by independent verification according to ISO Guide 34
- Easier, faster and more cost-effective than custom solutions
- Developed for use in any laboratory working according to ISO 17025
- Shipped in flame-sealed ampoules, and protected in custom-made boxes to increase shelf life and prevent contamination

Learn more about Kromega CRMs:

[www.sigmaldrich.com/jaytee](http://www.sigmaldrich.com/jaytee)



## CRMs for photometers

Product	Description	Content	Cat. No.
<b>UV Photometric Accuracy Standards</b>	Used to qualify photometric accuracy of UV spectrophotometers to the limits defined in the EP	3 ampoules (1 blank, 2 standards). The standards consist of a solution of $K_2Cr_2O_7$ in Perchloric Acid	<b>Z804452</b>
<b>UV Resolution Standards</b>	Used to qualify the UV resolution of UV spectrophotometers to the limits defined in the EP	2 ampoules (1 blank, 1 standard). The standard consists of a solution of toluene in n-hexane.	<b>Z804568</b>
<b>UV Stray Light Standards</b>	Used to qualify the stray light of UV spectrophotometers to the limits defined in the EP	2 ampoules (1 blank, 1 standard). The standard consists of a solution of NaCl in water.	<b>Z804665</b>
<b>UV Spec Qualification Kit</b>	To be used in any laboratory regardless of the regulator and are as relevant to a pharmaceutical company as to a contract lab working to ISO 17025.	Contains qualification standards for UV Photometric Accuracy   Resolution   Stray Light	<b>Z804789</b>

# GET CLARITY IN ANY WATER

## HOW clear is your solution?

A perfect solution has no turbidity. But it doesn't exist in reality. That's why the quantification of turbidity is crucial in proficiency testing. It is usually performed to check the efficiency of filtration units, such as in pools and spas, or food and beverage production plants. It is also needed in process control, for example to monitor coagulation in wastewater treatment.

### **We have the answer**

Turbiquant® turbidimeters are designed to simplify turbidity analysis. They offer rapid, reliable measurements in the lab or on-site, and can be combined with our non-toxic calibration standards for safe and clear results. The instruments are available with either an infrared (IR) or tungsten (T) light source. Choose the system that best suits your needs.

#### **IR: Infrared light at 860 nm**

- Required in Europe for ISO 7027 of DIN EN 27027
- Less prone to interferences in intensely-colored solutions

#### **T: Tungsten lamp at spectra of visible white light**

- Required in the US for Standard Methods 2130 B and USEPA
- Better for measuring turbidity caused by very small particles







## Turbidimetry Turbiquant®

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Drinking water workflow  
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# Turbiquant®

Get clarity in any water

## What is turbidity?

Turbidity is "the decrease in the transparency of a liquid caused by the presence of undissolved substances" (DIN EN 27027). Thus, clear water has a lower turbidity measurement than muddy water containing suspended particles, such as bacteria, sediments or sewage.

## How is it measured?

In nephelometric turbidity measurement, entering light is scattered and measured at 90° using a detector. The signals are characteristically non-linear. Thus, samples with very high turbidity, like untreated wastewater, show a decreasing signal with increasing turbidity. For added security, these samples are investigated in transmission (attenuation of translucent light) as well as by classic nephelometry. The combined result is the "NTU ratio".

## Clear results with Turbiquant®

Turbiquant® 3000 turbidimeters are ideal for challenging measurements of highly turbid or colored samples. The other Turbiquant® series offer different benefits such as mobility, robustness and compliance with European and/or US standards. Whichever model you choose, you'll always enjoy clear results.



**Turbidity is a critical parameter in drinking- and wastewater, beverages, and chemical production.**

### Typical turbidity values:

Deionized water	0.02 NTU
Drinking water	0.02 to 0.5 NTU
Spring water	0.05 to 10 NTU
Wastewater (untreated)	70 to 2,000 NTU
Sift water (paper industry)	60 to 800 NTU
USEPA	max. level 5 NTU
Japan	max. level 2 NTU
WHO	max. level 5 NTU
France	max. level 4 NTU
Germany	max. level 1 NTU

**! incomparable  
precision**

10 NTU ± 1%  
100 NTU ± 1%  
1,000 NTU ± 1%  
1,750 NTU ± 2%  
10,000 NTU ± 2%

## Mobility

Compact and portable turbidimeter for fast results

## Choice

Tungsten or infrared light source, and a broad range of calibration standards to suit your needs

## Compliance

Measure samples acc. to EN ISO 7027 or USEPA 180.1



Need a conductivity meter or a pH meter?

Find them and more on:

[www.sigmaldrich.com/labware/labware-catalog.html](http://www.sigmaldrich.com/labware/labware-catalog.html)



**NTU = Nephelometric Turbidity Units** 90° scattered light measurement according to section 2130 of the "Standard Methods for the Examination of Water and Wastewater", 21<sup>st</sup> edition, 2005.

**FNU = Formazine Nephelometric Units** 90° scattered light measurement that is only applicable if the instrument is calibrated with Formazine standards. It is used for measurements according to EN ISO 7027 (Conversion: 1 FNU = 1 NTU).

**FAU = Formazine Attenuation Units** transmission measurement unit for measurements according to EN ISO 7027 over 40 FNU.

**EBC = European Brewery Commission** 90° scattered light measurement used by the European Brewery Commission (Conversion: 0.245 EBC = 1 NTU).

# Turbiquant®

Get clarity in any water



	Turbiquant® 1100 IR (portable)	Turbiquant® 1100 T (portable)	Turbiquant® 1500 T
	Portable instrument for on-the-spot analysis	Portable instrument for on-the-spot analysis	Standard instrument for all applications in the laboratory, suitable for drinking water
<b>Ord. No.</b>	<b>1.18324.0001</b>	<b>1.18325.0001</b>	<b>1.18331.0001</b>
<b>Measuring principle</b>	nephelometric – 90° scattered light, conform with EN ISO 7027	nephelometric – 90° scattered light, follows USEPA recommendations	nephelometric (non ratio), conform with EN ISO 7027 follows USEPA recommendations
<b>Light source</b>	IR LED	white light tungsten lamp	white light tungsten lamp
<b>Indication of units</b>	NTU / FNU	NTU / FNU	NTU / FNU
<b>Measuring range</b>	0.02–1,100 NTU	0.02–1,100 NTU	0.02–1,000 NTU
<b>Resolution</b>	0.01 within the range 0.01 < x < 99.99 NTU 0.1 within the range 100 < x < 999.9 NTU 1 within the range 1,000 < x < 1,100 NTU		max. 0.01 within the range 0 < x < 10 NTU max. 0.1 within the range 10 < x < 100 NTU max. 1 within the range 100 < x < 1,000 NTU
<b>Accuracy</b>	±2 % of reading or ±0.1 NTU for range 0 – 500 NTU ±3 % of reading for range 500 – 1,100 NTU		±2 % of reading or ±0.01 NTU for range 0.00 – 1,000 NTU
<b>Reproducibility</b>	–	–	< ±1% of reading or ±0.01 NTU
<b>Calibration</b>	automatic 1 to 3 points	automatic 1 to 3 points	automatic 1 to 3 points
<b>Response time</b>	14 seconds	14 seconds	< 3 seconds
<b>Cuvettes</b>	25 x 45 mm	25 x 45 mm	28 x 70 mm
<b>Sample volume</b>	15 mL	15 mL	25 mL
<b>Serial input / output</b>	–	–	RS 232, uni-directional
<b>Protection type</b>	designed to meet IP 67	designed to meet IP 67	–
<b>Power requirements</b>	4 alkali manganese batteries, AAA / Micro	4 alkali manganese batteries, AAA / Micro	universal power supply / plug
<b>Test certificates</b>	CE	CE	CE, UL, CSA, TÜV-GS
<b>Warranty</b>	2 years	2 years	2 years
<b>Special features</b>	Portable, battery-operated instrument	Portable, battery-operated instrument	Real time clock integrated GLP function (calibration intervals monitoring), automatic self check

# IR OR T? YOU CHOOSE

Infrared (IR) measurements at 860 nm show no interference in colored solutions, and are required by EN ISO 7027. Tungsten (T) lamps emitting white light are more sensitive when measuring small particles, and are required by USEPA 180.1, APHA, AWWA and WPCF.



## Turbiquant® 3000 IR

Precision instrument for demanding turbidimetric applications with very high turbidity and/or colored solutions

**1.18332.0001**

nephelometric (non-ratio / ratio selectable), conform with EN ISO 7027

IR LED

NTU, FNU, FAU, EBC

0.02–10,000 NTU, 0.02–10,000 FNU, 0.02–10,000 FAU, 0.005–2,450 EBC

selectable 0.1–0.0001 NTU

max. 0.0001 within the range  $0 < x < 10$  NTU

max. 0.001 within the range  $10 < x < 100$  NTU

max. 0.01 within the range  $100 < x < 1,000$  NTU

max. 0.1 within the range  $1,000 < x < 10,000$  NTU

±2 % of reading or ±0.01 NTU for range 0.00 -1,000 NTU

±5 % of reading for range 1,000 – 4,000 NTU

±10 % of reading for range 4,000 -10,000 NTU

< ±1 % of reading or ±0.01 NTU

automatic 1 to 4 points (to 1,750 NTU) 10,000 NTU selectable

< 6 seconds

28 x 70 mm

25 mL

RS 232, bi-directional

–

universal power supply / plug

CE, UL, CSA, TÜV-GS

2 years

GLP function (calibration interval monitoring), automatic self check, integrated real time clock, safety access codes for calibration and instrument setup

## Turbiquant® Calibration Standards

Precise, stable, non-toxic and ready-to-use

**Turbiquant® 1100 IR / 1100 T Calibration Standard Set** **1.18335.0001**

3 standards 0.02 – 10.0 – 1,000 NTU

**Turbiquant® 1500 IR / 1500 T Calibration Standard Set** **1.18328.0001**

3 standards 0.02 – 10.0 – 1,000 NTU

**Turbiquant® 3000 IR Calibration Standard Set** **1.18329.0001**

4 standards 0.02 – 10.0 – 100.0 – 1,750 NTU

**Turbiquant® 3000 T Calibration Standard Set** **1.18349.0001**

4 standards 0.02 – 10.0 – 100.0 – 1,750 NTU

**Turbiquant® 3000 IR Calibration Standard** **1.18342.0001**

10,000 NTU

**Turbiquant® 3000 T Calibration Standard** **1.18343.0001**

10,000 NTU

**Turbiquant® 1500 / 3000 Calibration Standard** **1.18381.0001**

10 NTU

Turbiquant® calibration standards can be stored and transported without any precautionary measures. They are supplied with indexing rings for quick, repeatable indexing as recommended by USEPA.



Find more standards for measurements in our section "Environmental Matrix CRMs (RTC)"

**there's MORE ...**

Find Turbiquant® accessories, such as empty cells, and lamps, on: [www.emdmillipore.com/turbidity](http://www.emdmillipore.com/turbidity)

# TAKE YOUR TEST FURTHER

## HOW fresh is your honey?

### Rapid quantitative detection of hydroxymethylfurfural in honey

#### The application

- The freshness of honey is determined by measuring its hydroxymethylfurfural (HMF) content.
- HMF is an organic compound that arises from the dehydration of fructose, e.g. when honey is heated for easier filling.
- HMF is barely detectable in freshly centrifuged honey, but increases at 2-3 mg/kg annually, depending on storage temperature and pH. At 21°C, HMF content can rise to 20 mg/kg in just one year.

#### Our solution: Reflectoquant® Hydroxymethylfurfural (HMF) Test

The Reflectoquant® HMF Test is the first rapid test for the determination of HMF content, delivering accurate quantitative results in just a few minutes after sample preparation. Easy-to-use, portable and economical, the test is ideal for monitoring raw materials, as well as manufacturing and filling processes.

#### Benefits

- Small and easy to handle for on-the-spot analysis
- Bar-code calibration for reliable quantitative results in minutes
- Low analysis costs

For more details, please visit: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)





## Reflectometry Reflectoquant®

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# Reflectoquant®

Mobile accuracy with test strips

## Reflectometric measurements

Take your lab to the sample with the **Reflectoquant®** system. Compact and easy-to-use, the system allows you to monitor raw materials in all stages of your production processes, and obtain precise quantitative results – directly on-site.

Consisting of test strips, and reflectometers, this comprehensive program gives you all the tools you need for high quality, low cost analysis. It also offers numerous tests with a broad range of parameters, measuring ranges and applications for the widest spectrum of sample materials.



# Are your vegetables healthy?

Food & beverage workflow  
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## Easy, on-the-spot determination of nitrate content

### The application

- Humans ingest nitrate mostly through vegetables (70%), but also drinking water (20%) and cured meats (10%).
- Nitrate itself is not harmful, but its metabolic products can be.
- The World Health Organization recommends a daily limit of 3.65 mg nitrate per kg bodyweight.

### Our solution: Reflectoquant® Nitrate Test

The Reflectoquant® Nitrate Test is designed for rapid, accurate determination of nitrate content in a variety of foods, such as vegetables or infant meals, and drinking water. To further support your analysis, we offer application notes for over 15 sample materials.

### Benefits

- Fast analysis with reliable results
- Compact size for on-the-spot analysis
- Many applications available
- Low analysis costs
- Environmentally friendly



easy  
disposal

reliable results  
with bar-code  
calibration

fast results

with  $\pm 10-15\%$  accuracy



### Further Reflectoquant® applications

#### Test vitamin C content in food

Vitamin C (ascorbic acid) is an essential characteristic of many foods. Its depletion should be monitored as it signifies a deterioration of food quality and taste.

**See our Reflectoquant® Ascorbic Acid Test applications for over 15 sample materials.**  
[www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)

#### Monitor acrylamide formation

In fried or baked goods, like potato chips, the reaction between asparagine and reducing sugars (fructose, glucose, etc.) may produce acrylamide, which is considered toxic and carcinogenic. Consequently, maximum limits of reducing sugars in potatoes should not be exceeded.

**See our application "Total sugar in potatoes" for Reflectoquant® Total Sugar Test.**  
[www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)

# Reflectoquant®

Mobile accuracy with test strips

## RQflex® 10 reflectometer

RQflex® 10 reflectometers are designed for fast determination of more than 30 parameters using Reflectoquant® test strips. The instruments can store up to five different methods and 50 measurement values.



### RQflex® 10

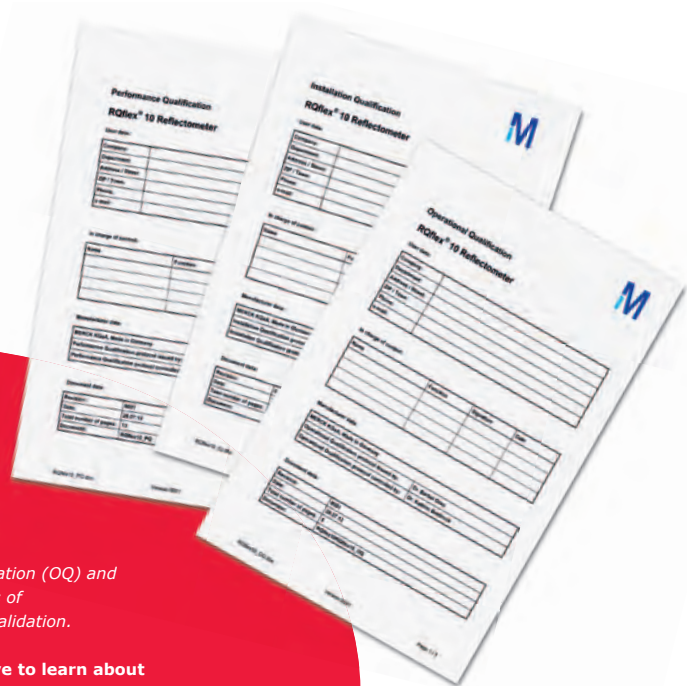
Ord. No. 1.16970.0001

#### Scope of delivery

Includes test-strip adapter and recalibration set, double optical system (option for evaluation for two reaction zones), memory for five methods, memory slots for 50 results (with date, time, parameter, and result), batch-specific calibration function (bar-code technology), battery operation with 4 1.5-V batteries, detailed manual for reflectometer and tests

## RQflex® accessories | sample preparation | quality assurance

Product	Application	Ord. No.
Test strip adapter for RQflex® 10		1.16953.0001
Recalibration set for RQflex® 10		1.16954.0001
RQcheck check set for RQflex® 10		1.16957.0001
Polyvinylpolypyrrolidone Divergan® RS, 100 g	<b>Decolorization</b>	1.07302.0100
Sodium azide tablets, 5,000 tabs	<b>Preserving milk samples</b>	1.06687.0001
Potassium dichromate tablets, 5,000 tabs	<b>Preserving milk samples</b>	1.04858.0001



## IQ, OQ and PQ documents

Installation qualification (IQ), operational qualification (OQ) and performance qualification (PQ) are essential parts of quality assurance, achieved through equipment validation.

Please contact your local sales representative to learn about our validation services for all Reflectoquant® instruments.

## ! ANALYTICAL APPLICATION NOTES FINDER

Interested in more application examples?  
Visit [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)  
> Reflectometry

# IS YOUR DIET DRINK REALLY SUGAR FREE?

If you use the same production line for diet and non-diet beverages, you need to be sure that your entire production system is free from sugar.

We offer a fast and easy solution: check your production line with RQflex® test strips for glucose and total sugar, and you'll have precise results within minutes.

Ord. No. 1.16720.0001 (glucose) and 1.16136.0001 (total sugar)



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# Reflectoquant®

## Reflectoquant® tests | Parameters A-Z

Parameter	Graduation	No. of tests	Ord. No.	Method	Type
<b>A</b> Ammonium Test	0.2 – 7.0 mg/L NH <sub>4</sub>	50	1.16892.0001	Indophenol blue	Reagent, incl.
Ammonium Test	5.0 – 20.0 mg/L NH <sub>4</sub>	50	1.16899.0001	Indophenol blue	Reagent, incl.
Ammonium Test	20 – 180 mg/L NH <sub>4</sub>	50	1.16977.0001	Nessler	Reagent, incl.
Ascorbic Acid Test	25 – 450 mg/L ascorbic acid	50	1.16981.0001	Phosphormolybd. blue	
Ascorbic Acid Test RQeasy®	25 – 450 mg/L ascorbic acid	50	1.17963.0001	Phosphormolybd. blue	
<b>B</b> Blank Strip		50	1.16730.0001		
<b>C</b> Calcium Test	2.5 – 45.0 mg/L Ca	50	1.16993.0001	Glyoxal-bis-(2-hydroxyanil)	Reagent, incl.
Calcium Test	5 – 125 mg/L Ca	50	1.16125.0001	Phthalein complexone	
Chlorine Test (free chlorine)	0.5 – 10.0 mg/L Cl <sub>2</sub>	50	1.16896.0001	Redox reaction	Reagent, incl.
<b>F</b> Formaldehyde Test	1.0 – 45.0 mg/L HCHO	50	1.16989.0001	Triazole	Reagent, incl.
<b>G</b> Glucose Test	1 – 100 mg/L glucose	50	1.16720.0001	Enzymatic reaction	
<b>H</b> Hydroxymethylfurfural Test	1.0 – 60.0 mg/L HMF	50	1.17952.0001	Enzymatic reaction	
<b>I</b> Iron Test	0.5 – 20.0 mg/L Fe(II)	50	1.16982.0001	Triazine	
Iron Test	20 – 200 mg/L Fe(II)	50	1.16983.0001	2.2'-Bipyridine	
<b>L</b> Lactic Acid Test	3.0 – 60.0 mg/L lactic acid	50	1.16127.0001	Enzymatic reaction	
<b>M</b> Magnesium Test	5 – 100 mg/L Mg	50	1.16124.0001	Phthalein complexone	
Malic Acid Test	5.0 – 60.0 mg/L malic acid	50	1.16128.0001	Enzymatic reaction	
<b>N</b> Nitrate Test	3 – 90 mg/L NO <sub>3</sub>	50	1.16995.0001	Modified Griess' reaction	
Nitrate Test	5 – 225 mg/L NO <sub>3</sub>	50	1.16971.0001	Modified Griess' reaction	
Nitrate Test RQeasy®	5 – 250 mg/L NO <sub>3</sub>	50	1.17961.0001	Modified Griess' reaction	
Nitrite Test	0.5 – 25.0 mg/L NO <sub>2</sub>	50	1.16973.0001	Griess' reaction	
Nitrite Test	0.03 – 1.00 g/L NO <sub>2</sub>	50	1.16732.0001	Aromatic amine	
<b>P</b> Peracetic Acid Test	1.0 – 22.5 mg/L peracetic acid	50	1.16975.0001	Redox reaction	
Peracetic Acid Test	20.0 – 100 mg/L peracetic acid	50	1.17956.0001	Redox reaction	
Peracetic Acid Test	75 – 400 mg/L peracetic acid	50	1.16976.0001	Redox reaction	
Peroxide Test	0.2 – 20.0 mg/L H <sub>2</sub> O <sub>2</sub>	50	1.16974.0001	Enzymatic reaction	
Peroxide Test	20.0 – 100 mg/L H <sub>2</sub> O <sub>2</sub>	50	1.17968.0001	Enzymatic reaction	
Peroxide Test	100 – 1,000 mg/L H <sub>2</sub> O <sub>2</sub>	50	1.16731.0001	Enzymatic reaction	
pH Test	pH 1.0 – 5.0	50	1.16894.0001	Mixed indicator	
pH Test	pH 4.0 – 9.0	50	1.16996.0001	Mixed indicator	
pH Test for Cooling Lubricants	pH 7.0 – 10.0	50	1.16898.0001	Mixed indicator	
Phosphate Test RQflex® plus	0.1 – 5.0 mg/L PO <sub>4</sub>	100	1.17942.0001	Phosphormolybd. blue	
Phosphate Test	5 – 120 mg/L PO <sub>4</sub>	50	1.16978.0001	Phosphormolybd. blue	Reagent, incl.
Potassium Test RQflex® plus	1.0 – 25.0 mg/L K	100	1.17945.0001	Kalignost®, turbidimetric	
Potassium Test	0.25 – 1.20 g/L K	50	1.16992.0001	Dipicrylamine	Reagent, incl.
<b>S</b> Sucrose Test	0.25 – 2.50 g/L	50	1.16141.0001	Enzymatic reaction	Reagent, incl.
Sulfite Test	10 – 200 mg/L SO <sub>3</sub>	50	1.16987.0001	Nitroprusside / Zn-hexacyanoferrate	
<b>T</b> Total Hardness Test	0.1 – 30.0 °d	50	1.16997.0001	Phthalein complexone	
Total Sugar Test (glucose and fructose)	65 – 650 mg/L total sugar	50	1.16136.0001	Enzymatic reaction	Reagent, incl.
<b>U</b> Urea Test in Milk Application	0.2 – 7.0 mg/L NH <sub>4</sub>	50	1.16892.0001	Indophenol blue	Reagent, incl.

Watch our videos and learn how to use our reflectometry instruments and test kits



[www.emdmillipore.com/video\\_asp\\_wfa\\_ascorbic\\_acid](http://www.emdmillipore.com/video_asp_wfa_ascorbic_acid)



[www.emdmillipore.com/video\\_asp\\_wfa\\_reflectoquant\\_maintenance](http://www.emdmillipore.com/video_asp_wfa_reflectoquant_maintenance)

												Parameter						
Food and beverages						Water (Analytics)						Others						
Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating	
						■		■	■			■		■	■			Ammonium Test
						■		■	■			■		■	■			Ammonium Test
														■	■			Ammonium Test
■	■	■	■		■													Ascorbic Acid Test
■	■	■	■		■													Ascorbic Acid Test RQeasy®
■	■	■	■		■													Blank Strip
■	■	■	■	■	■		■	■	■	■				■				Calcium Test
■	■	■	■	■	■		■	■	■									Calcium Test
								■						■		■		Chlorine Test
														■		■		Formaldehyde Test
■	■	■	■	■	■													Glucose Test
	■	■	■						■	■		■	■				■	Hydroxymethylfurfural Test
	■	■	■	■	■				■	■		■	■				■	Iron Test
■	■	■	■	■	■													Iron Test
	■	■	■	■	■													Lactic Acid Test
	■	■	■	■	■		■	■	■						■			Magnesium Test
	■	■	■	■	■													Malic Acid Test
	■	■	■	■	■	■		■	■	■		■	■	■	■			Nitrate Test
	■	■	■	■	■	■		■	■	■		■	■	■	■			Nitrate Test
	■	■	■	■	■	■		■	■	■		■	■	■	■			Nitrate Test RQeasy®
	■	■	■	■	■	■		■	■	■		■	■	■	■			Nitrite Test
							■											Nitrite Test
																■		Peracetic Acid Test
																■		Peracetic Acid Test
																■		Peracetic Acid Test
													■			■		Peroxide Test
																■		Peroxide Test
																■		Peroxide Test
	■	■	■	■	■													pH Test
	■	■	■	■	■	■		■	■	■	■		■	■	■			pH Test
	■	■	■	■	■	■		■	■	■		■	■	■				pH Test for Cooling Lubricants
	■	■	■	■	■	■		■	■	■		■	■	■				Phosphate Test RQflex® plus
	■	■	■	■	■	■		■	■	■		■	■	■				Phosphate Test
	■	■	■	■	■	■		■	■	■		■	■	■				Potassium Test RQflex® plus
■	■	■	■	■	■	■		■	■	■		■	■	■				Potassium Test
■	■	■	■	■	■	■		■	■	■		■	■	■				Sucrose Test
	■	■	■	■	■	■		■	■	■		■	■	■				Sulfite Test
							■	■	■	■								Total Hardness Test
■	■	■	■	■	■	■												Total Sugar Test (glucose and fructose)
			■	■	■	■												Urea Test in Milk Application

# AIM FOR BRILLIANCE

IS YOUR WATER  
OF THE HIGHEST  
QUALITY?

## Detect very low concentrations of impurities in water

### The application

- Drinking water, groundwater, freshwater, mineral water and process water should be regularly tested for a variety of parameters.
- Analysis often requires high measurement sensitivities down to the ppb range.

### Our solution: MColortest™ with color-card comparator

The MColortest™ system is designed for highly sensitive, fast analysis of any water sample. It includes a color-card comparator, which allows you to compare the reaction color of the sample with a high-quality color scale for accurate evaluation.

### Benefits

- Unique brilliance and fine color graduation for precise analysis
- Easy-to-use visual tests with fast results
- Very low (ppb range) to medium concentrations can be tested
- Excellent measurement sensitivity

For more details, please visit: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)







## Colorimetric and titrimetric test kits MColortest™

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# MColortest™

Aim for brilliance with color cards

## Colorimetric and titrimetric test kits

**MColortest™** test kits give you exceptional results with brilliant color cards for easy, precise comparison. No special training is required – simply follow our illustrated instructions. Despite their simplicity, they offer unparalleled reliability. All test kits are thoroughly checked using certified standard solutions, which can be traced directly to primary reference materials from NIST and PTB. Thanks to their excellent stability, the kits can be stored for up to three years at 15-25°C.



*The MColortest™ system includes colorimetric and titrimetric tests (evaluation using color cards or test vessels, respectively). For more information, please see page 126.*

Economical  
refill packs

Easy, fast,  
direct read-out of color cards

Maximum  
reliability  
with numerous parameters

# Is the water's ammonium level safe for aquatic life?

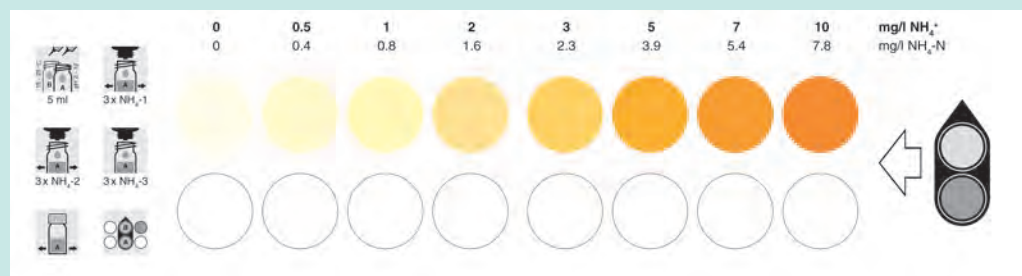
## Sensitive measurement of ammonium in fresh- and seawater

### The application

- Ammonium is a common water pollutant and can be toxic to aquatic life.
- Measuring the ammonium concentration of water is required by many international authorities, and maximum limits may not be exceeded.

### Our solution: MColortest™ Ammonium Test

We offer special test kits for fast, reliable measurement of ammonium ions and unionized ammonium in fresh- or seawater. The kits are designed for use with the MColortest™ system, offering sensitive measurements in the range of 0.5 to 10 mg/L  $\text{NH}_4$ .



### Benefits

- Easy to use with illustrated instructions
- Color card included in test kit for precise comparison
- Fast reaction times with results in 10 minutes
- Waste disposal advice available

For more applications, please visit: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)

### High to medium concentrations, especially for turbid solutions MColortest™ with color-disk comparator

These tests evaluate the color reaction based on the transmitted light method. So even turbid and lightly colored water samples can be analyzed without further preparation.

Ten-stage color disk is made of very durable, lightfast plastic, thus suitable for industrial areas and wet environments. Almost all test vessels are break-proof for safer handling.

#### Application areas:

- Wastewater
- Industrial water
- Groundwater
- Bottled water
- Boiler water
- Swimming pool water
- Industrial applications

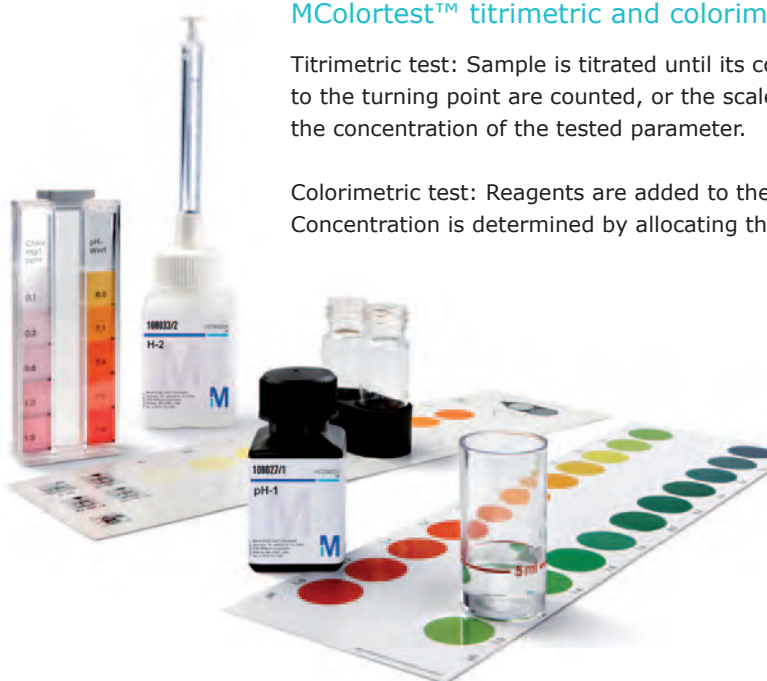
*The MColortest™ system:  
All reagents and the  
color-disk comparator are  
contained in the kit.*



### Medium concentrations MColortest™ titrimetric and colorimetric methods

Titrimetric test: Sample is titrated until its color changes. Number of drops consumed to the turning point are counted, or the scale value is read from a pipette to determine the concentration of the tested parameter.

Colorimetric test: Reagents are added to the sample, resulting in a color reaction. Concentration is determined by allocating the color to a value on a reference scale.



#### Application areas:

- Aquaculture for freshwater and seawater
- Surface water
- Swimming pool water
- School lessons

## Very low to medium concentrations MColorTest™ with color-card comparator

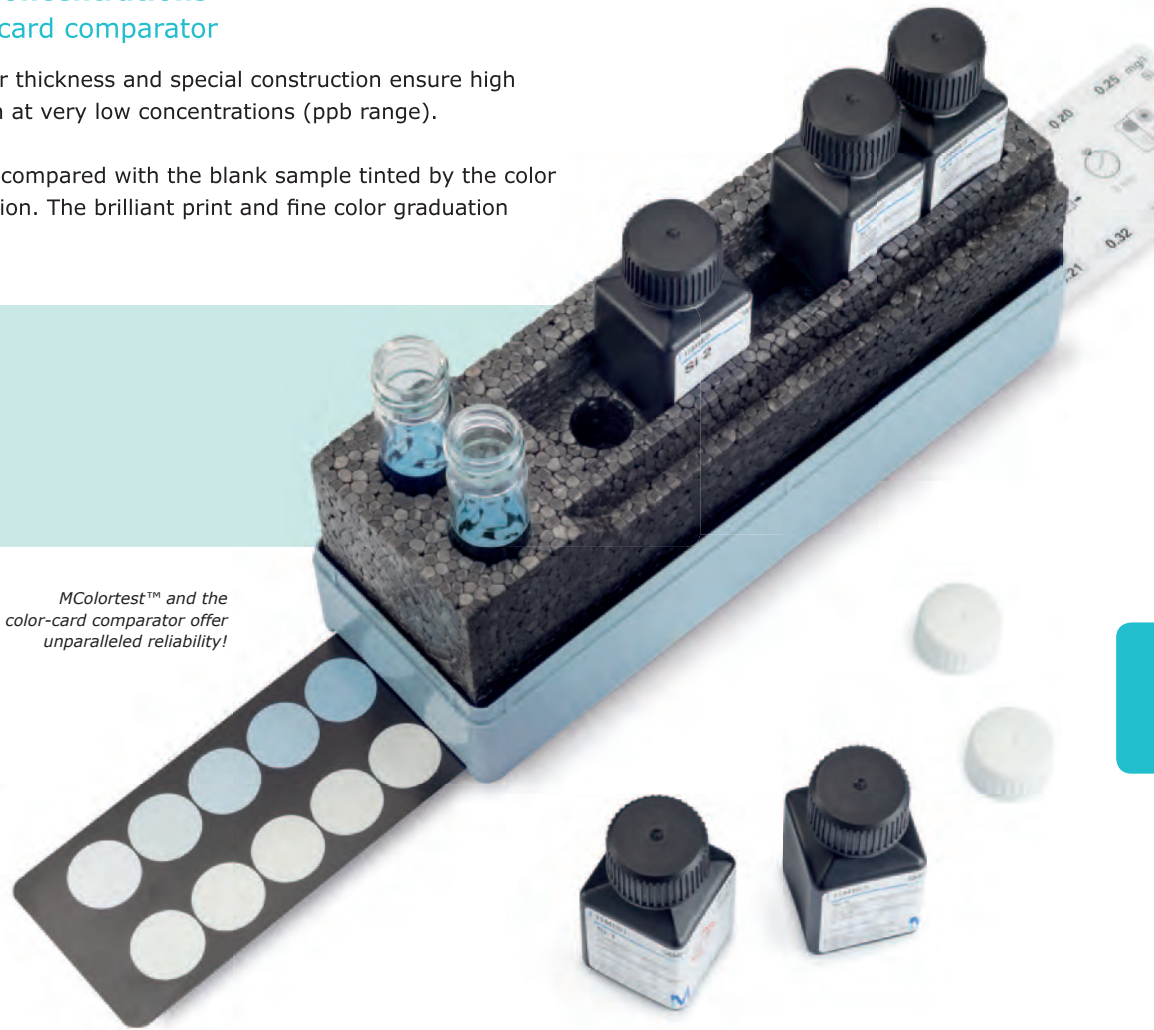
The comparator's greater layer thickness and special construction ensure high measurement sensitivity, even at very low concentrations (ppb range).

The sample's reaction color is compared with the blank sample tinted by the color cards to determine concentration. The brilliant print and fine color graduation enable precise analyses.

### Application areas:

- Drinking water
- Bottled water
- Boiler water
- Cooling water
- Industrial applications

*MColorTest™ and the color-card comparator offer unparalleled reliability!*



## ! practical refill packs

You can effectively reduce your costs per analysis by using the economical refill packs we offer for many of our test kits.

## ! waste disposal advice

Get detailed information about disposal of MColorTest™ kits on:  
[www.emdmillipore.com/waste-disposal-advice](http://www.emdmillipore.com/waste-disposal-advice)

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>A</b> Alkalinity Test	0.1 mmol/L	200 at 8.5 mmol/L	1.11109.0007		Acidimetric	Titration with pipette
Aluminium Test	0.07–0.12–0.20–0.35–0.50–0.65–0.80 mg/L Al	185	1.14413.0001	1.18452.0002	Chromazurol S	Color-card comparator
Aluminium Test	0.10–0.20–0.35–0.50–0.75–1–2–3–6 mg/L Al	150	1.18386.0001	1.18452.0002	Chromazurol S	Disk comparator
Ammonium Test	0.025–0.050–0.075–0.10–0.15–0.20–0.25–0.30–0.40 mg/L NH <sub>4</sub>	70	1.14428.0002		Indophenol blue	Color-card comparator
Ammonium Test	0.05–0.10–0.15–0.2–0.3–0.4–0.5–0.6–0.8 mg/L NH <sub>4</sub>	100	1.14400.0007		Neßler	Color-card comparator
Ammonium Test	0.2–0.4–0.6–1–2–3–5 mg/L NH <sub>4</sub>	50	1.08024.0001		Indophenol blue	Sliding comparator
Ammonium Test	0.2–0.5–0.8–1.2–1.6–2–3–5–8 mg/L NH <sub>4</sub>	200	1.14423.0002	1.18455.0002	Indophenol blue	Color-card comparator
Ammonium Test	0.2–0.5–0.8–1.3–2.0–3.0–4.5–6.0–8.0 mg/L NH <sub>4</sub>	200	1.14750.0002	1.18455.0002	Indophenol blue	Disk comparator
Ammonium Test	0.5–1–3–5–10 mg/L NH <sub>4</sub>	150	1.11117.0007		Neßler	Color-card comparator
Ammonium Test in freshwater and seawater	0.5–1–3–5–10 mg/L NH <sub>4</sub>	50	1.14657.0001		Indophenol blue	Color card
<b>C</b> Calcium Test	2 mg/L Ca	200 at 170 mg/L Ca	1.11110.0001		Titriplex® III	Titration with pipette
Carbon Dioxide Test	1.25 mg/L CO <sub>2</sub> 2.5 mg/L CO <sub>2</sub> 5 mg/L CO <sub>2</sub>	100 at 30 mg/L 100 at 60 mg/L 100 at 120 mg/L	1.17179.0007		Phenolphthalein	Titration with dropping bottle
Carbonate Hardness Test/ Acid cap. to pH 4.3 (ANC)	0.25 °e and 0.1 mmol/L	300 at 12.5 °e	1.08048.0001		Acidimetric	Titration with pipette
Carbonate Hardness Test/ Acid cap. to pH 4.3 (ANC)	1.25 °e	100 at 12.5 °e	1.11103.0001		Acidimetric	Titration with dropping bottle
Carbonate Hardness Test in freshwater and seawater	1.25 °e	50 at 1.25 °e	1.14653.0001		Acidimetric	Titration with dropping bottle
Chloride Test	2 mg/L Cl	200 at 170 mg/L Cl	1.11106.0001		Mercury(II)-nitrate	Titration with pipette
Chloride Test	3–6–10–18–30–60–100–180–300 mg/L Cl	200	1.14753.0007	1.18322.0002	Mercury(II)-thiocyanate	Disk comparator
Chloride Test	5–10–20–40–75–150–300 mg/L Cl	400	1.14401.0007	1.18322.0002	Mercury(II)-thiocyanate	Color-card comparator
Chloride Test	25 mg/L Cl	100 at 150 mg/L Cl	1.11132.0007		Mercury(II)-nitrate	Titration with dropping bottle
Chlorine Test (free chlorine)	0.01–0.025–0.045–0.06–0.08–0.1–0.15–0.2–0.3 mg/L Cl <sub>2</sub>	400 free chlorine	1.14434.0001	1.14977.0002	DPD	Color-card comparator
Chlorine Test (free chlorine) in freshwater and seawater	0.10–0.25–0.5–1.0–2.0 mg/L Cl <sub>2</sub>	100 free chlorine	1.14670.0001		TMB	Color card
Chlorine Test (free chlorine)	0.1–0.2–0.3–0.4–0.6–0.8–1.0–1.5–2.0 mg/L Cl <sub>2</sub>	600 free chlorine	1.14978.0001	1.14979.0002	DPD Liquid	Disk comparator
Chlorine Test (free and total chlorine)	0.1–0.2–0.3–0.4–0.6–0.8–1.0–1.5–2.0 mg/L Cl <sub>2</sub>	400 free chlorine + 400 total chlorine	1.14801.0001	1.14803.0002	DPD Liquid	Disk comparator
Chlorine Test (free chlorine)	0.25–0.50–0.75–1–2–4–8–10–15 mg/L Cl <sub>2</sub>	1,000 free chlorine	1.14976.0001	1.14977.0002	DPD	Disk comparator

														Parameter				
Food and beverages				Water (Analytics)										Others				
Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating	
				■		■	■	■	■	■	■	■	■	■				Alkalinity Test
■				■		■	■	■	■	■	■	■	■	■			■	Aluminium Test
■				■		■	■	■	■	■	■	■	■	■			■	Aluminium Test
	■			■		■	■	■	■				■	■	■			Ammonium Test
						■	■	■	■				■	■	■			Ammonium Test
	■			■		■	■	■	■	■			■	■	■			Ammonium Test
	■			■		■	■	■	■	■			■	■	■		■	Ammonium Test
						■	■	■	■	■			■	■	■		■	Ammonium Test
						■		■	■			■	■			■		Ammonium Test in freshwater and seawater
				■		■	■	■	■				■					Calcium Test
						■	■	■	■	■		■	■					Carbon Dioxide Test
				■		■	■	■	■	■	■	■						Carbonate Hardness Test / Acid cap. to pH 4.3 (ANC)
				■		■	■	■	■	■	■	■						Carbonate Hardness Test / Acid cap. to pH 4.3 (ANC)
				■		■	■	■	■	■	■	■						Carbonate Hardness Test in freshwater and seawater
	■			■		■	■	■	■	■	■	■	■	■	■			Chloride Test
	■			■		■	■	■	■	■	■	■	■	■	■			Chloride Test
	■			■		■	■	■	■	■	■	■	■	■	■			Chloride Test
	■			■		■	■	■	■	■	■	■	■	■	■			Chloride Test
				■		■		■					■			■	■	Chlorine Test (free chlorine)
				■		■	■	■			■		■					Chlorine Test (free chlorine) in freshwater and seawater
				■		■		■	■				■			■	■	Chlorine Test (free chlorine)
				■		■	■	■				■	■		■	■		Chlorine Test (free and total chlorine)
				■		■		■	■				■			■	■	Chlorine Test (free chlorine)



Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>C</b> Chlorine Test (free and total chlorine)	0.25-0.50-0.75-1-2-4-7-10-15 mg/L Cl <sub>2</sub>	400 free chlorine + 400 total chlorine	1.14826.0001	1.18326.0002	DPD	Disk comparator
Chlorine- and pH Test (free chlorine)	0.10-0.20-0.30-0.60-1.0-1.5 mg/L Cl <sub>2</sub> / pH 6.5-6.8-7.0-7.2-7.4-7.6-7.9	150 (chlorine) 150 (pH)	1.11160.0001		DPD Phenol red	Sliding comparator
Chlorine- and pH Test (free and total chlorine)	0.1-0.3-0.6-1.0-1.5 mg/L Cl <sub>2</sub> pH 6.8-7.1-7.4-7.6-7.8	200 (chlorine) 200 (pH)	1.11174.0001	1.11157.0001 1.11143.0001	DPD Phenol red	Color-matching vessel
Chlorine Dioxide Test	0.020-0.050-0.075-0.10-0.15-0.20-0.30-0.40-0.55 mg/L ClO <sub>2</sub>	300	1.18754.0001	1.18757.0002	DPD	Color-card comparator
Chlorine Dioxide Test	0.5-0.9-1.4-1.9-3.8-7.5-13-19-28 mg/L ClO <sub>2</sub>	300	1.18756.0001	1.18757.0002	DPD	Disk comparator
Chromate Test	0.011-0.022-0.045-0.07-0.09-0.11-0.13-0.18-0.22 mg/L CrO <sub>4</sub>	150	1.14402.0001	1.18456.0002	Diphenyl-carbazide	Color-card comparator
Chromate Test	0.22-0.45-0.67-1.0-1.3-1.8-2.2-2.9-3.6 mg/L CrO <sub>4</sub>	300	1.14441.0001	1.18456.0002	Diphenyl-carbazide	Color-card comparator
Chromate Test	0.22-0.45-0.8-1.3-2.2-4.0-6.7-13-22 mg/L CrO <sub>4</sub>	300	1.14756.0001	1.18456.0002	Diphenyl-carbazide	Disk comparator
Color Test	5-10-20-30-40-50-70-100-150 CU (Hazen)	no limit	1.14421.0001		Hazen	Color-card comparator
Copper Test	0.05-0.08-0.12-0.16-0.2-0.25-0.3-0.4-0.5 mg/L Cu	125	1.14414.0001	1.18459.0002	Cuprizone	Color-card comparator
Copper Test in freshwater and seawater	0.15-0.3-0.45-0.6-0.8-1.2-1.6 mg/L Cu	50	1.14651.0001		Cuprizone	Color card
Copper Test	0.3-0.6-1.0-1.5-2.0-2.5-3-5 mg/L Cu	125	1.14418.0001	1.18459.0002	Cuprizone	Color-card comparator
Copper Test	0.3-0.6-1.0-1.5-2-3-5-7-10 mg/L Cu	125	1.14765.0001	1.18459.0002	Cuprizone	Disk comparator
Cyanide Test	0.002-0.004-0.007-0.010-0.013-0.016-0.020-0.025-0.030 mg/L CN	65	1.14417.0001	1.18457.0002	König reaction	Color-card comparator
Cyanide Test	0.03-0.06-0.10-0.15-0.2-0.3-0.4-0.5-0.7 mg/L CN	200	1.14429.0001	1.18457.0002	König reaction	Color-card comparator
Cyanide Test	0.03-0.07-0.13-0.2-0.3-0.5-1-2-5 mg/L CN	200	1.14798.0001	1.18457.0002	König reaction	Disk comparator
<b>F</b> Fluoride Test	0.15-0.3-0.5-0.8 mg/L F	100	1.18771.0001		Alizarin complexone	Color card
Formaldehyde Test	0.10-0.25-0.4-0.6-0.8-1.0-1.5 mg/L HCHO	100	1.08028.0001		Triazole derivative	Sliding comparator
<b>H</b> Hydrazine Test	0.10-0.25-0.5-1.0 mg/L N <sub>2</sub> H <sub>2</sub>	100	1.08017.0001	necessary 1.08018.0001	Dimethylamino-benzaldehyde	Color-matching vessel
<b>I</b> Iron Test	0.01-0.02-0.03-0.04-0.06-0.08-0.10-0.15-0.20 mg/L Fe	300	1.14403.0001	1.18458.0002	Triazine	Color-card comparator
Iron Test in freshwater and seawater	0.05-0.1-0.2-0.4-0.6-0.8-1.0 mg/L Fe	50	1.14660.0007		Triazine	Color card
Iron Test	0.1-0.2-0.5-0.8-1.2-2-3-5 mg/L Fe	500	1.14759.0001	1.18458.0002	Triazine	Disk comparator
Iron Test	0.1-0.3-0.5-1.0-2.5-5.0-7.5-12.5-25-50 mg/L Fe	200	1.11136.0007	1.08023.0001	2,2'-Bipyridine	Color-matching vessel
Iron Test	0.2-0.4-0.6-0.8-1.0-1.3-1.6-2.0-2.5 mg/L Fe	500	1.14438.0001	1.18458.0002	Triazine	Color-card comparator



													Parameter						
Food and beverages			Water (Analytics)										Others						
Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating		
							■						■	■				■	Chlorine Test (free and total chlorine)
													■						Chlorine- and pH Test (free chlorine)
													■						Chlorine- and pH Test (free and total chlorine)
							■	■								■			Chlorine Dioxide Test
							■	■		■				■		■			Chlorine Dioxide Test
								■	■	■		■	■				■		Chromate Test
								■	■	■		■	■				■		Chromate Test
								■	■	■		■	■				■		Chromate Test
	■		■					■	■		■		■					■	Color Test
	■	■	■		■		■	■	■		■	■	■					■	Copper Test
							■	■	■	■		■	■	■					Copper Test in freshwater and seawater
			■				■	■	■		■	■	■					■	Copper Test
			■				■	■	■		■	■	■					■	Copper Test
			■		■		■	■	■	■			■					■	Cyanide Test
				■			■	■	■	■			■					■	Cyanide Test
				■			■	■	■	■			■					■	Cyanide Test
				■				■	■										Fluoride Test
		■									■					■	■		Formaldehyde Test
							■												Hydrazine Test
		■		■		■	■	■	■	■		■	■						Iron Test
				■		■	■	■	■	■		■	■						Iron Test in freshwater and seawater
				■		■	■	■	■	■		■	■						Iron Test
		■		■		■	■	■	■	■			■						Iron Test
		■		■		■	■	■	■	■		■	■						Iron Test

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>I</b> Iron Test	0.25-0.5-1.0-2.0-3.0-5.0-7.5-10-15 mg/L Fe	300	1.14404.0001		1,10-phenanthroline	Color-card comparator
<b>M</b> Magnesium Test	100-200-300-500-1,000-1,500 mg/L Mg	50	1.11131.0001		Xylidyl blue	Color card
Manganese Test	0.03-0.06-0.10-0.15-0.20-0.25-0.3-0.4-0.5 mg/L Mn	120	1.14406.0007	1.18460.0002	Oxime	Color-card comparator
Manganese Test	0.3-0.7-1.3-2-3-4-5-7-10 mg/L Mn	120	1.14768.0001	1.18460.0002	Oxime	Disk comparator
<b>N</b> Nickel Test	0.02-0.04-0.07-0.10-0.15-0.2-0.3-0.4-0.5 mg/L Ni	125	1.14420.0007	1.18461.0002	Dimethyl-glyoxime	Color-card comparator
Nickel Test	0.5-1.0-1.5-2-3-4-6-8-10 mg/L Ni	500	1.14783.0007	1.18461.0002	Dimethyl-glyoxime	Disk comparator
Nitrate Test	5-10-20-30-40-50-60-70-90 mg/L NO <sub>3</sub>	90	1.18387.0001	1.18462.0002	Nitrospectral / sulfuric acid	Disk comparator
Nitrate Test	10-25-50-75-100-125-150 mg/L NO <sub>3</sub>	200	1.11170.0007		Sulfanilic acid	Sliding comparator
Nitrate Test in freshwater	10-25-50-75-100-125-150 mg/L NO <sub>3</sub>	100	1.11169.0001		Sulfanilic acid	Color card
Nitrite Test	0.005-0.012-0.02-0.03-0.04-0.05-0.06-0.08-0.10 mg/L NO <sub>2</sub>	110	1.14408.0001	1.18463.0002	Griess' reaction	Color-card comparator
Nitrite Test in freshwater and seawater	0.05-0.15-0.25-0.50-1.0 mg/L NO <sub>2</sub>	100	1.14658.0001		Griess' reaction	Color card
Nitrite Test	0.025-0.05-0.075-0.1-0.15-0.2-0.3-0.5 mg/L NO <sub>2</sub>	200	1.08025.0001		Griess' reaction	Sliding comparator
Nitrite Test	0.1-0.2-0.3-0.4-0.6-0.8-1.0-1.3-2.0 mg/L NO <sub>2</sub>	400	1.14424.0001	1.18463.0002	Griess' reaction	Color-card comparator
Nitrite Test	0.1-0.2-0.4-0.6-1.0-1.8-3.0-6.0-10 mg/L NO <sub>2</sub>	400	1.14774.0001	1.18463.0002	Griess' reaction	Disk comparator
<b>O</b> Oxygen Test	0.1 mg/L O <sub>2</sub>	100 at 8.5 mg/L O <sub>2</sub>	1.11107.0001	1.11152.0001 1.14663.0001	modified Winkler method	Titration with pipette
Oxygen Test in freshwater and seawater	1-3-5-7-9-12 mg/L O <sub>2</sub>	50	1.14662.0001	necessary: 1.14663.0001	modified Winkler method	Color card
Ozone Test	0.007-0.017-0.030-0.040-0.055-0.070-0.10-0.14-0.20 mg/L O <sub>3</sub>	300	1.18755.0001	1.18759.0002	DPD	Color-card comparator
Ozone Test	0.15-0.35-0.5-0.7-1.4-2.7-5.0-7.0-10 mg/L O <sub>3</sub>	300	1.18758.0001	1.18759.0002	DPD	Disk comparator
<b>P</b> pH Universal indicator, liquid	pH 4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10.0	100 mL	1.09175.0100		Mixed indicator	Color card
pH Universal indicator, liquid	pH 4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10.0	1 L	1.09175.1000		Mixed indicator	Color card
pH Indicator liquid	pH 9.0-10.0-11.0-12.0-13.0	100 mL	1.09176.0100		Mixed indicator	Color card
pH Test	pH 4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	400	1.08027.0001		Mixed indicator	Sliding comparator
pH Test	pH 4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	100	1.08038.0001	1.08043.0001	Mixed indicator	Color-matching vessel
pH Test in freshwater and seawater	pH 5.0-5.3-5.6-6.0-6.3-6.6-7.0-7.3-7.6-8.0-8.3-8.6-9.0	200	1.18773.0001		Mixed indicator (fresh-/seawater)	Color-card comparator

	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating	Parameter
	Food and beverages						Water (Analytics)							Others					
		■					■	■	■	■	■		■		■				Iron Test
									■	■									Magnesium Test
					■			■	■	■			■		■	■		■	Manganese Test
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	■	■		■	■		■		■	■	■			■	■	■			Nitrate Test
		■					■		■	■				■	■	■			Nitrate Test
		■					■		■	■	■			■	■				Nitrate Test in freshwater
		■			■		■	■	■	■			■		■	■			Nitrite Test
					■		■	■	■	■	■		■		■				Nitrite Test in freshwater and seawater
		■			■		■	■	■	■			■		■	■			Nitrite Test
		■			■		■	■	■	■			■		■	■			Nitrite Test
	■				■	■	■	■	■	■	■		■		■				Oxygen Test
							■		■	■			■		■				Oxygen Test in freshwater and seawater
									■				■	■				■	Ozone Test
									■				■	■				■	Ozone Test
	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	pH Universal indicator, liquid
	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	pH Universal indicator, liquid
															■			■	pH Indicator liquid
	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	pH Test
							■	■	■	■	■								pH Test
							■		■	■			■						pH Test in freshwater and seawater

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>P</b> pH Test in swimming pool	pH 6.5–6.8–7.1–7.4–7.6–7.8–8.2	200	1.14669.0001		Phenol red	Color card
Phosphate Test	0.046–0.092–0.14–0.18–0.25–0.34–0.43 mg/L PO <sub>4</sub>	200	1.18394.0001	1.18465.0002	Phosphomolybdenum blue	Color-card comparator
Phosphate Test in freshwater and seawater	0.25–0.50–0.75–1.0–1.5–2.0–3.0 mg/L PO <sub>4</sub>	100	1.14661.0007		Phosphomolybdenum blue	Color card
Phosphate Test	0.6–1.2–1.8–2.5–3.1–4.6–6.1–7.7–9.2 mg/L PO <sub>4</sub>	200	1.14846.0007	1.18465.0002	Phosphomolybdenum blue	Disk comparator
Phosphate Test	1.3–3.3–6.7–10–13 mg/L PO <sub>4</sub>	200	1.11138.0007	1.08046.0007	Phosphomolybdenum blue	Color-matching vessel
Phosphate Test	3.1–6.1–11–18–31–61–123 mg/L PO <sub>4</sub>	190	1.14449.0001	1.18466.0002	Vanadium molybdate	Color-card comparator
Phosphate Test	4.6–9.2–18–28–37–49–61–123–307 mg/L PO <sub>4</sub>	300	1.18388.0001	1.18466.0002	Vanadium molybdate	Disk comparator
<b>R</b> Residual Hardness Test	0.05–0.10–0.19 °e	400	1.11142.0001		Mixed indicator	Color card
<b>S</b> Silicate (Silicic Acid) Test	0.021–0.043–0.086–0.13–0.17–0.21–0.32–0.43–0.53 mg/L SiO <sub>2</sub>	150	1.14410.0007	1.18323.0002	Silico-molybdenum blue	Color-card comparator
Silicate (Silicic Acid) Test	0.64–1.3–2.1–3.2–4.3–6.4–11–15–21 mg/L SiO <sub>2</sub>	150	1.14792.0007	1.18323.0002	Silico-molybdenum blue	Disk comparator
Sulfate Test	25–50–75–100–130–160–190–240–300 mg/L SO <sub>4</sub>	75	1.18389.0001	1.18467.0002	Tannic acid	Disk comparator
Sulfate Test	25–50–80–110–140–200–300 mg/L SO <sub>4</sub>	90	1.14411.0001	1.18467.0002	Tannic acid	Color-card comparator
Sulfide Test	0.02–0.04–0.06–0.08–0.10–0.13–0.16–0.20–0.25 mg/L S	100	1.14416.0001	1.18468.0002	Dimethyl-p-phenyldiamine	Color-card comparator
Sulfide Test	0.1–0.3–0.5–0.7–1–2–3–4–5 mg/L S	200	1.14777.0001	1.18468.0002	Dimethyl-p-phenyldiamine	Disk comparator
Sulfite Test	0.5 mg/L Na <sub>2</sub> SO <sub>3</sub> (0.32 mg/L SO <sub>3</sub> )	200 at 40 mg/L Na <sub>2</sub> SO <sub>3</sub>	1.11148.0001		Iodate / Starch	Titration with pipette
<b>T</b> Total Hardness Test	0.13 °e and 1 mg/L CaCO <sub>3</sub>	300 at 3.8 °e	1.08047.0001	1.08040.0001	Titriplex® III	Titration with pipette
Total Hardness Test	0.25 °e and 10 mg/L CaCO <sub>3</sub>	300 at 12.5 °e	1.08039.0001	1.08033.0001 1.11122.0001 1.08203.0001	Titriplex® III	Titration with pipette
Total Hardness Test	1.25 °e	100 at 12.5 °e	1.11104.0001		Titriplex® III	Titration with dropping bottle
Total Hardness Test	20 mg/L CaCO <sub>3</sub>	200 at 200 mg/L	1.08312.0001		Titriplex® III	Titration with dropping bottle
Total Hardness Test in freshwater	1.25 °e	50 at 1.25 °e	1.14652.0001		Titriplex® III	Titration with dropping bottle
<b>U</b> Urea Test for swimming pools	0.3–0.6–1.0–1.5–2–3–4–5–8 mg/L (NH <sub>2</sub> ) <sub>2</sub> CO	100	1.14843.0001	1.14845.0002	Indophenol blue	Disk comparator
<b>Z</b> Zinc Test	0.1–0.2–0.3–0.4–0.5–0.7–1–2–5 mg/L Zn	120	1.14780.0007	1.14782.0002	Thiocyanate / Brilliant green	Disk comparator
Zinc Test	0.1–0.2–0.3–0.4–0.5–0.7–1–2–5 mg/L Zn	120	1.14412.0007	1.14782.0002	Thiocyanate / Brilliant green	Color-card comparator

	Beer processing		Food testing		Juices		Milk products		Mineral water		Soft drinks		Aquaculture		Boiler water, cooling water		Drinking water		Groundwater, surface water		Industrial water		Process water		Seawater		Swimming pools		Wastewater		Agriculture		Disinfection control		Electroplating		Parameter		
	Food and beverages							Water (Analytics)														Others																	
																																						pH Test in swimming pool	
																																							Phosphate Test
																																							Phosphate Test in freshwater and seawater
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																																							Residual Hardness Test
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																																							Total Hardness Test in freshwater
																																							Urea Test
																																							Zinc Test
																																							Zinc Test

### Is it time for an oil change?

We offer rapid colorimetric methods for determining the freshness of frying oils and fats. With our easy-to-use tests, you'll always know whether your oil is still good or if you need to replace it.



### Deep-frying fats tests

Parameter	Graduation	No. of test	Ord. No.	Ord. No. Refill pack	Method
Free fatty acids	0.5–1.0–2.0–3.0 mg/g KOH	100	1.17046.0001		pH indicator
Oxifrit-Test®	fresh – change advisable – gone off	60 (Refill pack 30)	1.10653.0001	1.10654.0001	Colorimetric, acc. to the principle of determination of oxidized fatty acids (OFAs)

### Accessories for MColortest™ and MQuant™

Product	Ord. No.
Flat-bottomed long tubes inclusive screw caps for MColortest™ with color-card comparator (1 pack = 12 pcs)	1.14901.0001
Flat-bottomed tubes inclusive screw caps for titrimetric and colorimetric MColortest™ (1 pack = 12 pcs)	1.14902.0001
Flat-bottomed tubes inclusive screw caps for MColortest™ with color-disk comparator (1 pack = 12 pcs)	1.17988.0001
Test vessels with 5 mL und 10 mL graduations, for MColortest™ and MQuant™ Tests (1 pack = 30 pcs)	1.17989.0001

**quality assurance**

We check and calibrate our tests using certified buffer solutions, which can be traced directly to primary reference materials from NIST and PTB.

### MColortest™ Compact Laboratory for Water Testing | Ord. No. 1.11151.0007

Determination of pH, ammonium, biological oxygen demand (BOD), carbonate hardness, total hardness, residual hardness, nitrate, nitrite, phosphate and oxygen.

This compact laboratory allows you to quickly measure all major parameters of standing or flowing surface water, and accurately assess the current water quality.

#### Scope of delivery

Parameter	Measuring range	No. of tests	Ord. No. Refill pack
MColortest™ Ammonium Test	0.2 – 5 mg/L NH <sub>4</sub>	50	1.08024.0001
MColortest™ Carbonate Hardness Test / Acid cap. to pH 4.3 (ANC)	0.25 – 25 °e ANC: 0.1 – 7.2 mmol/L	150 at 12.5 °e	1.08048.0001
MColortest™ Total Hardness Test	0.25 °e and 10 mg/L	150 at 12.5 °e	1.08039.0001
MColortest™ Nitrate Test	10 – 150 mg/L NO <sub>2</sub>	100	1.11170.0007
MColortest™ Nitrite Test	0.025 – 0.5 mg/L NO <sub>2</sub>	200	1.08025.0001
MColortest™ pH Test	pH 4.5 – 9	200	1.08027.0001
MColortest™ Phosphate Test in freshwater and seawater	0.25 – 3.0 mg/L PO <sub>4</sub>	100	1.14661.0007
MColortest™ Oxygen Test	0.1 mg/L O <sub>2</sub>	100 at 8.5 mg/L O <sub>2</sub>	1.11107.0001
Flat-bottomed tubes inclusive screw caps for MColortest™ Tests		3 pcs	
Thermometer			
Test vessels with 5 mL graduation		1 pc	





# SCREEN ON THE GO

## What is the quality of your Milk?

### Detect peroxidase activity in milk

#### The application

- The quality of milk depends decisively on its successful heat treatment.
- If milk is heated to above 85° C, the enzyme lactoperoxidase (POD) is completely inactivated.
- The ultrahigh temperature control (UHT) of the milk can thus be documented.
- When lactoperoxidase is detected, pasteurization temperatures have been maintained and milk has been successfully pasteurized.
- For dairies, a yes / no statement is usually sufficient.

#### Our solution: MQuant™ Peroxidase test strips

With the qualitative MQuant™ Peroxidase Test, you can now determine the enzyme from your milk sample quickly and cost-effectively, instead of the more time-consuming photometry, and thus prove that their milk has been gently heated.

The test works just as reliably but significantly faster than the photometric reference method (DIN 10483-1). The rapid test is handy and can be used flexibly, directly at the sampling site.

#### Benefits

- Easy determination of peroxidase activity in milk
- Flexible application directly at the sampling site
- Low cost, low time requirement
- Easy evaluation with a color scale, whether activity is present

Learn more at: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)





## Test strips MQuant™

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## Test strips

Highly reliable and portable, **MQuant™** test strips are designed for semi-quantitative determination of ions and compounds. These versatile strips can be used in concentration ranges as low as below 1 mg/L up to the g/L range.

The test strips save you considerable time and costs during analyses, quality checks and in-process controls. Thanks to the PET film backing material and the low reagent content, the test strips are also easy to dispose of.



# What is the glucose content of your food?

## Semi-quantitative measurement of glucose

### The application

- Glucose is an important parameter in many foods and beverages, and is regularly tested in raw materials and final products.
- Traditional glucose analysis involves time-consuming enzymatic determination in laboratories.

### Our solution: MQuant™ Glucose test strips

MQuant™ Glucose test strips allow fast, cost-effective analysis anywhere. They deliver reliable semi-quantitative results, and are ideal for quick on-the-spot screening of samples when there's no time for lab analysis.

### Benefits

- Pocket-sized tests for on-site or laboratory use
- Easy disposal
- Simple analysis with illustrated instructions on label
- Fast, accurate results in minutes
- Cost-effective solution

For more applications, please visit: [www.emdmillipore.com/aaf](http://www.emdmillipore.com/aaf)

**Fast,  
easy, safe**

Fast results, easy usage, safe disposal

**Brilliant  
color scales for  
exact results**

**All for you ...**

All concentration ranges available



### Further MQant™ applications

#### Check the quality of frying oils

Deep-frying causes oils and fats to decompose over time, producing free fatty acids. When these acids exceed an acceptable limit, they affect the quality of fried food. With MQant™ Free Fatty Acids visual test strips, you can easily monitor the quality of your oil and determine the right time for a change. (MQant™ Free Fatty Acids | Ord. No. 1.17046.0001)



#### Ensure safety after disinfection

Residues from disinfectants used in food production, hospitals, and biotech or pharmaceutical environments can cause serious problems. MQant™ test strips help you monitor the cleaning process by checking for effective concentrations of disinfectants. We offer tests for: chlorine, formaldehyde, peracetic acid, peroxide and quaternary ammonium compounds.



# It's that simple!

## 01 Sample preparation

The MQuant™ Test contains all necessary reagents, including those required for sample pre-treatment.

## 02 Testing



Remove one MQuant™ test strip from the protective tube.



Dip strip into the test solution to wet reaction zones. Remove excess liquid by shaking test strip or drawing it across the edge of the vessel.



After the specified reaction time (maximum one minute), compare the color of the reaction zone with the color scale printed on the tube label to determine the concentration.

## 03 Disposal

MQuant™ test strips can be safely and easily disposed of with regular waste.

### Shelf-life and storage

When stored in a cool (refrigeration is necessary in some cases) and dry area, the test strips can be used up to three years (details printed in the pack). The tube must be closed immediately after removal of each strip to ensure the remaining test strips are protected.

### Quality assurance

We check and calibrate all MQuant™ tests and comparison colors using certified standard solutions. These solutions can be traced directly to primary reference materials from NIST and PTB.





Want to add your branding to our test strips or test tubes? Choose from the following options:

**Single sealed test strips**

Customized test strips are ideal for inserting in books, magazines and brochures, or for adhering to products.

**Tubes with list items or tailor-made test strips**

Personalize almost anything, from the design of the color card to the final product, and even the measuring range.

**Innovative customized products**

If the test you need is not offered, we'll produce tailor-made test strips to suit your individual requirements.

To find out about our minimum quantity requirements, and for more details, please visit: [www.emdmillipore.com/customized-test-strips](http://www.emdmillipore.com/customized-test-strips)

# YOUR brand – our test strips

Parameter	Graduation	No. of tests	Ord. No.	Method	Type
<b>A</b> Aluminium Test	10–25–50–100–250 mg/L Al	100	1.10015.0001	Aurintricarboxylic acid	Reagent, incl.
Ammonium Test	10–30–60–100–200–400 mg/L NH <sub>4</sub>	100	1.10024.0001	Neßler	Reagent, incl.
Arsenic Test	0.005–0.010–0.025–0.05–0.10–0.25–0.5 mg/L As	100	1.17927.0001	modified Gutzeit test	Reagent, incl.
Arsenic Test	0.02–0.05–0.1–0.2–0.5 mg/L As 0.1–0.5–1.0–1.7–3.0 mg/L As	100	1.17917.0001	modified Gutzeit test	Reagent, incl.
Ascorbic Acid Test	50–100–200–300–500–700– 1,000–2,000 mg/L ascorbic acid	100	1.10023.0001	Phosphomolybdenum blue	
<b>B</b> Blank strip		100	1.11860.0001		
<b>C</b> Calcium Test	10–25–50–100 mg/L Ca	60	1.10083.0001	Glyoxal-bis-hydroxyanil	Reagent, incl.
Carbonate Hardness Test	5–10–15–20–30 °e	100	1.10648.0001	Mixed indicator	
Chloride Test	500–1,000–1,500–2,000–≥3,000 mg/L Cl	100	1.10079.0001	Silver chromate	
Chlorine Test (free chlorine)	0.5–1–2–5–10–20 mg/L Cl <sub>2</sub>	75	1.17925.0001	Redox reaction	
Chlorine Test (free chlorine)	25–50–100–200–500 mg/L Cl <sub>2</sub>	100	1.17924.0001	Redox reaction	
Chromate Test	3–10–30–100 mg/L CrO <sub>4</sub>	100	1.10012.0001	Diphenylcarbazide	Reagent, incl.
Cobalt Test	10–30–100–300–1,000 mg/L Co	100	1.10002.0001	Rhodanide	
Copper Test	10–30–100–300 mg/L Cu	100	1.10003.0001	2,2'-Biquinoline	
Cyanide Test	1–3–10–30 mg/L CN	100	1.10044.0001	König reaction	Reagent, incl.
<b>F</b> Formaldehyde Test	10–20–40–60–100 mg/L HCHO	100	1.10036.0001	Triazole	Reagent, incl.
Free Fatty Acids	0.5–1.0–2.0–3.0 mg/g KOH	100	1.17046.0001	pH indicator	
<b>G</b> Glucose Test	10–25–50–100–250–500 mg/L Glucose	50	1.17866.0001	Enzymatic reaction	
<b>I</b> Iron Test	3–10–25–50–100–250–500 mg/L Fe(II)	100	1.10004.0001	2,2'-Bipyridine	
<b>L</b> Lead Test	20–40–100–200–500 mg/L Pb	100	1.10077.0001	Rhodizonic acid	Reagent, incl.
<b>M</b> Manganese Test	2–5–20–50–100 mg/L Mn	100	1.10080.0001	Oxidation/Redox indicator	Reagent, incl.
Molybdenum Test	5–20–50–100–250 mg/L Mo	100	1.10049.0001	Toluene-3,4-dithiol	Reagent, incl.
<b>N</b> Nickel Test	10–25–100–250–500 mg/L Ni	100	1.10006.0001	Dimethylglyoxime	
Nitrate Test	10–25–50–100–250–500 mg/L NO <sub>3</sub>	100	1.10020.0001	modified Griess' reaction	
Nitrate Test	10–25–50–100–250–500 mg/L NO <sub>3</sub>	25	1.10020.0002	modified Griess' reaction	
Nitrate Test	10–25–50–100–250–500 mg/L NO <sub>3</sub>	1,000	1.10092.0021	modified Griess' reaction	Individually sealed
Nitrite Test	0.5–1–2–5–10 mg/L NO <sub>2</sub>	75	1.10057.0001	Griess' reaction	
Nitrite Test	2–5–10–20–40–80 mg/L NO <sub>2</sub>	100	1.10007.0001	Griess' reaction	
Nitrite Test	2–5–10–20–40–80 mg/L NO <sub>2</sub>	25	1.10007.0002	Griess' reaction	
Nitrite Test	0.1–0.3–0.6–1–2–3 g/L NO <sub>2</sub>	100	1.10022.0001	Griess' reaction	
<b>P</b> Peracetic Acid Test	5–10–20–30–50 mg/L Peracetic acid	100	1.10084.0001	Redox reaction	
Peracetic Acid Test	20–40–80–120–160 mg/L Peracetic acid	100	1.17976.0001	Redox reaction	
Peracetic Acid Test	100–150–200–250–300–400–500 mg/L Peracetic acid	100	1.10001.0001	Redox reaction	
Peracetic Acid Test	500–1,000–1,500–2,000 mg/L Peracetic acid	100	1.17922.0001	Redox reaction	
Peroxidase Test	yes/no result	100	1.17828.0001	Enzymatic reaction	



	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating	Parameter
	Food and beverages						Water (Analytics)						Others						
	■	■	■		■	■				■					■				Aluminium Test
									■		■				■	■			Ammonium Test
					■			■	■								■		Arsenic Test
					■			■	■										Arsenic Test
	■	■	■			■													Ascorbic Acid Test
	■	■	■			■													Blank strip
	■	■	■	■	■	■		■		■						■			Calcium Test
					■		■	■	■	■									Carbonate Hardness Test
		■							■						■				Chloride Test
															■		■		Chlorine Test
															■		■		Chlorine Test
															■			■	Chromate Test
															■			■	Cobalt Test
								■						■	■			■	Copper Test
															■			■	Cyanide Test
												■					■		Formaldehyde Test
		■																	Free Fatty Acids
	■	■	■	■		■													Glucose Test
		■	■	■		■			■	■	■				■				Iron Test
										■	■	■			■	■			Lead Test
									■	■	■				■				Manganese Test
								■											Molybdenum Test
															■			■	Nickel Test
		■	■		■		■	■	■	■			■		■	■			Nitrate Test
		■	■		■		■	■	■	■			■		■	■			Nitrate Test
		■	■		■		■	■	■	■			■		■	■			Nitrate Test
		■					■	■	■	■			■		■				Nitrite Test
		■					■	■	■	■			■		■				Nitrite Test
		■					■	■	■	■			■		■				Nitrite Test
								■											Nitrite Test
																			Peracetic Acid Test
																			Peracetic Acid Test
																			Peracetic Acid Test
																			Peracetic Acid Test
	■			■															Peroxidase Test

Parameter	Graduation	No. of tests	Ord. No.	Method	Type
<b>P</b> Peroxide Test	0.5-2-5-10-25 mg/L H <sub>2</sub> O <sub>2</sub>	100	1.10011.0001	Enzymatic reaction	
Peroxide Test	0.5-2-5-10-25 mg/L H <sub>2</sub> O <sub>2</sub>	25	1.10011.0002	Enzymatic reaction	
Peroxide Test	1-3-10-30-100 mg/L H <sub>2</sub> O <sub>2</sub>	100	1.10081.0001	Enzymatic reaction	
Peroxide Test	100-200-400-600-800-1,000 mg/L H <sub>2</sub> O <sub>2</sub>	100	1.10337.0001	Enzymatic reaction	
Phosphate Test	10-25-50-100-250-500 mg/L PO <sub>4</sub>	100	1.10428.0001	Molybdate ion	Reagent, incl.
Potassium Test	250-450-700-1,000-1,500 mg/L K	100	1.17985.0001	Dipicrylamine	Reagent, incl.
<b>Q</b> Quaternary Ammonium Compounds	10-25-50-100-250-500 mg/L Benzalkonium chloride	100	1.17920.0001	Indicator	
<b>S</b> Sulfate Test	<200->400->800->1200->1600 mg/L SO <sub>4</sub>	100	1.10019.0001	Ba-thorin complex	
Sulfite Test	10-40-80-180-400 mg/L SO <sub>3</sub>	100	1.10013.0001	Nitroprusside/ Zn-hexacyanoferrate	
<b>T</b> Tin Test	10-25-50-100-200 mg/L Sn	50	1.10028.0001	Toluene-3,4-dithiol	Reagent, incl.
Total Hardness Test	<4->5->9->18->26 °e	100	1.10025.0001	EDTA	
Total Hardness Test	<4->5->9->18->26 °e	5,000	1.10029.0001	EDTA	Single test strips
Total Hardness Test	<4->5->9->18->26 °e	1,000	1.10032.0001	EDTA	Individually sealed
Total Hardness Test	>6->13->19->25->31 °e	100	1.10046.0001	EDTA	
Total Hardness Test	>6->13->19->25->31 °e	25,000	1.10047.0013	EDTA	Individually sealed
Total Hardness Test	<1.5; 1.5-2.5; >2.5 mmol/L CaCO <sub>3</sub>	100	1.17934.0001	EDTA	
<b>Z</b> Zinc Test	0-4-10-20-50 mg/L Zn	100	1.17953.0001	Dithizone	

## Reagent papers

**Lead(II) acetate paper 3 rolls, each 4.8 meters**

**Ord. No. 1.09511.0003**

Lead(II) acetate paper is used for the determination of sulfide and hydrogen sulfide

**Potassium iodide-starch paper, grade value Reag. Ph Eur, 3 rolls, each 4.8 meters**

**Ord. No. 1.09512.0003**

Potassium iodide-starch paper is used for the determination of oxidizing agents

	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating	Parameter
	Food and beverages			Water (Analytics)										Others					
				■										■	■		■		Peroxide Test
				■										■	■		■		Peroxide Test
				■										■	■		■		Peroxide Test
		■												■		■			Peroxide Test
					■									■		■			Phosphate Test
								■			■			■		■			Potassium Test
																	■		Quaternary Ammonium Compounds
									■	■	■			■					Sulfate Test
		■	■		■	■		■						■					Sulfite Test
		■	■	■										■	■	■	■		Tin Test
					■			■	■										Total Hardness Test
					■			■	■										Total Hardness Test
					■			■	■										Total Hardness Test
					■			■	■										Total Hardness Test
					■			■	■										Total Hardness Test
					■			■	■						■			■	Total Hardness Test
																			Zinc Test



**blank zone control**

MQuant™ Blank Test Strips include a reagent-free zone. This allows you to check whether the sample solution changes the color of the blank zone.

# TAKE THE FAST TRACK

## Having trouble measuring the pH of turbid samples?

### Quick and clear pH measurements of turbid solutions

#### The application

- Analyzing turbid or colored liquids with conventional pH-indicator strips can be extremely difficult.
- Suspended particulate matter which accumulates on the reaction zone can obscure the color and make the pH impossible to read.
- Using pH electrodes leads to extensive cleaning and maintenance.

#### Our solution: MColorpHast™ non-bleeding pH-indicator strips

Our transparent pH-indicator strips for turbid solutions eliminate the need for sample preparation steps, such as filtration or clarification. The pH reaction zone is backed by a transparent carrier film, so you can easily read the pH on the reverse side of it.

#### Benefits

- Non-bleeding strips prevent contamination of the medium
- Transparent strips for clear results in lightly colored or turbid liquids
- Quick and easy method without sample preparation
- Brilliant color scales ensure reliable results
- SafetyEdge box for maximum security and convenience



## pH test strips and papers MColorpHast™

General information

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**SafetyEdge** box

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pH test strips and papers

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# MColorpHast™

Simply read the color... fast

## pH test strips and papers

**MColorpHast™** makes pH measurement easier than ever. No instruments, sample preparation, maintenance, or cleaning electrodes. Simply read the color. The rapid method offers an accurate color scale for clear, reliable results. It's suitable for all types of media in environmental analysis and industrial in-process controls – even for highly turbid liquids. With our broad range of pH tests, you'll always have the optimal solution for your application.

# SAFETYEDGE BOX



### Performing pH measurements?

Enjoy the ultimate in security and simplicity with our SafetyEdge box. Its tamper-proof seal ensures that the box has not been opened, while its innovative flip-top corner allows easy removal of pH indicator strips, but prevents them from falling out.

### Do you have special applications?

Simplify your workflow with our pH test strips for special requirements, like testing turbid samples or meat.

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Read more about our pH test strips:  
[www.emdmillipore.com/pH-tests](http://www.emdmillipore.com/pH-tests)

Fast and  
easy Method

Non-bleeding  
strips

Brilliant  
Colors

for convenient analysis

*With our broad range of pH tests,  
you'll always have the optimal  
solution for your application.*



### Premium pH indicator papers

High-quality filter papers combined with a roll format, protect your tests from external factors, such as moisture, light, and ambient gases. This also ensures that they can be stored for a longer time.

### MColorpHast™ non-bleeding pH indicator strips

Special indicator dyes are covalently bound to the reagent papers. This prevents the indicator from bleeding, and allows the strips to be left in the measurement medium indefinitely – without contaminating the sample.



### pH-indicator papers

Product	pH measuring range	Graduation	Roll length / No. of strips	Ord. No.
<b>Roll format</b>				
pH-Box	0.5 – 13.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	3 x 4.8 m	1.09565.0001
pH-indicator paper Replacement rolls*	0.5 – 5.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0	6 x 4.8 m	1.09568.0001
pH-indicator paper Replacement rolls*	5.5 – 9.0	5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	6 x 4.8 m	1.09569.0001
pH-indicator paper Replacement rolls*	9.5 – 13.0	9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	6 x 4.8 m	1.09570.0001
pH-indicator paper Universal indicator	1 – 14	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0-12.0-14.0	3 x 4.8 m	1.10962.0003
pH-indicator paper Replacement rolls*	1 – 14	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0-12.0-14.0	6 x 4.8 m	1.10232.0001
pH-indicator paper Universal indicator	1 – 10	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0	3 x 4.8 m	1.09526.0003
pH-indicator paper Replacement rolls*	1 – 10	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0	6 x 4.8 m	1.09527.0001
pH-indicator paper Acilit®	0.5 – 5.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0	3 x 4.8 m	1.09560.0003
pH-indicator paper Replacement rolls*	0.5 – 5.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0	6 x 4.8 m	1.09568.0001
pH-indicator paper Neutralit®	5.5 – 9.0	5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	3 x 4.8 m	1.09564.0003
pH-indicator paper Replacement rolls*	5.5 – 9.0	5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	6 x 4.8 m	1.09569.0001
pH-indicator paper Alkalit®	9.5 – 13.0	9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	3 x 4.8 m	1.09562.0003
pH-indicator paper Replacement rolls*	9.5 – 13.0	9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	6 x 4.8 m	1.09570.0001
pH-indicator paper Special indicator	3.8 – 5.4	<3.8-3.8-4.1-4.4-4.6-4.8-5.1-5.4	3 x 4.8 m	1.09555.0003
pH-indicator paper Special indicator	5.4 – 7.0	<5.4-5.4-5.8-6.2-6.4-6.7-7.0->7.0	3 x 4.8 m	1.09556.0003
pH-indicator paper Special indicator	6.4 – 8.0	6.4-6.7-7.0-7.2-7.5-7.7-8.0->8.0	3 x 4.8 m	1.09557.0003
pH-indicator paper Special indicator	8.2 – 10.0	<8.2-8.2-8.5-8.8-9.0-9.3-9.6-10.0	3 x 4.8 m	1.09558.0003
Litmus paper, blue Reag. Ph Eur	pH <4 red / >9 blue	-	3 x 4.8 m	1.09486.0003
Litmus paper, red Reag. Ph Eur	pH <4 red / >9 blue	-	3 x 4.8 m	1.09489.0003
Congo red paper Reag. Ph Eur	pH <2 blue-violet / >5 red-orange	-	3 x 4.8 m	1.09514.0003
Phenolphthalein paper	<8 colorless / >9 red	-	3 x 4.8 m	1.09521.0003
<b>Booklet format</b>				
pH-indicator paper Universal indicator	1 – 10	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0	3 x 100	1.09525.0003

\* Replacement roll without color scale

#### Shelf-life and storage

- Store at 10-25°C to maintain top condition for 3-5 years
- Protect from light and moisture
- Close box immediately after removing each strip or paper

## pH-indicator strips (non-bleeding)

Product	pH measuring range	Graduation	No. of test strips	Ord. No.
pH-indicator strips Universal indicator	0 – 14	0-1-2-3-4-5-6-7-8-9-10-11-12-13-14	100	1.09535.0001
pH-indicator strips	0 – 6.0	0-0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0	100	1.09531.0001
pH-indicator strips	5.0 – 10.0	5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10.0	100	1.09533.0001
pH-indicator strips	7.5 – 14.0	7.5-8.0-8.5-9.0-9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0-13.5-14.0	100	1.09532.0001
pH-indicator strips	2.0 – 9.0	2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	100	1.09584.0001
pH-indicator strips	0 – 2.5	0-0.5-1.0-1.3-1.6-1.9-2.2-2.5	100	1.09540.0001
pH-indicator strips	2.5 – 4.5	2.5-3.0-3.3-3.6-3.9-4.2-4.5	100	1.09541.0001
pH-indicator strips	4.0 – 7.0	4.0-4.4-4.7-5.0-5.3-5.5-5.8-6.1-6.5-7.0	100	1.09542.0001
pH-indicator strips	6.5 – 10.0	6.5-6.8-7.1-7.4-7.7-7.9-8.1-8.3-8.5-8.7-9.0-9.5-10.0	100	1.09543.0001
pH-indicator strips	11.0 – 13.0	11.0-11.5-11.8-12.1-12.3-12.5-12.8-13.0	100	1.09545.0001

## pH-indicator strips (for professional use)

Product	pH measuring range	Graduation	No. of test strips	Ord. No.
pH-indicator strips Special indicator for pH-measurements in turbid solutions (suspensions)	2.0 – 9.0	2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0	100	1.09502.0001
pH-indicator strips Special indicator for pH-measurements in meat	5.2 – 7.2	5.2-5.6-6.0-6.4-6.8-7.2	100	1.09632.0001
pH-indicator strips, individually sealed	2.0 – 9.0	2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	1,000	1.09450.0010
pH-indicator strips, individually sealed	2.0 – 9.0	2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	25,000	1.09450.0013

### ! single sealed strips

Upon request, we offer individually sealed test strips for standard or special pH ranges. These can also be customized with your branding, making them ideal for inserting into magazines and brochures, or for adhering to your products.

[www.emdmillipore.com/customized-test-strips](http://www.emdmillipore.com/customized-test-strips)



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Drinking water workflow  
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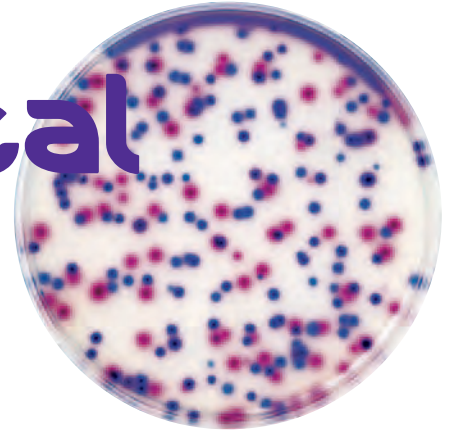
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## Complementary products **Analysis and monitoring**

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# Microbiological testing



## Rapidly verify the absence or presence of coliforms and *E. coli* with Readycult®

- USEPA approved for presence/absence detection of coliforms and *E. coli* in drinking water
- Optional 30-second indole test for accurate positive confirmation of *E. coli*
- **Readycult® Coliforms 100** [Ord. No. 1.01298.0001]
- **Readycult® Enterococci 100** [Ord. No. 1.01299.0001]

## Screen any type of microbiological contamination

- **Chromocult®**: Separate color for each colony type ensures clear identification and easy counting [Ord. No. 1.10426.0500]
- **Ready-to-Use agar plates**: No additional preparation! [Ord. No. 1.46689.0020, 1.46757.0020 and 1.46758.0150]

## Easy, rapid and reliable tools

to ensure your production facilities are free from microbiological contaminants

# bioburden analysis

## Easily test bioburden in liquid samples with optimal microbiological recovery

- Comply with international standards (EP/USP) and water testing regulations
- **EZ-Fit™ Manifold**: 1-, 3-, or 6-place [Ord. No. EZFITEFUN1, EZFITEFUN3, EZFITEFUN6]
- **EZ-Fit™ Filtration Unit Membranes** [Ord. No. EFHAB100I, EFHAB250B, EFHAB250I, EFHAW100B, EFHAW100I, EFHAW250B, EFHAW250I]
- **EZ-Stream™ Pump** [Ord. No. EZSTREAM1]



# surface Monitoring



#### Ensure hygiene through rapid testing

- **HY-LiTE® system:** Detect biological residues on surfaces and in process water [Ord. No. 1.30100.0301]
- **HY-RiSE®:** Check for organic impurities on surfaces [Ord. No. 1.31200.0001]

# ENVIRONMENTAL Monitoring

#### Use our high-precision air samplers to easily and effectively monitor microorganisms in air and compressed gas.

- **MAS-100 Iso® NT:** For highly sensitive applications, e.g. monitoring aseptic production areas and isolators [Ord. No. 1.09168.0001]
- **MAS-100 NT®:** Industry standard for routine air monitoring [Ord. No. 1.09191.0001]
- **MAS-100 Iso MH®:** Allows sampling 4 isolator points at once, each tube up to 10 m long [Ord. No. 1.17174.0001 or 1.17149.0001]
- **MAS-100 VF®:** Compact, portable design for varying sample locations [Ord. No. 1.17103.0001]
- **ARIES™ EX Dual Personal Sampling Pump:** Next-generation device with Bluetooth® compatibility and patented Mass Flow Controller [Ord. No. 30251-U]



# analytical chromatography

**Do you need to separate the compounds in your sample, or require more detailed investigation? We offer a wide range of advanced chromatography and sample preparation products to support your application.**

HPLC columns for different separations:

- **Chromolith®:** Low pressure, fast analysis, long column lifetime [Ord. No. 1.52022.0001]
- **Purospher® Star:** Excellent peak symmetry, high separation efficiency, extended pH stability, batch-to-batch reproducibility [Ord. No. 1.50359.0001]
- **SeQuant® ZIC®-HILIC and ZIC®-cHILIC:** Superior selectivity for separating polar hydrophilic compounds [Ord. No. 1.50441.0001]

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reliable &  
reproducible  
separations

quantitation &  
identification  
of compounds



# Inorganic reagents

## Classical inorganic analysis



Salts



Acids



Caustic alkalis and bases



Metals and metal oxides

## Instrumental inorganic analysis



Volumetric solutions



Karl Fischer reagents and standards



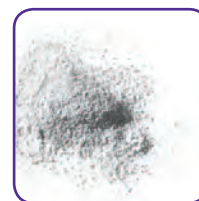
Reference materials



Fluxes for XRF



High purity acids and bases



High purity salts

## Safety products and general applications



Absorption and filtration



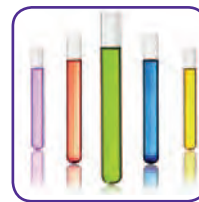
Absorbents for spilled liquids



Drying agents



Auxiliaries for purification and sample preparation



Indicators



Cleaning applications

highest quality

lowest impurities

compliant with ACS & Reag. Ph Eur

## classical photometry

Inorganic analysis typically involves enrichment and isolation of trace elements prior to photometric determination. For both process steps, we offer an extensive range of high-quality reagents to make your analysis more efficient and economical from the start.

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Precipitate proteins, eliminate turbidity, break emulsions in meat or milk samples [Ord. No. 1.10537.0001]
- **Charcoal activated:** For de-colorization [Ord. No. 1.02005.0010]

Find the reagents  
you need



efficient  
& economical  
analysis



## pesticide standards

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**We offer more than 1700 high-purity pesticide standards and certified reference materials, including:**

- Pesticides, neat and in solution
- Certified reference materials (CRM) TraceCERT® and matrix standards
- Matrix standards for proficiency testing (PT) (See page 106)
- Isotope-labeled pesticides and pesticide metabolite standards



# Flavors & fragrances

Do you want to enhance the flavor and fragrance of your food? Or need to test these features? With our high-quality raw materials, analysis tools, reference materials and documentation, you can ensure your customers' safety and satisfaction.



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# Nutrient analysis

Accurate information on protein and fiber content is needed for all food products. To simplify your work, we offer reliable kits for testing dietary fiber, and special reagents for Kjeldahl nitrogen analysis, which is the official method for determining protein content in food.

- **Reagent test kits for easy determination of total amount of dietary fiber**  
[Ord. No. 1.12979.0001 and TDF100A]
- **Kjeldahl tablets for nitrogen determination**, also offered in micro-scale  
[Ord. No. 1.15348.0250, 1.17958.0250, 1.16469.0250, 1.18348.0250, 1.10958.0250, 1.18469.0250]
- Learn more: [www.emdmillipore.com/kjeldahl-catalysts](http://www.emdmillipore.com/kjeldahl-catalysts)



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# Karl Fischer reagents

It's important to measure water content in products because it can affect their quality, texture, shelf life, chemical stability and reactivity. Karl Fischer titration is a universally recognized method for determining water content in all types of substances, such as chemicals, oils, pharmaceuticals and food.

#### We offer all products required for Karl Fischer titration:

- **Volumetric reagents**
- **One-component reagents**
- **Two-component reagents:** special reagents for determining water in aldehydes, ketones and other substances that are difficult to solubilize
- **Coulometric reagents:** special solvents for oils and fats
- **Water standards** for titer determination and instrument monitoring



[Learn more](#)



Food & beverage workflow  
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# food & beverage testing

Learn more about testing mycotoxins, antioxidants and carbohydrates on our "Food and Beverage Testing" webpage:

[www.sigma-aldrich.com/industries/food-and-beverage.html](http://www.sigma-aldrich.com/industries/food-and-beverage.html)

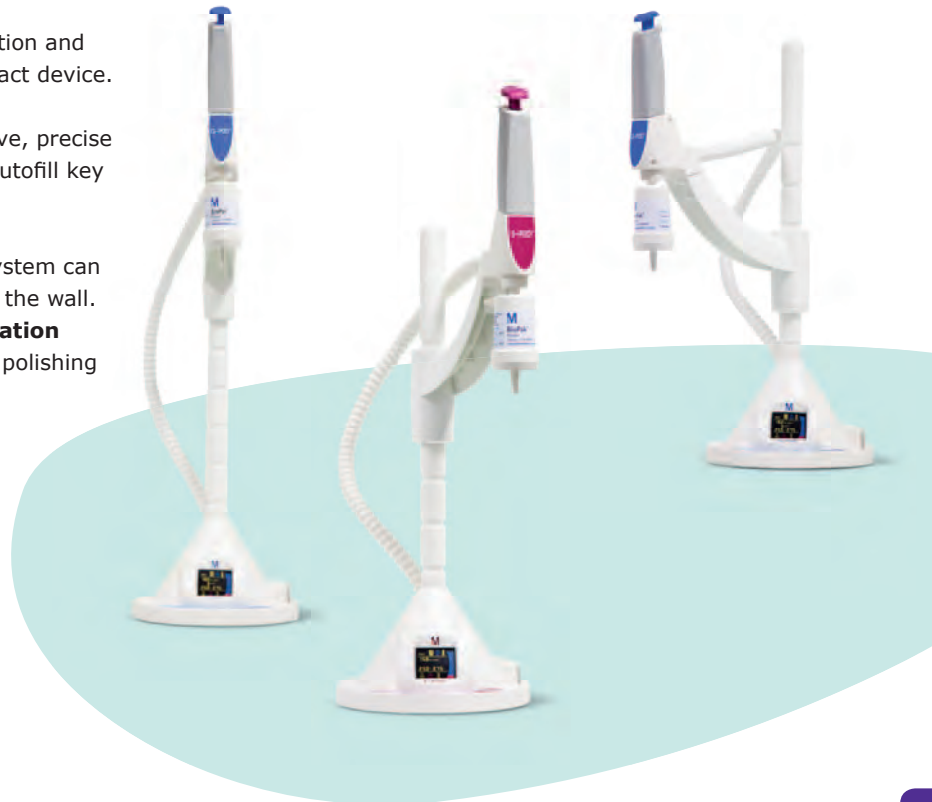
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Drinking water workflow  
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# A to Z

## Service and information

## Direct web address

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- Learn sample preparation methods
- Determine measurement parameters
- Compare the process with other methods
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Enter the six-digit product number into the search field to find usage instructions, applications, technical documents, brochures, accessories and related products.

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<b>I Instrument support</b> Contact your local customer support hotline. Also see: Service plan	<a href="http://www.emdmillipore.com/support">▶ www.emdmillipore.com/support</a>
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<b>P Package inserts</b> <ul style="list-style-type: none"> <li>• Important handling information</li> <li>• Printed version is included in test kits, or can be downloaded from product detail pages</li> </ul>	<a href="http://www.emdmillipore.com/test-kits">▶ www.emdmillipore.com/test-kits</a>
<b>Photometer method update</b> <ul style="list-style-type: none"> <li>• Update the software on your photometer to ensure its accuracy and compatibility with new tests.</li> <li>• This free service is available via the "Quick Links".</li> </ul>	<a href="http://www.emdmillipore.com/method-update">▶ www.emdmillipore.com/method-update</a>
<b>Product information</b> See: Direct access to product information	<a href="http://www.emdmillipore.com">▶ www.emdmillipore.com</a>
<b>R Research and development</b> <ul style="list-style-type: none"> <li>• New test kits are regularly developed to serve your needs</li> <li>• If you do not find the test kit or parameters you require, please contact us for further advice</li> </ul>	<a href="http://www.emdmillipore.com/support">▶ www.emdmillipore.com/support</a>



# Service

Ask for more

Service and information	Direct web address
<b>R Return and recycle test kits</b> See: Waste disposal advice	▶ <a href="http://www.emdmillipore.com/waste-disposal-advice">www.emdmillipore.com/waste-disposal-advice</a>
<b>S Safety for personnel</b> In developing our test kits, we avoid the use of harmful chemicals, such as chloroform, cadmium or benzene, wherever possible. We also supply comprehensive advice for safe waste disposal.	▶ <a href="http://www.emdmillipore.com/safety">www.emdmillipore.com/safety</a>
<b>Search online</b> <ul style="list-style-type: none"><li>• Search by product name, product number or keyword.</li><li>• As you type your search string, you will get suggestions in a drop-down list.</li><li>• Choose from the list and you will be immediately directed to the corresponding product page.</li></ul>	▶ <a href="http://www.emdmillipore.com/test-kits">www.emdmillipore.com/test-kits</a> ▶ <a href="http://www.sigma-aldrich.com">www.sigma-aldrich.com</a>
<b>Service plan</b> The Spectroquant® Service Plan minimizes breakdowns to maximize productivity. It includes: <ul style="list-style-type: none"><li>• Performance check with reference materials and certificates</li><li>• Factory-recommended instrument maintenance</li><li>• Support hotline</li><li>• Free software upgrade</li><li>• Reagent delivery program</li></ul>	▶ <a href="http://www.emdmillipore.com/water-analytics-service">www.emdmillipore.com/water-analytics-service</a>
<b>Shipping of goods</b> Strict international regulations are followed to ship your goods.	▶ <a href="http://www.emdmillipore.com/packaging">www.emdmillipore.com/packaging</a>
<b>T Technical support</b> See: Customer support	▶ <a href="http://www.sigma-aldrich.com/technical-service-home.html">www.sigma-aldrich.com/technical-service-home.html</a>
<b>Training courses and seminars</b> <ul style="list-style-type: none"><li>• Our experts provide practical advice to help you avoid errors in your analysis, and give you tips and tricks to help towards accreditation</li><li>• Small groups ensure that each participant receives optimum attention and instruction</li><li>• Online webinars are available free of charge</li></ul>	▶ <a href="http://www.emdmillipore.com/learningcenter">www.emdmillipore.com/learningcenter</a> ▶ <a href="http://www.emdmillipore.com/support">www.emdmillipore.com/support</a> ▶ <a href="http://www.sigma-aldrich.com/customer-service.html">www.sigma-aldrich.com/customer-service.html</a>
<b>V Validation and accreditation for Spectroquant® test kits</b> <ul style="list-style-type: none"><li>• All of the methods are validated</li><li>• Certificate of quality and lot certificate to confirm quality</li><li>• If you plan to validate Spectroquant® test kits or are applying for accreditation, please contact us to obtain documents created for approvals by organizations like the USEPA</li></ul>	▶ <a href="http://www.emdmillipore.com/wfa-documents">www.emdmillipore.com/wfa-documents</a>
<b>Visits and Demonstration on-site</b> for support with presentations and demonstrations of handling of instruments and test kits in your laboratory please contact our customer service	▶ <a href="http://www.emdmillipore.com/support">www.emdmillipore.com/support</a> ▶ <a href="http://www.sigma-aldrich.com/customer-service.html">www.sigma-aldrich.com/customer-service.html</a>

Service and information

Direct web address

**W Waste disposal advice – online**

Get clear instructions on how to properly dispose of used test kits. ► [www.emdmillipore.com/waste-disposal-advice](http://www.emdmillipore.com/waste-disposal-advice)

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## Product number index

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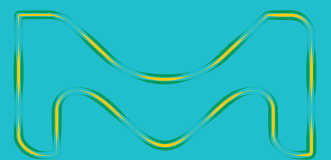


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