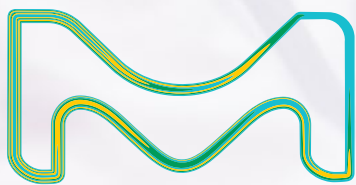


Water, Environmental and Food & Beverage Analysis

Ready-to-use Test Kits, Instruments and Accessories



MilliporeSigma is the U.S. and Canada Life Science business of Merck KGaA, Darmstadt, Germany.

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Analytical Products

Merck has brought together the world's leading Life Science brands, so whatever your life science problem, you can benefit from our expert products and services.

Supelco®

The Supelco® portfolio of analytical solutions of Merck is developed by analytical chemists for analytical chemists to ensure your results are accurate, precise and reproducible. Every product is meticulously quality-controlled to maintain the integrity of your testing protocols and, with our dedicated scientists, the expertise you need is always on hand.



Supelco® products

Millipore®

The Millipore® portfolio of Merck offers an ecosystem of industry-leading products and services, spanning preparation, separation, filtration and monitoring – all of which are deeply rooted in quality, reliability and timetested processes. Our proven products, regulatory and application expertise are a strong foundation you can rely on to consistently perform at the highest level.



Millipore® products

Sigma-Aldrich®

The Sigma-Aldrich® portfolio of Merck offers a strong and ever-expanding offering of lab and production materials. Through our technical support and scientific partnerships, we help connect our customers with a whole world of progress.



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Milli-Q® products

our purpose

is to solve the toughest problems in life science by collaborating with the global scientific community.

our promise

is to accelerate access to health for people everywhere.

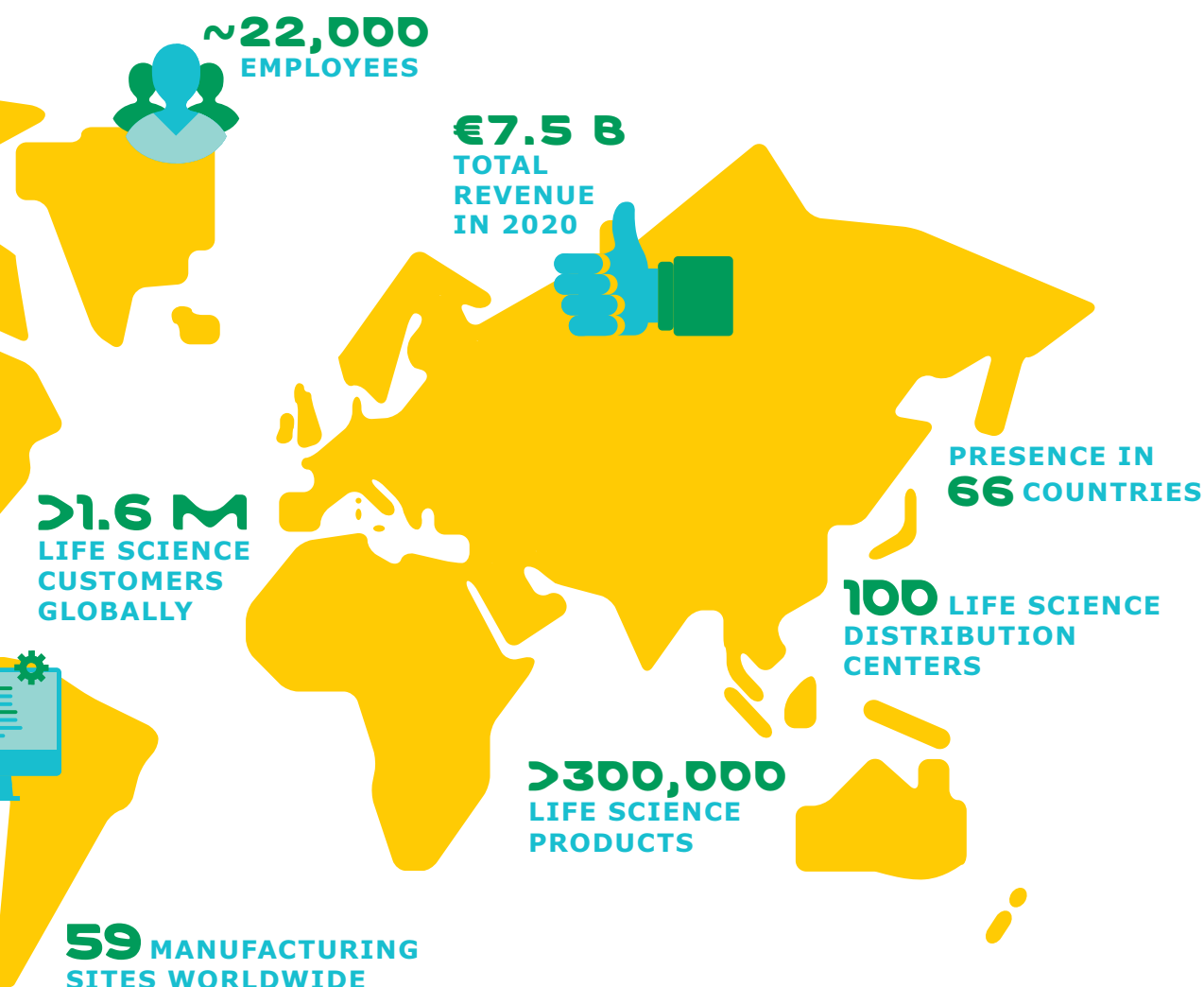
FOUNDED
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WORLD'S
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CHEMICAL &
PHARMACEUTICAL
COMPANY

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LIFE SCIENCE
WEBSITES

we are a leader in life science

- We solve problems at every stage, from discovery and development to processing, manufacturing and diagnostics
- We help customers deliver the promise of their work better, faster and safer
- We have the expertise to understand the challenges of our customers

We are **dedicated** to making water, environmental and food & beverage analysis simpler, and more accurate.



Increasing food contamination outbreaks are driving demand for highly sensitive, rapid response test development

Thirsty for clean water

We have been leading fast, precise water analysis for more than 100 years. From Arsenic to 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.

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Food & Beverage Workflow
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Disinfection Control
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key workflows

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Spectroquant® Photometry

Instruments, test kits, and
analytical quality assurance

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Turbiquant™ Turbidimeter

Quantifying turbidity

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Reflectoquant® System

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Colorimetric and titrimetric tests

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Visual & Instrumental Testing

Portfolio Overview

Lower

Mobility

Higher

0.0001 mg/L 0.001 mg/L 0.01 mg/L 0.1 mg/L 1 mg/L

Concentration



Spectroquant® Prove & Test Kits

Accurate and durable spectrophotometers with over 200 ready-to-use test kits for precise analysis of wastewater, drinking water, or process water
> **Page 38**

0.00025 mg/L – 90,000 mg/L

Spectroquant® Move & Test Kits

Small, portable colorimeters for fast, precise on-site analysis of every important parameter for wastewater, drinking water, or disinfection control
> **Page 44**

0.004 mg/L – 90,000 mg/L

Reflectoquant® System

Comprehensive system with easy-to-use reflectometer, test kits, and strips for high-quality, quantitative, and cost-effective on-site analysis of a broad range of parameters
> **Page 130**

0.2 mg/L – 2,500 mg/L

MQuant® Liquid Tests

Chemical testing systems for quick, precise, and portable water testing for high to low parameter concentration ranges using direct readout of color cards, disks, or vessels
> **Page 138**

0.002 mg/L – 1,500 mg/L

MQuant® Test Strips & Digital Reader

Test strips for reliable semi-quantitative determination of ions and other compounds with visual or digital readout
> **Page 152**

0.005 mg/L – 3,000 mg/L

MQuant® pH Test Strips and Papers

Rapid pH measurement with accurate color scales for clear, reliable results suitable for all media including liquids with high turbidity
> **Page 162**

0 – 14 pH

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

Visual & Instrumental Testing

Portfolio Overview

Our visual and instrumental test kits offer numerous options for determining individual parameter concentrations.

Find the most suitable test for your application:

- Select your preferred test parameter (arranged alphabetically)
- Find your desired measuring range, then choose the most appropriate products for your workflow or sample type
- Use the catalog numbers to purchase products directly on our eShop
- For further product information, please visit **vwr® Selector**



Parameters A

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
A	Absorbance	-0.300–3.000 A			Physical method	Spectroquant®	62
	Acid Capacity Cell Test to pH 4.3 (total alkalinity)	0.40–8.00 mmol/L 20–400 mg/L CaCO ₃	120	1.01758.0001	Cell test Application	Spectroquant®	62, 89, 120
	ADMI Color measurement					Spectroquant®	48, 62
	Alkalinity (total)	see also Acid capacity to pH 4.3			Cell test	Spectroquant®	62
	Alkalinity Test	0.1–10 mmol/L	200	1.11109.0001	Titration with pipette	MQuant® Liquid	144
	Aluminium Cell Test	0.02–0.50 mg/L Al	25	1.00594.0001	Cell test	Spectroquant®	62, 89, 97, 113, 120
	Aluminium Test	0.020–1.20 mg/L Al	350	1.14825.0001	Reagent test	Spectroquant®	62, 89, 97, 113, 120
	Aluminium Test	0.07–0.8 mg/L Al	185	1.14413.0001	Color-card comparator	MQuant® Liquid	144
	Aluminium Test	0.1–6 mg/L Al	150	1.18386.0001	Disk comparator	MQuant® Liquid	144
	Aluminium Test	10–250 mg/L Al	100	1.10015.0001	Test strip	MQuant® Test Strips	158
	Ammonia, free	0.000–3.0 mg/L NH ₃ -N 0.000–3.65 mg/L NH ₃			Application	Spectroquant®	62
	Ammonium Cell Test	0.010–2.000 mg/L NH ₄ -N 0.01–2.58 mg/L NH ₄	25	1.14739.0001	Cell test	Spectroquant®	62, 89, 97, 111, 120
	Ammonium Test	0.010–3.00 mg/L NH ₄ -N 0.013–3.86 mg/L NH ₄	250 500	1.14752.0002 1.14752.0001	Reagent test	Spectroquant®	62, 89, 97
	Ammonium Test	0.025–0.4 mg/L NH ₄	70	1.14428.0002	Color-card comparator	MQuant® Liquid	144
	Ammonium Test	0.05–0.8 mg/L NH ₄	100	1.14400.0001	Color-card comparator	MQuant® Liquid	144
	Ammonium Test	0.2–5 mg/L NH ₄	50	1.08024.0001	Sliding comparator	MQuant® Liquid	144
	Ammonium Test	0.2–7 mg/L NH ₄	50	1.16892.0001	Test strip	Reflectoquant®	136
	Ammonium Test	0.2–8 mg/L NH ₄	200	1.14423.0002	Color-card comparator	MQuant® Liquid	144
	Ammonium Test	0.2–8 mg/L NH ₄	200	1.14750.0002	Disk comparator	MQuant® Liquid	144
	Ammonium Cell Test	0.20–8.00 mg/L NH ₄ -N 0.26–10.30 mg/L NH ₄	25	1.14558.0001	Cell test	Spectroquant®	62, 110, 120
	Ammonium Test	0.5–10 mg/L NH ₄	150	1.11117.0001	Color card	MQuant® Liquid	144
	Ammonium Test in freshwater and seawater	0.5–10 mg/L NH ₄	50	1.14657.0001	Color card	MQuant® Liquid	144
	Ammonium Cell Test	0.5–16.0 mg/L NH ₄ -N 0.6–20.6 mg/L NH ₄	25	1.14544.0001	Cell test	Spectroquant®	62, 89, 111, 120
	Ammonium Test	2.0–150 mg/L NH ₄ -N 2.6–193 mg/L NH ₄	100	1.00683.0001	Reagent test	Spectroquant®	62, 89, 112, 120
	Ammonium Cell Test	4.0–80.0 mg/L NH ₄ -N 5.2–103.0 mg/L NH ₄	25	1.14559.0001	Cell test	Spectroquant®	62, 89, 112, 120
	Ammonium Test	5.0–20.0 mg/L NH ₄	50	1.16899.0001	Test strip	Reflectoquant®	136
	Ammonium Test	10–400 mg/L NH ₄	100	1.10024.0001	Test strip	MQuant® Test Strips	158
	Ammonium Test	20–180 mg/L NH ₄	50	1.16977.0001	Test strip	Reflectoquant®	136
	Antimony	0.10–8.00 mg/L Sb			Application	Spectroquant®	62
	AOX Cell Test	0.05–2.50 mg/L AOX	25	1.00675.0001	Cell test	Spectroquant®	62, 89, 105, 120
	Arsenic Test	0.001–0.100 mg/L As	30	1.01747.0001	Reagent test	Spectroquant®	64, 89, 97, 120
	Arsenic Test	0.005–0.5 mg/L As	100	1.17927.0001	Test strip	MQuant® Test Strips	158

Visual & Instrumental Testing

Portfolio Overview

Parameters A–C

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
A	Arsenic Test	0.02–3 mg/L As	100	1.17917.0001	Test strip	MQuant® Test Strips	158
	Ascorbic Acid Test	25–450 mg/L Ascorbic Acid	50	1.16981.0001	Test strip	Reflectoquant®	136
	Ascorbic Acid Test	50–2,000 mg/L Ascorbic Acid	100	1.10023.0001	Test strip	MQuant® Test Strips	158
B	Blank strip		100	1.11860.0001	Test strip	Reflectoquant®	158
	Blank strip		50	1.16730.0001	Test strip	Reflectoquant®	136
	BOD Cell Test	0.5–3,000 mg/L BOD	50	1.00687.0001	Cell test	Spectroquant®	64, 89, 120
	Boron Test	0.050–0.800 mg/L B	60	1.14839.0001	Reagent test	Spectroquant®	64, 89, 97, 120
	Boron Cell Test	0.05–2.00 mg/L B	25	1.00826.0001	Cell test	Spectroquant®	64, 89, 97, 120
	Bromine Test	0.020–10.00 mg/L Br ₂	200	1.00605.0001		Spectroquant®	64, 89, 120
C	Cadmium Test	0.0020–0.500 mg/L Cd	55	1.01745.0001	Reagent test	Spectroquant®	64, 89, 97, 113, 120
	Cadmium Cell Test	0.025–1.000 mg/L Cd	25	1.14834.0001	Cell test	Spectroquant®	64, 89, 97, 113, 120
	Calcium Test	0.20–4.00 mg/L Ca	100	1.00049.0001	Reagent test	Spectroquant®	64, 89, 121
	Calcium Test	2–200 mg/L Ca	200	1.11110.0001	Titration with pipette	MQuant® Liquid	144
	Calcium Test for RQflex® 10 / 10 plus	2.5–45.0 mg/L Ca	50	1.16993.0001	Test strip	Reflectoquant®	136
	Calcium Test	5–125 mg/L Ca	50	1.16125.0001	Test strip	Reflectoquant®	136
	Calcium Test	5–160 mg/L Ca 7–224 mg/L CaO 12–400 mg/L CaCO ₃ 1.0–15.0 mg/L Ca 1.4–21.0 mg/L CaO 2.5–37.5 mg/L CaCO ₃	100	1.14815.0001	Reagent test	Spectroquant®	64, 89, 121
	Calcium Test	10–100 mg/L Ca	60	1.10083.0001	Test strip	MQuant® Test Strips	158
	Calcium Cell Test	10–250 mg/L Ca 14–350 mg/L CaO 25–624 mg/L CaCO ₃	25	1.00858.0001	Cell test Reagent test	Spectroquant®	64, 90, 120
	Carbohydrazide	see Oxygen Scavengers Test				Spectroquant®	64
	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	MQuant® Liquid	144
	Carbonate Hardness Test in freshwater and seawater	1 drop corresponds to 1.25 °e	50	1.14653.0001	Titration with dropping bottle	MQuant® Liquid	144
	Carbonate Hardness Test	5–30 °e	100	1.10648.0001	Test strip	MQuant® Test Strips	158
	Carbon Dioxide Test	1.25–120 mg/L CO ₂	100	1.17179.0001	Titration with dropping bottle	MQuant® Liquid	144
	Chloride Test	0.10–5.00 mg/L Cl	100	1.01807.0001	Reagent test	Spectroquant®	64, 89, 121
	Chloride Cell Test	0.5–15.0 mg/L Cl	25	1.01804.0001	Cell test	Spectroquant®	66, 89, 97, 121
	Chloride Test	2–200 mg/L Cl	200	1.11106.0001	Titration with pipette	MQuant® Liquid	144
	Chloride Test	2.5–250 mg/L Cl	100 175	1.14897.0001 1.14897.0002	Reagent test	Spectroquant®	66, 89, 97, 121

Parameters C

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
C	Chloride Test	3–300 mg/L Cl	200	1.14753.0001	Disk comparator	MQuant® Liquid	144
	Chloride Cell Test	5–125 mg/L Cl	25	1.14730.0001	Cell test	Spectroquant®	66, 89, 97, 110, 111, 121
	Chloride Test	5–300 mg/L Cl	400	1.14401.0001	Color-card comparator	MQuant® Liquid	144
	Chloride Test	1 drop corresponds to 25 mg/L Cl	100	1.11132.0001	Titration with dropping bottle	MQuant® Liquid	144
	Chloride Test	500–3,000 mg/L Cl	100	1.10079.0001	Test strip	MQuant® Test Strips	158
	Chlorine Test (free chlorine)	0.01–0.3 mg/L Cl ₂	400	1.14434.0001	Color-card comparator	MQuant® Liquid	144
	Chlorine Test (free chlorine)	0.010–6.00 mg/L Cl ₂	200 1,200	1.00598.0002 1.00598.0001	Reagent test	Spectroquant®	45, 66, 89, 99, 121
	Chlorine Cell Test (free chlorine)	0.03–6.00 mg/L Cl ₂	200	1.00595.0001	Cell test	Spectroquant®	66, 89, 99, 121
	Chlorine Test (free chlorine) in freshwater and seawater	0.1–2 mg/L Cl ₂	100	1.14670.0001	Color card	MQuant® Liquid	144
	Chlorine Test (free chlorine) (liquid)	0.1–2 mg/L Cl ₂	600	1.14978.0001	Disk comparator	MQuant® Liquid	144
	Chlorine Test (free chlorine)	0.25–15 mg/L Cl ₂	1000	1.14976.0001	Disk comparator	MQuant® Liquid	146
	Chlorine Test (free chlorine)	0.5–10.0 mg/L Cl ₂	50	1.16896.0001	Test strip	Reflectoquant®	136
	Chlorine Test (free chlorine)	0.5–20 mg/L Cl ₂	75	1.17925.0001	Test strip	MQuant® Test Strips	158
	Chlorine Test (free chlorine)	25–500 mg/L Cl ₂	100	1.17924.0001	Test strip	MQuant® Test Strips	158
	Chlorine Test (total chlorine)	0.010–6.00 mg/L Cl ₂	200 1200	1.00602.0001 1.00602.0002	Reagent test	Spectroquant®	45, 66, 89, 99, 121
	Chlorine Test (free and total chlorine)	0.010–6.00 mg/L Cl ₂	200 (100 each)	1.00599.0001	Reagent test	Spectroquant®	45, 66, 89, 121
	Chlorine Cell Test (free and total chlorine)	0.03–6.00 mg/L Cl ₂	200 (100 each)	1.00597.0001	Cell test	Spectroquant®	66, 89, 99, 121
	Chlorine Test (liquid) (free and total chlorine)	0.1–2 mg/L Cl ₂	800 (400 each)	1.14801.0001	Disk comparator	MQuant® Liquid	146
	Chlorine Test (free and total chlorine)	0.25–15 mg/L Cl ₂	800 (400 each)	1.14826.0001	Disk comparator	MQuant® Liquid	146
	Chlorine Reagent Cl ₂ -1 (liquid)	0.010–6.00 mg/L Cl ₂	200	1.00086.0001	Reagent test	Spectroquant®	45, 66, 89
	Chlorine Reagent Cl ₂ -2 (liquid)	0.010–6.00 mg/L Cl ₂	400	1.00087.0001	Reagent test	Spectroquant®	45, 66, 89
	Chlorine Reagent Cl ₂ -3 (liquid)	0.010–6.00 mg/L Cl ₂	600	1.00088.0001	Reagent test	Spectroquant®	45, 66, 89
	Chlorine- and pH Test (free chlorine)	0.1–1.5 mg/L Cl ₂ pH 6.5–7.9	150 (Cl ₂) 150 (pH)	1.11160.0001	Sliding comparator	MQuant® Liquid	146
	Chlorine- and pH Test (free and total chlorine)	0.1–1.5 mg/L Cl ₂ pH 6.8–7.8	200 (Cl ₂) 200 (pH)	1.11174.0001	Color-matching vessel	MQuant® Liquid	146
	Chlorine Dioxide Test	0.020–0.55 mg/L ClO ₂	300	1.18754.0001	Color-card comparator	MQuant® Liquid	146

Visual & Instrumental Testing

Portfolio Overview

Parameters C

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
C	Chlorine Dioxide Test	0.020–10.00 mg/L ClO ₂	200	1.00608.0001	Reagent test	Spectroquant®	45, 66, 90, 99, 121
	Chlorophyll-a and phaeophytin-a				Application	Spectroquant®	66
	Chlorophyll-a, -b, -c				Application Reagent test	Spectroquant®	66
	Chromate Test for the determination of chromium (VI)	0.010–3.00 mg/L Cr 0.02–6.69 mg/L CrO ₄	250	1.14758.0001		Spectroquant®	66, 90, 99, 121
	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 ₄	25	1.14552.0001	Cell test	Spectroquant®	68, 90, 99, 121
	Chromate Test	0.01–0.22 mg/L CrO ₄	150	1.14402.0001	Color-card comparator	MQuant® Liquid	146
	Chromate Test	0.2–3.6 mg/L CrO ₄	300	1.14441.0001	Color-card comparator	MQuant® Liquid	146
	Chromate Test	0.2–22 mg/L CrO ₄	300	1.14756.0001	Disk comparator	MQuant® Liquid	146
	Chromate Test	3–100 mg/L CrO ₄	100	1.10012.0001	Test strip	MQuant® Test Strips	158
	Chromium in electroplating baths	4–400 g/L CrO ₃			Application	Spectroquant®	68
	Cobalt Cell Test	0.05–2.00 mg/L Co	25	1.17244.0001	Cell Test	Spectroquant®	68, 90, 121
	Cobalt Test	10–1,000 mg/L Co	100	1.10002.0001	Test strip	MQuant® Test Strips	158
	COD Cell Test	4.0–40.0 mg/L COD	25	1.14560.0001	Cell test	Spectroquant®	68, 90, 111, 121
	COD Cell Test	5.0–80.0 mg/L COD		1.01796.0001		Spectroquant®	68, 90, 111, 121
	COD Cell Test	10–150 mg/L COD	25	1.14540.0001	Cell test	Spectroquant®	68, 90, 110, 121
	COD Cell Test	15–300 mg/L COD	25	1.14895.0001	Cell test	Spectroquant®	68, 90, 112, 121
	COD Cell Test	25–1,500 mg/L COD	25	1.14541.0001	Cell test	Spectroquant®	68, 90, 111, 121
	COD Cell Test	50–500 mg/L COD	25	1.14690.0001	Cell test	Spectroquant®	68, 90, 112, 120
	COD Cell Test	300–3,500 mg/L COD	25	1.14691.0001	Cell test	Spectroquant®	68, 90, 112, 121
	COD Cell Test	500–10,000 mg/L COD	25	1.14555.0001	Cell test	Spectroquant®	68, 90, 112, 121
	COD Cell Test	5000–90,000 mg/L COD	25	1.01797.0001	Cell test	Spectroquant®	68, 90, 122
	COD Cell Test for seawater / high chloride contents	5.0–60.0 mg/L COD	25	1.17058.0001	Cell test	Spectroquant®	68, 90, 122
	COD Cell Test for seawater / high chloride contents	50–3,000 mg/L COD	25	1.17059.0001	Cell test	Spectroquant®	70, 90, 122
	COD Cell Test (Hg free)	10–150 mg/L COD	25	1.09772.0001	Cell test	Spectroquant®	70, 90, 122
	COD Cell Test (Hg free)	100–1,500 mg/L COD	25	1.09773.0001	Cell test	Spectroquant®	70, 90, 122
	Color, ADMI				Physical method	Spectroquant®	70
	Color, Hazen				Physical method	Spectroquant®	70, 72
	Color, Spectral Absorption Coefficient				Physical method	Spectroquant®	72

Parameters C–G

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
C	Color, true color				Physical method	Spectroquant®	72
	Congo red paper	pH <3 blue-violet / >5 red-orange	3 x 4.8 m	1.09514.0003	pH test paper	MQuant® pH	167
	Copper Test	0.02–6.00 mg/L Cu	250	1.14767.0001	Reagent test	Spectroquant®	72, 90, 101, 113, 122
	Copper Test	0.05–0.5 mg/L Cu	125	1.14414.0001	Color-card comparator	MQuant® Liquid	146
	Copper Cell Test	0.05–8.00 mg/L Cu	25	1.14553.0001	Cell test	Spectroquant®	72, 101, 113, 122
	Copper Test in freshwater and seawater	0.15–1.6 mg/L Cu	50	1.14651.0001	Color card	MQuant® Liquid	146
	Copper Test	0.3–5 mg/L Cu	125	1.14418.0001	Color-card comparator	MQuant® Liquid	146
	Copper Test	0.3–10 mg/L Cu	125	1.14765.0001	Disk comparator	MQuant® Liquid	146
	Copper Test	10–300 mg/L Cu	100	1.10003.0001	Test strip	MQuant® Test Strips	158
	Copper in electroplating baths	2.0–80.0 g/L Cu			Application	Spectroquant®	72
	Cyanide Test	0.002–0.03 mg/L CN	65	1.14417.0001	Color-card comparator	MQuant® Liquid	146
	Cyanide Test for the determination of free and readily liberated cyanide	0.0020–0.500 mg/L CN	100	1.09701.0001	Reagent test	Spectroquant®	72, 90, 101, 122
	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	Spectroquant®	72, 90, 101, 122
	Cyanide Test	0.03–0.7 mg/L CN	200	1.14429.0001	Color-card comparator	MQuant® Liquid	146
	Cyanide Test	0.03–5 mg/L CN	200	1.14798.0001	Disk comparator	MQuant® Liquid	146
	Cyanide Test	1–30 mg/L CN	100	1.10044.0001	Test strip	MQuant® Test Strips	158
	Cyanuric acid Test	2–160 mg/L Cyanuric acid	100	1.19253.0001	Reagent test	Spectroquant®	45, 72, 90, 122
D	DEHA (Diethylhydroxylamine)	see Oxygen Scavengers Test			Reagent test	Spectroquant®	72
	Detergents	see Surfactants			Cell test	Spectroquant®	72
F	Fluoride Test	0.02–2.00 mg/L F	250 mL	1.00822.0250	Reagent test	Spectroquant®	72, 91, 122
	Fluoride Cell Test	0.10–1.80 mg/L F 0.025–0.500 mg/L F	25	1.00809.0001	Cell test	Spectroquant®	72, 91, 101, 122
	Fluoride Test	0.10–20.0 mg/L F	100 250	1.14598.0001 1.14598.0002	Reagent test	Spectroquant®	72, 91, 101, 122
	Fluoride Test	0.15–0.8 mg/L F	100	1.18771.0001	Color card	MQuant® Liquid	146
	Formaldehyde Test	0.02–8.00 mg/L HCHO	100	1.14678.0001	Reagent test	Spectroquant®	72, 91, 122
	Formaldehyde Test	0.1–1.5 mg/L HCHO	100	1.08028.0001	Sliding comparator	MQuant® Liquid	146
	Formaldehyde Cell Test	0.10–8.00 mg/L HCHO	25	1.14500.0001	Cell test	Spectroquant®	72, 91, 122
	Formaldehyde Test	1.0–45.0 mg/L HCHO	50	1.16989.0001	Test strip	Reflectoquant®	136
	Formaldehyde Test	10–100 mg/L HCHO	100	1.10036.0001	Test strip	MQuant® Test Strips	158
	Free Fatty Acids	0.5–3.0 mg/g KOH	100	1.17046.0001	Test strip	MQuant® Test Strips	158
G	Glucose Test	1–100 mg/L Glucose	50	1.16720.0001	Test strip	Reflectoquant®	136
	Glucose Test	10–500 mg/L Glucose	50	1.17866.0001	Test strip	MQuant® Test Strips	158
	Gold Test	0.5–12.0 mg/L Au	75	1.14821.0002	Reagent test	Spectroquant®	72, 91, 122

Visual & Instrumental Testing

Portfolio Overview

Parameters H–M

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
H	Hardness	see Carbonate Hardness, Residual Hardness or Total Hardness					72
	Hazen Color Number (Pt/Co, APHA, Hazen)				Physical method	Spectroquant®	72
	Hydrazine Test	0.005–2.00 mg/L N ₂ H ₄	100	1.09711.0001	Reagent test	Spectroquant®	72, 91, 122
	Hydrazine Test	0.1–1 mg/L N ₂ H ₄	100	1.08017.0001	Color-matching vessel	MQuant® Liquid	146
	Hydrogen Peroxide	see also Peroxide			Test strip	Reflectoquant®	136
	Hydrogen Peroxide	see also Peroxide			Test strip	MQuant® Test Strips	160
	Hydrogen Peroxide Test	0.015–6.00 mg/L H ₂ O ₂	100	1.18789.0001	Reagent test	Spectroquant®	74, 91, 122
	Hydrogen Peroxide Cell Test	2.0–20.0 mg/L H ₂ O ₂ 0.25–5.00 mg/L H ₂ O ₂	25	1.14731.0001	Cell test	Spectroquant®	74, 91, 122
	Hydrogen sulfide	see Sulfide			Reagent test	Spectroquant®	74
	Hydroquinone	see Oxygen Scavengers Test			Reagent test	Spectroquant®	74
	Hydroxymethylfurfural Test	1.0–60.0 mg/L HMF	50	1.17952.0001	Test strip	Reflectoquant®	136
I	Iodine Color Number	0.010–50.0 IFZ			Physical method	Spectroquant®	74
	Iron Test	0.0025–5.00 mg/L Fe	250 1,000	1.14761.0002 1.14761.0001	Reagent test	Spectroquant®	74, 91, 101, 113
	Iron Test	0.01–0.2 mg/L Fe	300	1.14403.0001	Color-card comparator	MQuant® Liquid	148
	Iron Test	0.010–5.00 mg/L Fe	150	1.00796.0001	Reagent test	Spectroquant®	74, 91, 101, 113, 122
	Iron Test in freshwater and seawater	0.05–1 mg/L Fe	50	1.14660.0001	Color card	MQuant® Liquid	148
	Iron Cell Test	0.05–4.00 mg/L Fe	25	1.14549.0001	Cell test	Spectroquant®	74, 91, 101, 113, 122
	Iron Test	0.1–5 mg/L Fe	500	1.14759.0001	Disk comparator	MQuant® Liquid	148
	Iron Test	0.1–50 mg/L Fe	200	1.11136.0001	Color-matching vessel	MQuant® Liquid	148
	Iron Test	0.2–2.5 mg/L Fe	500	1.14438.0001	Color-card comparator	MQuant® Liquid	148
	Iron Test	0.25–15 mg/L Fe	300	1.14404.0001	Color-card comparator	MQuant® Liquid	148
	Iron Test	0.5–20.0 mg/L Fe(II)	50	1.16982.0001	Test strip	Reflectoquant®	136
	Iron Cell Test	1.0–50.0 mg/L Fe	25	1.14896.0001	Cell test	Spectroquant®	74, 91, 122
	Iron Test	3–500 mg/L Fe(II)	100	1.10004.0001	Test strip	MQuant® Test Strips	158
	Isoascorbic acid (Erythorbic acid)	see Oxygen Scavengers Test				Spectroquant®	74
L	Lactic Acid Test	3–60.0 mg/L Lactic acid	50	1.16127.0001	Test strip	Reflectoquant®	136
	Lead Test	0.010–5.00 mg/L Pb	50	1.09717.0001	Reagent test	Spectroquant®	74, 91, 101, 113, 122
	Lead Cell Test	0.10–5.00 mg/L Pb	25	1.14833.0001	Cell test	Spectroquant®	74, 91, 113, 122
	Lead Test	20–500 mg/L Pb	100	1.10077.0001	Test strip	MQuant® Test Strips	158
	Lead(II) acetat paper	Sulfide from 10 mg/L	3 x 4.8 m	1.09511.0003	Reagent paper	MQuant® Test Strips	161
	Litmus paper, blue	pH <7 red / >7 blue	3 x 4.8 m	1.09486.0003	pH test paper	MQuant® pH	167
	Litmus paper, red	pH <7 red / >7 blue	3 x 4.8 m	1.09489.0003	pH test paper	MQuant® pH	167
M	Magnesium Cell Test	5.0–75.0 mg/L Mg	25	1.00815.0001	Cell test	Spectroquant®	74, 91, 123
	Magnesium Test	5–100 mg/L Mg	50	1.16124.0001	Test strip	Reflectoquant®	136

Parameters M–N

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
M	Magnesium Test	100–1,500 mg/L Mg	50	1.11131.0001	Color card	MQuant® Liquid	148
	Malic Acid Test	5.0–60.0 mg/L Malic acid	50	1.16128.0001	Test strip	Reflectoquant®	136
	Manganese Test	0.005–2.00 mg/L Mn	250	1.01846.0001	Reagent test	Spectroquant®	74, 91, 103, 113, 123
	Manganese Test	0.010–10.0 mg/L Mn	250 500	1.14770.0002 1.14770.0001	Reagent test	Spectroquant®	74, 91, 103, 112
	Manganese Test	0.03–0.5 mg/L Mn	120	1.14406.0001	Color-card comparator	MQuant® Liquid	148
	Manganese Cell Test	0.10–5.00 mg/L Mn	25	1.00816.0001	Cell test	Spectroquant®	74, 91, 113, 123
	Manganese Test	0.3–10 mg/L Mn	120	1.14768.0001	Disk comparator	MQuant® Liquid	148
	Manganese Test	2–100 mg/L Mn	100	1.10080.0001	Test strip	MQuant® Test Strips	158
	Mercury	0.025–1.000 Hg			Application Reagent test	Spectroquant®	74
	Methylethylketoxime (2-Butanoneoxime)	see Oxygen Scavengers Test				Spectroquant®	74
	Molybdenum Cell Test	0.02–1.00 mg/L Mo 0.03–1.67 mg/L MoO ₄ ²⁺ 0.04–2.15 mg/L Na ₂ MoO ₄	25	1.00860.0001	Cell test	Spectroquant®	74, 91, 103, 123
	Molybdenum Test	5–250 mg/L Mo	100	1.10049.0001	Test strip	MQuant® Test Strips	158
	Monochloramine Test	0.050–10.00 mg/L Cl ₂ 0.036–7.26 mg/L NH ₂ Cl 0.010–1.98 mg/L NH ₂ Cl-N	150	1.01632.0001	Reagent test	Spectroquant®	76, 91, 103, 123
N	Nickel Test	0.02–0.5 mg/L Ni	125	1.14420.0001	Color-card comparator	MQuant® Liquid	148
	Nickel Test	0.02–5.00 mg/L Ni	250	1.14785.0001	Reagent test	Spectroquant®	76, 91, 103, 113, 123
	Nickel Cell Test	0.10–6.00 mg/L Ni	25	1.14554.0001	Cell test	Spectroquant®	76, 91, 113, 123
	Nickel Test	0.5–10 mg/L Ni	500	1.14783.0001	Disk comparator	MQuant® Liquid	148
	Nickel Test	10–500 mg/L Ni	100	1.10006.0001	Test strip	MQuant® Test Strips	158
	Nickel in electroplating baths	2.0–120 g/L Ni			Application	Spectroquant®	76
	Nitrate (UV)	0.0–7.0 mg/L			Application Reagent test	Spectroquant®	76
	Nitrate Test	0.10–25.0 mg/L NO ₃ -N 0.4–110.7 mg/L NO ₃	100 250	1.09713.0001 1.09713.0002	Application Reagent test	Spectroquant®	76, 92, 103, 123
	Nitrate Test	0.2–20.0 mg/L NO ₃ -N 0.9–88.5 mg/L NO ₃	100	1.14773.0001	Reagent test	Spectroquant®	76, 91, 103, 110, 111, 123
	Nitrate Test	0.3–30.0 mg/L 1.3–132.8 mg/L	100	1.01842.0001	Reagent test	Spectroquant®	76, 91, 103, 123
	Nitrate Cell Test	0.5–18.0 mg/L NO ₃ -N 2.2–79.7 mg/L NO ₃	25	1.14542.0001	Cell test	Spectroquant®	76, 91, 103, 111, 123
	Nitrate Cell Test	0.5–25.0 mg/L NO ₃ -N 2.2–110.7 mg/L NO ₃	25	1.14563.0001	Cell test	Spectroquant®	76, 91, 103, 111, 123
	Nitrate Test	3–90 mg/L NO ₃	50	1.16995.0001	Test strip	Reflectoquant®	136
	Nitrate Cell Test	1.0–50.0 mg/L NO ₃ -N 4–221 mg/L NO ₃	25	1.14764.0001	Cell test	Spectroquant®	76, 91, 103, 112, 123
	Nitrate Test	5–90 mg/L NO ₃	90	1.18387.0001	Disk comparator	MQuant® Liquid	148
	Nitrate Test	5–225 mg/L NO ₃	50	1.16971.0001	Test strip	Reflectoquant®	136

Visual & Instrumental Testing

Portfolio Overview

Parameters N–O

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
N	Nitrate Test RQeasy®	5–250 mg/L NO ₃	50	1.17961.0001	Test strip	Reflectoquant®	136
	Nitrate Test	10–150 mg/L NO ₃	200	1.11170.0001	Sliding comparator	MQuant® Liquid	148
	Nitrate Test	10–500 mg/L NO ₃	25 100	1.10020.0002 1.10020.0001	Test strip	MQuant® Test Strips	158
	Nitrate Test	10–500 mg/L NO ₃	1,000	1.10092.0021	Individually sealed	MQuant® Test Strips	158
	Nitrate Cell Test	23–225 mg/L NO ₃ -N 102–996 mg/L NO ₃	25	1.00614.0001	Cell test	Spectroquant®	76, 91, 123
	Nitrate Cell Test in seawater	0.10–3.00 mg/L NO ₃ -N 0.4–13.3 mg/L NO ₃	25	1.14556.0001	Cell test	Spectroquant®	76, 92, 110, 123
	Nitrate Test in seawater	0.2–17.0 mg/L NO ₃ -N 0.9–75.3 mg/L NO ₃	50	1.14942.0001	Reagent test	Spectroquant®	76, 92, 111, 123
	Nitrate Test in freshwater	10–150 mg/L NO ₃	100	1.11169.0001	Color card	MQuant® Liquid	148
	Nitrite Test	0.005–0.1 mg/L NO ₂	110	1.14408.0001	Color-card comparator	MQuant® Liquid	148
	Nitrite Test	0.002–1.00 mg/L NO ₂ -N 0.007–3.28 mg/L NO ₂	335 1,000	1.14776.0002 1.14776.0001	Reagent test	Spectroquant®	76, 92, 105, 123
	Nitrite Test	0.025–0.5 mg/L NO ₂	200	1.08025.0001	Sliding comparator	MQuant® Liquid	148
	Nitrite Cell Test	0.010–0.700 mg/L NO ₂ -N 0.03–2.30 mg/L NO ₂	25	1.14547.0001	Cell test	Spectroquant®	76, 92, 105, 123
	Nitrite Test	0.1–2 mg/L NO ₂	400	1.14424.0001	Color-card comparator	MQuant® Liquid	148
	Nitrite Test	0.1–10 mg/L NO ₂	400	1.14774.0001	Disk comparator	MQuant® Liquid	148
	Nitrite Test	0.5–10 mg/L NO ₂	75	1.10057.0001	Test strip	MQuant® Test Strips	158
	Nitrite Test	0.5–25.0 mg/L NO ₂	50	1.16973.0001	Test strip	Reflectoquant®	136
	Nitrite Test	2–80 mg/L NO ₂	25 100	1.10007.0002 1.10007.0001	Test strip	MQuant® Test Strips	158
	Nitrite Test in freshwater and seawater	0.05–1.0 mg/L NO ₂	100	1.14658.0001	Color card	MQuant® Liquid	148
	Nitrite Cell Test	1.0–90.0 mg/L NO ₂ -N 3.3–295.2 mg/L NO ₂	25	1.00609.0001	Cell test	Spectroquant®	78, 92, 123
	Nitrite Test	0.03–1.00 g/L NO ₂	50	1.16732.0001	Test strip	Reflectoquant®	136
	Nitrite Test	0.1–3 g/L NO ₂	100	1.10022.0001	Test strip	MQuant® Test Strips	158
	Nitrogen (total) Cell Test	0.5–15.0 mg/L N	25	1.00613.0001	Cell test	Spectroquant®	78, 92, 111, 123, 125
	Nitrogen (total) Cell Test	0.5–15.0 mg/L N	25	1.14537.0001	Cell test	Spectroquant®	78, 92, 111, 123, 125
	Nitrogen (total) Cell Test	10–150 mg/L N	25	1.14763.0001	Cell test	Spectroquant®	78, 92, 112, 123, 125
O	Organic Carbon, Total	see TOC			Cell test	Spectroquant®	78
	Oxygen Test	0.1–10 mg/L O ₂	100	1.11107.0001	Titration with pipette	MQuant® Liquid	148
	Oxygen Cell Test	0.5–12 mg/L O ₂	25	1.14694.0001	Cell test	Spectroquant®	78, 92, 124
	Oxygen Test in freshwater and seawater	1–12 mg/L O ₂	50	1.14662.0001	Color card	MQuant® Liquid	148
	Oxygen demand, biochemical	see BOD			Cell test	Spectroquant®	78
	Oxygen demand, chemical	see COD			Cell test	Spectroquant®	78

Parameters O–P

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
O	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	Spectroquant®	78, 92, 124
	Ozone Test	0.007–0.20 mg/L O ₃	300	1.18755.0001	Color-card comparator	MQuant® Liquid	148
	Ozone Test	0.010–4.00 mg/L O ₃	200 1,200	1.00607.0001 1.00607.0002	Reagent test	Spectroquant®	45, 78, 92, 124
	Ozone Test	0.15–10 mg/L O ₃	300	1.18758.0001	Disk comparator	MQuant® Liquid	148
P	Palladium	0.05–1.25 mg/L Pd			Application	Spectroquant®	78
	Peracetic Acid Test	1.0–22.5 mg/L Peracetic acid	50	1.16975.0001	Test strip	Reflectoquant®	136
	Peracetic Acid Test	5–50 mg/L Peracetic acid	100	1.10084.0001	Test strip	MQuant® Test Strips	160
	Peracetic Acid Test	20–100 mg/L Peracetic acid	50	1.17956.0001	Test strip	Reflectoquant®	136
	Peracetic Acid Test	75–400 mg/L Peracetic acid	50	1.16976.0001	Test strip	Reflectoquant®	136
	Peracetic Acid Test	100–500 mg/L Peracetic acid	100	1.10001.0001	Test strip	MQuant® Test Strips	160
	Peracetic Acid Test	500–2,000 mg/L Peracetic acid	100	1.17922.0001	Test strip	MQuant® Test Strips	160
	Peracetic Acid Test	20–40–80–120–160 mg/L Peracetic acid	100	1.17976.0001	Test strip	MQuant® Test Strips	160
	Peroxidase Test	yes/no result	100	1.17828.0001	Test strip	MQuant® Test Strips	160
	Peroxide	see also Hydrogen peroxide			Reagent test	Spectroquant®	78
	Peroxide Test	0.2–20.0 mg/L H ₂ O ₂	50	1.16974.0001	Test strip	Reflectoquant®	136
	Peroxide Test	0.5–25 mg/L H ₂ O ₂	25 100	1.10011.0002 1.10011.0001	Test strip	MQuant® Test Strips	160
	Peroxide Test	1–100 mg/L H ₂ O ₂	100	1.10081.0001	Test strip	MQuant® Test Strips	160
	Peroxide Test	20.0–100 mg/L H ₂ O ₂	50	1.17968.0001	Test strip	Reflectoquant®	136
	Peroxide Test	100–1,000 mg/L H ₂ O ₂	50	1.16731.0001	Test strip	Reflectoquant®	136
	Peroxide Test	100–1,000 mg/L H ₂ O ₂	100	1.10337.0001	Test strip	MQuant® Test Strips	160
	pH indicator papers	see separate list of pH indicator papers	3 x 4.8 m		pH test paper	MQuant® pH	167
	pH indicator strips	see separate list of pH indicator strips	100		pH test strips	MQuant® pH	166
	pH Test	pH 4.0–9.0	50	1.16996.0001	Test strip	Reflectoquant®	136
	pH Test	pH 4.5–9	400	1.08027.0001	Sliding comparator	MQuant® Liquid	150
	pH Cell Test	pH 6.4–8.8	280	1.01744.0001	Cell test	Spectroquant®	45, 78, 92, 105, 124
	pH Test for Cooling Lubricants	pH 7.0–10.0	50	1.16898.0001	Test strip	Reflectoquant®	136
	Phaeophytin-a and Chlorophyll-a				Application	Spectroquant®	78
	Phenol Test	0.002–0.100 mg/L Phenol 0.025–5.00 mg/L Phenol	50–250	1.00856.0001	Reagent test	Spectroquant®	78, 92, 124
	Phenol Cell Test	0.10–2.50 mg/L Phenol	25	1.14551.0001	Cell test	Spectroquant®	78, 92, 124

Visual & Instrumental Testing

Portfolio Overview

Parameters P

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
P	Phenolphthalein paper	pH <8.5 colorless / >8.5 red	3 x 4.8 m	1.09521.0003	pH test paper	MQuant® pH	167
	Phosphate Test (ortho-phosphate)	0.0025–5.00 mg/L PO ₄ -P 0.0077–15.30 mg/L PO ₄ 0.0057–11.46 mg/L P ₂ O ₅	220 420	1.14848.0002 1.14848.0001	Reagent test	Spectroquant®	78, 92, 110
	Phosphate Test	0.046–0.43 mg/L PO ₄	200	1.18394.0001	Color-card comparator	MQuant® Liquid	150
	Phosphate Test RQflex® plus	0.1–5.0 mg/L PO ₄	100	1.17942.0001	Reagent test	Reflectoquant®	136
	Phosphate Cell Test (ortho-phosphate)	0.05–5.0 mg/L PO ₄ -P 0.2–15.3 mg/L PO ₄ 0.11–11.46 mg/L P ₂ O ₅	25	1.00474.0001	Cell test	Spectroquant®	78, 110, 124
	Phosphate Cell Test (ortho-phosphate and total phosphorus)	0.05–5.00 mg/L PO ₄ -P 0.2–15.3 mg/L PO ₄ 0.11–11.46 mg/L P ₂ O ₅	25	1.14543.0001	Cell test	Spectroquant®	78, 92, 110, 124
	Phosphate Test in freshwater and seawater	0.25–3 mg/L PO ₄	100	1.14661.0001	Color card	MQuant® Liquid	150
	Phosphate Test	0.6–9.2 mg/L PO ₄	200	1.14846.0001	Disk comparator	MQuant® Liquid	150
	Phosphate Test	1.3–13.4 mg/L PO ₄	200	1.11138.0001	Color-matching vessel	MQuant® Liquid	150
	Phosphate Cell Test (ortho-phosphate and total phosphorus)	0.5–25.0 mg/L PO ₄ -P 1.5–76.7 mg/L PO ₄ 1.1–57.3 mg/L P ₂ O ₅	25	1.14729.0001	Cell test	Spectroquant®	80, 92, 111, 112, 124
	Phosphate Cell Test (ortho-phosphate)	0.5–25.0 mg/L PO ₄ -P 1.5–76.7 mg/L PO ₄ 1.1–57.3 mg/L P ₂ O ₅	25	1.14546.0001	Cell test	Spectroquant®	80, 93, 124
	Phosphate Test (ortho-phosphate)	0.5–30.0 mg/L PO ₄ -P 1.5–92.0 mg/L PO ₄ 1.1–68.7 mg/L P ₂ O ₅	400	1.14842.0001	Reagent test	Spectroquant®	80, 93, 124
	Phosphate Test	3.1–123 mg/L PO ₄	190	1.14449.0001	Color-card comparator	MQuant® Liquid	150
	Phosphate Test (ortho-phosphate)	1.0–100.0 mg/L PO ₄ -P 3–307 mg/L PO ₄ 2–229 mg/L P ₂ O ₅	100	1.00798.0001	Reagent test	Spectroquant®	80, 93, 124
	Phosphate Test	4.6–307 mg/L PO ₄	300	1.18388.0001	Disk comparator	MQuant® Liquid	150
	Phosphate Test	5–120 mg/L PO ₄	50	1.16978.0001	Test strip	Reflectoquant®	136
	Phosphate Cell Test (ortho-phosphate)	3.0–100.0 mg/L PO ₄ -P 9–307 mg/L PO ₄ 7–229 mg/L P ₂ O ₅	25	1.00616.0001	Cell test	Spectroquant®	80, 92, 124
	Phosphate Cell Test (ortho-phosphate and total phosphorus)	3.0–100 mg/L PO ₄ -P 9–307 mg/L PO ₄ 7–229 mg/L P ₂ O ₅	25	1.00673.0001	Cell test	Spectroquant®	80, 92, 124
	Phosphate Test	10–500 mg/L PO ₄	100	1.10428.0001	Test strip	MQuant® Test Strips	160
	Platinum	0.10–1.25 mg/L Pt			Application	Spectroquant®	80
	Potassium Test RQflex® plus	1.0–25.0 mg/L K	100	1.17945.0001	Reagent test	Reflectoquant®	136
	Potassium Cell Test	5.0–50.0 mg/L K	25	1.14562.0001	Cell test	Spectroquant®	80, 93, 124
	Potassium Cell Test	30–300 mg/L K	25	1.00615.0001	Cell test	Spectroquant®	80, 93, 124
	Potassium Test	0.25–1.20 g/L K	50	1.16992.0001	Test strip	Reflectoquant®	136
	Potassium Test	250–1,500 mg/L K	100	1.17985.0001	Test strip	MQuant® Test Strips	160
	Potassium iodide-starch paperOxidizing agents		3 x 4.8 m	1.09512.0003	Reagent paper	MQuant® Test Strips	161

Parameters P–S

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
P	Protein-Test	0.01–1.4 g/L Protein	200	1.10306.0500	Reagent test	Spectroquant®	80
	Protein-Test	0.5–10 g/L Protein	250	1.10307.0500	Reagent test	Spectroquant®	80
Q	Quaternary Ammonium Compounds	10–500 mg/L Benzalkonium chloride	100	1.17920.0001	Test strip	MQuant® Test Strips	160
R	Residual Hardness Test	0.05–0.19 °e 0.7–2.7 mg/L CaCO ₃	400	1.11142.0001	Color card	MQuant® Liquid	150
	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 ₃	25	1.14683.0001	Cell test	Spectroquant®	80, 93, 124
S	SAC (Spectral absorption coefficient)	0.5–50.0 m ⁻¹			Physical method	Spectroquant®	80
	Silicate (Silicic Acid) Test	0.0005–0.5000 mg/L SiO ₂ 0.00012–0.2337 mg/L Si	100	1.01813.0001	Reagent test	Spectroquant®	80, 93, 124
	Silicate (Silicic Acid) Test	0.011–10.70 mg/L SiO ₂ 0.005–5.00 mg/L Si	300	1.14794.0001	Reagent test	Spectroquant®	80, 93, 124
	Silicate (Silicic Acid) Test	0.01–0.25 mg/L Si 0.02–0.53 mg/L SiO ₂	150	1.14410.0001	Color-card comparator	MQuant® Liquid	150
	Silicate (Silicic Acid) Test	0.3–10 mg/L Si 0.6–21 mg/L SiO ₂	150	1.14792.0001	Disk comparator	MQuant® Liquid	150
	Silicate (Silicic Acid) Test	1.1–1,070 mg/L SiO ₂ 0.5–500 mg/L Si	100	1.00857.0001	Reagent test	Spectroquant®	82, 93, 124
	Sodium Cell Test in nutrient solution for fertilization	10–300 mg/L Na	25	1.00885.0001	Cell test	Spectroquant®	82, 93, 124
	Spectral Absorption Coefficient, Color	0.5–250 m ⁻¹			Application	Spectroquant®	82
	Spectral Attenuation Coefficient	0.5–250 m ⁻¹			Application	Spectroquant®	82
	Sucrose Test	0.25–2.5 g/L	50	1.16141.0001	Test strip	Reflectoquant®	136
	Sulfate Test	0.50–50.0 mg/L SO ₄	100	1.01812.0001	Reagent test	Spectroquant®	82, 93, 105, 125
	Sulfate Cell Test	5–250 mg/L SO ₄	25	1.14548.0001	Cell test	Spectroquant®	82, 93, 105, 110, 124
	Sulfate Test	5–300 SO ₄	100	1.02537.0001	Reagent test	Spectroquant®	82, 93, 105, 110, 124
	Sulfate Test	25–300 mg/L SO ₄	75	1.18389.0001	Disk comparator	MQuant® Liquid	150
	Sulfate Test	25–300 mg/L SO ₄	90	1.14411.0001	Color-card comparator	MQuant® Liquid	150
	Sulfate Cell Test	50–500 mg/L SO ₄	25	1.00617.0001	Cell test	Spectroquant®	82, 93, 105, 110, 124
	Sulfate Cell Test	100–1,000 mg/L SO ₄	25	1.14564.0001	Cell test	Spectroquant®	82, 93, 111, 124
	Sulfate Test	200–1,600 mg/L SO ₄	100	1.10019.0001	Test strip	MQuant® Test Strips	160
	Sulfide Test	0.02–0.25 mg/L S ²⁻	100	1.14416.0001	Color-card comparator	MQuant® Liquid	150
	Sulfide Test	0.020–1.50 mg/L S ²⁻	220	1.14779.0001	Reagent test	Spectroquant®	82, 93, 125
	Sulfide Test	0.1–5 mg/L S ²⁻	200	1.14777.0001	Disk comparator	MQuant® Liquid	150
	Sulfite Test	0.5–50 mg/L Na ₂ SO ₃ (0.3–32 mg/L SO ₃)	200	1.11148.0001	Titration with pipette	MQuant® Liquid	150

Visual & Instrumental Testing

Portfolio Overview

Parameters S–U

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
S	Sulfite Cell Test	1.0–20.0 mg/L SO ₃ 0.05–3.00 mg/L SO ₃	25	1.14394.0001	Cell test	Spectroquant®	82, 93, 125
	Sulfite Test	1.0–60.0 mg/L SO ₃ 0.8–48.0 mg/L SO ₂	150	1.01746.0001	Reagent test	Spectroquant®	82, 93, 125
	Sulfite Test	10–200 mg/L SO ₃	50	1.16987.0001	Test strip	Reflectoquant®	136
	Sulfite Test	10–400 mg/L SO ₃	100	1.10013.0001	Test strip	MQuant® Test Strips	160
	Surfactants (anionic) Cell Test	0.05–2.00 mg/L MBAS	25	1.02552.0001	Cell test	Spectroquant®	51, 82, 93, 125
	Surfactants (cationic) Cell Test	0.05–1.50 mg/L CTAB	25	1.01764.0001	Cell test	Spectroquant®	51, 82, 93, 125
	Surfactants (nonionic) Cell Test	0.10–7.50 mg/L Triton® X-100	25	1.01787.0001	Cell test	Spectroquant®	51, 82, 93, 125
	Suspended Solids	25–750 mg/L suspended solids			Physical method	Spectroquant®	82
T	Tin Cell Test	0.10 - 2.50 mg/L Sn	25	1.17265.0001	Cell test	Spectroquant®	82, 93, 125
	Tin Test	10–200 mg/L Sn	50	1.10028.0001	Test strip	MQuant® Test Strips	160
	TOC Cell Test	5.0–80.0 mg/L TOC	25	1.14878.0001	Cell test	Spectroquant®	82, 93, 125
	TOC Cell Test	50–800 mg/L TOC	25	1.14879.0001	Cell test	Spectroquant®	82, 93, 125
	Total Alkalinity	see Acid capacity to pH 4.3 or Alkalinity			Cell test	Spectroquant®	84
	Total Hardness Test	0.13–7 °e (1–100 mg/L CaCO ₃)	300	1.08047.0001	Titration with pipette	MQuant® Liquid	150
	Total Hardness Test	0.1–30.0 °d	50	1.16997.0001	Test strip	Reflectoquant®	136
	Total Hardness Test	0.25–25 °e (0.1–3.6 mmol/L)	300	1.08039.0001	Titration with pipette	MQuant® Liquid	150
	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 ₃	25	1.00961.0001	Cell test	Spectroquant®	84, 93, 125
	Total Hardness Test	1 drop corresponds to 1.25 °e	100	1.11104.0001	Titration with dropping bottle	MQuant® Liquid	150
	Total Hardness Test	1 drop corresponds to 20 mg/L CaCO ₃	200	1.08312.0001	Titration with dropping bottle	MQuant® Liquid	150
	Total Hardness Test in freshwater	1 drop corresponds to 1.25 °e	50	1.14652.0001	Titration with dropping bottle	MQuant® Liquid	150
	Total Hardness Test	4–26 °e	100	1.10025.0001	Test strip	MQuant® Test Strips	160
	Total Hardness Test	4–26 °e	1,000	1.10032.0001	Individually sealed	MQuant® Test Strips	160
	Total Hardness Test	6–31 °e	100	1.10046.0001	Test strip	MQuant® Test Strips	160
	Total Hardness Test	6–31 °e	25,000	1.10047.0013	Individually sealed	MQuant® Test Strips	160
	Total Nitrogen	see Nitrogen (total)			Cell test	Spectroquant®	84
	Total Sugar Test (glucose and fructose)	65–650 mg/L total sugar	50	1.16136.0001	Test strip	Reflectoquant®	136
	Transmission	0.0–100.0 % T			Physical method	Spectroquant®	84
	Turbidity	1–100 FAU			Physical method	Spectroquant®	84
U	Urea Test in Milk Application	0.2–7.0 mg/L NH ₄	50	1.16892.0001	Test strip	Reflectoquant®	136

Parameters V–Z

Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Cat. No.	System / Type	Trade name	Page No.
V	Various	various parameter combined in a Compact Laboratory for water testing		1.11151.0001	Compact lab	MQuant® Liquid	142
	Volatile Organic Acids Cell Test	50–3,000 mg/L acetic acid	25	1.01749.0001	Cell test	Spectroquant®	84, 93, 125
	Volatile Organic Acids Test	50–3,000 mg/L acetic acid	100	1.01809.0001	Reagent test	Spectroquant®	84, 93, 125
W	Water Hardness	see Carbonate Hardness, Residual Hardness, or Total Hardness					84
Z	Zinc Cell Test	0.025–1.000 mg/L Zn	25	1.00861.0001	Cell test	Spectroquant®	84, 93, 105, 113, 125
	Zinc Test	0.05–2.50 mg/L Zn	100	1.14832.0001	Reagent test	Spectroquant®	84, 93, 105, 113, 125
	Zinc Test	0.1–5 mg/L Zn	120	1.14780.0001	Disk comparator	MQuant® Liquid	150
	Zinc Test	0.1–5 mg/L Zn	120	1.14412.0001	Color-card comparator	MQuant® Liquid	150
	Zinc Cell Test	0.20–5.00 mg/L Zn	25	1.14566.0001	Cell test	Spectroquant®	84, 93, 105, 125
	Zinc Test	4–50 mg/L Zn	100	1.17953.0001	Test strip	MQuant® Test Strips	160

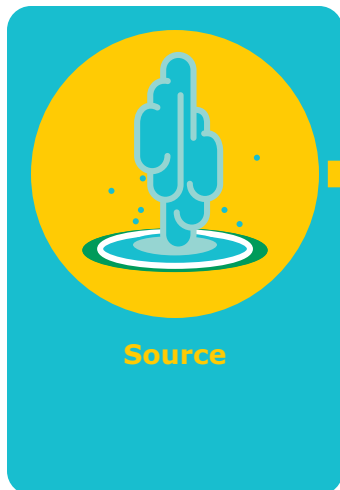


cooling & boiler water workflow

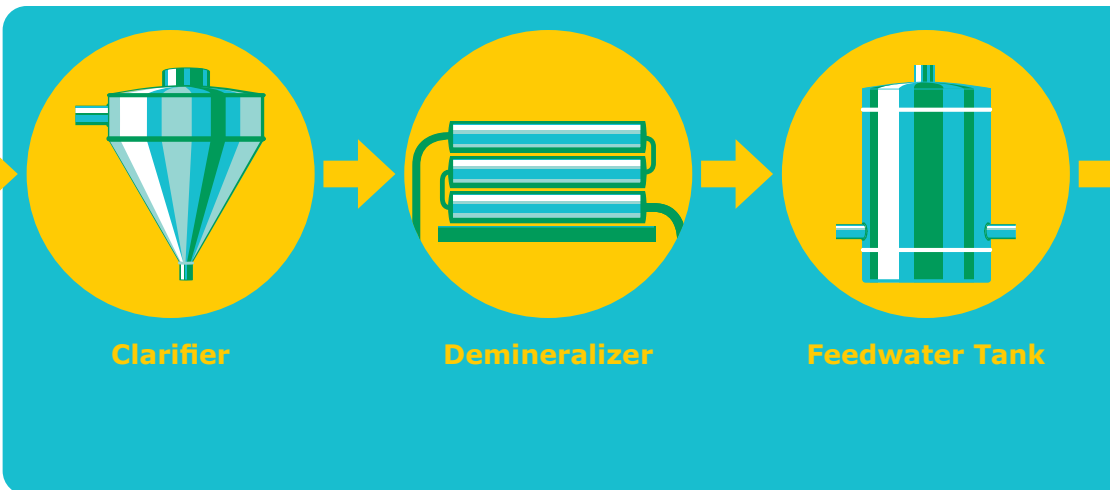
Analyzing cooling and boiler water is essential for power plants and industrial producers such as chemical, pharmaceutical, technical, or food and beverage companies. Silicate, calcium, and magnesium are particularly important as elevated levels can cause deposit formation and scaling, leading to increased maintenance costs and downtimes. Find a selection of products that support your workflow to measure low and ultra-low concentrations of various parameters. In particular, using the Spectroquant® Prove 600 spectrophotometer with a 100-mm cuvette allows ultra-sensitive measurements of silicate, chloride, and iron to protect your system.



Input



In-Process



Instruments & Test Kits

Spectroquant® Photometers

- Prove 300/600 **page 38**
- Move 100 and Move DC **page 44**

Spectroquant® Photometric Test Kits

- Chloride Test Cat. No. **1.01807.0001**
- Silicate Test Cat. No **1.01813.0001**
- Phosphate Test Cat. No. **1.14848.0001**
- More test kits see **page 62**

Rapid Chemical Testing with Reflectoquant® or MQuant® Systems

- Reflectometric tests
 - Calcium Test Cat. No. **1.16125.0001**
 - Total Hardness Test Cat. No. **1.16997.0001**
 - Nitrite Test Cat. No. **1.16973.0001**
 - More reflectometric test kits see **page 136**
- Visual tests
 - pH-indicator strips pH 0-14
Cat. No. **1.09535.0001**
 - Chlorine Test strips Cat. No. **1.17925.0001**
 - Phosphate Test Color card comparator
Cat. No. **1.18394.0001**

Reference Materials

- Ready-to-use reference materials for photometric test kits **page 114**
- CombiCheck **page 110**
- Certipur® standards **page 118**

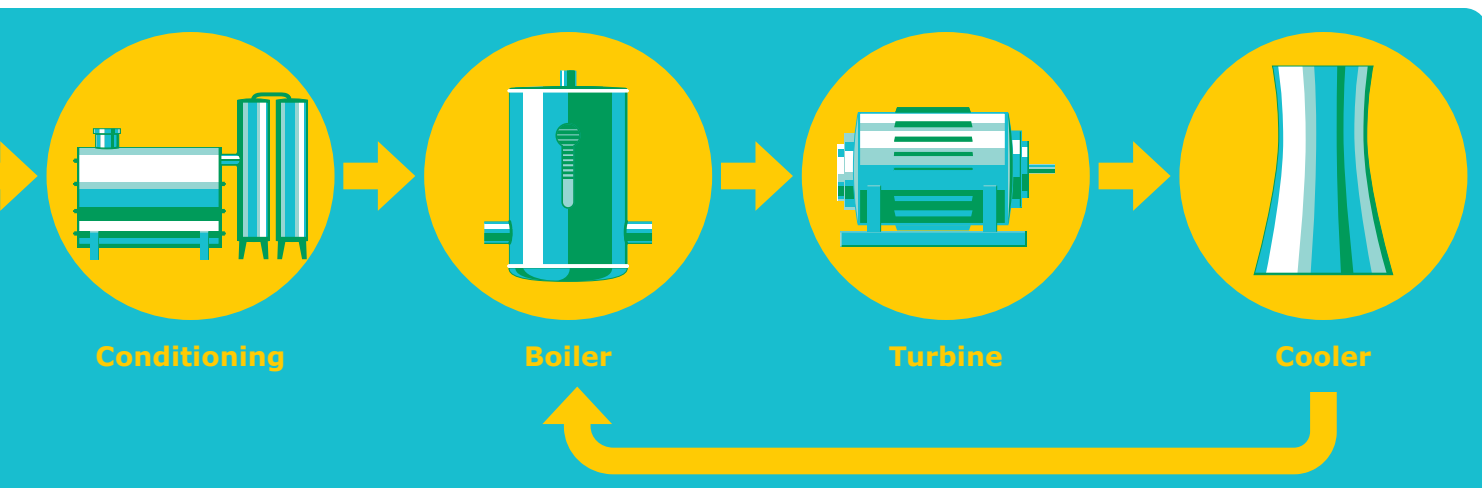
Complementary Testing

- Water purification testing, e.g. Milli-Q® system **page 177**

Protocols & Resources

- Application Notes
 - Ultrasensitive determination of silicate in process and boiler water
 - Calcium in water
- Silicate Testing **page 19**
- Chloride Testing **page 10**
- Phosphonate Testing **page 18**
- Wastewater & Process Water Testing Webpage

Find protocols and application notes on **VWR® Water Analysis**





wastewater workflow

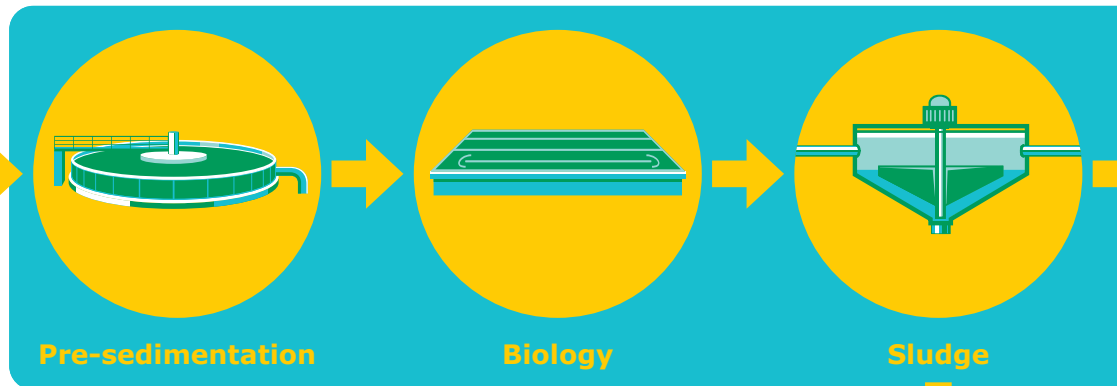
To protect the environment and communities, almost all governments require treatment and testing of both municipal wastewater from households and industrial wastewater from chemical, pharmaceutical, food, beverage, and other production facilities. The workflow diagram shows the products you need to analyze essential chemical parameters such as COD, BOD, TOC, ammonium, nitrate, nitrite, total phosphorus, and total nitrogen, as well as other important parameters like chromium, heavy metals, and volatile organic acids (VOA).



Input



In-Process



Instruments & Test Kits

Spectroquant® Photometers

- Prove 100/300 **page 38**
- Move 100 and Move DC **page 44**

Spectroquant® Photometric Test Kits

- COD test kits
Cat. No. **1.14560.0001** | **1.01796.0001**
- Nitrate test kits
Cat. No. **1.09713.0001** | **1.14773.0001**
- Ammonium test kits
Cat. No. **1.14739.0001** | **1.14752.0001**
- Phosphate test kits
Cat. No. **1.14543.0001** | **1.14729.0001**
- Nitrogen test kits
Cat. No. **1.00613.0001** | **1.14537.0001**
- Chloride test kits
Cat. No. **1.01807.0001** | **1.01804.0001**
- More test kits see **page 62**

Rapid Chemical Testing with Reflectoquant® or MQuant® Systems

- Reflectometric tests
 - Nitrite Test Cat. No. **1.16732.0001**
 - Ammonium Test Cat. No. **1.16892.0001**
 - Nitrate Test Cat. No. **1.16971.0001**
 - More reflectometric test kits see **page 136**
- Visual tests
 - Chloride Test Disc comparator
Cat. No. **1.14753.0001**
 - Chloride Test strips Cat. No. **1.10079.0001**
 - pH-indicator strips pH 0-14
Cat. No. **1.09535.0001**

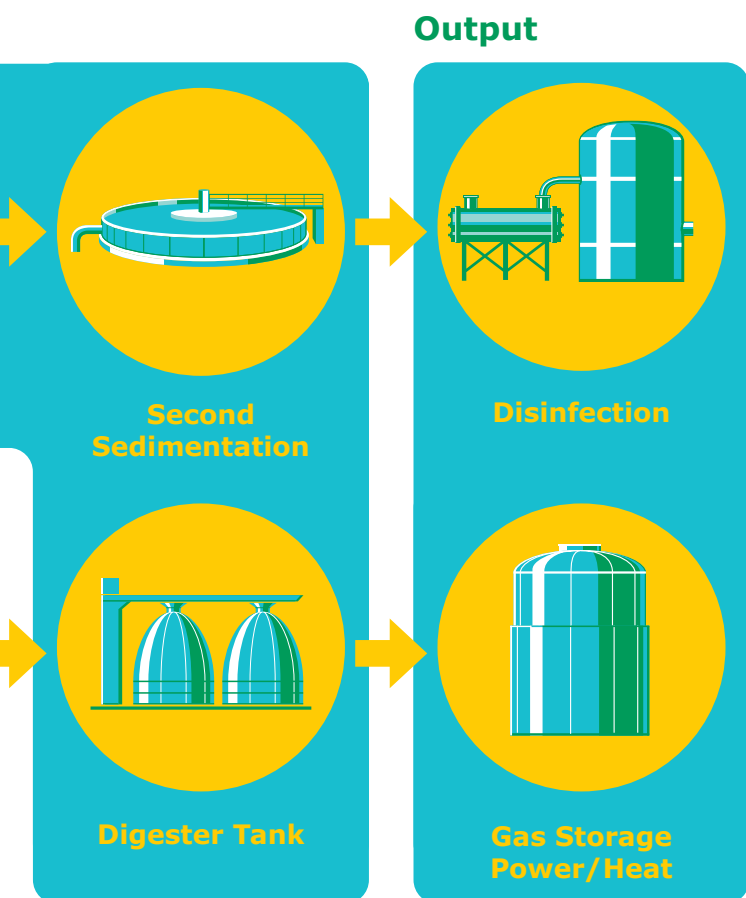
Reference Materials

- Ready-to-use reference materials for photometric test kits **page 114**
- CombiCheck **page 110**
- Certipur® standards **page 118**

Protocols & Resources

- Application Notes
 - Ammonium in effluents with high cod value
 - Chloride determination for cod cell test for seawater
 - Ammonium in sewage sludge
 - Ammonium in effluents
 - Nitrate in effluents
 - Phosphate in effluents
 - Phosphorus (total) in effluents
 - Nitrogen (total) in effluents
 - Nitrite in wastewater
 - Ammonium in wastewater
 - Nitrate in wastewater
- Wastewater & Process Water Testing Webpage
- Measuring Chemical Oxygen Demand in Water Treatment Facilities

Find protocols and application notes on
VWR® Water Analysis

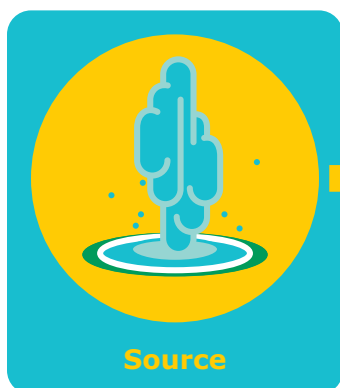


water workflow

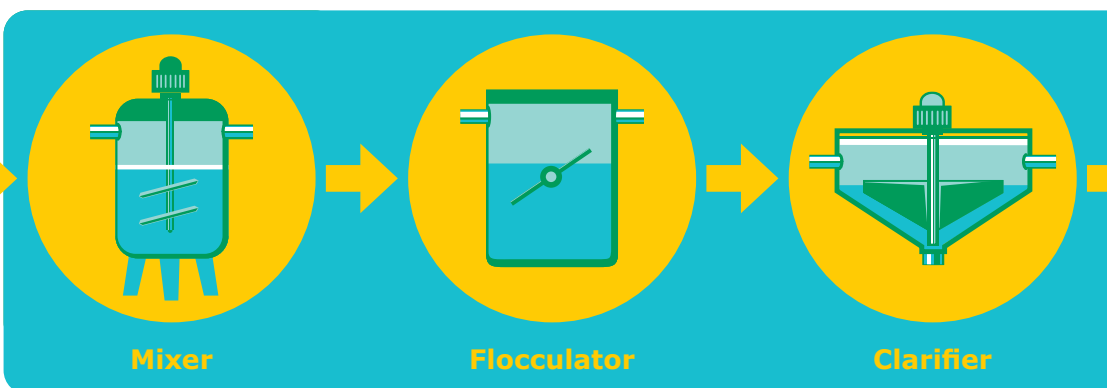
Any industry that produces, uses, or processes drinking water must comply with national regulations and perform regular tests to ensure that drinking water is free of chemical and microbiological contamination. The workflow diagram shows a selection of products you need to test microbiological contamination and important chemical parameters such as aluminum, ammonium, bromate, iron, manganese, chloride, nitrate, nitrite, sulfate, chromium and other metals.



Input



In-Process



Instruments & Test Kits

Spectroquant® Photometers

- Prove 300/600 **page 38**
- Move 100 and Move DC **page 44**

Spectroquant® Photometric Test Kits

- Iron Test Cat. No. **1.14761.0001**
- Manganese Test Cat. No. **1.01846.0001**
- Nitrite Test Cat. No. **1.14776.0001**
- More test kits see **page 62**

Rapid Chemical Testing with Reflectoquant® or MQuant® Systems

- Reflectometric tests
 - Iron Test Cat. No. **1.16982.0001**
 - Calcium Test Cat. No. **1.16125.0001**
 - Nitrate Test Cat. No. **1.16995.0001**
 - Hardness Test Cat. No. **1.16997.0001**
 - Magnesium Test Cat. No. **1.16124.0001**
 - More reflectometric test kits see **page 136**
- Visual tests
 - pH-indicator strips pH 0-14
Cat. No. **1.09535.0001**
 - Peracetic Acid Test strips
Cat. No. **1.10084.0001**

Reference Materials

- Ready-to-use reference materials for photometric test kits **page 114**
- Certipur® standards **page 118**
- Standards for pesticides **page 174**

Complementary Testing

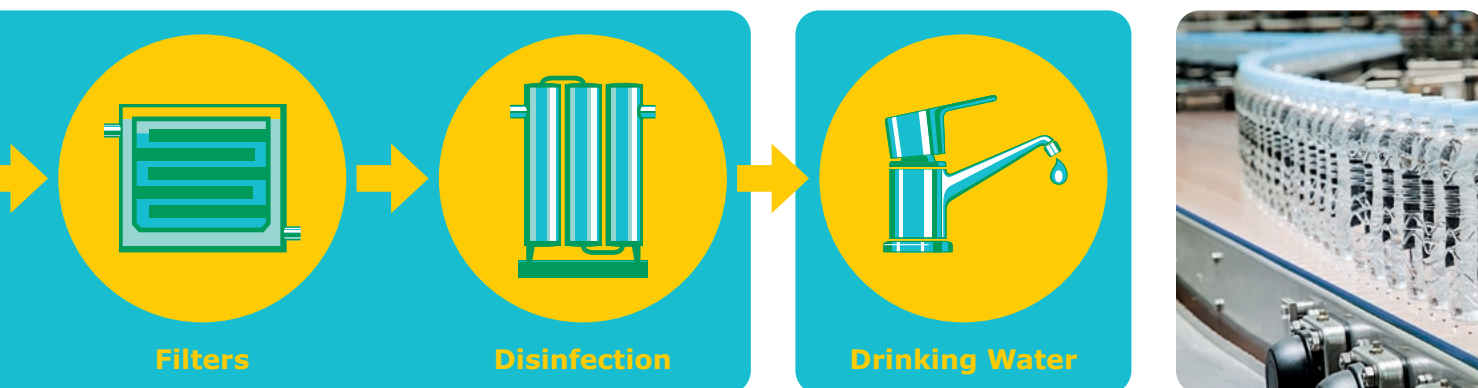
- Chromatography, e.g. HPLC, GC, TLC **page 172**
- Microbial filtration testing, e.g. EZ family **page 170**
- Water purification testing, e.g. Milli-Q® system **page 177**

Protocols & Resources

- Application Notes
 - Selenium in water
 - Iron (total) in mineral water
 - Manganese (total) in mineral water
 - Nitrite in mineral water
 - Calcium in drinking water
 - Total hardness in drinking water
 - Magnesium in drinking water
- Testing methods of WHO, US EPA, EU for Drinking water **page 95**
- Drinking Water Testing Webpage

Find protocols and application notes on **VWR® Water Analysis**

Output

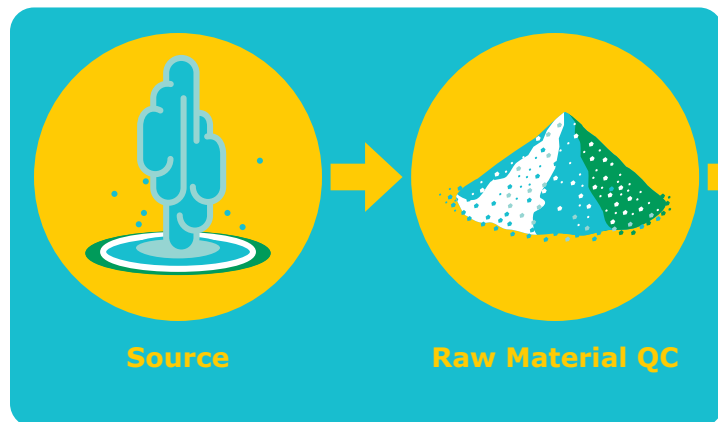


BREWERY WORKFLOW

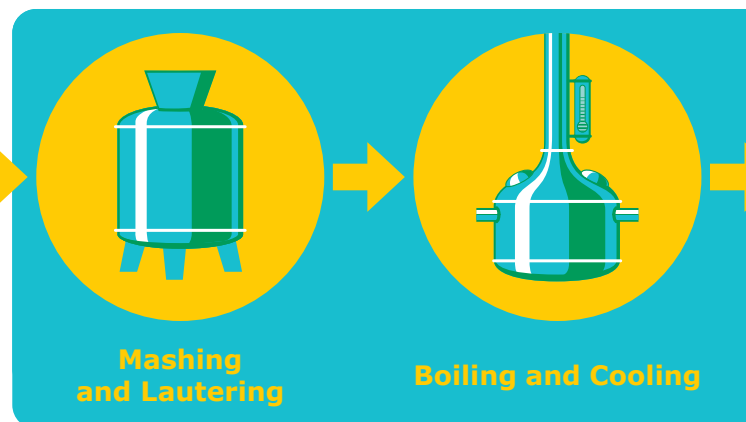
Breweries need to carefully monitor all stages of production from analyzing raw materials and drinking water, to in-process and disinfection controls, to testing the finished product and wastewater (see “wastewater workflow” on pages 24 & 25). Beer quality and consistency are judged through parameters such as bitterness, flavonoids, free amino nitrogen, color, calcium content, zinc content, and microbiological contamination. The workflow diagram shows a selection of 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.



Input



In-Process



Instruments & Test Kits

Spectroquant® Photometers

- Prove 300 **page 38**
- Move 100 and Move DC **page 44**

Spectroquant® Photometric Test Kits

- Calcium Test Cat. test kit No. **1.00049.0001**
- Sulfite Test Cat. No. **1.01746.0001**
- Zinc Cell Test Cat. No. **1.00861.0001**
- Nitrate Test Cat. No. **1.09713.0001**
- More test kits see **page 62**
- Test kits acc. to international standards **page 48**

Rapid Chemical Testing with Reflectoquant® or MQuant® Systems

- Reflectometric tests
 - Hardness Test Cat. No. **1.16997.0001**
 - Calcium Test Cat. No. **1.16125.0001**
 - Glucose Test Cat. No. **1.16720.0001**
 - Nitrate Test Cat. No. **1.16995.0001**
 - More reflectometric test kits see **page 136**
- Visual tests
 - pH-indicator strips pH 0-14
Cat. No. **1.09535.0001**
 - Glucose Test strips
Cat. No. **1.17866.0001**

Reference Materials

- Ready-to-use reference materials for photometric test kits **page 114**
- Certipur® standards **page 118**
- Standards for pesticides **page 174**

Ingredient and Nutritional Testing

- Flavors and fragrances **page 175**
- Karl Fischer – reagents **page 176**

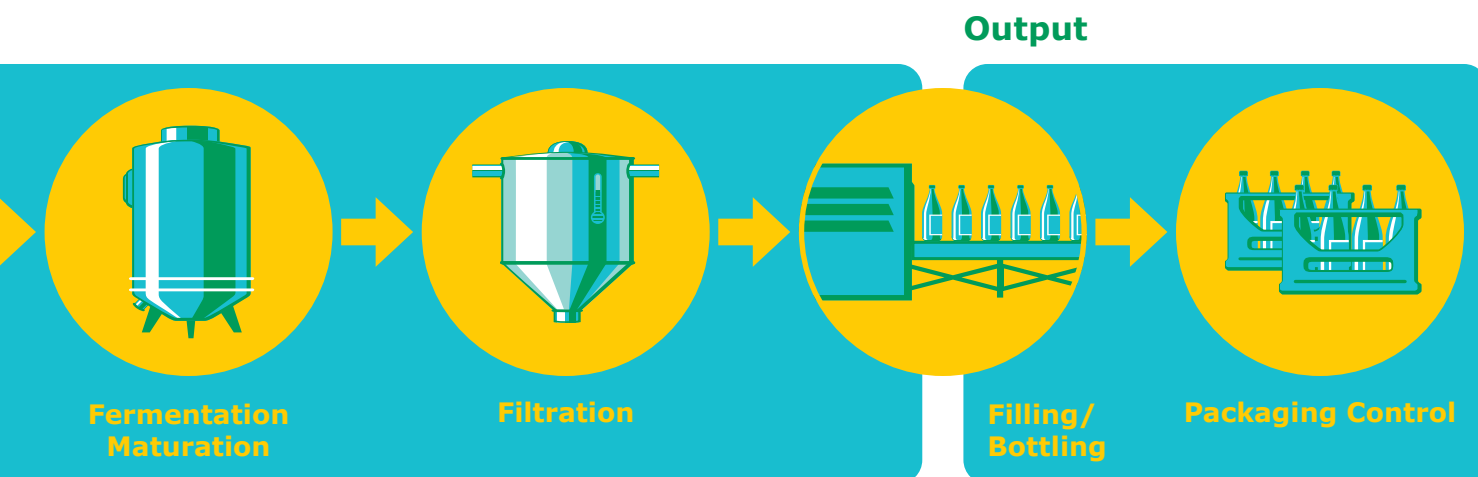
Complementary Testing

- Chromatography, e.g. HPLC, GC, TLC **page 172**
- Microbial filtration testing, e.g. EZ family **page 170**
- Water purification testing, e.g. Milli-Q® system **page 177**

Protocols & Resources

- Application Notes
 - Calcium in beer
 - Sulfur dioxide in beer
 - Zinc (total) in beer worts
 - Nitrate in hops (photometry)
 - Total hardness in drinking water
 - Calcium in beer (reflectometry)
 - Glucose in fermentation solutions
 - Nitrate in hops (reflectometry)
- Brewery Methods of MEBK, ECB and ASBC

Find protocols and application notes on
VWR® Fast Analysis





Food & Beverage Workflow

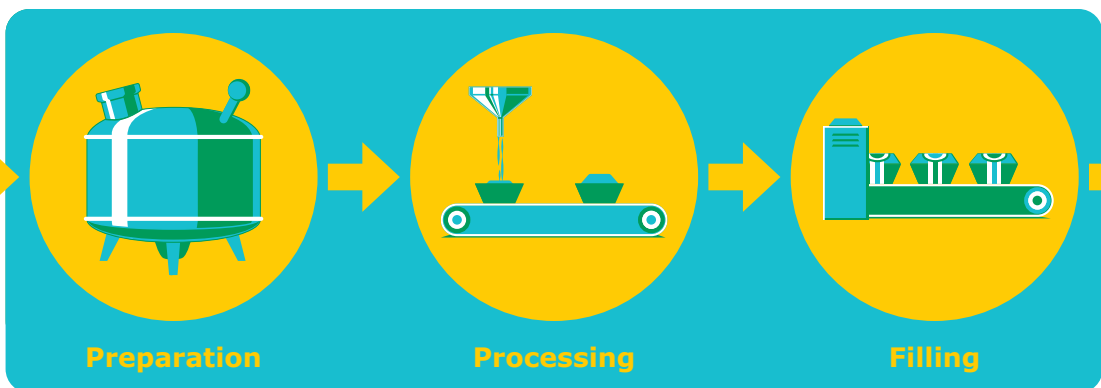
Food and beverage producers face increasing safety regulations requiring detailed analyses of raw materials, in-process controls, quality tests, and hygiene monitoring. Because all of these analyses take time, our rapid and on-the-spot tests for chemical and microbiological contamination are designed to help get your product ready for purchase faster. The workflow diagram shows a selection of products you need to accurately analyze microbiological contamination and important chemical parameters in food and beverages such as ascorbic acid, glucose, and fructose.



Input



In-Process



Instruments & Test Kits

Spectroquant® Photometers

- Prove 600 **page 38**
- Move 100 and Move DC **page 44**

Spectroquant® Photometric Test Kits

- Chromium Test Cat. No. **1.14758.0001**
- Nickel Test Cat. No. **1.14785.0001**
- Nitrogen Cell Test Cat. No. **1.00613.0001**
- Phosphate Cell Test Cat. No. **1.14543.0001**
- More test kits see **page 62**

Rapid Chemical Testing with Reflectoquant® or MQuant® Systems

- Reflectometric tests
 - Ascorbic Acid Test Cat. No. **1.16981.0001**
 - Sucrose Test Cat. No. **1.16141.0001**
 - Glucose Test Cat. No. **1.16720.0001**
 - Nitrate Test Cat. No. **1.16971.0001**
 - Urea (Ammonium) Test Cat. No. **1.16892.0001**
 - More reflectometric test kits see **page 136**
- Visual tests
 - pH-indicator strips pH 0-14 Cat. No. **1.09535.0001**
 - Free Fatty Acids Test strips Cat. No. **1.17046.0001**

Reference Materials

- Ready-to-use reference materials for photometric test kits **page 114**
- Certipur® standards **page 118**
- Standards for pesticides **page 174**

Ingredient and Nutritional Testing

- Kjeldahl, total dietary fiber **page 175**
- Flavors and fragrances **page 175**
- Karl Fischer – reagents **page 176**

Complementary Testing

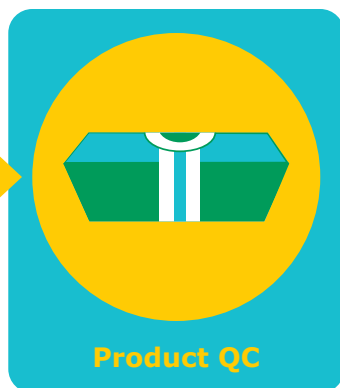
- Chromatography, e.g. HPLC, GC, TLC **page 172**
- Microbial filtration testing, e.g. EZ family **page 170**
- Water purification testing, e.g. Milli-Q® system **page 177**

Protocols & Resources

- Application Notes
 - Chromium (total) in dairy products
 - Nickel (total) in dairy products
 - Nitrogen (total) in dairy products
 - Phosphorus (total) in dairy products
 - Urea in milk
 - Hydroxymethylfurfural (hmf) in honey
 - Ascorbic acid in juices
 - Sucrose (saccharose) in soft drinks
 - Glucose in red and white wine
- Nitrate in Vegetables
- Nitrate in Milk Powder
- Nitrate in Vegetables **page 132**
- How Fresh is Your Honey **page 130**
- Total Sugar Testing in Diet Soft Drinks **page 135**
- Glucose Content Testing **page 154**
- Ascorbic Acid in Food **page 133**
- Monitor Acrylamide **page 133**
- Quality of Frying Oil **page 155**
- Milk Quality Testing **page 153**

Find protocols and application notes on **VWR® Fast Analysis**

Output



Disinfection Control in Your Workflow

Tasks requiring disinfection control

Water Bottling Packaging Control



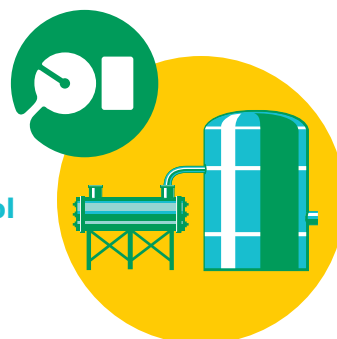
Brewery Filling/Bottling



Food Processing Product QC



Wastewater Output Control



Instruments & Test Kits

Rapid Chemical Testing with Reflectoquant® or MQuant® Systems

- Reflectometric tests
 - Chlorine Test Cat. No. **1.16896.0001**
 - Peroxide Test Cat. No. **1.16731.0001**
 - Peracetic Acid Test Cat. No. **1.16976.0001**
 - pH Test Cat. No. **1.16996.0001**
 - More reflectometric test kits see **page 136**
- Visual tests
 - pH-indicator strips pH 0-14 Cat. No. **1.09535.0001**
 - Peroxide Test strips Cat. No. **1.10011.0001**

Spectroquant® Instruments

- Reflectometer: RQflex® 20 Cat. No. **1.17246.0001**
- Colorimeter: Move DC Cat. No. **1.73635.0001**

Spectroquant® Photometric Test Kits

- Ozone Test Cat. No. **1.00607.0001**
- Surfactants (nonionic) Cell Test Cat. No. **1.01787.0001**
- Hydrogen Peroxide Test Cat. No. **1.18789.0001**
- Formaldehyde Test Cat. No. **1.14678.0001**
- More test kits see **page 62**

Complementary Testing

- Hygiene monitoring see **page 171**

Facilities that are not disinfected effectively have more potential safety risks. Disinfection control remains critical in ensuring the safety of your product. However, the determination of chemical cleanliness requires instruments and means and not just the human eye. Ensure the safety of your production line after disinfection.

Are you working in these areas?

- dairy or infant formula
- vegetarian dishes
- meat products
- products with allergen free claims
- other food and beverage industries

Thorough disinfection control testing of filling and processing equipment must be conducted to ensure that no disinfectant residues remain and subsequently contaminate the final food or beverage products.



Protocols & Resources

- Application Notes
 - Perchlorate in wastewater
 - Surfactants (nonionic) in Extran® rinse solutions
 - Glutardialdehyde in aqueous solutions



Accurate quantitative results

A solution for every step of wastewater analysis

The Application

Wastewater analysis is a critical in ensuring that wastewater treatment is being performed to the appropriate standard. Testing a range of parameters such as chemical oxygen demand (COD), ammonium, phosphate, and nitrate is necessary to prevent pollution of lakes, rivers, and groundwater and meets environmental regulation standards. This requires instrumentation capable of measuring with high sensitivity and accuracy.

Our Solution: Spectroquant® Prove photometers

The Spectroquant® Prove instruments offer a photometric method for wastewater parameters, allowing you to easily and accurately detect very low levels of pollutants. It is compatible with 100-mm cells to maximize sensitivity and you can also assign individualized measuring ranges for parameters in order to check whether their concentrations fall within required limits. It also automatically recognizes Spectroquant® test kits so that the correct analysis method is always selected and the right results displayed.

Benefits

- High sensitivity to detect very low levels of pollutants
- Seamless and automatic function with Spectroquant® test kits
- Customizable measuring ranges for individual parameters





Spectroquant® Photometry

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Spectroquant® Photometry

General Information



Sample preparation

Simple and effective preparation with Crack Sets and thermoreactors

- Spectroquant® Crack Set
- Spectroquant® Thermoreactors
TR 320 / 420 / 620



Sample treatment

More than 200 Spectroquant® test kits offer efficient and effective solutions for the widest range of applications

- Reagent Tests
- Cell Tests
- Test kits for samples with salt content
- Test kits for other photometer brands



Test assured

VWR® Fast Analysis

Analytical quality assurance (AQA) proves the validity and reproducibility of your results and is an absolute requirement to have confidence in your analysis. With the **Spectroquant® system**, you can focus on your daily work without worrying about results quality. Our convenient, consolidated workflow solution includes everything you need for secure analysis: reliable instruments, high-quality test kits, customized applications, and start-to-finish AQA. All components work together seamlessly to make a sophisticated analysis simple.

See how our products support your workflow on pages **22–33**.



Analysis

Spectroquant® colorimeters and photometers combine high measurement quality with simple handling for benchtop or portable analysis

Spectroquant® Instruments

Instruments	Barcode reading	No of Test Kits	Mode of Operation	Page
Spectroquant® Move – Reliable, waterproof colorimeters for rapid, on-site results		5 to more than 100	Portable	44
Spectroquant® NOVA – Compact, convenient filter photometers for reliable measurements	x	>180	Bench top / portable	43
Spectroquant® Prove – Sophisticated touchscreen photometers for sensitive, secure analysis	x	>200	Bench top	38



Validation & data transfer:

Perfect Analytical Quality Assurance (AQA) with certified standards and GLP-compliant documentation. See page **106** for more

Laboratory Information Management System (LIMS) connections for enhanced quality assurance
Learn more on page **41**



Just prove it.

Our goal was to build the perfect tool for water analysis, combining the simplicity you want, the security you need, and the durability you expect into the **Spectroquant® Prove spectrophotometers**. It also offers intuitive controls and is pre-programmed for over 200 Spectroquant® test kits and methods to make analysis smoother than ever.

Spectroquant® Prove

Durable, long-lasting lamp and reference beam technology

Innovative ambient light measurement technology, patent pending

Smart touchscreen for simple navigation in 28 languages

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

Assign individualized measuring ranges to see if results are within limits

Fast data transfer made easy with USB or Ethernet ports to connect to your printer or LIMS

Commercially-available USB hubs, handheld USB barcode scanners, and PC keyboards can be connected via the USB port

Designed with materials that are resistant to most lab chemicals and built to last

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

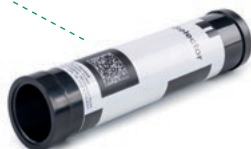


More information about
Accessories find page **47**
Analytical Quality Assurance (AQA) find page **106**

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



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



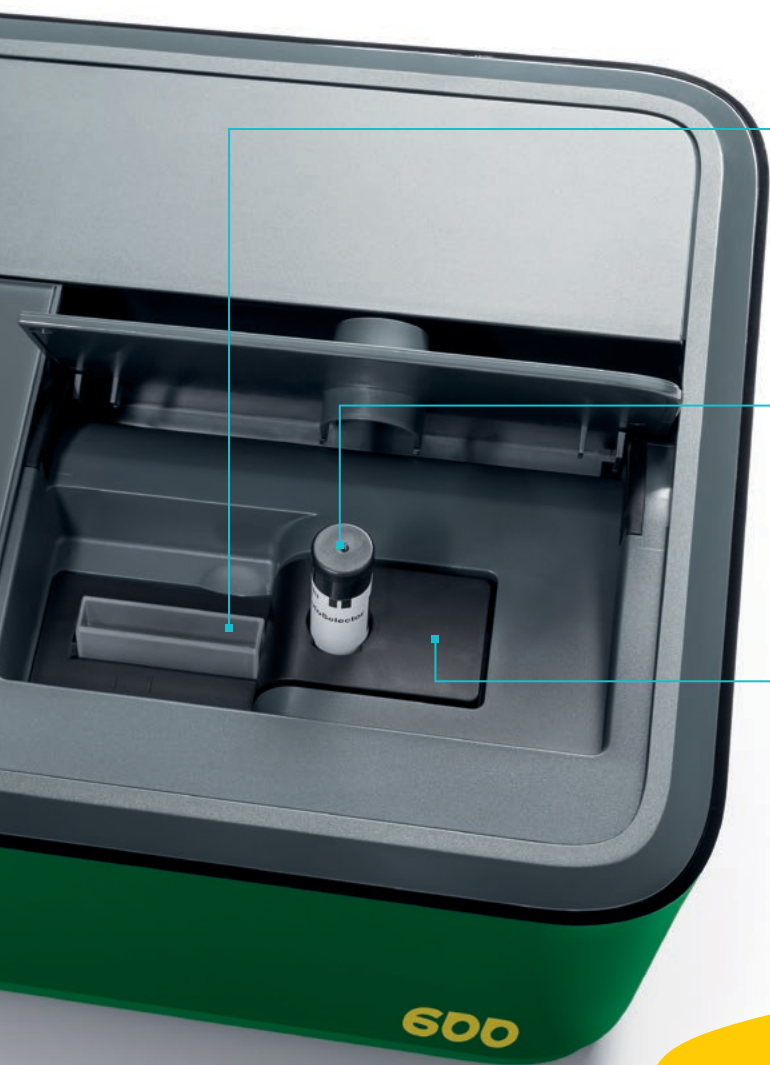
Reagent tests include an AutoSelector for automatic test detection and result calculation

Cells in Cell Tests contain virtually all reagents necessary for 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



pick your test

Choose our convenient cell tests or economical reagent tests

> Learn more on page 62

Spectroquant® Photometry Instruments

100



Spectroquant® Prove 100
Cat. No. 1.73016.0001

For routine applications

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 your daily analyses.

300



Spectroquant® Prove 300
Cat. No. 1.73017.0001

For sensitive measurements

Because of its long-lasting xenon lamp, Prove 300 is ideal for more intensive use. It is capable of both UV and Vis measurements, for greater flexibility and more intricate analyses.

600



Spectroquant® Prove 600
Cat. 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, for complex kinetics, or for spectral measurements.

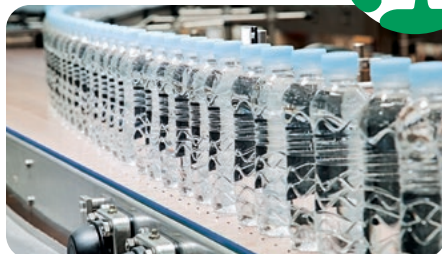
Specifications		Prove 100	Prove 300	Prove 600
Measuring technology	Spectrophotometer with reference beam technology	•	•	•
Wavelength range	Vis (320–1,100 nm)	•	•	•
	UV (190–320 nm)		•	•
Lamp type	Tungsten halogen lamp	•		
	Xenon flash lamp		•	•
Ambient light protection	Measurement with open shaft possible due to proprietary solution (patent pending)	•	•	•
Spectral bandwidth	4 nm	•	•	
	1.8 nm			•
Smart Screen display	Resistive touch screen	•	•	
	P-cap glass touch screen			•
Live ID system	2-D Bar-code recognition for cell tests and reagent tests	•	•	•
	Bar-code contains lot, expiry, and calibration data. Data stored with each measurement	•	•	•
Cell size	16-mm round cells, 10-, 20- and 50-mm rectangular cells with automatic recognition	•	•	•
	100-mm rectangular cells with automatic recognition			•
Cell holder	Removable for easy cleaning	•	•	•
Methods	Programmed methods of all Spectroquant® cell and reagent tests, 99 user defined methods,	•	•	•
	20 profiles for kinetics and absorbance scans each	•	•	•
Applications	Free preprogrammed applications: Brewery methods, Chemical, Physical and Biological applications, Food & Beverage applications and Color Determination	•	•	•
AQA Prime	Individual settings for all methods in AQA 1 (instrument check) and AQA 2 mode (system check) and pipette check	•	•	•
Sample matrix check	Easy access through setting menu to perform instrument supported matrix check for each method	•	•	•
Software updates	Free method updates on our website	•	•	•
Languages	Navigation in 28 built-in languages	•	•	•
Communication interfaces	USB: 2 x USB-A (for printer, USB memory devices, keyboard or bar-code reader), 1 x USB-B; Ethernet: LAN connection	•	•	•



Wastewater

The Prove 100 is the perfect choice for regular testing with cell test kits, which are commonly used in wastewater analysis. The Spectroquant® portfolio offers the broadest selection of COD Cell Tests: just choose the measuring range that best suits your needs, and enjoy precise results.

Wastewater workflow
> Page 24



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 because it allows UV/Vis analyses, and is programmed with free applications, like bromate and brewery tests.

Water workflow
> Page 26



Process water

Even low levels of impurities in process water can lead to damage, downtime, and costly repairs. To avoid this outcome, we offer the most sensitive silicate and chloride tests available. For even greater sensitivity, use 100-mm cells with the Prove 600.

Cooling & boiler water workflow
> Page 22

Prove Connect to LIMS

Automate and streamline quality control data or experimental data transfer to your electronic lab system (Laboratory Information Management System; LIMS or Electronic Lab Notebook; ELN) with Spectroquant® Prove Connect to LIMS software.

- Easily link via simple LAN connection
- Flexible integration with both LIMS and ELN

Order your Spectroquant® Prove Connect to LIMS unlimited license Cat. No. **Y110860001**

The digital solutions from the Supelco® portfolio can simplify your daily analytical workflow and maintain the fidelity of your data while saving you time for your important tasks.



Spectroquant® Photometry Instruments



At your service

Our **Spectroquant® Service** offerings include method updates, firmware updates, maintenance and repair in our service centers, qualifications, and service plans to keep your instruments in top shape.

Photometer software updates

Keep pre-programmed methods up to date and get added features improving usability based on customer feedback for a smooth laboratory workflow. Just download the latest version of the software for your photometer for free.

Installation qualification (IQ), operational qualification (OQ), performance qualification (PQ) – always at your service

Whether you are looking for an IQ after device delivery, OQ to check the system, or a PQ to validate your workflow – we will assist you either in person or with the right documentation.

Spectroquant® Prove service plans

Spectroquant® Prove service plans provide you with the professional support of a team of experts to ensure your spectrophotometer is performing optimally every time you switch it on. Our work is accompanied by detailed documentation to streamline your accreditation and audits. Two service plans, the Essential and the Advanced, help you get the best performance from your instruments.

Repair Depot Service	Essential	Advanced
For Prove 100 - Cat. No.:	Y110320001	Y110330001
For Prove 300 - Cat. No.:	Y111320001	Y111330001
For Prove 600 - Cat. No.:	Y112320001	Y112330001
Instrument		
Performance check with reference materials	✓	✓
Factory-recommended maintenance	✓	✓
Performance check certificate	✓	✓
Repair		
Telephone support hotline	✓	✓
One floating repair per year*		✓
Shipment cost to/from workshop	✓	✓
Upgrade		
Free software upgrade	✓	✓
Option		
Reagent delivery program	✓	✓

carry your benchtop!

Spectroquant® NOVA photometer

Enjoy high measurement quality with great simplicity, packing maximum convenience into a minimum size with the NOVA 60A filter photometer.

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



Spectroquant® NOVA 60A Cat. No. 1.09752.0001

Technical data	
Wavelength	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)
Photometric reproducibility	0.001 A at 1.000 A
Photometric resolution	0.001 A
Types of determination	Absorbance, concentration, transmission
Measuring range of absorbance	-0.300 A to 3.200 A
Lamp	Tungsten halogen lamp, preset, no warm-up time, measuring time 2 s
Date/Time	real time clock integrated in the photometer
Cell compartment	10-, 20- and 50-mm rectangular cells and 16-mm round cells
Test recognition	AutoSelect function (bar-code reading system) automatic cell recognition
Method-update	via Internet
AQA	3 quality control modes
Turbidity correction	simultaneous multiwavelength measurement to correct turbidity
Interface	RS 232 C serial interface for printer and computer
Methods	Programming of more than 180 methods for Spectroquant® cell and reagent tests, as well as physical measurements and pre-programmed applications
Storage capacity	up to 1,000 results
Power supply	100 – 240 V~, 50 – 60 Hz
Temperature	Storage: -25 °C to +65 °C, operations: +5 °C to +40 °C
Allowable relative humidity	Annual mean: ≤ 75 %, 30 days/year: 95 %, other days: 85 %
Dimensions	140 x 270 x 260 mm (H x D x W)
Weight	2.8 kg incl. battery
Special functions	50 free programmable methods
Accessories	see page 47 Spectroquant® Accessories

Get answers on the Move

Spectroquant® Move 100

Bring the lab to your 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.

- 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

Find technical information on page 46



Spectroquant® Move DC

Simplify disinfection control

Spectroquant® Move DC is built for easy disinfection control in field tests and process monitoring. Used with convenient and accurate Spectroquant® test kits, this small device is automated for the five essential parameters of disinfection control: chlorine, ozone, chlorine dioxide, cyanuric acid, and pH.

- All key disinfection control parameters analyzed with one portable device
- Dust-tight and waterproof according to IP 68 classification
- Pre-programmed for high-quality Spectroquant® test kits



Find technical information on page 46

Parameter	Measuring Range	No. of Test	Cat. No.	
Chlorine Test, free	0.02–6.00 mg/L Cl ₂	200	1.00598.0002	
		1200	1.00598.0001	
Chlorine Test, total	0.02–6.00 mg/L Cl ₂	200	1.00602.0001	
Chlorine Test, total	0.02–6.00 mg/L Cl ₂	1200	1.00602.0002	
Chlorine Test, free+total	0.02–6.00 mg/L Cl ₂	100 tests free 100 tests total	1.00599.0001	
Chlorine Reagent 1 (liquid)	0.02–6.00 mg/L Cl ₂	200	1.00086.0001	Free Chlorine: Use Reagent 1+2 Total Chlorine: Use Reagent 1+2+3
Chlorine Reagent 2 (liquid)	0.02–6.00 mg/L Cl ₂	400	1.00087.0001	
Chlorine Reagent 3 (liquid)	0.02–6.00 mg/L Cl ₂	600	1.00088.0001	
Chlorine Dioxide Test	0.05–10.00 mg/L Cl ₂	200	1.00608.0001	
Cyanuric Acid Test	2–160 mg/L CyA	100	1.19253.0001	
Ozone Test	0.02–4.00 mg/L O ₃	200	1.00607.0001	
Ozone Test	0.02–4.00 mg/L O ₃	1200	1.00607.0002	
pH Cell Test	6.4–8.8	280	1.01744.0001	
Absorbance	–100–2500 mAbs			

Disinfection Control
> Page 32



Data Transfer

Easy data transmission (to printer or PC) via the Spectroquant® Data Transfer infrared module. Contact our customer service.



Spectroquant® Photometry Instruments



◀ Spectroquant® Move DC colorimeter

▼ Spectroquant® Move 100 colorimeter



Spectroquant® Move Colorimeters

Spectroquant® Move 100 colorimeter | Cat. No 1.73632.0001

Spectroquant® Move DC colorimeter | Cat. No 1.73635.0001

Technical data		Move 100	Move DC
Scope of delivery	Instrument in light carrying case, 4 batteries, 3 round vials each 24- and 16-mm –, 1 adapter for 16-mm vials, screw driver, guarantee certificate, certificate of compliance, instruction manual	•	•
Display	Backlit graphic-display	•	
	Backlit LCD (on keypress)		•
Interfaces	IR interface for data transfer	•	•
	RJ45 connector for internet updates	•	
Optics	LED, interference filter, photosensor, transparent measurement chamber	•	•
Wavelength	430, 530, 560, 580, 610 and 660 nm	•	
	530 nm		•
Wavelength accuracy	±1 nm	•	•
Photometric accuracy	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)		•
Photometric resolution	0.005 A	•	
	0.001 A		•
Operation	Acid and solvent resistant tactile film keyboard	•	•
Power supply	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		•
Weight	approx. 450 g	•	
	approx. 260 g		•
Dimensions	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)		•
IP classification	Dust and waterproof acc. to IP 68	•	•
Storage capacity	approx. 1,000 data sets	•	
	Internal ring memory for 16 data sets		•

Accessories and Cells for Spectroquant® instruments

Make your analytical work even easier with useful accessories for Spectroquant® colorimeters, photometers and spectrophotometers.

Product	Cat. No. for Prove	Cat. No. for NOVA	Cat. 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	4 batteries included
		1.09779.0001 (EU adapter)	
		1.20097.0001 (US adapter)	
		1.20347.0001 (UK adapter)	
		1.20497.0001 (AUS adapter)	
Data transfer		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)
16-mm round cells with screw cap	1.14724.0001	1.14724.0001	1.14724.0001
24-mm round cells with screw caps			1.73650.0001
10-mm rectangular cell	1.14946.0001	1.14946.0001	
10-mm rectangular Quartz cell	1.00784.0001	1.00784.0001	
10-mm rectangular Polystyrene(PS), disposable cell	C5291	C5291	
10-mm rectangular semi-micro cell	Z801216	Z801216	
10-mm rectangular semi-micro Quartz cell	Z600288	Z600288	
10-mm rectangular semi-micro Polystyrene(PS) disposable cell	C5416	C5416	
20-mm rectangular cell	1.14947.0001	1.14947.0001	
50-mm rectangular cell	1.14944.0001	1.14944.0001	
50-mm semi-micro cell	1.73502.0001	1.73502.0001	
50-mm rectangular semi-micro Quartz cell	Z801178	Z801178	
100-mm rectangular cell	1.74011.0001 (for Prove 600)		



Special Applications for Prove photometers

Brewery Methods

The Spectroquant® Prove software package, "Analysis methods for the brewery industry," contains all 39 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. Find an extract of brewery methods below and the complete list in the **Spectroquant® Brewery manual**, it provides step-by-step instructions for reagent preparation, sample processing, and analysis. The package also includes information about test solution stability and storage which isn't provided in the standard MEBAK method description.



	Determination	Measuring Range	Method	Prove 100	Prove 300	Prove 600
A	∂ Acids	0–80 mg/L	Own coloring	•	•	•
	Anthocyanogens (Harris and Ricketts method)	0–100 mg/L	Acidic hydrolysis	•	•	•
B	Bitterness – Beer (EBC method)	1–80 BU	UV-absorption		•	•
	Bitterness – Wort (EBC method)	1–120 BU	UV-absorption		•	•
C	Color (EBC method)	0.0–60.0 EBC Units	Own coloring	•	•	•
	Copper (EBC method)	0.10–5.00 mg/L Cu	Cuprethol	•	•	•
F	Flavanoids (EBC method)	3.0–200.0 mg/L	4-(Dimethylamino)-cinnamaldehyde	•	•	•
	Free Amino Nitrogen (Beer/Wort)	0–400 mg/L	Ninhydrin	•	•	•
I	Iso-∂ 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®	•	•	•
N	Nickel (EBC method)	0.00–5.00 mg/L Ni	Dimethylglyoxime	•	•	•
P	Photometric Iodine Test	0.00–0.80	Iodine	•	•	•
R	Reducing Power, spectrophotometric	0–100%	DPI	•	•	•
S	Steam-volatile Phenols Malt Beer	0.00–3.00 mg/kg 0.00–0.30 mg/kg	Aminoantipyrine extractive	•	•	•
T	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)	•	•	•
V	Vicinal Diketones	0.00–1.00 mg/kg	Phenylenediamine	•	•	•

Chemical, Physical & Biological Applications

The Spectroquant® Prove spectrophotometer contains the following pre-programmed methods to analyze chemical, physical and biological parameters of a sample – such as the cell density, protein content or the purity of DNA. Our application notes offer further detailed information.

	Determination	Measuring Range	Method	Prove 100	Prove 300	Prove 600
A	Ammonia, free	0.00–3.65 mg/L NH ₃	Indophenol blue	•	•	•
B	Bromate in water / drinking water	0.5–200 µg/L BrO ₃	3,3'-dimethylnaphtidine	•	•	•
C	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 ³ Chl-a, Phaeo	Analogous APHA 10200-H, ASTM D3731-20	•	•	•
	Chlorophyll-a, -b, -c	0–50,000 mg/m ³ Chl-a, Chl-b, Chl-c	Trichromatic method, analogous APHA 10200-H, ASTM D3731-20	•	•	•
	Cobalt in Water	0.5–10.0 mg/L Co	Nitroso-R-Salt	•	•	•
D	dsDNA	5–37500 µg/mL dsDNA	UV absorption		•	•
	ssDNA	3–25000 µg/mL ssDNA	UV absorption		•	•
M	McFarland	0.0–10.0	Cell density, turbidimetric	•	•	•
	Mercury in water / wastewater	0.025–1.000 mg/L Hg	Michler's thioketone	•	•	•
N	Nitrate (UV)	0.0–7.0 mg/L NO ₃ -N	Analogous to APHA 4500-NO ₃ -B		•	•
O	OD280	-0.020–2.000	Measurement at 280 nm		•	•
	OD600	-0.020–1.200	Measurement at 600 nm	•	•	•
P	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-phenylenediamine	•	•	•
	Protein BCA	200–1000 µg/L BSA	Bicinchoninic Acid (BCA)	•	•	•
	Protein Biuret LR	0.5–5.0 g/L BSA	Biuret Reaction	•	•	•
	Protein Biuret HR	1–10 g/L BSA	Biuret Reaction	•	•	•
	Protein Bradford LR	0.01–0.10 mg/L BSA	Coomassie® Brilliant Blue	•	•	•
	Protein Bradford HR	0.1–1.4 mg/L BSA	Coomassie® Brilliant Blue	•	•	•
R	RNA	4–30000 µg/mL RNA	UV absorption		•	•
S	Spectral Absorption Coefficient $\partial(254)$	0.5–250 m ⁻¹	Physical measurement according DIN 38404, at 254 nm		•	•
	Spectral Absorption Coefficient $\partial(436)$	0.5–250 m ⁻¹	Physical measurement according DIN 7887, at 436 nm	•	•	•
	Spectral Attenuation Coefficient $\mu(254)$	0.5–250 m ⁻¹	Physical measurement according DIN 38404, at 254 nm		•	•
	Suspended Solids	25–750 mg/L susp. Solids	Physical measurement	•	•	•

Spectroquant® Photometry Instruments

Food & Beverage Applications

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 packages for more specific requirements in quality control. These packages ensure you have accurate results in compliance with international standards.

	Determination	Measuring Range	Method	Prove 100	Prove 300	Prove 600
A	Acesulfame-K EN 1377	0.0–1200.0 mg/g	UV absorption		•	•
	Annatto Cheese §64LFBG 03.00-37	0.0–10.0 mg/kg	Bixin/Norbixin			
C	Carotene Palm Oil	10–7,500 mg/kg β -Car	Inherent color	•	•	•
D	DOBI Palm Oil	0.00–4.00 DOBI	UV-absorption		•	•
K	K232 Olive Oil	0.00–4.00 K232	UV-absorption		•	•
	K268 Olive Oil	0.00–4.00 K268	UV-absorption		•	•
	K270 Olive Oil	0.00–4.00 K270	UV-absorption		•	•
	delta K268 Olive Oil	-0.10–1.00 Δ K268	UV-absorption		•	•
	delta K270 Olive Oil	-0.10–1.00 Δ K270	UV-absorption		•	•
H	Hydroxyproline Meat §64LFBG 06.00-8	0.000–1.000 g/100g	4-Dimethylamino benzaldehyde	•	•	•
I	ICUMSA Color GS1/3-7	0–50,000 IU7.0	Inherent color	•	•	•
	ICUMSA Color GS2/3-9	0–600 IU7.0	Inherent color	•	•	•
	ICUMSA Color GS2/3-10	0–50 IU7.0	Inherent color	•	•	•
	ICUMSA Color GS9/1/2/3-8	0–20,000 IU7.0	Inherent color	•	•	•
P	Phosphatide Milk §64LFBG 01.00-41	0–750 mg/100g P	Ashing/ Phosphormolybdenum blue	•	•	•
	Phosphorus Juice EN 1136	0.0–300.0 mg/L P	Phosphormolybdenum blue	•	•	•
	Phosphorus Milk §64LFBG 01.00-92	0–2000 mg/100g P	Ashing/ Phosphormolybdenum blue	•	•	•
	Phosphorus Meat §64LFBG 06.00-9	0.000–2.500 g/100g P ₂ O ₅	Ashing/ Vanadatomolybdate	•	•	•
	Proline Juice EN 1141	0–1200 mg/L	Ninhydrin	•	•	•
S	Saccharine EN 1376	0.0–1200.0 mg/g	UV absorption		•	•
	Sugar	0–200 g/L	3,5-Dinitrosalicylic Acid (DNSA)	•	•	•
Y	Yellow Pigment EN ISO 11052	0.000–1.250 mg/100g	β -Carotene	•	•	•

stay up to date

Surfactant cell tests – superior sensitivity, easy handling

Surfactants come in three main classes: anionic, cationic and nonionic. All of these can enter water systems from extensive use in detergents and industrial processes. They can be harmful for humans, animals, and vegetation, so authorities require regular water testing and treatment to confirm that surfactant content is within limits.

Surfactants (anionic) Cell Test | Cat. No. 1.02552.0001

Surfactants (cationic) Cell Test | Cat. No. 1.01764.0001

Surfactants (nonionic) Cell Test | Cat. No. 1.01787.0001



Spectroquant® Photometry Instruments

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	Prove 300	Prove 600
A	ADMI Color measurment	Determination of color acc. to APHA 2120F	•	•	•
	Ansidine value	Measure for the amount of α , β -unsaturated aldehydes (2-alkenals) in animal and vegetable fats and oils acc. to ISO 6885	•	•	•
	ASTM Color	Determination of the color of a wide variety of petroleum products (lubricating oils, heating oils, diesel fuel oils, petroleum waxes) acc. to ASTM D6045	•	•	•
C	CIE color distance	Determination of CIE Color Distance D65/2° values (ΔE^*ab ; ΔL^* ; Δa^* ; Δb^* ; ΔC^*ab) for liquid samples	•	•	•
	CIELAB color space (brightness, chroma)	Determination of CIELAB D65/2° values (L^* ; a^* ; b^* ; C^*ab) for liquid samples	•	•	•
	CIELUV color space	Determination of CIELUV D65/2° values (L^* ; u^* ; v^* ; C^*uv ; S^*uv) for liquid samples	•	•	•
	CIExyY color space	Determination of CIExyY D65/2° values (x ; y ; Y) for liquid samples	•	•	•
	Color (ASBC)	Determination of the color of brewery products according to ASBC (American Society of Brewing Chemists) method Beer-10 and method Wort-9	•	•	•
	Color (EBC method)	Determination of color of beers, worts, liquid malt substitutes according to MEBAK method 2.12.3, EBC method 8.5 and 9.6	•	•	•
	Color 410 acc. to EN 7887	Measurement at 410 nm, range 2-2,500 mg/L Pt	•	•	•
	Color, Hazen	Measurement at 340 nm, range 0.2-500 mg/L Pt, Pt/Co, Hazen, CU	•	•	•
	Color, Hazen	Measurement at 445 nm, corresponds to ASTM D 1209-05, DIN EN ISO 6271-2, range 0-1,000 mg/L Pt, Pt/Co, Hazen, CU	•	•	•
	Color, Hazen	Measurement at 455 nm, corresponds to APHA 2120 B, ASTM D 1209-05, DIN EN ISO 6271-2, range 0-1,000 mg/L Pt, Pt/Co, Hazen, CU	•	•	•
	Color, Hazen	Measurement at 465 nm, corresponds to APHA 2120 B, ASTM D 1209-05, DIN EN ISO 6271-2, range 0-1,000 mg/L Pt, Pt/Co, Hazen, CU	•	•	•
G	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.	•	•	•
H	Hess-Ives color units	Determination of the Hess-Ives color units	•	•	•
	Hunter color distance	Determination of Hunter Color Distance D65/2° values for liquid samples acc. to HunterLab application note Vol8, Vol 9, 06/08 (ΔE^*H ; ΔL^* ; Δa^* and Δb^*)	•	•	•
	Hunter LAB color space	Determination of Hunter Lab D65/2° values for liquid samples acc. to HunterLab application note Vol8, Vol 9, 06/08 (L^* , a^* and b^*)	•	•	•
I	ICUMSA Color GS1 / 3-7	Color measurement of sugar with a color index >250 IU7.0 (Raw sugar, strongly colored white sugar, partly refined brown sugar, sugar syrup)	•	•	•
	ICUMSA Color GS2 / 3-9	Color measurement of sugar with a color index up to 600 IU7.0 (Crystalline white sugar, icing sugar and sugar syrup)	•	•	•
	ICUMSA Color GS2 / 3-10	Color measurement of sugar with a color index up to 50 IU (cyrstaline white sugar, icing sugar and sugar syrup)	•	•	•
	ICUMSA Color GS9 / 1/ 2 / 3-8	Color measurement of sugar with a color index up to 16000 IU7.0 (raw sugar, white sugar from plantations, refined raw sugar)	•	•	•
	Iodine Color Number, lower range	Measurement at 340 nm, corresponds to DIN 6162 A, range 0.010-3.01	•	•	•
	Iodine Color Number, higher range	Measurement at 445 nm, corresponds to DIN 6162 A, range 0.2-50.0	•	•	•
K	Klett color index	Determination of Klett color of clear, yellow to yellow-brown liquids comparable with the Klett-Summerson colorimeter	•	•	•



	Determination	Description	Prove 100	Prove 300	Prove 600
S	Spectral Absorption coefficient	Determination of the spectral absorption coefficient at 254 nm acc to DIN 38404-3		•	•
	Spectral Absorption coefficient	Determination of the spectral absorption coefficient at 436 nm acc to DIN EN ISO 7887-B	•	•	•
	Spectral Absorption coefficient	Determination of the spectral absorption coefficient at 525 nm acc to DIN EN ISO 7887-B	•	•	•
	Spectral Absorption coefficient	Determination of the spectral absorption coefficient at 620 nm acc to DIN EN ISO 7887-	•	•	•
	Spectral Absorption coefficient	Determination of the spectral absorption coefficient at 436 nm, 525 nm and 620 nm acc to DIN EN ISO 7887-B (Multi-wavelength method)	•	•	•
	Spectral Attenuation coefficient	Determination of the spectral attenuation coefficient at 254 nm acc to DIN 38404-3 for a filtered sample		•	•
	Spectral Attenuation coefficient, corrected	Determination of the spectral attenuation coefficient at 254 nm acc to DIN 38404-3 for an unfiltered sample		•	•
	Saybolt Color	Determination of the color of refined oils (undyed motor & aviation gasoline, jet propulsion fuels, naphthas, kerosene & petroleum waxes & pharmaceutical white oils) ASTM D6045	•	•	•
T	Tint index	Determination of Tint index from instrumentally measured Color Coordinates according to ASTM E 313-15e1	•	•	•
	Transmittance TX, TY, TZ	Spectrophotometric characterization of optically clear colored liquids	•	•	•
U	UV absorbing organic constituents	Determination of UV absorbing organic constituents at 254 nm acc. to APHA 5910		•	•
	UV irradiation (UV absorption)	Determination of the UV Absorption at 254 nm		•	•
	UV irradiation (UV transmission)	Determination of the UV Transmission at 254 nm		•	•
W	Whiteness index	Determination of Whiteness index from instrumentally measured Color Coordinates according to ASTM E 313-15e1	•	•	•
Y	Yellowness index	Determination of Yellowness index from instrumentally measured Color Coordinates Q3 2017 according to ASTM E 313-15e1	•	•	•

Ready-to-use sample preparation

Decomposition converts the substance to be determined into an analyzable form. In most cases, decomposition agents are acids in combination with oxidizing agents; in exceptional cases (e.g. in the determination of total nitrogen) an alkaline decomposition is more effective. The type of decomposition procedure used depends on the analyte to be determined and the sample matrix.

The ready-to-use sample-decomposition products **Spectroquant® Crack Sets** are suited for the preparation of sample materials for the determinations stated in the table. The decomposition processes are carried out in the **Spectroquant® thermoreactors** that combine outstanding precision and speed to ensure thorough digestion. See **page 56**



quick and easy
sample preparation for
analysis

**All the
reagents
you need**
for digestion

step by step
instructions with
no special training



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 with the thermoreactor.

Spectroquant®	Crack Set 10	Crack Set 10C	Crack Set 20
Catalog No.	1.14687.0001	1.14688.0001	1.14963.0001
Sample preparation for determination of total content of	Cd, Cr, Co, Fe, Pb, Ni, P, Zn	Cd, Cr, Co, Fe, Pb, Ni, P, Zn	Nitrogen
Method	Peroxodisulfate/acidic	Peroxodisulfate/acidic	Koroleff
Content	Reagents, neutralizing agent for pH adjustment, pH paper (1 – 14), dose metering cap	Reagent prefilled in 16 mm – cells, acid, neutralizing agent for pH adjustment, pH paper (1–14), dose metering cap, and stickers for sample labelling	Reagents
Cells needed	Empty cells 16 mm – with screw caps Cat. No. 1.14724.0001	No further cells needed	Empty cells 16 mm – with screw caps Cat. No. 1.14724.0001

it's precise

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? We have the perfect solution: convenient cell tests and economical reagent tests for all of them. 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

Choose your photometric test kit from our overview table. See **page 63**.



Spectroquant® Photometry

Sample Preparation

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.

320**420****620**

Spectroquant® TR 320
Cat. No. 1.71200.0001

Standard model for basic use
 12 holes | 8 pre-installed programs

Spectroquant® TR 420
Cat. No. 1.71201.0001

Advanced device for frequent use
 24 holes | 8 pre-installed and 8 freely selectable programs

Spectroquant® TR 620
Cat. No. 1.71202.0001

Two-in-one instrument for flexible use
 2 x 12 holes | 8 pre-installed and 8 freely selectable programs |
 2 separately-controlled heating zones

Technical data		Spectroquant® thermoreactors		
		TR 320	TR 420	TR 620
Scope of delivery	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.	•	•	•
Display	LCD display for temperature and time, desired and actual values for heating time and temperature continually shown in the LCD display	•	•	•
Heater	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	•	•	•
Functions	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		•	•
Holes	12 for cell tests – 16 mm	•		
	24 for cell tests – 16 mm		•	
	24 (2 x 12) for cell tests – 16 mm			•
Temperature selection	100 °C, 120 °C, 148 °C and 150 °C ±1.0 °C	•	•	•
	Room temperature–170 °C ±1.0 °C		•	•
Controlling accuracy	±1 °C ±1 digit	•	•	•
Timer	0–180 min freely selectable		•	•
Heating time	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	•	•	•
Mains version	115 V~ / 230 V~, 50 Hz / 60 Hz convertible	•	•	•
Dimensions	180 x 245 x 292 mm (H x W x D)	•	•	•
Weight	2.85 kg	•		
	3.6 kg		•	•
Optional accessories	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)		•	•

Thermosensor for thermoreactors TR 420/620 | Cat. No 1.71203.0001

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.

PC cable for thermoreactors TR 420/620 | Cat. No 1.71204.0001

Spectroquant® Photometry Test Kits

it's convenient

Spectroquant® test kits are swift, sensitive, and accurate whether they are used with Spectroquant® instruments or other photometers. Nearly all kits conveniently contain all necessary reagents for your analysis. Test kits are available in two formats to suit your needs: Spectroquant® Reagent Tests contain the reagents you need for photometric determinations with your own rectangular cells of 10–100 mm path length and Spectroquant® Cell Tests are ready-to-use, with 16 mm round cells pre-filled with reagents. Kits are highly stable and most can be stored at room temperature.

While Spectroquant® test kits are compatible with any photometer, using Spectroquant® Prove instruments for your determinations offers the additional benefit of intuitive controls and pre-programmed methods for seamless analysis of over 200 Spectroquant® test kits.



Cell Tests

- Ready-to-use, with the vast majority of kits containing all necessary reagents and cells
- Very stable; shelf life of up to three years at room temperature
- Automatically recognized by Spectroquant® Prove and NOVA photometers so that the correct method is always selected
- Label provides all key information: contents, safety, and batch number
- Package insert explains reaction principle, handling instructions, and potential applications

**rapid,
reliable
results**

though
pre-programmed
blank values

**secure
analysis**

with validated,
standard-compliant
reagents

**barcode
identification**
for fast, simple operation



Reagent Tests

- Reagent mixtures are ready-to-use
- Components are very stable; shelf life of up to three years at room temperature
- Variable measuring range by selecting the appropriate cell format
- A barcode system allowing Spectroquant® Prove and NOVA photometers to automatically apply the correct analysis method
- Package insert explains reaction principle, working procedures, and application areas

Spectroquant® Photometry Test Kits

it's sensitive



Several measuring ranges and formats to meet your sulfate testing needs

High sulfate levels in tap water can diminish water quality and cause pipes to corrode or burst. Maximum sulfate limit set by regulatory agencies are in the 250 mg/L range, which is covered by Spectroquant® sulfate tests. They can measure anywhere from 5–300 mg/L, which is appropriate to determine low sulfate in bottled water or high content in tap water.

Benefits

- Cost-efficient: reagent test kits with 100 or 1000 determinations per pack
Spectroquant® Sulfate Test | Cat. No. 1.02537.0001
- Convenient: cell tests contain 25 prefilled round cells (16 mm)
Spectroquant® Sulfate Cell Test | Cat. No. 1.02532.0001

Sensitive, secure measurement of phosphate

Phosphate is essential for plants and animals, but its content in ground and surface water should be minimized to avoid excess algal growth, called eutrophication, and other environmental risks in marine ecosystems.

Benefits

- High sensitivity: with Spectroquant® Prove 600 and 100-mm cells, levels as low as 2.5 µg/L PO₄-P can be measured, corresponding to DIN EN ISO 6878, 4500 P and EPA 365.2+3

Spectroquant® Phosphate Test | Cat. No. 1.14848.0001

- Easy to use: Spectroquant® Phosphate Cell Tests contain 25 round cells (16 mm), each with pre-filled reagents

Spectroquant® Phosphate Cell Test | Cat. No. 1.14543.0001



Spectroquant® Photometry

Test Kits

Spectroquant® Test Kits (A)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
A		Absorbance	-3.300–3.300 A	-0.300–3.000 A	-2.600–2.600 A	–	–	
		Acid Capacity Cell Test to pH 4.3 (total alkalinity) ^{A.2)}	0.40–8.00 mmol/L 20–400	0.40–8.00 mmol/L 20–400	0.40–8.00 mmol/L 20–400	CaCO ₃	120	1.01758.0001
		ADMI Color measurement						
		Alkalinity (total)						
		Aluminium Cell Test	0.02–0.50	0.02–0.50	0.05–0.50	Al	25	1.00594.0001
		Aluminium Test	0.020–1.20	0.020–1.20	20–700 µg/L	Al	350	1.14825.0001
		Ammonia, free	0.000–3.00 0.000–3.65	–	–	NH ₃ -N NH ₃	–	–
	USEPA equivalent	Ammonium Cell Test ^{B.3)}	0.010–2.000 0.01–2.58 0.010–2.000 0.01–2.43	0.010–2.000 0.01–2.58	10–2,000 µg/L 10–2,576 µg/L	NH ₄ -N NH ₄ NH ₃ -N NH ₃	25	1.14739.0001
	USEPA equivalent	Ammonium Test ^{B.3)}	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	NH ₄ -N NH ₄ NH ₃ -N NH ₃	250 500	1.14752.0002 1.14752.0001
	USEPA equivalent	Ammonium Cell Test ^{B.3)}	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	NH ₄ -N NH ₄ NH ₃ -N NH ₃	25	1.14558.0001
	USEPA equivalent	Ammonium Cell Test ^{B.3)}	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 ₄ -N NH ₄ NH ₃ -N NH ₃	25	1.14544.0001
	USEPA equivalent	Ammonium Test ^{B.3)}	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	NH ₄ -N NH ₄ NH ₃ -N NH ₃	100	1.00683.0001
	USEPA equivalent	Ammonium Cell Test ^{B.3)}	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	NH ₄ -N NH ₄ NH ₃ -N NH ₃	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	AOX	25	1.00675.0001
		AOX Sample Preparation Set	–	–	–	–	25	1.00677.0001

A.2 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

B.3 This method is officially recognized by the USEPA as an alternative method for the investigation of drinking water and wastewater

- Only with NOVA 60/ Nova 60A



Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	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-AI 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-AI 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-NH3 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-NH3 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-NH3 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-NH3 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-NH3 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-NH3 F, ISO 7150-1, DIN 38406-5	0.1	–	±1.9	1, 4, 8, 12, 13, 16, 18
Brilliant 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	–	–	–	

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry

Test Kits

Spectroquant® Test Kits (A–C)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
A		AOX Enrichment Set	–	–	–	–	2	1.00678.0001
		Arsenic Test	0.001–0.100	0.001–0.100 •	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		BOD Cell Test ^{A.1)}	0.5–3,000	0.5–3,000	0.5–3,000	BOD	50	1.00687.0001
		BOD Nutrient Salt Mixture (with allyl thiourea)	–	–	–	–		1.00688.0001
		BOD (Oxygen) Reaction bottle	–	–	–	–	1	1.14663.0001
		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	B	35	1.00826.0001
		Bromine Test	0.020–10.00	0.020–10.00	0.10–5.00	Br ₂	200	1.00605.0001
C		Cadmium Test ^{C)}	0.0020–0.500	0.0020–0.500 •	5–500 µg/L	Cd	55	1.01745.0001
		Cadmium Cell Test ^{C)}	0.025–1.000	0.025–1.000	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 1.4–21.0 2.5–37.5 5–160 7–224 12–400	1.0–15.0 1.4–21.0 2.5–37.5 5–160 7–224 12–400	5–160 7–224 13–400	Ca CaO CaCO ₃ Ca CaO CaCO ₃	100	1.14815.0001
		Calcium Cell Test	10–250 14–350 25–624	10–250 14–350 25–624	10–250 14–350 25–625	Ca CaO CaCO ₃	25	1.00858.0001
		Carbohydrazide						
		Chloride Test	0.10–5.00	0.10–5.00	0.50–5.00	Cl	100	1.01807.0001

A.1 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 55**

- Only with NOVA 60/ Nova 60A

No Spectroquant® photometer?

No problem. To use Spectroquant® test kits with other photometer brands. Contact our customer service.

VWR® Selector

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	–	for multiple use, additionally required for AOX measurement	–	–	–	
	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.	–	–	–	
	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
	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	
	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-CI- E	0.20 + 10	50	±0.10	2, 5, 6, 9, 12, 13, 15, 18

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry

Test Kits

Spectroquant® Test Kits (C)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
C		Chloride Cell Test	0.5–15.0	0.5–15.0	0.5–15.0	Cl	25	1.01804.0001
		Chloride Test	2.5–250	2.5–250 •	10–250	Cl	100 175	1.14897.0001 1.14897.0002
		Chloride Cell Test	5–125	5–125	5–125	Cl	25	1.14730.0001
	USEPA equivalent	Chlorine Test (free chlorine) ^{B.2)}	0.010–6.00	0.010–6.00 •	0.02–6.00	Cl ₂	200 1,200	1.00598.0002 1.00598.0001
	USEPA equivalent	Chlorine Cell Test ^{A.1)} (free chlorine) ^{B.2)}	0.03–6.00	0.03–6.00	0.05–5.00	Cl ₂	200	1.00595.0001
	USEPA equivalent	Chlorine Test (total chlorine) ^{B.3)}	0.010–6.00	0.010–6.00 •	0.02–6.00	Cl ₂	200 1,200	1.00602.0001 1.00602.0002
	USEPA equivalent	Chlorine Test 100 tests free chlorine + 100 tests chlorine (total) ^{B.3)}	0.010–6.00	0.010–6.00 •	0.02–6.00	Cl ₂	200	1.00599.0001
	USEPA equivalent	Chlorine Cell Test ^{A.1)} 100 tests free chlorine + 100 tests chlorine (total) ^{B.3)}	0.03–6.00	0.03–6.00	0.05–5.00	Cl ₂	200	1.00597.0001
		Chlorine Reagent Cl ₂ -1 (liquid) ^{F)}	0.03–6.00	0.03–6.00	0.02–6.00	Cl ₂	200	1.00086.0001
		Chlorine Reagent Cl ₂ -2 (liquid) ^{F)}	0.03–6.00	0.03–6.00	0.02–6.00	Cl ₂	400	1.00087.0001
		Chlorine Reagent Cl ₂ -3 (liquid) ^{F)}	0.03–6.00	0.03–6.00	0.02–6.00	Cl ₂	600	1.00088.0001
		Cells and accessories for the photometric chlorine measurement with liquid reagents 1.00086, 1.00087 and 1.00088	–	–	–	Cl ₂	25	1.00089.0001
		Chlorine Dioxide Test	0.020–10.00	0.020–10.00 •	0.05–10.00	ClO ₂	200	1.00608.0001
		Chlorophyll-a and Phaeophytin-a	–	–	–	Chl-a Phaeo	–	–
		Chlorophyll-a, -b, -c	–	–	–	Chl-a Chl-b Chl-c	–	–
		Chromate Test ^{C)} 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 µ/L 22–3,123 µ/L	Cr CrO ₄	250	1.14758.0001

A.1 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.2 This method is officially recognized by the USEPA as an alternative method for the investigation of drinking water

B.3 This method is officially recognized by the USEPA as an alternative method for the investigation of 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 55

• Only with NOVA 60/ Nova 60A

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl- E	0.25 + 10	–	±0.3	2, 5, 6, 9, 12, 13, 15, 18
	Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl- E	1.0 + 5.0 + 0.5 + 2.5	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- 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 ₂ 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 ₂ 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 ₂ 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 ₂ 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 ₂ 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 ₂ 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 ₂ 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 ₂ 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 ₂ -1, Cl ₂ -2, Cl ₂ -3 for free chlorine: Cl ₂ -1 and Cl ₂ -2 for total chlorine: Cl ₂ -1, Cl ₂ -2 and Cl ₂ -3 Measuring range of NOVA 30: 0.03–6.00 mg/L Cl ₂	–	–	–	
	DPD	analogous APHA 4500-ClO ₂ 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 38412-16, 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
	Diphenylcarbazine	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

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits

Spectroquant® Test Kits (C)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
C	USEPA equivalent	Chromate Cell Test for the determination of chromium (VI) and chromium (total) ^{B.1)}	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 ₄	25	1.14552.0001
		Chromium in electroplating baths (inherent color)	4.0–400 g/L	4.0–400 g/L	–	CrO ₃	–	–
		Cobalt Cell Test	0.05 - 2.00	0.05 - 2.00	0.05 - 2.00	Co	25	1.17244.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	4.0–40.0	4.0–40.0	–	COD	25	1.14560.0001
	USEPA equivalent	COD Cell Test	5.0–80.0	5.0–80.0	5.0–80.0	COD	25	1.01796.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	10–150	10–150	10–150	COD	25	1.14540.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	15–300	15–300	15–300	COD	25	1.14895.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	50–500	50–500	50–500	COD	25	1.14690.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	25–1,500	25–1,500	25–1,500	COD	25	1.14541.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	300–3,500	300–3,500	300–3,500	COD	25	1.14691.0001
	USEPA equivalent	COD Cell Test ^{B.1)}	500–10,000	500–10,000	500–10,000	COD	25	1.14555.0001
	USEPA equivalent	COD Cell Test	5,000–90,000	5,000–90,000	5,000–90,000	COD	25	1.01797.0001
	USEPA equivalent	COD Cell Test for seawater / high chloride contents	5.0–60.0	5.0–60.0	5.0–60.0	COD	25	1.17058.0001

B.1 This method is officially recognized by the USEPA as an alternative method for the investigation of wastewater

quality checks needed?

See our overview table on **page 116** to find ready-to-use standard materials for your tests

VWR® Selector

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	Diphenylcarbazine	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
	Nitroso-R salt	–	0.5 + 5.0	–	±0.05	2, 8, 9, 11, 13, 15, 16, 18
	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 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	3.0	–	±29	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

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits

Spectroquant® Test Kits (C)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
C	USEPA equivalent	COD Cell Test for seawater / high chloride contents	50–3,000	50–3,000	50–3,000	COD	25	1.17059.0001
		COD Cell Test for seawater / chloride: Absorption tube	–	–	–	–	1 piece	1.15955.0001
		COD Cell Test for seawater / chloride: Sodalime	–	–	–	–	500 g 2,500 g	1.06733.0501 1.06733.2500
		COD Cell Test for seawater / chloride: Sulfuric Acid for COD determ.	–	–	–	–	1 L	1.17048.1000
		COD Cell Test (Hg free)	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	COD	25	1.09773.0001
		Color, ADMI	2.0–500	–	–	–	–	–

- Only with NOVA 60/ Nova 60A

Measure COD in wastewater

The Application

Chemical oxygen demand (COD) is a sum parameter in wastewater analysis, measuring overall organic pollutant content. As such, it is a key parameter that is measured at many points of wastewater treatment.

Our Solution: Spectroquant® COD test kits

Spectroquant® COD test kits are ready-to-use and are available in many concentration ranges. Whether your sample concentration is just 4 mg/L, or as much as 90,000 mg/L, there is a kit that can determine it. Specialty kits designed to function with high chloride samples such as seawater as well as Hg-free kits are available.

Benefits

- Simple procedures with ready-to-use reagents and cells
- High sensitivity for measurements as low as 4 mg/L
- Environmentally friendly Hg-free kits available

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
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	–	–	–	
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
Inherent color	physical measurement, analogous to APHA 2120 F	–	10, 50	–	

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater



Spectroquant® Photometry

Test Kits

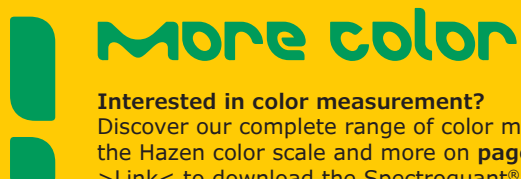
Spectroquant® Test Kits (C–H)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
C		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)	25–1,000 (at 430 nm)	Pt, Pt/Co, Hazen, CU	–	–
		Color, Spectral Absorption Coefficient	0.1–250 m-1	0.1–50.0 m-1 •	–	–	–	–
		Color, true color	2–2,500	–	–	Pt, Pt/Co, CU	–	–
		Copper Test ^C	0.02–6.00	0.02–6.00 •	0.10–6.00	Cu	250	1.14767.0001
		Copper Cell Test ^C	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	CN	100	1.09701.0001
	USEPA equivalent	Cyanide Cell Test (free and readily liberated cyanide) ^{B.1)}	0.010–0.500	0.010–0.500	10–350 µg/L	CN	25	1.14561.0001
		Cyanuric Acid Test	2–160	2–160 •	2–160	Cyanuric acid	100	1.19253.0001
D		DEHA (Diethylhydroxylamine)						
		Detergents						
F		Fluoride Cell Test	0.025 - 0.500 0.10 - 1.80	0.025 - 0.500 • 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	F	250	1.00822.0250
		Fluoride Test	0.10–20.0	0.10–20.0 •	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
G		Gold Test	0.5–12.0	0.5–12.0	–	Au	75	1.14821.0002
		Hardness						
H		Hazen Color Number (Pt/Co / APHA / Hazen)						
		Hydrazine Test	0.005–2.00	0.005–2.00 •	10–1,200 µ/L	N ₂ H ₄	100	1.09711.0001

B.1 This method is officially recognized by the USEPA as an alternative method for the investigation of wastewater

C For determination of total content of this parameter, use one of the Crack Sets before the photometric procedure, see **page 55**

- Only with NOVA 60/ Nova 60A



Interested in color measurement?

Discover our complete range of color methods including the Hazen color scale and more on **page 52** or visit [>Link<](#) to download the Spectroquant® Color Measurement Manual

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
Inherent color	physical measurement at 340 nm	–	10, 20, 50	–	5, 9, 10, 11, 12, 13, 15, 18
Inherent color	physical measurement, corresponds to APHA 2120 B, DIN EN ISO 6271-2	–	50	–	5, 9, 10, 11, 12, 13, 15, 18
Inherent color	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	–	
Inherent color	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- 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- E, ASTM D2036-09D, ISO 6703, DIN 38405-13	5.0 + 10	–	±0.013	8, 9, 10, 11, 13, 15, 18
Turbidity	–	5.0	20	±5	7, 11, 17
	see Oxygen Scavengers Test				
	see Surfactants				
Alizarin complexone	analogous EPA 340.3, APHA 4500-F- E for determinations in the low measuring range see manual NOVA / Prove	10 5.0	50 –	±0.024 ±0.06	9, 10, 11, 13, 15, 18
SPADNS method	analogous to APHA 4500-F- 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- 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				
	see Color, Hazen				
4-(Dimethylamino)-benzaldehyde	analogous DIN 38413-1	2.0 + 5.0	10, 20, 50	±0.007	5

Areas of application:

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

Spectroquant® Photometry

Test Kits

Spectroquant® Test Kits (H–M)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
H		Hydrogen Peroxide Test	0.015–6.00	0.015–6.00 •	0.02–5.50	H ₂ O ₂	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 ₂ O ₂ H ₂ O ₂	25	1.14731.0001
		Hydrogen sulfide						
		Hydroquinone						
I		Iodine color number	0.010–50.0	0.010–50.0 •	–	IFZ	–	
		Iron Test ^C	0.0005– 0.0100 ^{D)} 0.0025–5.00 ^{D)} 0.005–5.00	0.005–5.00 •	0.01–2.00	Fe	250 1,000	1.14761.0002 1.14761.0001
		Iron Test ^C	0.010–5.00	0.010–5.00 •	0.10–5.00	Fe	150	1.00796.0001
		Iron Cell Test ^C	0.05–4.00	0.05–4.00	0.05–4.00	Fe	25	1.14549.0001
		Iron Cell Test ^C	1.0–50.0	1.0–50.0	–	Fe	25	1.14896.0001
		Isoascorbic acid (erythorbic acid)						
L		Lead Test ^C	0.010–5.00	0.010–5.00 •	0.05–5.00	Pb	50	1.09717.0001
		Lead Cell Test ^C	0.10–5.00	0.10–5.00	0.10–5.00	Pb	25	1.14833.0001
M		Magnesium Cell Test	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	Mn	250	1.01846.0001
		Manganese Test	0.010–10.00	0.010–10.00 •	0.05–6.00	Mn	250 500	1.14770.0002 1.14770.0001
		Manganese Cell Test	0.10–5.00	0.10–5.00	0.10–5.00	Mn	25	1.00816.0001
		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	Mo MoO ₄ ²⁺ Na ₂ MoO ₄	25	1.00860.0001

B.3 This method is officially recognized by the USEPA as an alternative method for the investigation of 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 55**

- Only with NOVA 60/ Nova 60A

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	Neocuproin	–	8.0 + 0.5	10, 20	±0.033	3, 7, 9, 11, 12, 13, 14, 15
	Titanyl sulfate	analogous DIN 38409-15 for determinations in the low measuring range see manual of instrument	10 10	– 50	±0.9	3, 7, 9, 11, 12, 13, 14, 15, 18
		see Sulfide				
		see Oxygen Scavengers Test				
	Inherent color	corresponds to DIN 6162 A	–	10, 20, 50	–	3, 11, 12
	Triazine	–	5.0	100 100 10, 20, 50	±0.014	1, 2, 5, 6, 8, 9, 10, 11, 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				
		–	0.5 + 8.0		±0.028	2, 5, 8, 9, 10, 11, 15, 18
	PAR	–	5.0	–	±0.08	1, 2, 6, 9, 10, 12, 13, 15, 18
	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

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits



Spectroquant® Test Kits (M–N)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
M		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	Cl ₂ NH ₂ Cl NH ₂ Cl-N	150	1.01632.0001
N		Nickel Test ^{C)}	0.02–5.00	0.02–5.00 •	0.05–5.00	Ni	250	1.14785.0001
		Nickel Cell Test ^{C)}	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 ₃ -N	–	–
	USEPA equivalent	Nitrate Test ^{B.3) C)}	0.10–25.0 0.4–110.7	0.10–25.0 • 0.4–110.7 •	–	NO ₃ -N NO ₃	100 250	1.09713.0001 1.09713.0002
	USEPA equivalent	Nitrate Test ^{B.3) C)}	0.2–20.0 0.89–88.5	0.2–20.0 • 0.89–88.5 •	0.5–15.0 2.2–66.4	NO ₃ -N NO ₃	100	1.14773.0001
	USEPA equivalent	Nitrate Test ^{B.3) C)}	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 ₃ -N NO ₃	100	1.01842.0001
	USEPA equivalent	Nitrate Cell Test ^{B.3) C)}	0.5–18.0 2.2–79.7	0.5–18.0 2.2–79.7	0.5–15.0 2.2–66.4	NO ₃ -N NO ₃	25	1.14542.0001
	USEPA equivalent	Nitrate Cell Test ^{B.3) C)}	0.5–25.0 2.2–110.7	0.5–25.0 2.2–110.7	–	NO ₃ -N NO ₃	25	1.14563.0001
	USEPA equivalent	Nitrate Cell Test ^{B.3) C)}	1.0–50.0 4–221	1.0–50.0 4–221	–	NO ₃ -N NO ₃	25	1.14764.0001
	USEPA equivalent	Nitrate Cell Test ^{B.3) C)}	23–225 102–996	23–225 102–996	–	NO ₃ -N NO ₃	25	1.00614.0001
	USEPA equivalent	Nitrate Cell Test in seawater	0.10–3.00 0.4–13.3	0.10–3.00 • 0.4–13.3 •	0.10–3.00 0.4–13.3	NO ₃ -N NO ₃	25	1.14556.0001
	USEPA equivalent	Nitrate Test in seawater	0.2–17.0 0.9–75.3	0.2–17.0 • 0.9–75.3 •	–	NO ₃ -N NO ₃	50	1.14942.0001
	USEPA equivalent	Nitrite Test ^{B.3)}	0.002–1.00 0.007–3.28	0.002–1.00 • 0.007–3.28 •	5–400 µg/L 16–1,313 µg/L	NO ₂ -N NO ₂	335 1,000	1.14776.0002 1.14776.0001
	USEPA equivalent	Nitrite Cell Test ^{B.3)}	0.010–0.700 0.03–2.30	0.010–0.700 0.03–2.30	10–700 µg/L 33–2,299 µg/L	NO ₂ -N NO ₂	25	1.14547.0001

B.3 This method is officially recognized by the USEPA as an alternative method for the investigation of 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 55**

- Only with NOVA 60/ Nova 60A

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	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-NO3- 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
	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-NO2- 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-NO2- B, DIN EN 26777	5.0	–	±0.010	2, 5, 8, 9, 10, 11, 13, 15, 16, 18

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits



Spectroquant® Test Kits (N-P)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
N	USEPA equivalent	Nitrite Cell Test ^{B.3)}	1.0–90.0 3.0–295.2	1.0–90.0 3.0–295.2	1.0–90.0 3.0–295.2	NO ₂ -N NO ₂	25	1.00609.0001
		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	N	25	1.14537.0001
		Nitrogen (total) Cell Test	10–150	10–150	–	N	25	1.14763.0001
O		Organic Carbon, Total						
		Oxygen Cell Test	0.5–12.0	0.5–12.0	0.5–12.0	O ₂	25	1.14694.0001
		Oxygen Demand, Biological						
		Oxygen Demand, Chemical						
		Oxygen Scavengers Test	0.020–0.500 0.027–0.667 0.05–1.32 0.08–1.95 0.09–2.17	0.020–0.500 • 0.027–0.667 • 0.05–1.32 • 0.08–1.95 • 0.09–2.17 •	0.020–0.500 0.027–0.667 0.053–1.315 0.078–1.950 0.087–2.170	DEHA Carbohy Hydro ISA MEKO	200	1.19251.0001
		Ozone Test	0.010–4.00	0.010–4.00 •	0.02–4.00	O ₃	200 1,200	1.00607.0001 1.00607.0002
P		Palladium	0.05–1.25	0.05–1.25 •	–	Pd	–	–
		Peroxide						
		pH Cell Test ^{A.1)}	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 0.025–5.00	0.002–0.100 • 0.025–5.00 •	0.10–5.00	Phenol	50 – 250	1.00856.0001
		Phenol Cell Test	0.10–2.50	0.10–2.50 •	0.10–2.50	Phenol	25	1.14551.0001
	USEPA equivalent	Phosphate Test ^{C)} (ortho-phosphate)	0.0025–5.00 0.0077–15.30 0.0057–11.46 0.0005 – 0.0250 ^{D)} 0.0015 – 0.0767 ^{D)} 0.0007 – 0.0335 ^{D)}	0.010–5.00 • 0.03–15.3 • 0.02–11.46 •	0.01–2.50 0.03–7.66 0.02–5.73	PO ₄ -P PO ₄ P ₂ O ₅ PO ₄ -P PO ₄ P ₂ O ₅	220 420	1.14848.0002 1.14848.0001
	USEPA equivalent	Phosphate Test ^{C)} (ortho-phosphate)	0.05–5.00 0.2–15.3 0.11–11.46	0.05–5.00 0.2–15.3 0.11–11.46	0.05–4.00 0.15–12.26 0.11–9.17	PO ₄ -P PO ₄ P ₂ O ₅	25	1.00474.0001
	USEPA equivalent	Phosphate Cell Test (ortho-phosphate and total phosphorus) ^{B.3)}	0.05–5.00 0.2–15.3 0.11–11.46	0.05–5.00 0.2–15.3 0.11–11.46	0.05–4.00 0.15–12.26 0.11–9.17	PO ₄ -P PO ₄ P ₂ O ₅	25	1.14543.0001

A.1 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.3 This method is officially recognized by the USEPA as an alternative method for the investigation of 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 55**

D With Prove 600

• Only with NOVA 60/ Nova 60A

PICK YOUR phosphate

Choose the citation form
(e.g., PO_4^{3-} , $\text{PO}_4\text{-P}$, P_2O_5)

VWR® Selector

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	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, 50 100	±0.015	1, 2, 5, 9, 11, 13, 15, 16, 18
	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
	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

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits



Spectroquant® Test Kits (P-S)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
P	USEPA equivalent	Phosphate Cell Test (ortho-phosphate and total phosphorus) ^{B.3)}	0.5–25.0 1.5–76.7 1.1–57.3	0.5–25.0 1.5–76.7 1.1–57.3	0.5–20.0 1.5–61.3 1.1–45.8	PO ₄ -P PO ₄ P ₂ O ₅	25	1.14729.0001
	USEPA equivalent	Phosphate Cell Test (ortho-phosphate)	0.5–25.0 1.5–76.7 1.1–57.3	0.5–25.0 1.5–76.7 1.1–57.3	0.5–25.0 1.5–76.7 1.1–57.3	PO ₄ -P PO ₄ P ₂ O ₅	25	1.14546.0001
	USEPA equivalent	Phosphate Test (ortho-phosphate)	0.5–30.0 1.5–92.0 1.1–68.7	0.5–30.0 • 1.5–92.0 • 1.1–68.7 •	0.5–30.0 1.5–92.0 1.1–68.7	PO ₄ -P PO ₄ P ₂ O ₅	400	1.14842.0001
	USEPA equivalent	Phosphate Test (ortho-phosphate)	1.0–100.0 3–307 2–229	1.0–100.0 • 3–307 • 2–229 •	1.0–60.0 3.1–184 2.3–137.5	PO ₄ -P PO ₄ P ₂ O ₅	100	1.00798.0001
	USEPA equivalent	Phosphate Cell Test (ortho-phosphate)	3.0–100.0 9–307 7–229	3.0–100.0 9–307 7–229	3.0–100.0 9–307 7–229	PO ₄ -P PO ₄ P ₂ O ₅	25	1.00616.0001
	USEPA equivalent	Phosphate Cell Test (ortho-phosphate and total phosphorus)	3.0–100.0 9–307 7–229	3.0–100.0 9–307 7–229	3.0–100.0 9–307 7–229	PO ₄ -P PO ₄ P ₂ O ₅	25	1.00673.0001
		Platinum	0.10–1.25	0.10–1.25 •	–	Pt	–	–
		Potassium Cell Test	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	K	25	1.00615.0001
		Protein Test	0.01–1.4 g/L	0.01–1.4 g/L	–	Protein	200	1.10306.0500
R		Protein Test	0.5–10 g/L	0.5–10 g/L	–	Protein	250	1.10307.0500
		Residual Hardness Cell Test	0.50–5.00 0.070–0.700 0.087–0.874 0.12–1.25 0.70–7.00 1.2–12.5	0.50–5.00 0.070–0.700 0.087–0.874 0.12–1.25 0.70–7.00 1.2–12.5	0.50–5.00 0.070–0.700 0.087–0.874 0.12–1.25 0.70–7.00 1.2–12.5	Ca °d °e °f CaO CaCO ₃	25	1.14683.0001
S		SAC (Spectral absorption coefficient)	0.5–250 m-1	–	–	–	–	–
		Silicate (Silicic Acid) Test	0.00025–0.50000 0.00012–0.23370 0.00025–0.02500 ^{D)} 0.00012–0.01168 ^{D)}	0.0005–0.5000 • 0.0002–0.2337 •	0.004–0.500 0.002–0.234	SiO ₂ Si SiO ₂ Si	100 900	1.01813.0001 1.01813.0002
		Silicate (Silicic Acid) Test	0.011–10.70 0.005–5.00	0.011–10.70 • 0.005–5.00 •	0.11–8.56 0.05–4.00	SiO ₂ Si	300	1.14794.0001

^{B.3} This method is officially recognized by the USEPA as an alternative method for the investigation of drinking water and wastewater

^D With Prove 600

• Only with NOVA 60/ Nova 60A

ultra-sensitive!

Measure ultra-low range of Silicate, Iron or Phosphate with Spectroquant® Prove 600 and a 100-mm cell.

VWR® Selector

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	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
	Vanadatomolybdate	analogous APHA 4500-P C	5.0	–	±0.4	5, 16
	Vanadatomolybdate	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	5.0 + 1.0 + 0.50	10	–	10, 18
	Kalignost®, turbidimetric	–	2.0	–	±2.2	9, 12, 13, 15, 16
	Kalignost®, turbidimetric	–	0.5	–	±1.3	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
	Silicomolybdenum blue	analogous APHA 4500-SiO ₂ 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 ₂ D+E, ASTM D859-10, DIN 38405-21	5.0 + 0.5	10, 20, 50	±0.024	5, 6, 9, 13, 16

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits



Spectroquant® Test Kits (S-T)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
S		Silicate (Silicic Acid) Test	1.1–1,070 0.5–500	1.1–1,070 • 0.5–500 •	11–1,070 5–500	SiO ₂ Si	100	1.00857.0001
		Sodium Cell Test in nutrient solutions for fertilization	10–300	10–300	10–300	Na	25	1.00885.0001
		Spectral Absorption Coefficient, Color	0.1–250 m-1	–	–	–	–	–
		Spectral Attenuation Coefficient	0.5–250 m-1	–	–	–	–	–
		Sulfate Test	0.50–50.0	0.50–50.0 •	1.0–25.0	SO ₄	100	1.01812.0001
		Sulfate Cell Test	1.0–50.0	1.0–50.0	1.0–50.0	SO ₄	25	1.02532.0001
	USEPA equivalent	Sulfate Cell Test ^{B.1)}	5–250	5–250	5–250	SO ₄	25	1.14548.0001
		Sulfate Test	5–300	5–300 •	5–300	SO ₄	100 1,000	1.02537.0001 1.02537.0002
		Sulfate Cell Test	50–500	50–500	50–500	SO ₄	25	1.00617.0001
	USEPA equivalent	Sulfate Cell Test ^{B.1)}	100–1,000	100–1,000	100–1,000	SO ₄	25	1.14564.0001
		Sulfide Test	0.020–1.50	0.020–1.50 •	0.10–1.50	S ²⁻	220	1.14779.0001
		Sulfite Cell Test	0.8–16.00 1.0–20.00 0.05–3.00 0.04–2.40	0.8–16.00 • 1.0–20.00 • 0.05–3.00 • 0.04–2.40 •	1.0–20.0	SO ₂ SO ₃ SO ₃ SO ₂	25	1.14394.0001
		Sulfite Test	1.0–60.0 0.8–48.0	1.0–60.0 • 0.8–48.0 •	1.0–60.0	SO ₃ SO ₂	150	1.01746.0001
		Surfactants (anionic) Cell Test	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 •	–	CTAB	25	1.01764.0001
		Surfactants (nonionic) Cell Test	0.1–7.50	0.1–7.50	0.1–7.50	Triton® X-100	25	1.01787.0001
		Suspended solids	25–750	25–750	50–750	susp. Solids	–	–
T		Tin Cell Test	0.10 - 2.50	0.10 - 2.50	0.10 - 2.50	Sn	25	1.17265.0001
		TOC Cell Test	5.0–80.0	5.0–80.0	–	TOC	25	1.14878.0001
		TOC Cell Test	50–800	50–800	–	TOC	25	1.14879.0001

B.1 This method is officially recognized by the USEPA as an alternative method for the investigation of wastewater

- Only with NOVA 60/ Nova 60A

	Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
	Molybdosilicate	analogous APHA 4500-SiO ₂ C	0.5 + 2.0 + 4.0 + 5.0	10	±2.1	5, 6, 9, 13, 15
	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 ₄ ²⁻ 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 ₄ ²⁻ E, ASTM D516-11	10	–	±1.1	1, 6, 9, 11, 13, 15, 18
	Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO ₄ ²⁻ E, ASTM D516-11	5.0	–	±8	1, 6, 9, 11, 13, 15, 16
	Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO ₄ ²⁻ E, ASTM D516-11	0.5 + 5	10	±7	1, 6, 9, 11, 13, 15, 16, 18
	Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO ₄ ²⁻ 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 ₄ ²⁻ 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 ₂ ⁻ 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	–	
	Pyrocatechol violet	–	0.5 + 4.0	–	±0.04	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

Areas of application:

- 1 Agriculture
- 2 Aquaculture
- 3 Beverages
- 4 Biotechnology, fermenter

- 5 Boiler water, cooling water
- 6 Construction-material industry
- 7 Disinfection control
- 8 Disposal drainage water
- 9 Drinking water

- 10 Electroplating surface refinement
- 11 Environment
- 12 Food testing
- 13 Groundwater, surface water
- 14 Milk dairy products

- 15 Mineral water
- 16 Seawater
- 17 Swimming pools
- 18 Wastewater

Spectroquant® Photometry Test Kits

Spectroquant® Test Kits (T–Z)

	USEPA classification	Parameter	Measuring range of the Spectroquant® instruments [mg/L]			Citation form	No. of tests	Cat. No.
			Prove	NOVA	Move 100			
T		Screw caps for Spectroquant® TOC digestion	–	–	–	–	6	1.73500.0001
		Total Alkalinity						
		Total Hardness Cell Test	5–215 0.7–30.1 0.9–37.6 1.2–53.7 7–301 12–537	5–215 0.7–30.1 0.9–37.6 1.2–53.7 7–301 12–537	5–215 0.7–30.1 0.9–37.6 1.2–53.7 7–301 12–537	Ca °d °e °f CaO CaCO ₃	25	1.00961.0001
		Total Nitrogen						
		Transmission	0.0–100.0 %	0.0–100.0 %	–	T	–	–
		Turbidity	1–100	1–100 •	1–100	FAU	–	–
V		Volatile Organic Acid Cell Test	50–3,000 71–4,401	50–3,000 71–4,401	50–3,000 71–4,401	acetic acid butyric acid	25	1.01749.0001
		Volatile Organic Acid Test ^{A.2)}	50–3,000 71–4,401	50–3,000 71–4,401	50–3,000 71–4,401	acetic acid butyric acid	100	1.01809.0001
W		Water Hardness						
Z		Zinc Cell Test ^{C)}	0.025–1.000	0.025–1.000	25–1,000 µg/L	Zn	25	1.00861.0001
		Zinc Test ^{C)}	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 ^{C)}	0.20–5.00	0.20–5.00	0.20–5.00	Zn	25	1.14566.0001

A.2 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 55**

- Only with NOVA 60/ Nova 60A

Total Organic Carbon (TOC)

While COD is the most widely-used parameter to determine organic pollution in wastewater, TOC is sometimes used as an alternative sum parameter. In some cases, regulations may require TOC in addition to COD as a complementary measurement. The Spectroquant® TOC Cell Tests allow streamlined and accurate photometric determination with ready-to-use reagents and cells.

Method	Reference to norms and standards / Comments	Pipette volume [mL]	Rectangular cell size [mm]	Accuracy [mg/L]	Areas of application
–	for multiple use, additionally required for TOC measurement 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:

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



it's flexible

Test kits for other photometer brands

We also offer Spectroquant® test kits for photometers of other manufactures. They work seamlessly with other photometer brands. The tests work with the original programming data installed by the manufacturers according to the instrument's operation manual.

Furthermore, we provide test-specific data for easy programming for each Spectroquant® test kits with any photometer.

Test kits for other photometer brands | Overview A-Z

		Parameter	Measuring range [mg/L]	No. of tests	Cat. No.	Hach Cat. No.
C		Chlorine Powder Packs for photometers of other manufacturers for 10-mL-samples (free Chlorine)	0–2.00 Cl ₂	100	1.19254.0001	21055-69 21055-28
	USEPA equivalent	COD Cell Tests for photometers of other manufacturers*	0–40.0 COD	25	1.18750.0001	24158-25 24158-15 24158-51
		COD Cell Tests for photometers of other manufacturers*	0–150.0 COD	25	1.18751.0001	21258-25 21258-15 21258-51
		COD Cell Tests for photometers of other manufacturers*	0–1,500 COD	25	1.18752.0001	21259-25 21259-15 21259-51
		COD Cell Tests for photometers of other manufacturers*	0–15,000 COD	25	1.18753.0001	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

* Listed COD cell test kits comes pre-filled in 15,4 mm round cells and Hach photometer method numbers for same measuring range can be used (please ensure appropriate AQA).



programming data for free

Download our programming data manual if you want to use Spectroquant® test kits with another photometer brand at [>Link to provide<.](#)

Method	Reference to norms and standards / Comments	Pipette-volume	Cell size Hach	Areas of application
DPD	analogous EPA 330.5, APHA 4500-Cl G	10 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

Spectroquant® Photometry Test Kits

it's robust

Stable results in challenging samples

Some samples contain compounds other than the target analyte which could impact the measuring results of the test kits. Many of our kits were investigated for their susceptibility to this sort of interference from other substances, and the results of those studies are provided with the test kits.

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.



One key example of a sample with compounds that may interfere with analysis is seawater with high sodium chloride content. We provide a specific test kit dedicated to measure chemical oxygen demand (COD) in high chloride samples without the need of additional mercury application. After a depletion step to remove chloride, the sample can be used directly for photometric determination, allowing for a theoretically unlimited tolerance to chloride. This method is suitable for testing seawater, municipal wastewater, and industrial wastewater. It is convenient with an easy, fast, and precise workflow.

Two different measuring ranges are available:

COD Cell Test for seawater / high chloride contents 5–60 mg/L COD
Cat. No. 1.17058.0001

COD Cell Test for seawater / high chloride contents 50–3,000 mg/L COD
Cat. No. 1.17059.0001

Tolerance Overview (A–C)

	USEPA classification	Test Kits	Cat. No.	Seawater	Tolerance limit, NaCl	salts in % NaNO ₃	Na ₂ SO ₄
A		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
	USEPA equivalent	Ammonium Cell Test	1.14739.0001	no	5	5	5
		Ammonium Cell Test	1.14558.0001	yes	20	10	15
	USEPA equivalent	Ammonium Cell Test	1.14544.0001	yes	20	15	20
	USEPA equivalent	Ammonium Cell Test	1.14559.0001	yes	20	20	20
	USEPA equivalent	Ammonium Test	1.14752.0001 1.14752.0002	no ¹⁾	10	10	20
	USEPA equivalent	Ammonium Test	1.00683.0001	yes	20	20	20
		AOX Cell Test	1.00675.0001	no	0.4	20	20
B		Arsenic Test	1.01747.0001	no	10	10	10
		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
C		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	1.01807.0001	no	–	0.5	0.05
		Chloride Cell Test	1.01804.0001	no	–	0.5	0.05
		Chloride Cell Test	1.14730.0001	yes	–	20	1
		Chloride Test	1.14897.0001 1.14897.0002	yes	–	10	0.1
	USEPA equivalent	Chlorine Cell Test	1.00595.0001	no	10	10	10
	USEPA equivalent	Chlorine Cell Test	1.00597.0001	no	10	10	10
	USEPA equivalent	Chlorine Test	1.00598.0001 1.00598.0002	no	10	10	10
	USEPA equivalent	Chlorine Test	1.00602.0001 1.00602.0002	no	10	10	10
	USEPA equivalent	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

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

² Distill beforehand as per APHA 4400-F- B

Spectroquant® Photometry

Test Kits

Tolerance Overview (C)

	USEPA classification	Test Kits	Cat. No.	Seawater	Tolerance limit, NaCl	salts in % NaNO ₃	Na ₂ SO ₄
C		Chlorine dioxide Test	1.00608.0001	no	10	10	10
	USEPA equivalent	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
		Cobalt Cell Test	1.17244.0001	yes	10	10	20
	USEPA equivalent	COD Cell Test	1.14560.0001	no	0.4	10	10
	USEPA equivalent	COD Cell Test	1.01796.0001	no	0.4	10	10
	USEPA equivalent	COD Cell Test	1.14540.0001	no	0.4	10	10
	USEPA equivalent	COD Cell Test	1.14895.0001	no	0.4	10	10
	USEPA equivalent	COD Cell Test	1.14690.0001	no	0.4	20	20
	USEPA equivalent	COD Cell Test	1.14541.0001	no	0.4	10	10
	USEPA equivalent	COD Cell Test	1.14691.0001	no	0.4	20	20
	USEPA equivalent	COD Cell Test	1.14555.0001	no	1.0	10	10
	USEPA equivalent	COD Cell Test	1.01797.0001	no	10	20	20
	USEPA equivalent	COD Cell Test for seawater / high chloride contents	1.17058.0001	yes	35	10	10
	USEPA equivalent	COD Cell Test for seawater / high chloride contents	1.17059.0001	yes	35	10	10
		COD Cell Test (Hg free)	1.09772.0001	no	0	10	10
		COD Cell Test (Hg free)	1.09773.0001	no	0	10	10
		Copper Cell Test	1.14553.0001	yes	15	15	15
		Copper Test	1.14767.0001	yes	15	15	15
	USEPA equivalent	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	–	–	–

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

2 Distill beforehand as per APHA 4400-F- B

Tolerance Overview (F–N)

	USEPA classification	Test Kits	Cat. No.	Seawater	Tolerance limit, NaCl	salts in % NaNO ₃	Na ₂ SO ₄
F		Fluoride Test	1.00822.0250	yes ²⁾	0.05	0.05	0.001
		Fluoride Cell Test	1.00809.0001	no	10	10	10
		Fluoride Test	1.14598.0002	yes	20	20	20
		Formaldehyde Cell Test	1.14500.0001	no	5	0	10
		Formaldehyde Test	1.14678.0001	no	5	0	10
G		Gold Test	1.14821.0002	yes	10	20	5
H		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
I		Iron Cell Test	1.14549.0001	yes	20	20	20
		Iron Cell Test	1.14896.0001	no	5	5	5
		Iron Test	1.14761.0001 1.14761.0002	yes	20	20	20
		Iron Test	1.00796.0001	yes	20	20	20
L		Lead Cell Test	1.14833.0001	no	20	20	1
		Lead Test	1.09717.0001	no	20	5	15
M		Magnesium Cell Test	1.00815.0001	yes	2	2	1
		Manganese Test	1.00816.0001	no	20	20	20
		Manganese Test	1.01846.0001	no	20	25	5
		Manganese Test	1.14770.0001 1.14770.0002	yes	20	20	20
		Molybdenum Cell Test	1.00860.0001	no	20	20	5
		Monochloramine Test	1.01632.0001	no	10	10	20
N		Nickel Cell Test	1.14554.0001	no	20	20	20
		Nickel Test	1.14785.0001	no	20	20	20
	USEPA equivalent	Nitrate Cell Test	1.14542.0001	no	0.4	–	20
	USEPA equivalent	Nitrate Cell Test	1.14563.0001	no	0.2	–	20
	USEPA equivalent	Nitrate Cell Test	1.14764.0001	no	0.5	–	20
	USEPA equivalent	Nitrate Cell Test	1.00614.0001	no	2	–	20
	USEPA equivalent	Nitrate Test	1.01842.0001	no	0.001	–	0.001
	USEPA equivalent	Nitrate Test	1.14773.0001	no	0.4	–	20

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

² Distill beforehand as per APHA 4400-F- B

Spectroquant® Photometry

Test Kits

Tolerance Overview (N–P)

	USEPA classification	Test Kits	Cat. No.	Seawater	Tolerance limit, NaCl	salts in % NaNO ₃	Na ₂ SO ₄
N	USEPA equivalent	Nitrate Test	1.09713.0001 1.09713.0002	no	0.2	–	20
	USEPA equivalent	Nitrate Cell Test (seawater)	1.14556.0001	yes	20	–	20
	USEPA equivalent	Nitrate Test (seawater)	1.14942.0001	yes	20	–	20
	USEPA equivalent	Nitrite Cell Test	1.14547.0001	yes	20	20	15
	USEPA equivalent	Nitrite Cell Test	1.00609.0001	yes	20	20	15
	USEPA equivalent	Nitrite Test	1.14776.0001 1.14776.0002	yes	20	20	15
		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
O		Oxygen Cell Test	1.14694.0001	no	10	5	1
		Oxygen Scavengers Test	1.19251.0001	no	–	–	–
		Ozone Test	1.00607.0001 1.00607.0002	no	10	10	10
P		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
	USEPA equivalent	Phosphate (ortho-phosphate) Cell Test	1.00475.0001	yes	20	20	20
	USEPA equivalent	Phosphate (ortho-phosphate) Cell Test	1.14543.0001	yes	5	10	10
		Phosphorus (total) Cell Test	1.14543.0001	no	1	10	10
	USEPA equivalent	Phosphate (ortho-phosphate) Cell Test	1.14729.0001	yes	20	20	20
		Phosphorus (total) Cell Test	1.14729.0001	yes	5	20	20
	USEPA equivalent	Phosphate (ortho-phosphate) Cell Test	1.00616.0001	yes	20	20	20
	USEPA equivalent	Phosphate (ortho-phosphate) Cell Test	1.00673.0001	yes	20	20	20
		Phosphorus (total) Cell Test	1.00673.0001	yes	20	20	20
	USEPA equivalent	Phosphate Test	1.14848.0001 1.14848.0002	yes	5	10	10

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

2 Distill beforehand as per APHA 4400-F- B

Application notes to meet your need

VWR® Selector

We provide support to ensure that our test kits work with your samples. Sometimes, sample preparation is required to remove interferences. You can find numerous application notes, providing step-by-step guidance on how to prepare and analyze your sample with Spectroquant® test kits. Find the application note you need on our webpage at **VWR® Fast Analysis**

Tolerance Overview (N–Z)

	USEPA classification	Test Kits	Cat. No.	Seawater	Tolerance limit, NaCl	salts in % NaNO ₃	Na ₂ SO ₄
P	USEPA equivalent	Phosphate Test	1.00798.0001	yes	15	20	10
	USEPA equivalent	Phosphate Cell Test	1.14546.0001	yes	20	20	20
	USEPA equivalent	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
		Residual Hardness Cell Test	1.14683.0001	no	0.01	0.01	0.01
S		Silicate (Silicic Acid) Test	1.01813.0001	no	0.5	1	0.2
		Silicate (Silicic Acid) Test	1.14794.0001	yes	5	10	5
		Silicate (Silicic Acid) Test	1.00857.0001	no	5	10	2.5
		Sodium Cell Test	1.00885.0001	no	–	10	1
		Sulfate Test	1.01812.0001	no	2	0.007	–
	USEPA equivalent	Sulfate Cell Test	1.14548.0001	yes	10	0.1	–
		Sulfate Cell Test	1.00617.0001	yes	10	0.1	–
	USEPA equivalent	Sulfate Cell Test	1.14564.0001	yes	10	0.5	–
		Sulfate Cell Test	1.02537.0001 1.02537.0002	yes	10	0.015	–
		Sulfate Test	1.02532.0001	no	2	0.007	–
		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
T		Tin Cell Test	1.17265.0001	no	5	–	–
		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
V		Volatile Organic Acid Cell Test	1.01749.0001	no	20	20	10
		Volatile Organic Acid Test	1.01809.0001	no	20	20	10
Z		Zinc Cell Test	1.00861.0001	no	20	20	1
		Zinc Cell Test	1.14566.0001	no	10	10	10
		Zinc Test	1.14832.0001	no	5	15	15

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

2 Distill beforehand as per APHA 4400-F- B

National and International Regulations for Testing Drinking Water

Contaminated water poses a threat to both human health and the environment. As a result, national and international regulatory agencies like the U.S. Environmental Protection Agency (USEPA), World Health Organization (WHO), EU, and other regulators have set official testing methods for drinking water and wastewater that must be followed in order to ensure a benchmark of health and safety. While a quality standard must always be maintained, regulations have increasingly allowed for more method flexibility in recent years, including modifications such as rapid testing, for example.

To help you meet these standards, many Spectroquant® test kits were developed according to approved USEPA or ISO methods. With these kits, you get reliable and reproducible results in compliance with the national regulations of your region.

WHO Drinking Water Limits and Methods

“Access to safe drinking-water is essential to health, a basic human right and a component of effective policy for health protection.”¹

The WHO has published drinking water guidelines for the maximum allowable levels of many parameters (summarized in the table below), and detailed information on individual parameters can be found in the subchapters of the guidelines.¹ Some limits in the summary table appear as “not specified”, meaning that the WHO has not provided guidance on that particular parameter because it is not found at levels posing a health concern in drinking water.

In addition to imposing limits on parameters, the WHO is also clear on its guidelines for analysis methods:

“While it is not essential to use standard methods, it is important that the methods used are properly validated and their precision and accuracy determined before significant decisions are made based on the results.”

It is therefore necessary to ascertain that a given method has sufficient precision and accuracy, with an auditable quality control and quality assurance procedure to ensure credible results.



USEPA Drinking Water Limits and Methods

“The National Primary Drinking Water Regulations (NPDWR) are legally enforceable primary standards and treatment techniques that apply to public water systems. Primary standards and treatment techniques protect public health by limiting the levels of contaminants in drinking water.”²

In 1974, the Safe Drinking Water Act (SDWA)³ was enacted to protect and regulate public water supplies in the US. The SDWA authorized the USEPA to set enforceable standards for contaminants in drinking water in the interest of public health. Similar to the WHO, the NPDWR also dictates methods for drinking water testing. Most approved analysis methods come from the USEPA, American Public Health Association (APHA), or American Society for Testing and Materials (ASTM).

In addition, there are allowances for modified methods with strict guidelines in terms of how alternatives are implemented and categorized.⁴ USEPA-equivalent methods can differ significantly from approved methods, but must meet criteria set out for procedural changes in order to be considered USEPA-compliant.

Merck received its first USEPA equivalency certificate in 1999, and continues to work closely with consultants to provide more equivalent methods for a range of testing parameters. To date, we have equivalent methods to those in the Safe Drinking Water Act for the following parameters: ammonium, chlorine, COD, and ortho-phosphate.

For your wastewater analysis, we have a number of equivalent methods to those in the Clean Water Act: ammonium, chromium (VI), COD, cyanide, nitrate, nitrite, total nitrogen, ortho-phosphate, and sulfate.

EU Drinking Water Directive

The EU Drinking Water Directive (2020/2184 of Dec 16th, 2020)⁵ established the legal framework to protect human health from the adverse effects of drinking water contamination, providing clear regulations for all member states. Similar to both WHO and USEPA guidelines, limits on various water parameters were implemented in order to ensure a safe water supply. In its most recent update in December 2020, an important change was included in terms of analytical quality assurance such that the performance characteristics required of a measurement were clearly defined. Any method that fulfills three acceptance criteria may be used for monitoring.

These acceptance criteria are:

- Limit of Detection (LOD)
- Limit of Quantification (LOQ)
- Uncertainty ($k=2$) of the method

Annex III, Part B of the directive has the chemical and indicator parameters for which such performance characteristics are specified.

Table 1 in Annex III defines the minimum performance characteristic ‘uncertainty of measurement’. You can also find this in an overview table on **page 96** of this catalog, where we specify EU drinking water values, information about the $\leq 30\%$ value of the LOQ, and the calculated values of uncertainty ($k=2$) for both our standard and rapid methods.

References

1. Guidelines for Drinking Water Quality, 4th edition incorporating the first addendum 2017
2. National Primary Drinking Water Regulations and Secondary Drinking Water Standards, last updated Jan 05th 2021
3. Summary of the Safe Drinking Water Act, <https://www.epa.gov/laws-regulations/summary-safe-drinking-water-act>
4. Alternative Testing Methods for Contaminants Listed at 40 CFR 141.21
https://www.ecfr.gov/cgi-bin/text-idx?SID=e7755de6447839f1a9496a59f9d4d9cf&mc=true&node=ap40.25.141_129.a&rgn=div9
5. Directive (EU) 2020/2184 of the European Parliament and the Council of 16 December 2020 on the quality of water intended for human consumption

Spectroquant® Photometry Test Kits

Spectroquant® Test Kits for Drinking Water (A–C)

	Parameter	WHO Guideline	USEPA	EU	EU	EU	EU	Test information according	
		2017 Limit values in [mg/L]	Jan 05th 2021 max. MCL in [mg/L]	Dec. 2020 max. limits [mg/L]	LOQ ≤ 30% of the limit calculated in [mg/L]	Uncertainty of measurement % of parameter value (k = 2)	Uncertainty value from the limit (k = 2) in [mg/L]	Measuring range per cell size [mg/L]	Citation form
A	Aluminium (Al)	0.1 - 0.2	0.05–0.2	0.2	0.06	25	0.05	0.020–0.200	Al
								0.05–0.60	
								0.10–1.20	
								0.02–0.50	Al
	Ammonium (NH ₄)	not specified ⁸⁾		0.5	0.15	40	0.2	0.013–0.644	NH ₄ ²⁴⁾
								0.04–1.93	NH ₄ ²⁴⁾
								0.06–3.86	NH ₄ ²⁴⁾
								0.01–2.86	NH ₄ ²⁴⁾
	Antimony	0.02	0.006	0.01	0.003	40	0.004		
	Arsenic (As)	0.01	0.01	0.01	0.003	30	0.003	0.001–0.020	As
								0.005–0.100	As
B	Barium (Ba)	1.3	2						
	Boron (B)	2.4		1.5	0.45	25	0.375	0.050–0.800	B
								0.05–2.00	B
C	Cadmium (Cd)	0.003	0.005	0.005	0.0015	25	0.00125	0.0020–0.100	Cd
								0.005–0.250	Cd
								0.010–0.500	Cd
								0.025–1.000	Cd
	Chlorate	0.7		0.25 ⁹⁾	0.075	40	0.1		
	Chlorite	0.7	1.0	0.25 ⁹⁾	0.075	40	0.1		
	Chloride (Cl ⁻)	not specified ⁸⁾	250	250	75	15	37.5	0.5–15.0	Cl ⁻
								2.5–25.0	Cl ⁻
								10–250	
								5–125	Cl ⁻

WHO Guidelines for drinking-water quality: fourth edition incorporating the first addendum. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.
 USEPA National Primary Drinking Water Regulations and Secondary Drinking Water Standards, last updated Jan 05th 2021
 EU Directive (EU) 2020/2184 of the European Parliament and the Council of 16 December 2020 on the quality of water intended for human consumption

- 1) The "Limit of Detection" (LOD) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 chapter 4.4.2 Limit of detection based on standard deviation of results of blank samples. To comply with regulatory demands, it may be necessary to perform an own determination.
- 2) The "Limit of Quantification" (LOQ) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 and calculated as 3 times the LOD. To comply with regulatory demands, it may be necessary to perform an own determination.
- 3) The uncertainty (k=2) is calculated according to ISO 11352:2012 Appendix B.3 — Estimation of measurement uncertainty using a standard solution. In contrary to the Appendix B3 we don't use a single concentration of a standards solution, we are using 10 concentrations for standards equidistance over the entire measuring range and calculate the standard deviation from the entire calibration. From this we calculate the uncertainty.
- 4) The uncertainty of the method lies within the acceptance criteria from requirement measuring the limit and the given tolerance. The results can be used for reporting.
- 5) The uncertainty of the method doesn't lie within the acceptance criteria from requirement measuring the limit and the given tolerance. The results can be used for screening (own information) but not for reporting. For reporting a other method must be used.
- 6) Merck has got an "USEPA equivalent" for SDWA (Safe Drinking Water Act) according to the procedure of 40 CFR part 136 Clean Water Act as for drinking water no own methods are available.
- 7) Merck has got an "USEPA equivalent" according to 40 CFR part 136 Clean Water Act (for wastewater analysis).
- 8) (not specified 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)
- 9) A parametric value of 0,70 mg/L shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption.

EU requirements											
	Cell size [mm]	LOD in [mg/L] ¹⁾	LOQ in [mg/L] ²⁾	Uncertainty (k = 2) [mg/L] ³⁾	Good for reporting ⁴⁾	Screening (own information) ⁵⁾	Test type	Cat. No.	No. of tests	USEPA equivalent for SDWA ⁶⁾	USEPA equivalent for CWA ⁷⁾
	50 mm	0.008	0.024	±0.025	yes	yes	Reagent Test	1.14825.0001	350		
	20 mm	0.008	0.024	±0.03	yes	yes					
	10 mm	0.008	0.024	±0.03	yes	yes					
	16 mm	0.0048	0.0144	±0.02	yes	yes	Cell Test	1.00594.0001	25		
	50 mm	0.0041	0.0123	±0.013	yes	yes	Reagent Test	1.14752.0001 1.14752.0002	250 500	USEPA equivalent	USEPA equivalent
	20 mm	0.006	0.018	±0.032	yes	yes					
	10 mm	0.009	0.027	±0.067	yes	yes					
	16 mm	0.0062	0.0186	±0.041	yes	yes	Cell Test	1.14739.0001	25	USEPA equivalent	USEPA equivalent
							–	–	–		
	20 mm	0.0002	0.0006	±0.002	yes	yes	Reagent Test	1.01747.0001	30		
	10 mm	0.0004	0.0012	±0.004	no	yes					
								–	–		
	10 mm	0.0056	0.0168	±0.022	yes	yes	Reagent Test	1.14839.0001	60		
	16 mm	0.024	0.072	±0.06	yes	yes	Cell Test	1.00826.0001	25		
	50 mm	0.00072	0.00216	±0.0018	no	yes	Reagent Test	1.01745.0001	55		
	20 mm	0.00090	0.00240	±0.0045	no	no					
	10 mm	0.00128	0.00384	±0.009	no	no					
	16 mm	0.0040	0.0120	±0.016	no	no	Cell Test	1.14834.0001	25		
							–	–	–		
							–	–	–		
	16 mm	0.08	0.24	±0.3	yes	yes	Cell Test	1.01804.0001	25		
	10 mm	0.32	0.96	±0.5	yes	yes	Reagent Test	1.14897.0001 1.14897.0002	100 175		
	10 mm	1.28	3.84	±7	yes	yes					
	16 mm	1.20	3.60	±3	yes	yes	Cell Test	1.14730.0001	25		

10) The parametric value of 25 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/L.

11) For the digestion of total chromium the CrackSet 10 or 10C is needed

12) Can be measured photometrically according to different standards like e.g. APHA 2120 F, APHA 2120 B, DIN EN ISO 6271-2, EN ISO 7887

13) not a photometric measurement

14) For the analysis of the total Cyanide a distillation included sparging with air like e.g. described in APHA 4500-CN- C, is required.

15) The method determines total cyanide in all forms.

16) The parametric value of 5 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/L.

17) The analysis of Mercury with photometric analysis is not sensitive enough. Better to use a AA-Hg system or ICP-MS

18) A parametric value of 30 µg/L shall be applied for regions where geological conditions could lead to high levels of selenium in groundwater.

19) Method of choice is the flame photometer

20) The measurement of TDS is done with a conductivity meter.

21) It is the sum of concentrations of the following specified compounds: chloroform, bromoform, dibromochloromethane and bromodichloromethane.

22) For the measurement of turbidity in drinking water it is required to use a turbidity meter

23) Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 Nephelometric Turbidity Unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTUs in at least 95 percent of the samples in any month. Systems that use filtration other than the conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTUs.

24) This citation form differs from the one in the product name. The measurement ranges mentioned in this table refer to this citation from.

Spectroquant® Photometry Test Kits

Spectroquant® Test Kits for Drinking Water (C)

	Parameter	WHO Guideline	USEPA	EU	EU	EU	EU	Test information according	
		2017 Limit values in [mg/L]	Jan 05th 2021 max. MCL in [mg/L]	Dec. 2020 max. limits [mg/L]	LOQ ≤ 30% of the limit calculated in [mg/L]	Uncertainty of measurement % of parameter value (k = 2)	Uncertainty value from the limit (k = 2) in [mg/L]	Measuring range per cell size [mg/L]	Citation form
C	Chlorine (Cl ₂) free	0.2 (minimal residual concentration at the point of delivery)	4.0					0.010–1.000	Cl ₂
								0.02–3.00	
								0.05–6.00	
								0.03–6.00	Cl ₂
	Chlorine (total)	0.2–0.5						0.010–1.000	Cl ₂
								0.02–3.00	
								0.05–6.00	
								0.03–6.00	Cl ₂
	Chlorine dioxide (ClO ₂)	not specified ⁸⁾	0.8					0.020–2.000	ClO ₂
								0.05–5.00	
								0.10–10.00	
	Chromium (Cr)			0.05 ¹⁰⁾	0.015	30	0.015	0.010–0.600	Cr
								0.03–1.50	
								0.05–3.00	
								0.05–2.00	Cr
	Chromium (total) (Cr)	0.05	0.1					0.010–0.600	Cr
								0.03–1.50	
								0.05–3.00	
								0.05–2.00	Cr
	Coliforms (total) (organisms/ 100 mL)	0	0	0					
	Color ¹²⁾	acceptable	15 color units	acceptable				0–1000 Pt/Co	Color
	Conductivity ¹³⁾			2500 µS/ cm at 20 °C					

WHO Guidelines for drinking-water quality: fourth edition incorporating the first addendum. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.
 USEPA National Primary Drinking Water Regulations and Secondary Drinking Water Standards, last updated Jan 05th 2021
 EU Directive (EU) 2020/2184 of the European Parliament and the Council of 16 December 2020 on the quality of water intended for human consumption

- 1) The "Limit of Detection" (LOD) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 chapter 4.4.2 Limit of detection based on standard deviation of results of blank samples. To comply with regulatory demands, it may be necessary to perform an own determination.
- 2) The "Limit of Quantification" (LOQ) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 and calculated as 3 times the LOD. To comply with regulatory demands, it may be necessary to perform an own determination.
- 3) The uncertainty (k=2) is calculated according to ISO 11352:2012 Appendix B.3 — Estimation of measurement uncertainty using a standard solution. In contrary to the Appendix B3 we don't use a single concentration of a standard solution, we are using 10 concentrations for standards equidistance over the entire measuring range and calculate the standard deviation from the entire calibration. From this we calculate the uncertainty.
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- 6) Merck has got an "USEPA equivalent" for SDWA (Safe Drinking Water Act) according to the procedure of 40 CFR part 136 Clean Water Act as for drinking water no own methods are available.
- 7) Merck has got an "USEPA equivalent" according to 40 CFR part 136 Clean Water Act (for wastewater analysis).
- 8) (not specified 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)
- 9) A parametric value of 0,70 mg/L shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption.

EU requirements											
	Cell size [mm]	LOD in [mg/L] ¹⁾	LOQ in [mg/L] ²⁾	Uncertainty (k = 2) [mg/L] ³⁾	Good for reporting ⁴⁾	Screening (own information) ⁵⁾	Test type	Cat. No.	No. of tests	USEPA equivalent for SDWA ⁶⁾	USEPA equivalent for CWA ⁷⁾
	50 mm	0.0028	0.0084	±0.022			Reagent Test	1.00598.0002 1.00598.0001	200 1200	USEPA equivalent	
	20 mm	0.0036	0.0100	±0.055							
	10 mm	0.004	0.012	±0.11							
	16 mm	0.0128	0.0384	±0.1			Cell Test	1.00595.0001	200	USEPA equivalent	
	50 mm	0.0028	0.0084	±0.022			Reagent Test	1.00602.0001 1.00602.0002	200 1200	USEPA equivalent	USEPA equivalent
	20 mm	0.0036	0.0100	±0.055							
	10 mm	0.004	0.012	±0.11							
	16 mm	0.0128	0.0384	±0.1			Cell Test	1.00597.0001	200	USEPA equivalent	USEPA equivalent
	50 mm	0.005	0.016	±0.024			Reagent Test	1.00608.0001	200		
	20 mm	0.006	0.018	±0.060							
	10 mm	0.0072	0.0216	±0.12							
	50 mm	0.0024	0.0072	±0.008	yes	yes	Reagent Test	1.14758.0001	250		
	20 mm	0.0030	0.0090	±0.02	no	yes					
	10 mm	0.0056	0.0168	±0.04	no	yes					
	16 mm	0.004	0.012	±0.02	no	yes	Cell Test	1.14552.0001	25		USEPA equivalent
	50 mm	0.0024	0.0072	±0.008	yes	yes	Reagent Test	1.14758.0001	250		
	20 mm	0.0030	0.0090	±0.02	no	yes					
	10 mm	0.0056	0.0168	±0.04	no	yes					
	16 mm	0.004	0.012	±0.02	no	yes	Cell Test	1.14552.0001	25		
	10 mm	1.6 Pt/Co	5 Pt/Co	±6 Pt/Co			Color	application	-		

10) The parametric value of 25 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/L.

11) For the digestion of total chromium the CrackSet 10 or 10C is needed

12) Can be measured photometrically according to different standards like e.g. APHA 2120 F, APHA 2120 B, DIN EN ISO 6271-2, EN ISO 7887

13) not a photometric measurement

14) For the analysis of the total Cyanide a distillation included ppurging with air like e.g. described in APHA 4500-CN- C, is required.

15) The method determines total cyanide in all forms.

16) The parametric value of 5 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/L.

17) The analysis of Mercury with photometric analysis is not sensitive enough. Better to use a AA-Hg system or ICP-MS

18) A parametric value of 30 µg/L shall be applied for regions where geological conditions could lead to high levels of selenium in groundwater.

19) Method of choice is the flame photometer

20) The measurement of TDS is done with a conductivity meter.

21) It is the sum of concentrations of the following specified compounds: chloroform, bromoform, dibromochloromethane and bromodichloromethane.

22) For the measurement of turbidity in drinking water it is required to use a turbidity meter

23) Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 Nephelometric Turbidity Unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTUs in at least 95 percent of the samples in any month. Systems that use filtration other than the conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTUs.

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Spectroquant® Photometry

Test Kits

Spectroquant® Test Kits for Drinking Water (C–L)

	Parameter	WHO Guideline	USEPA	EU	EU	EU	EU	Test information according	
		2017 Limit values in [mg/L]	Jan 05th 2021 max. MCL in [mg/L]	Dec. 2020 max. limits [mg/L]	LOQ ≤ 30% of the limit calculated in [mg/L]	Uncertainty of measurement % of parameter value (k = 2)	Uncertainty value from the limit (k = 2) in [mg/L]	Measuring range per cell size [mg/L]	Citation form
C	Copper (Cu)	2	1.0	2	0.6	25	0.5	0.02–1.20	Cu
								0.05–3.00	
								0.10–6.00	
								0.05–8.00	Cu
	Cyanides (Cy) free		0.2					0.0020–0.1000	Cy
								0.005–0.200	
								0.010–0.500	
								0.010–0.500	Cy
	Cyanides (Cy) total ¹⁴⁾	not specified ⁸⁾		0.05 ¹⁵⁾	0.015	30	0.015	0.0020–0.1000	Cy
								0.005–0.200	
								0.010–0.500	
								0.010–0.500	Cy
F	Fluoride (F ⁻)	1.5	2.0	1.5	0.45	20	0.3	0.025–0.500	F ⁻
								0.1–1.80	
								0.02–2.00	F ⁻
								0.10–2.50	F ⁻
								0.10–2.00	F ⁻
								1.0–20.0	
I	Iron (Fe)	not specified ⁸⁾	0.3	0.2	0.06	30	0.06	0.0025–0.5000	Fe
								0.005–1.000	
								0.03–2.50	
								0.05–5.00	
								0.010–1.000	Fe
								0.05–2.50	
								0.10–5.00	
								0.05–4.00	Fe
L	Lead (Pb)	0.01	0.015	0.01 ¹⁶⁾	0.003	30	0.003	0.010–1.000	Pb
								0.05–2.50	
								0.10–5.00	

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 EU Directive (EU) 2020/2184 of the European Parliament and the Council of 16 December 2020 on the quality of water intended for human consumption

- 1) The "Limit of Detection" (LOD) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 chapter 4.4.2 Limit of detection based on standard deviation of results of blank samples. To comply with regulatory demands, it may be necessary to perform an own determination.
- 2) The "Limit of Quantification" (LOQ) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 and calculated as 3 times the LOD. To comply with regulatory demands, it may be necessary to perform an own determination.
- 3) The uncertainty (k=2) is calculated according to ISO 11352:2012 Appendix B.3 — Estimation of measurement uncertainty using a standard solution. In contrary to the Appendix B3 we don't use a single concentration of a standards solution, we are using 10 concentrations for standards equidistance over the entire measuring range and calculate the standard deviation from the entire calibration. From this we calculate the uncertainty.
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- 8) (not specified 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)
- 9) A parametric value of 0,70 mg/L shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption.

EU requirements

Cell size [mm]	LOD in [mg/L] ¹⁾	LOQ in [mg/L] ²⁾	Uncertainty (k = 2) [mg/L] ³⁾	Good for reporting ⁴⁾	Screening (own information) ⁵⁾	Test type	Cat. No.	No. of tests	USEPA equivalent for SDWA ⁶⁾	USEPA equivalent for CWA ⁷⁾
50 mm	0.0008	0.0024	±0.01	yes	yes	Reagent Test	1.14767.0001	250		
20 mm	0.0025	0.0075	±0.02	yes	yes					
10 mm	0.0056	0.0168	±0.05	yes	yes					
16 mm	0.0088	0.0264	±0.09	yes	yes	Cell Test	1.14553.0001	25		
50 mm	0.00032	0.00096	±0.0018			Reagent Test	1.09701.0001	100		
20 mm	0.00032	0.00096	±0.0045							
10 mm	0.00032	0.00096	±0.009							
16 mm	0.0088	0.0264	±0.09			Cell Test	1.14561.0001	25		USEPA equivalent
50 mm	0.00032	0.00096	±0.0018	yes	yes	Reagent Test	1.09701.0001	100		
20 mm	0.00032	0.00096	±0.0045	yes	yes					
10 mm	0.00032	0.00096	±0.009	yes	yes					
16 mm	0.0088	0.0264	±0.09	yes	yes	Cell Test	1.14561.0001	25		
50 mm	0.0096	0.0288	±0.014	yes	yes	Cell Test	1.00809.0001	25		
16 mm	0.04	0.12	±0.02	yes	yes					
50 mm	0.016	0.048	±0.02	yes	yes	Reagent Test	1.17236.0250	250		
16 mm	0.04	0.12	±0.06	yes	yes	Cell Test	1.17243.0001	25		
10 mm	0.032	0.096	±0.04	yes	yes	Reagent Test	1.14598.0001	100		
10 mm	0.26	0.65	±0.4	no	no		1.14598.0002	250		
100 mm	0.00096	0.0029	±0.004	yes	yes	Reagent Test	1.14761.0002 1.14761.0001	250 1000		
50 mm	0.0017	0.0050	±0.008	yes	yes					
20 mm	0.0024	0.0072	±0.020	yes	yes					
10 mm	0.0048	0.0144	±0.040	yes	yes					
50 mm	0.0042	0.0125	±0.008	yes	yes	Reagent Test	1.00796.0001	150		
20 mm	0.012	0.036	±0.02	yes	yes					
10 mm	0.025	0.075	±0.04	no	no					
16 mm	0.011	0.034	±0.04	yes	yes	Cell Test	1.14549.0001	25		
50 mm	0.0048	0.0144	±0.010	no	yes	Reagent Test	1.09717.0001	50		
20 mm	0.010	0.030	±0.025	no	no					
10 mm	0.027	0.082	±0.050	no	no					

10) The parametric value of 25 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/L.

11) For the digestion of total chromium the CrackSet 10 or 10C is needed.

12) Can be measured photometrically according to different standards like e.g. APHA 2120 F, APHA 2120 B, DIN EN ISO 6271-2, EN ISO 7887

13) not a photometric measurement

14) For the analysis of the total Cyanide a distillation included purging with air like e.g. described in APHA 4500-CN- C, is required.

15) The method determines total cyanide in all forms.

16) The parametric value of 5 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/L.

17) The analysis of Mercury with photometric analysis is not sensitive enough. Better to use a AA-Hg system or ICP-MS

18) A parametric value of 30 µg/L shall be applied for regions where geological conditions could lead to high levels of selenium in groundwater.

19) Method of choice is the flame photometer

20) The measurement of TDS is done with a conductivity meter.

21) It is the sum of concentrations of the following specified compounds: chloroform, bromoform, dibromochloromethane and bromodichloromethane.

22) For the measurement of turbidity in drinking water it is required to use a turbidity meter

23) Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 Nephelometric Turbidity Unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTUs in at least 95 percent of the samples in any month. Systems that use filtration other than the conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTUs.

24) This citation form differs from the one in the product name. The measurement ranges mentioned in this table refer to this citation from.

Spectroquant® Photometry Test Kits

Spectroquant® Test Kits for Drinking Water (M–N)

	Parameter	WHO Guideline	USEPA	EU	EU	EU	EU	Test information according	
		2017 Limit values in [mg/L]	Jan 05th 2021 max. MCL in [mg/L]	Dec. 2020 max. limits [mg/L]	LOQ ≤ 30% of the limit calculated in [mg/L]	Uncertainty of measurement % of parameter value (k = 2)	Uncertainty value from the limit (k = 2) in [mg/L]	Measuring range per cell size [mg/L]	Citation form
M	Manganese (Mn)	not specified ⁸⁾	0.05	0.05	0.015	30	0.015	0.005–0.400	Mn
								0.03–1.00	
								0.05–2.00	
								0.010–2.000	Mn
								0.25–5.00	
								0.50–10.00	
	Mercury (Hg) ¹⁷⁾	0.006	0.002	0.001	0.0003	30	0.0003		
	Monochloramines (as Cl ₂)	3	4.0					0.050–2.000	Cl ₂
								0.13–5.00	
								0.25–10.00	
	Molybdenum (Mo)	not specified ⁸⁾						0.02–1.00	Mo
N	Nickel (Ni)	0.07		0.02	0.006	25	0.005	0.02–1.00	Ni
								0.05–2.50	
								0.10–5.00	
	Nitrates	50 (as NO ₃ ⁻)	10 (as N)	50 (as NO ₃)	15	15	7.5	0.04–22.1	NO ₃ ²⁴⁾
								2.2–55.3	
								4.4–110.7	
								0.89–44.27	NO ₃ ²⁴⁾
								2.2–88.5	
								1.3–132.8	NO ₃ ²⁴⁾
								2.2–79.7	NO ₃ ²⁴⁾
								2.2–110.7	NO ₃ ²⁴⁾
								4.4–221	NO ₃ ²⁴⁾

WHO Guidelines for drinking-water quality: fourth edition incorporating the first addendum. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.
 USEPA National Primary Drinking Water Regulations and Secondary Drinking Water Standards, last updated Jan 05th 2021
 EU Directive (EU) 2020/2184 of the European Parliament and the Council of 16 December 2020 on the quality of water intended for human consumption

- 1) The "Limit of Detection" (LOD) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 chapter 4.4.2 Limit of detection based on standard deviation of results of blank samples. To comply with regulatory demands, it may be necessary to perform an own determination.
- 2) The "Limit of Quantification" (LOQ) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 and calculated as 3 times the LOD. To comply with regulatory demands, it may be necessary to perform an own determination.
- 3) The uncertainty (k=2) is calculated according to ISO 11352:2012 Appendix B.3 — Estimation of measurement uncertainty using a standard solution. In contrary to the Appendix B3 we don't use a single concentration of a standards solution, we are using 10 concentrations for standards equidistance over the entire measuring range and calculate the standard deviation from the entire calibration. From this we calculate the uncertainty.
- 4) The uncertainty of the method lies within the acceptance criteria from requirement measuring the limit and the given tolerance. The results can be used for reporting.
- 5) The uncertainty of the method doesn't lie within the acceptance criteria from requirement measuring the limit and the given tolerance. The results can be used for screening (own information) but not for reporting. For reporting a other method must be used.
- 6) Merck has got an "USEPA equivalent" for SDWA (Safe Drinking Water Act) according to the procedure of 40 CFR part 136 Clean Water Act as for drinking water no own methods are available.
- 7) Merck has got an "USEPA equivalent" according to 40 CFR part 136 Clean Water Act (for wastewater analysis).
- 8) (not specified 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)
- 9) A parametric value of 0,70 mg/L shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption.

EU requirements											
	Cell size [mm]	LOD in [mg/L] ¹⁾	LOQ in [mg/L] ²⁾	Uncertainty (k = 2) [mg/L] ³⁾	Good for reporting ⁴⁾	Screening (own information) ⁵⁾	Test type	Cat. No.	No. of tests	USEPA equivalent for SDWA ⁶⁾	USEPA equivalent for CWA ⁷⁾
	50 mm	0.0032	0.0096	±0.004	yes	yes	Reagent Test	1.01846.0001	250		
	20 mm	0.004	0.012	±0.01	yes	yes					
	10 mm	0.008	0.024	±0.02	no	no					
	50 mm	0.0022	0.0067	±0.0117	yes	yes	Reagent Test	1.14770.0002 1.14770.0001	250 500		
	20 mm	0.007	0.021	±0.04	no	no					
	10 mm	0.014	0.043	±0.09	no	no					
							–	–	–		
	50 mm	0.0023	0.007	±0.022			Reagent Test	1.01632.0001	150		
	20 mm	0.0048	0.015	±0.055							
	10 mm	0.0096	0.029	±0.11							
	16 mm	0.0088	0.0264	±0.02			Cell Test	1.00860.0001	25		
	50 mm	0.0048	0.0144	±0.012	no	yes	Reagent Test	1.14785.0001	250		
	20 mm	0.0112	0.034	±0.03	no	no					
	10 mm	0.0224	0.067	±0.06	no	no					
	50 mm	0.18	0.53	±0.44	yes	yes	Reagent Test	1.09713.0001 1.09713.0002	100 250		USEPA equivalent
	20 mm	0.25	0.75	±0.67	yes	yes					
	10 mm	0.50	1.5	±1.33	yes	yes					
	20 mm	0.18	0.53	±0.85	yes	yes	Reagent Test	1.14773.0001	100		USEPA equivalent
	10 mm	0.21	0.63	±1.77	yes	yes					
	50 mm	1.06	3.18	±4.86	yes	yes	Reagent Test	1.01842.0001	100		USEPA equivalent
	16 mm	0.21	0.63	±1.33	yes	yes	Cell Test	1.14542.0001	25		USEPA equivalent
	16 mm	0.46	1.38	±1.33	yes	yes	Cell Test	1.14563.0001	25		USEPA equivalent
	16 mm	1.06	3.18	±2.66	yes	yes	Cell Test	1.14764.0001	25		USEPA equivalent

10) The parametric value of 25 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/L.

11) For the digestion of total chromium the CrackSet 10 or 10C is needed

12) Can be measured photometrically according to different standards like e.g. APHA 2120 F, APHA 2120 B, DIN EN ISO 6271-2, EN ISO 7887

13) not a photometric measurement

14) For the analysis of the total Cyanide a distillation included ppurging with air like e.g. described in APHA 4500-CN- C, is required.

15) The method determines total cyanide in all forms.

16) The parametric value of 5 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/L.

17) The analysis of Mercury with photometric analysis is not sensitive enough. Better to use a AA-Hg system or ICP-MS

18) A parametric value of 30 µg/L shall be applied for regions where geological conditions could lead to high levels of selenium in groundwater.

19) Method of choice is the flame photometer

20) The measurement of TDS is done with a conductivity meter.

21) It is the sum of concentrations of the following specified compounds: chloroform, bromoform, dibromochloromethane and bromodichloromethane.

22) For the measurement of turbidity in drinking water it is required to use a turbidity meter

23) Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 Nephelometric Turbidity Unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTUs in at least 95 percent of the samples in any month. Systems that use filtration other than the conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTUs.

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Spectroquant® Photometry Test Kits

Spectroquant® Test Kits for Drinking Water (N–Z)

	Parameter	WHO Guideline	USEPA	EU	EU	EU	EU	Test information according	
		2017 Limit values in [mg/L]	Jan 05th 2021 max. MCL in [mg/L]	Dec. 2020 max. limits [mg/L]	LOQ ≤ 30% of the limit calculated in [mg/L]	Uncertainty of measurement % of parameter value (k = 2)	Uncertainty value from the limit (k = 2) in [mg/L]	Measuring range per cell size [mg/L]	Citation form
N	Nitrites	3 (as NO ₂ ⁻)	1 (as N)	0.5 (as NO ₂)	0.15	20	0.1	0.007–0.657	NO ₂ ²⁴⁾
								0.03–1.64	
								0.07–3.28	
								0.03–2.30	NO ₂ ²⁴⁾
P	pH	not specified ⁸⁾	6.5–8.5	≥ 6.5–≤ 9.5				6.4–8.8 pH	pH
S	Selenium (Se)	0.04	0.05	0.02 ¹⁸⁾	0.006	40	0.008		
	Silver (Ag)	not specified ⁸⁾	0.1						
	Sodium (Na) ¹⁹⁾	not specified ⁸⁾		200	60	15	30		
	Sulfate (SO ₄)	not specified ⁸⁾	250	250	75	15	37.5	0.50–10.00	SO ₄
								1.3–25.0	
								2.5–50.0	
								1.0–50.0	SO ₄
								5–250	SO ₄
								5–300	SO ₄
								50–500	SO ₄
T	Total Dissolved Solids (TDS) ²⁰⁾	not specified ⁸⁾	500						
	Trihalomethans (total)	Chloroform: 0.3	0.08	0.1 ²¹⁾	0.03	40	0.04	0.05–2.00	AOX
	Turbidity ²²⁾	0.2 - 0.5 NTU	1 NTU ²³⁾	acceptable		30			
Z	Zinc	not specified ⁸⁾	5					0.025–1.00	Zn
								0.05–2.00	Zn
								0.20–5.00	Zn

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 EU Directive (EU) 2020/2184 of the European Parliament and the Council of 16 December 2020 on the quality of water intended for human consumption

- 1) The "Limit of Detection" (LOD) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 chapter 4.4.2 Limit of detection based on standard deviation of results of blank samples. To comply with regulatory demands, it may be necessary to perform an own determination.
- 2) The "Limit of Quantification" (LOQ) is determined by skilled staff in the QC lab and calculated according to ISO/TS 13530:2009 and calculated as 3 times the LOD. To comply with regulatory demands, it may be necessary to perform an own determination.
- 3) The uncertainty (k=2) is calculated according to ISO 11352:2012 Appendix B.3 — Estimation of measurement uncertainty using a standard solution. In contrary to the Appendix B3 we don't use a single concentration of a standards solution, we are using 10 concentrations for standards equidistance over the entire measuring range and calculate the standard deviation from the entire calibration. From this we calculate the uncertainty.
- 4) The uncertainty of the method lies within the acceptance criteria from requirement measuring the limit and the given tolerance. The results can be used for reporting.
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- 9) A parametric value of 0,70 mg/L shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption.

EU requirements											
	Cell size [mm]	LOD in [mg/L] ¹⁾	LOQ in [mg/L] ²⁾	Uncertainty (k = 2) [mg/L] ³⁾	Good for reporting ⁴⁾	Screening (own information) ⁵⁾	Test type	Cat. No.	No. of tests	USEPA equivalent for SDWA ⁶⁾	USEPA equivalent for CWA ⁷⁾
	50 mm	0.0016	0.0047	±0.0105	yes	yes	Reagent Test	1.14776.0002	335 1000		USEPA equivalent
	20 mm	0.0027	0.0079	±0.026	yes	yes		1.14776.0001			
	10 mm	0.0053	0.0158	±0.052	yes	yes					
	16 mm	0.0021	0.0063	±0.026	yes	yes	Cell Test	1.14547.0001	25		USEPA equivalent
	16 mm			±0.1 pH			Cell Test	1.01744.0001	280		
							–	–	–		
							–	–	–		
							–	–	–		
	50 mm	0.176	0.528	±0.36	yes	yes	Reagent Test	1.01812.0001	100		
	20 mm	0.28	0.84	±0.45	yes	yes					
	10 mm	0.56	1.68	±0.9	yes	yes					
	16 mm	0.32	0.96	±1.0	yes	yes	Cell Test	1.02532.0001	25		
	16 mm	1.68	5.04	±6	yes	yes	Cell Test	1.14548.0001	25		USEPA equivalent
	10 mm	1.6	4.8	±5	yes	yes	Reagent Test	1.02537.0001	100		
	16 mm	13.6	40.8	±12	yes	yes	Cell Test	1.00617.0001	25		
							–	–	–		
	16 mm	0.02	0.06	±0.12	no	yes	Cell Test	1.00675.0001	25		
	16 mm	0.0112	0.0336	±0.013			Cell Test	1.00861.0001	25		
	10 mm	0.012	0.036	±0.06			Reagent Test	1.14832.0001	100		
	16 mm	0.072	0.216	±0.08			Cell Test	1.14566.0001	25		

10) The parametric value of 25 µg/L shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/L.

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AQA FROM A to Z

Analytical Quality Assurance (AQA) is the practice of ensuring your results are reliable and conform to 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® Prove instruments. Target values and tolerances are either supplied in certificates or pre-programmed in the instruments.

Spectroquant® AQA Concept - 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

Installation qualification (IQ) and operational qualification (OQ)–checking the instrument

The purpose of IQ is to verify that instrument delivery matches the purchase order, and ensure that it is installed correctly.

OQ aims to assure the instrument's functionality over the entire operating range according to defined procedures. All Spectroquant® instruments are checked using certified color standards or Certipur® UV/Vis standards.

See **page 108**.

Photometer check	Information	Content	Cat. No.	Prove 100 300 600	NOVA 60A	Move 100	Move DC
Spectroquant® Zero Cell	We recommend replacing the zero cell every 2 years.	• One 16-mm cell filled with distilled water	1.73503.0001	•	•		
Spectroquant® PhotoCheck	Secondary standards are compliant with ISO 9001, ISO 14001 and ISO 17205 guidelines, and calibrated with instrument qualified with NIST standards.	• Check solutions for 3 different wavelengths • 2 zero cells • 2 cells for checking the bar-code reader (only for Spectroquant® NOVA photometers)	1.14693.0001	•	•		
Spectroquant® Verification Standards	Standards are supplied in sealed vials, which are individually calibrated on instruments traceable to NIST SRM 2032, 935a.	• 1 zero standard • 6 cells for checking 6 different wavelengths of the instrument	1.19302.0001			•	
Spectroquant® Reference Standards	Standards are supplied in sealed vials, which are individually calibrated on instruments traceable to NIST SRM 2032, 935a.	• 1 zero standard • 3 cells for checking 3 different concentrations for chlorine, chlorine dioxide and ozone method in the instrument	1.19301.0001				•
Spectroquant® PipeCheck	For checking pipettes and documenting results, without the need for a precise balance.	• 24 cells with check solutions • 4 cells with corresponding reference solutions	1.14962.0001	•	•	•	•



Spectroquant® Prove and Spectroquant® NOVA 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.

Spectroquant® Photometry

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.

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

The solutions are suitable for checking the following parameters as per Ph Eur:

- Absorption
- Stray light
- Wavelength accuracy

Designation	Content	Cat. 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 ₂ Cr ₂ O ₇ – 60.06 mg/L in H ₂ SO ₄ – 0.01 N and 6 x 10 mL H ₂ SO ₄ – 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 ₂ Cr ₂ O ₇ – 600.06 mg/L in H ₂ SO ₄ – 0.01 N and 6 x 10 mL H ₂ SO ₄ – 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 ₂ – 50 g/L in H ₂ 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 ₂ 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 ₂ 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 ₂ O ₃ – 40 g/L in HClO ₄ (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 a system check (see below) and a matrix check (see next page).

System Check

The complete system can be checked using standard solutions of a known content and covers all components of the analysis: instrument, test kit, standard, pipette and/or cell, and operator.

Spectroquant® test kits are listed on **page 62–85**

Spectroquant® CombiCheck see **page 110–113**

Standard solutions (CRM) for photometric applications see **page 116–117**

Certipur® standard solutions see **page 118**

MATRIX CHECK AQA 3

Matrix Check

Identifies measurement errors due to interferences from foreign substances in the sample.

Because they can significantly interfere with results, we have tested a number of foreign compounds to determine the maximum concentration they may be present at without causing errors. These limits are defined in the package insert of each Spectroquant® test kit. However, for samples with very complex or unknown compositions, we recommend analysis of interferences based on recovery rates and rectification through appropriate countermeasures like sample pre-treatment.

How?

Depending on the sample concentration and the available test kit measuring range, there are two methods: spiking with standard solutions or diluting with water.

For ease of use, Spectroquant® CombiChecks provide a CombiCheck R-2 addition solution for one-time standard addition (spiking).

Spectroquant® CombiCheck product information page 110

When using self-prepared standard solutions or following listed, it is necessary to spike multiple times. To avoid changing the sample matrix, spiking solutions should be highly concentrated and used in small quantities relative to the sample. The AQA3 program in Spectroquant® Prove spectrophotometers will guide you through this procedure step-by-step.

Standard solutions (CRM) for photometric applications product information page 116

Certipur® standard solutions product information page 118

Comprehensive quality assurance using IQ, OQ, and PQ documents will transform your measurements into proven, verifiable analytical results. Please contact your local 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® Photometry

Analytical Quality Assurance

The Combination for Simplicity

Convenient photometric system checking with one product. **Spectroquant® CombiChecks** have two standard solutions for multiple analytes of interest: one for direct measurement and the other for spiking your sample. The performance check covers test kits, instruments, and individual working procedures.

All analytes have specified concentration, are ready-to-use, and directly traceable to NIST primary standards. If you obtain a measurement result within the specified concentration range with your test kit and instrument, your system is working properly.

If you obtain outside the specified range, further investigation is needed to determine the reason. This may be due to interfering substances in the sample matrix, in which case an appropriate sample pre-treatment to remove the interfering compounds is necessary. Methods for this type of removal are described in various application notes. Another possibility is that it is a result of the uncertainty introduced by the test kit you are using.

CombiCheck 10

Spectroquant® CombiCheck 10 | Cat. No. 1.14676.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Ammonium	4.00	±0.30 mg/L NH ₄ -N	1.14558.0001	1.0	96
	Chloride	25	±6 mg/L Cl	1.14730.0001	1.0	96
	COD	80	±12 mg/L COD	1.14540.0001	3.0	32
		80	±12 mg/L COD	1.18751.0001	2.0	48
	Nitrate	2.50	±0.25 mg/L NO ₃ -N	1.14556.0001	2.0	48
		2.50	±0.25 mg/L NO ₃ -N	1.14773.0001 ²⁾	1.5	64
		2.50	±0.25 mg/L NO ₃ -N	1.09713.0001 ³⁾	1.0	96
	Phosphate ⁴⁾	0.80	±0.08 mg/L PO ₄ -P	1.00474.0001	5.0	19
		0.80	±0.08 mg/L PO ₄ -P	1.14543.0001	5.0	19
		0.80	±0.08 mg/L PO ₄ -P	1.14848.0001/ .0002 ²⁾	5.0	19
		0.80	±0.08 mg/L PO ₄ -P	1.14848.0001 ³⁾ / .0002 ³⁾	10.0	9
	Sulfate	100	±15 mg/L SO ₄ ²⁻	1.14548.0001	5.0	19
		100	±15 mg/L SO ₄ ²⁻	1.00617.0001	2.0	48
		100	±15 mg/L SO ₄ ²⁻	1.02537.0001	5.0	19
Addition Solution Reagent R-2 (for spiking of samples)	Ammonium	3.00	±0.25 mg/L NH ₄ -N	1.14558.0001	0.10	280
	Chloride	25	±6 mg/L Cl	1.14730.0001	0.10	280
	COD	30	±8 mg/L COD	1.14540.0001	0.10	280
		45	±8 mg/L COD	1.18751.0001	0.10	280
	Nitrate	1.50	±0.20 mg/L NO ₃ -N	1.14556.0001	0.10	280
		2.00	±0.40 mg/L NO ₃ -N	1.14773.0001 ²⁾	0.10	280
		3.00	±0.50 mg/L NO ₃ -N	1.09713.0001 ³⁾	0.10	280
		6.0	±1.0 mg/L NO ₃ -N	1.09713.0001 ¹⁾ ²⁾	0.10	280
	Phosphate ⁴⁾	0.60	±0.07 mg/L PO ₄ -P	1.00474.0001	0.10	280
		0.60	±0.07 mg/L PO ₄ -P	1.14543.0001	0.10	280
		0.30	±0.05 mg/L PO ₄ -P	1.14848.0001/ .0002 ³⁾	0.10	280
	Sulfate	40	±5 mg/L SO ₄ ²⁻	1.14548.0001	0.10	280
		100	±15 mg/L SO ₄ ²⁻	1.00617.0001	0.10	280
		40	±5 mg/L SO ₄ ²⁻	1.02537.0001	0.10	280

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

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

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

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

5) when using AutoSelector, measuring range 5 - 150 mg/L NH₄-N is used

CombiCheck 20

Spectroquant® CombiCheck 20 | Cat. No. 1.14675.0001

	Parameter	Concentration and working tolerance		Can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Ammonium	12.0	±1.0 mg/L NH ₄ -N	1.14544.0001	0.50	192
	Chloride	60	±10 mg/L Cl	1.14730.0001	1.0	96
	COD	750	±75 mg/L COD	1.14541.0001	3.0	32
		750	±75 mg/L COD	1.18752.0001	2.0	48
	Nitrate	9.0	±0.9 mg/L NO ₃ -N	1.14563.0001	1.0	96
		9.0	±0.9 mg/L NO ₃ -N	1.14542.0001	1.5	64
		9.0	±0.9 mg/L NO ₃ -N	1.09713.0001/ .0002 ¹⁾	0.50	192 ¹⁾
		9.0	±0.9 mg/L NO ₃ -N	1.14773.0001 ¹⁾	1.5	64
		9.0	±0.9 mg/L NO ₃ -N	1.14942.0001	1.0	96
	Phosphate ⁴⁾	8.0	±0.7 mg/L PO ₄ -P	1.00475.0001	1.0	96
		8.0	±0.7 mg/L PO ₄ -P	1.14729.0001	1.0	96
	Sulfate	500	±75 mg/L SO ₄ ²⁻	1.14564.0001	1.0	96
Addition Solution Reagent R-2 (for spiking of samples)	Ammonium	8.0	±0.8 mg/L NH ₄ -N	1.14544.0001	0.10	280
	Chloride	40	±7 mg/L Cl	1.14730.0001	0.10	280
	COD	200	±40 mg/L COD	1.14541.0001	0.10	280
		300	±40 mg/L COD	1.18752.0001	0.10	280
	Nitrate	7.5	±0.8 mg/L NO ₃ -N	1.14563.0001	0.10	280
		5.0	±0.6 mg/L NO ₃ -N	1.14542.0001	0.10	280
		15.0	±1.5 mg/L NO ₃ -N	1.09713.0001/ .0002	0.10	280
		5.0	±0.6 mg/L NO ₃ -N	1.14773.0001 ¹⁾	0.10	280
		7.5	±0.8 mg/L NO ₃ -N	1.14942.0001 ¹⁾	0.10	280
	Phosphate ⁴⁾	5.0	±0.5 mg/L PO ₄ -P	1.00475.0001	0.10	280
		5.0	±0.5 mg/L PO ₄ -P	1.14729.0001	0.10	280
	Sulfate	150	±30 mg/L SO ₄ ²⁻	1.14564.0001	0.10	280

CombiCheck 50

Spectroquant® CombiCheck 50 | Cat. No. 1.14695.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Ammonium	1.000	±0.100 mg/L NH ₄ -N	1.14739.0001	5.0	19
		1.00	±0.10 mg/L NH ₄ -N	1.14752.0002/ .0001 ¹⁾	5.0	19
	COD	20.0	±4.0 mg/L COD	1.14560.0001	3.0	32
		20.0	±4.0 mg/L COD	1.01796.0001	2.0	48
		20.0	±4.0 mg/L COD	1.18750.0001	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
Addition Solution Reagent R-2 (for spiking of samples)	Ammonium	1.000	±0.100 mg/L NH ₄ -N	1.14739.0001	0.10	280
		1.00	±0.10 mg/L NH ₄ -N	1.14752.0002/ .0001 ¹⁾	0.10	280
	COD	10.0	±3.0 mg/L COD	1.14560.0001	0.10	280
		15.0	±3.0 mg/L COD	1.01796.0001	0.10	280
		15.0	±3.0 mg/L COD	1.18750.0001	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

¹⁾ using a 10-mm rectangular cell, Cat. No. 1.14946.0001²⁾ using a 20-mm rectangular cell, Cat. No. 1.14947.0001³⁾ using a 50-mm rectangular cell, Cat. No. 1.14944.0001⁴⁾ only the determination of ortho-phosphate can be checked⁵⁾ when using AutoSelector, measuring range 5 - 150 mg/L NH₄-N is used

Spectroquant® Photometry

Analytical Quality Assurance

CombiCheck 60

Spectroquant® CombiCheck 60 | Cat. No. 1.14696.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Chloride	125	±13 mg/L Cl ⁻	1.14897.0001/ .0002	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
Addition Solution Reagent R-2 (for spiking of samples)	Chloride	50	±7 mg/L Cl ⁻	1.14897.0001/ .0002	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

Spectroquant® CombiCheck 70 | Cat. No. 1.14689.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Ammonium	50.0	±5.0 mg/L NH ₄ -N	1.14559.0001	0.10	960
	Ammonium (2.0–75.0 mg/L)	50.0	±5.0 mg/L NH ₄ -N	1.00683.0001 ^{1) 5)}	0.20	480
	Ammonium (5–150 mg/L)	50	±5 mg/L NH ₄ -N	1.00683.0001 ^{1) 5)}	0.10	960
	COD	5,000	±400 mg/L COD	1.14555.0001	1.0	96
		5,000	±400 mg/L COD	1.18753.0001	0.20	480
	Nitrogen	50	±7 mg/L N	1.14763.0001	1.0	96
Addition Solution Reagent R-2 (for spiking of samples)	Ammonium	20.0	±2.0 mg/L NH ₄ -N	1.14559.0001	0.10	280
	Ammonium (2.0–75.0 mg/L)	10.0	±1.0 mg/L NH ₄ -N	1.00683.0001 ^{1) 5)}	0.10	280
	Ammonium (5–150 mg/L)	20	±2 mg/L NH ₄ -N	1.00683.0001 ^{1) 5)}	0.10	280
	COD	2,000	±200 mg/L COD	1.14555.0001	0.10	280
	Nitrogen	20	±6 mg/L N	1.14763.0001	0.10	280

CombiCheck 80

Spectroquant® CombiCheck 80 | Cat. No. 1.14738.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	COD	1,500	±150 mg/L COD	1.14691.0001	2.0	48
	Nitrate	25.0	±2.5 mg/L NO ₃ -N	1.14764.0001	0.50	190
	Phosphate ⁴⁾	15.0	±1.0 mg/L PO ₄ -P	1.00475.0001	1.0	96
		15.0	±1.0 mg/L PO ₄ -P	1.14729.0001	1.0	96
Addition Solution Reagent R-2 (for spiking of samples)	COD	1,000	±100 mg/L COD	1.14691.0001	0.10	280
	Nitrate	10.0	±1.5 mg/L NO ₃ -N	1.14764.0001	0.10	280
	Phosphate ⁴⁾	5.0	±0.5 mg/L PO ₄ -P	1.00475.0001	0.10	280
		5.0	±0.5 mg/L PO ₄ -P	1.14729.0001	0.10	280

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

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

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

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

5) when using AutoSelector, measuring range 5 - 150 mg/L NH₄-N is used

CombiCheck 90

Spectroquant® CombiCheck 90 | Cat. No. 1.18700.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Cadmium	0.250	±0.030 mg/L Cd	1.01745.0001 ¹⁾	10.0	9
		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 ¹⁾	5.0	19
		1.00	±0.15 mg/L Fe	1.00796.0001 ¹⁾	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 ¹⁾	5.0	19
	Manganese	1.00	±0.15 mg/L Mn	1.00816.0001	7.0	13
		1.00	±0.15 mg/L Mn	1.14770.0001 ³⁾	10.0	9
		1.00	±0.15 mg/L Mn	1.01846.0001 ¹⁾	8.0	12
Addition Solution Reagent R-2 (for spiking of samples)	Cadmium	0.100	±0.015 mg/L Cd	1.01745.0001 ¹⁾	0.10	280
		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 ¹⁾	0.10	280
		1.88	±0.20 mg/L Fe	1.00796.0001 ¹⁾	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 ¹⁾	0.10	280
	Manganese	1.43	±0.15 mg/L Mn	1.00816.0001	0.10	280
		1.00	±0.15 mg/L Mn	1.14770.0001 ³⁾	0.10	280
		1.25	±0.15 mg/L Mn	1.01846.0001 ¹⁾	0.10	280

CombiCheck 100

Spectroquant® CombiCheck 100 | Cat. No. 1.18701.0001

	Parameter	Concentration and working tolerance		can be used for test kits Cat. No.	Standard solution [mL]	Number of quality checks
Standard Solution Reagent R-1	Aluminium	0.40	±0.05 mg/L Al	1.00594.0001	6.0	16
		0.40	±0.05 mg/L Al	1.14825.0001 ¹⁾	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 ¹⁾	8.0	11
	Nickel	2.00	±0.20 mg/L Ni	1.14554.0001	5.0	19
		2.00	±0.20 mg/L Ni	1.14785.0001 ¹⁾	5.0	19
	Zinc	0.750	±0.150 mg/L Zn	1.00861.0001	10.0	9
		0.75	±0.15 mg/L Zn	1.14832.0001	5.0	19
Addition Solution Reagent R-2 (for spiking of samples)	Aluminium	0.20	±0.03 mg/L Al	1.00594.0001	0.10	280
		0.24	±0.04 mg/L Al	1.14825.0001 ¹⁾	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 ¹⁾	0.10	280
	Nickel	2.00	±0.20 mg/L Ni	1.14554.0001	0.10	280
		2.00	±0.20 mg/L Ni	1.14785.0001 ¹⁾	0.10	280
	Zinc	0.250	±0.050 mg/L Zn	1.00861.0001	0.10	280
		0.50	±0.10 mg/L Zn	1.14832.0001	0.10	280

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

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

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

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

5) when using AutoSelector, measuring range 5 - 150 mg/L NH₄-N is used

NO DILUTION. NO DOUBTS. NO DELAYS.

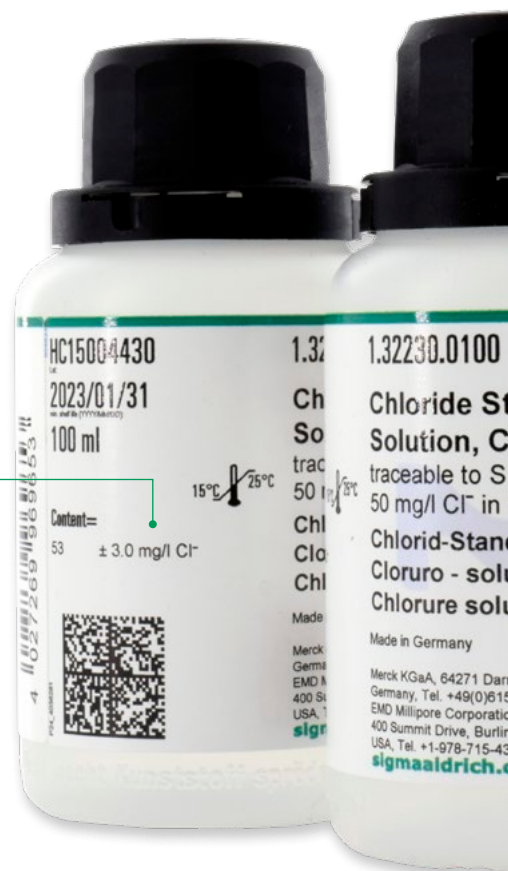
Experience absolute precision in photometric quality control with our ready-to-use, **reference material solutions**. As a result of their exact concentrations, expanded measurement uncertainty, and direct traceability to NIST primary reference materials, our standards ensure that your measurements are correct and comparable worldwide.

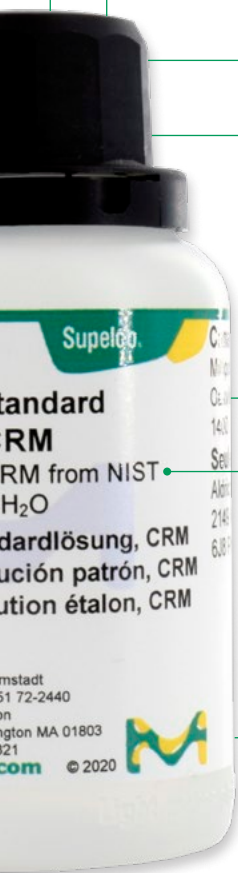
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PRECISE
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DIRECTLY
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Complete range of parameters for analytical quality control of wastewater, drinking water, and process water

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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, EPA, 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 38)

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."¹

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."²

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."²

Secondary measurement standard

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

¹ ISO Guide 99:2007; International Vocabulary of Metrology—Basic and General Concepts and Associated Terms (VIM)

² ISO/Guide 30:2015; Reference Materials—Selected Terms and Definitions

Spectroquant® Photometry

Analytical Quality Assurance

Standard Solutions (100 mL, in H₂O), traceable to SRM from NIST

	Product	Concentration	Expanded Measurement Uncertainty	Cat. No.
A	Aluminium Standard Solution	0.200 mg/L Al	±0.006 mg/L Al	1.32225.0100
	Ammonium Standard Solution	0.250 mg/L NH ₄	±0.011 mg/L NH ₄	1.32227.0100
	Ammonium Standard Solution	0.400 mg/L NH ₄ -N	±0.012 mg/L NH ₄ -N	1.25022.0100
	Ammonium Standard Solution	1.00 mg/L NH ₄ -N	±0.04 mg/L NH ₄ -N	1.25023.0100
	Ammonium Standard Solution	2.00 mg/L NH ₄ -N	±0.07 mg/L NH ₄ -N	1.25024.0100
	Ammonium Standard Solution	6.00 mg/L NH ₄ -N	±0.13 mg/L NH ₄ -N	1.25025.0100
	Ammonium Standard Solution	12.0 mg/L NH ₄ -N	±0.4 mg/L NH ₄ -N	1.25026.0100
	Ammonium Standard Solution	50.0 mg/L NH ₄ -N	±1.2 mg/L NH ₄ -N	1.25027.0100
	Arsenic Standard Solution	1.00 mg/L As	±0.05 mg/L As	1.33002.0250 ^{1) 2)}
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 ₃	±0.0006 mg/L BrO ₃	1.33006.0100
	Bromate Standard Solution	0.1000 mg/L BrO ₃	±0.0040 mg/L BrO ₃	1.33007.0100
C	Cadmium Standard Solution	0.00500 mg/L Cd	±0.00020 mg/L Cd	1.33008.0100 ¹⁾
	Chloride Standard Solution	0.100 mg/L Cl	±0.006 mg/L Cl ⁻	1.33009.0100
	Chloride Standard Solution	1.00 mg/L Cl	±0.04 mg/L Cl ⁻	1.33010.0100
	Chloride Standard Solution	2.50 mg/L Cl	±0.08 mg/L Cl ⁻	1.33011.0100
	Chloride Standard Solution	10.0 mg/L Cl	±0.5 mg/L Cl ⁻	1.32229.0100
	Chloride Standard Solution	50 mg/L Cl	±3 mg/L Cl ⁻	1.32230.0100
	Chloride Standard Solution	250 mg/L Cl	±8 mg/L Cl ⁻	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
F	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
I	Iron Standard Solution	0.0500 mg/L Fe	±0.0015 mg/L Fe	1.33014.0100 ¹⁾
	Iron Standard Solution	0.1000 mg/L Fe	±0.0030 mg/L Fe	1.33018.0100 ¹⁾
	Iron Standard Solution	0.300 mg/L Fe	±0.009 mg/L Fe	1.33019.0100 ¹⁾
	Iron Standard Solution	1.00 mg/L Fe	±0.04 mg/L Fe	1.33020.0100 ¹⁾
L	Lead Standard Solution	0.0500 mg/L Pb	±0.0040 mg/L Pb	1.33003.0100 ¹⁾
	Lead Standard Solution	0.100 mg/L Pb	±0.005 mg/L Pb	1.33004.0100 ¹⁾

1) 100 mL, in HNO₃ 2) 250 mL bottle 3) traceable to USP

get your COA

Certificates of Analysis (COAs) for all our standard solutions can be downloaded free of charge.
Contact our Customer Service.

Standard Solutions (100 mL, in H₂O), traceable to SRM from NIST

	Product	Concentration	Expanded Measurement Uncertainty	Cat. No.
M	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
N	Nitrate Standard Solution	1.00 mg/L NO ₃	±0.03 mg/L NO ₃	1.32240.0100
	Nitrate Standard Solution	10.0 mg/L NO ₃	±0.3 mg/L NO ₃	1.32241.0100
	Nitrate Standard Solution	50.0 mg/L NO ₃	±2.0 mg/L NO ₃	1.32242.0100
	Nitrate Standard Solution	0.50 mg/L NO ₃ -N	±0.05 mg/L NO ₃ -N	1.25036.0100
	Nitrate Standard Solution	2.50 mg/L NO ₃ -N	±0.06 mg/L NO ₃ -N	1.25037.0100
	Nitrate Standard Solution	15.0 mg/L NO ₃ -N	±0.4 mg/L NO ₃ -N	1.25038.0100
	Nitrate Standard Solution	40.0 mg/L NO ₃ -N	±1 mg/L NO ₃ -N	1.25039.0100
	Nitrate Standard Solution	200 mg/L NO ₃ -N	±5 mg/L NO ₃ -N	1.25040.0100
	Nitrite Standard Solution	0.200 mg/L NO ₂ -N	±0.009 mg/L NO ₂ -N	1.25041.0100
	Nitrite Standard Solution	40.0 mg/L NO ₂ -N	±1.3 mg/L NO ₂ -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
	Phosphorus Standard Solution	0.400 mg/L PO ₄ -P	±0.016 mg/L PO ₄ -P	1.25046.0100
	Phosphorus Standard Solution	4.00 mg/L PO ₄ -P	±0.08 mg/L PO ₄ -P	1.25047.0100
P	Phosphorus Standard Solution	15.0 mg/L PO ₄ -P	±0.4 mg/L PO ₄ -P	1.25048.0100
	Phosphorus Standard Solution	75.0 mg/L PO ₄ -P	±1.6 mg/L PO ₄ -P	1.25049.0100
S	Silicate Standard Solution	0.1000 mg/L SiO ₂	±0.0040 mg/L SiO ₂	1.32244.0100
	Silicate Standard Solution	0.500 mg/L SiO ₂	±0.025 mg/L SiO ₂	1.32243.0100
	Silicate Standard Solution	1.000 mg/L SiO ₂	±0.030 mg/L SiO ₂	1.32245.0100
	Sulfate Standard Solution	40 mg/L SO ₄	±6 mg/L SO ₄	1.25050.0100
	Sulfate Standard Solution	125 mg/L SO ₄	±6 mg/L SO ₄	1.25051.0100
	Sulfate Standard Solution	400 mg/L SO ₄	±20 mg/L SO ₄	1.25052.0100
	Sulfate Standard Solution	800 mg/L SO ₄	±27 mg/L SO ₄	1.25053.0100
	Surfactants (nonionic) Standard Solution ³⁾	1.00 mg/L Triton® X-100	±0.16 mg/L Triton® X-100	1.33022.0100
	Surfactants (nonionic) Standard Solution ³⁾	5.00 mg/L Triton® X-100	±0.30 mg/L Triton® X-100	1.33023.0100
	Surfactants (nonionic) Standard Solution ³⁾	10.00 mg/L Triton® X-100	±0.30 mg/L Triton® X-100	1.33024.0100
T	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 HNO₃ 2) 250 mL bottle 3) traceable to USP

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 easily be diluted to whatever concentration you require.

	Parameter	Volume	Cat. No.
A	Aluminium	100 mL	1.19770.0100
	Ammonium	500 mL	1.19812.0500
	Antimony	100 mL	1.70204.0100
	Arsenic	100 mL	1.19773.0100
B	Boron	100 mL	1.19500.0100
C	Cadmium	100 mL	1.19777.0100
	Calcium	100 mL	1.19778.0100
	Chloride	500 mL	1.19897.0500
	Chromate	500 mL	1.19780.0500
	Chromium	100 mL	1.19779.0100
	Cobalt	100 mL	1.19785.0100
	Copper	100 mL	1.19786.0100
	Cyanide	500 mL	1.19533.0500
F	Fluoride	500 mL	1.19814.0500
G	Gold	100 mL	1.70216.0100
I	Iron	100 mL	1.19781.0100
L	Lead	100 mL	1.19776.0100
M	Magnesium	100 mL	1.19788.0100
	Manganese	100 mL	1.19789.0100
	Mercury	100 mL	1.70226.0100
	Molybdenum	100 mL	1.70227.0100
N	Nickel*	1,000 mL	1.09989.0001
	Nitrate	500 mL	1.19811.0500
	Nitrite	500 mL	1.19899.0500

	Parameter	Volume	Cat. No.
P	Palladium	100 mL	1.14282.0100
	Phosphate	500 mL	1.19898.0500
	Platinum	100 mL	1.70219.0100
	Potassium	100 mL	1.70230.0100
S	Silicon	100 mL	1.70236.0100
	Silver	100 mL	1.19797.0100
	Sulfate	500 mL	1.19813.0500
T	Tin	100 mL	1.70242.0100
	TOC	100 mL	1.09017.0100
V	Vanadium	100 mL	1.70245.0100
Z	Zinc	100 mL	1.19806.0100

* Titrisol®



Proficiency testing (PT) process

1. **Registration & ordering:** 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 the pre-determined 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, and a copy is sent to your accreditation body if requested

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		•		

Spectroquant® Photometry

Analytical Quality Assurance

Cross Reference per Test Kit Parameter (A–Z)

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. A comprehensive overview of standard solutions and further information can be found on **VWR® CombiCheck**.

Analytical Quality Assurance - Cross Reference per Test Kit Parameter (A–C)

	Test kit	Cat. No. Test kit	Cat. No. CombiCheck	Cat. No. Standard solution, CRM	Alternative standard	Cat. No. Certipur® standard sol.
A	Acid Capacity Cell Test to pH 4.3 (total alkalinity)	1.01758.0001			²⁾	
	Aluminium Cell Test	1.00594.0001	1.18701.0001	1.32225.0100	¹⁾	1.19770.0100
	Aluminium Test	1.14825.0001	1.18701.0001	1.32225.0100	¹⁾	1.19770.0100
	Ammonium Cell Test	1.14739.0001	1.14695.0001	1.25022.0100 1.25023.0100	¹⁾	1.19812.0500
	Ammonium Cell Test	1.14558.0001	1.14676.0001	1.25022.0100 1.25023.0100 1.25024.0100 1.25025.0100	¹⁾	1.19812.0500
	Ammonium Cell Test	1.14544.0001	1.14675.0001	1.25023.0100 1.25024.0100 1.25025.0100 1.25026.0100	¹⁾	1.19812.0500
	Ammonium Cell Test	1.14559.0001	1.14689.0001	1.25025.0100 1.25026.0100 1.25027.0100	¹⁾	1.19812.0500
	Ammonium Test	1.14752.0002	1.14695.0001	1.25022.0100 1.25023.0100 1.25024.0100	¹⁾	1.19812.0500
	Ammonium Test	1.00683.0001	1.14689.0001	1.25025.0100 1.25026.0100 1.25027.0100	¹⁾	1.19812.0500
	AOX Cell Test	1.00675.0001			0.2–2.0 mg/L AOX 1.00680.0001	
	Arsenic Test	1.01747.0001		1.33002.0250	¹⁾	1.19773.0100
	BOD Cell Test	1.00687.0001			EN 1899, 210 mg/L 1.00718.0001	
B	Boron Cell Test	1.00826.0001		1.33005.0100	¹⁾	1.19500.0100
	Boron Test	1.14839.0001			¹⁾	1.19500.0100
	Bromate	–		1.33006.0100 1.33007.0100	²⁾	
	Bromine Test	1.00605.0001			DIN EN ISO 7393 ²⁾	
C	Cadmium Cell Test	1.14834.0001	1.18700.0001		¹⁾	1.19777.0100
	Cadmium Test	1.01745.0001	1.18700.0001			1.19777.0100
	Calcium Cell Test	1.00858.0001			NIST3109A ²⁾	

¹⁾ Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see column Cat. No. Certipur® standard solution)

²⁾ Own standards. Application Notes/Protocols how to prepare these standards can be downloaded from our website **SigmaAldrich.com**

³⁾ For photometers of other manufacturers

Analytical Quality Assurance - Cross Reference per Test Kit Parameter (C)

	Test kit	Cat. No. Test kit	Cat. No. CombiCheck	Cat. No. Standard solution, CRM	Alternative standard	Cat. No. Certipur® standard sol.
C	Calcium Test	1.00049.0001			¹⁾	1.19778.0100
	Calcium Test	1.14815.0001			¹⁾	1.19778.0100
	Chloride Cell Test	1.01804.0001		1.33010.0100	¹⁾	1.19897.0500
	Chloride Cell Test	1.14730.0001	1.14676.0001 1.14675.0001	1.32229.0100 1.32230.0100	¹⁾	1.19897.0500
	Chloride Test	1.01807.0001		1.33010.0100	¹⁾	1.19897.0500
	Chloride Test	1.14897.0002	1.14696.0001	1.32229.0100 1.32230.0100	¹⁾	1.19897.0500
	Chlorine Cell test (free)	1.00595.0001			DIN EN ISO 7393 ²⁾	
	Chlorine Test (free)	1.00598.0001			DIN EN ISO 7393 ²⁾	
	Chlorine Test (total)	1.00602.0002			DIN EN ISO 7393 ²⁾	
	Chlorine Cell Test (free and total)	1.00597.0001			DIN EN ISO 7393 ²⁾	
	Chlorine Test (free and total)	1.00599.0001			DIN EN ISO 7393 ²⁾	
	Chlorine Dioxide Test	1.00608.0001			DIN EN ISO 7393 ²⁾	
	Chromate Cell Test	1.14552.0001		1.33013.0100	¹⁾	1.19780.0500
	Chromate Test	1.14758.0001		1.33012.0100	¹⁾	1.19780.0500
	Cobalt Cell Test	1.17244.0001				
	COD Cell Test	1.14560.0001	1.14695.0001	1.25028.0100	²⁾	
	COD Cell Test	1.01796.0001	1.14695.0001	1.25028.0100	²⁾	
	COD Cell Test	1.14540.0001	1.14676.0001	1.25029.0100	²⁾	
	COD Cell Test	1.14895.0001	1.14696.0001	1.25029.0100 1.25030.0100	²⁾	
	COD Cell Test	1.14690.0001	1.14696.0001	1.25029.0100 1.25030.0100 1.25031.0100	²⁾	
	COD Cell Test	1.14541.0001	1.14675.0001	1.25029.0100 1.25031.0100 1.25030.0100 1.25032.0100	²⁾	
	COD Cell Test	1.14691.0001	1.14738.0001	1.25031.0100 1.25032.0100 1.25033.0100	²⁾	
	COD Cell Test	1.14555.0001	1.14689.0001	1.25032.0100 1.25033.0100 1.25034.0100	²⁾	

¹⁾ Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see column Cat. No. Certipur® standard solution)

²⁾ Own standards. Application Notes/Protocols how to prepare these standards can be downloaded from our website [SigmaAldrich.com](#)

³⁾ For photometers of other manufacturers

Spectroquant® Photometry

Analytical Quality Assurance

Analytical Quality Assurance - Cross Reference per Test Kit Parameter (C-L)

	Test kit	Cat. No. Test kit	Cat. No. CombiCheck	Cat. No. Standard solution, CRM	Alternative standard	Cat. No. Certipur® standard sol.
C	COD Cell Test	1.01797.0001		1.25035.0100	2)	
	COD Cell Test (Hg-free)	1.09772.0001		1.25028.0100 1.25029.0100	2)	
	COD Cell Test (Hg-free)	1.09773.0001		1.25030.0100 1.25031.0100 1.25032.0100	2)	
	COD Cell Test 3)	1.18750.0001	1.14695.0001	1.25028.0100	2)	
	COD Cell Test 3)	1.18751.0001	1.14676.0001	1.25029.0100	2)	
	COD Cell Test 3)	1.18752.0001	1.14675.0001	1.25029.0100	2)	
	COD Cell Test 3)	1.18753.0001	1.14689.0001	1.25032.0100	2)	
	COD Cell Test for seawater / high chloride contents	1.17058.0001			2)	
	COD Cell Test for seawater / high chloride contents	1.17059.0001			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	1.14561.0001			1)	1.19533.0500
	Cyanide Test	1.09701.0001			1)	1.19533.0500
	Cyanuric Acid Test	1.19253.0001			2)	
F	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	1.14598.0002		1.32234.0100	1)	1.19814.0500
	Formaldehyde Cell Test	1.14500.0001			2)	
	Formaldehyde Test	1.14678.0001			2)	
G	Gold Test	1.14821.0002			1)	1.70216.0100
H	Hydrazine Test	1.09711.0001			2)	
	Hydrogen Peroxide Cell Test	1.14731.0001			2)	
	Hydrogen Peroxide Test	1.18789.0001			2)	
I	Iron Cell Test	1.14549.0001	1.18700.0001	1.33018.0100 1.33019.0100	1)	1.19781.0100
	Iron Cell Test	1.14896.0001			1)	1.19781.0100
	Iron Test	1.14761.0002	1.18700.0001	1.33014.0100 1.33018.0100	1)	1.19781.0100
	Iron Test	1.00796.0001	1.18700.0001	1.33014.0100 1.33018.0100	1)	1.19781.0100
L	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

1) Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see column Cat. No. Certipur® standard solution)

2) Own standards. Application Notes/Protocols how to prepare these standards can be downloaded from our website [SigmaAldrich.com](https://www.sigmaaldrich.com)

3) For photometers of other manufacturers

Analytical Quality Assurance - Cross Reference per Test Kit Parameter (M–N)

	Test kit	Cat. No. Test kit	Cat. No. CombiCheck	Cat. No. Standard solution, CRM	Alternative standard	Cat. No. Certipur® standard sol.
M	Magnesium Cell Test	1.00815.0001		NIST3131A	²⁾	
	Manganese Cell Test	1.00816.0001	1.18700.0001	1.32238.0100	¹⁾	1.19789.0100
	Manganese Test	1.01846.0001	1.18700.0001		¹⁾	1.19789.0100
	Manganese Test	1.14770.0002	1.18700.0001	1.32237.0100 1.32238.0100	¹⁾	1.19789.0100
	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	1.14785.0001	1.18701.0001		¹⁾	1.09989.0001
	Nitrate Cell Test	1.14542.0001	1.14675.0001	1.25037.0100 1.25038.0100	¹⁾	1.19811.0500
	Nitrate Cell Test	1.14563.0001	1.14675.0001	1.25037.0100 1.25038.0100	¹⁾	1.19811.0500
	Nitrate Cell Test	1.14764.0001	1.14738.0001	1.25037.0100 1.25038.0100 1.25039.0100	¹⁾	1.19811.0500
	Nitrate Cell Test	1.00614.0001		1.25039.0100 1.25040.0100	¹⁾	1.19811.0500
	Nitrate Test	1.01842.0001		1.32241.0100 1.32242.0100	¹⁾	1.19811.0500
	Nitrate Test	1.14773.0001	1.14676.0001 1.14675.0001	1.25036.0100 1.25037.0100 1.25038.0100	¹⁾	1.19811.0500
	Nitrate Test	1.09713.0002	1.14676.0001 1.14675.0001	1.25036.0100 1.25037.0100 1.25038.0100	¹⁾	1.19811.0500
	Nitrate Cell Test in seawater	1.14556.0001	1.14676.0001	1.25036.0100 1.25037.0100	¹⁾	1.19811.0500
	Nitrate Test in seawater	1.14942.0001	1.14675.0001	1.25036.0100 1.25037.0100 1.25038.0100	¹⁾	1.19811.0500
	Nitrite Cell Test	1.14547.0001		1.25041.0100	¹⁾	1.19899.0500
	Nitrite Test	1.14776.0001		1.25041.0100	¹⁾	1.19899.0500
	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 1.25044.0100	²⁾	
	Nitrogen (total) Cell Test	1.00613.0001	1.14695.0001	1.25043.0100 1.25044.0100	²⁾	
	Nitrogen (total) Cell Test	1.14763.0001	1.14689.0001	1.25044.0100 1.25045.0100	²⁾	
O	Oxygen Cell Test	1.14694.0001			²⁾	
	Oxygen Scavengers Test	1.19251.0001			²⁾	
	Ozone-Test	1.00607.0002			DIN EN ISO 7393 ²⁾	

¹⁾ Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see column Cat. No. Certipur® standard solution)

²⁾ Own standards. Application Notes/Protocols how to prepare these standards can be downloaded from our website [SigmaAldrich.com](#)

³⁾ For photometers of other manufacturers

Spectroquant® Photometry

Analytical Quality Assurance

Analytical Quality Assurance - Cross Reference per Test Kit Parameter (O-S)

	Test kit	Cat. No. Test kit	Cat. No. CombiCheck	Cat. No. Standard solution, CRM	Alternative standard	Cat. No. Certipur® standard sol.
P	pH Cell Test	1.01744.0001			Buffer solution pH 7.00 / 1.09439.1000	
	Phenol Cell Test	1.14551.0001			1524806 ²⁾	
	Phenol Test	1.00856.0001			1524806 ²⁾	
	Phosphate (ortho-phosphate) Cell Test	1.00474.0001	1.14676.0001		¹⁾	1.19898.0500
	Phosphate (ortho-phosphate) Cell Test	1.14543.0001	1.14676.0001		¹⁾	1.19898.0500
	Phosphorus (total) Cell Test	1.14543.0001	1.14676.0001	1.25046.0100 1.25047.0100	¹⁾	
	Phosphate (ortho-phosphate) Cell Test	1.14729.0001	1.14675.0001 1.14738.0001		¹⁾	1.19898.0500
	Phosphorus (total) Cell Test	1.14729.0001	1.14676.0001	1.25047.0100 1.25048.0100	¹⁾	
	Phosphate (ortho-phosphate) Cell Test	1.00616.0001			¹⁾	1.19898.0500
	Phosphorus (total) Cell Test	1.00673.0001		1.25048.0100 1.25049.0100	¹⁾	
	Phosphate (ortho-phosphate) Cell Test	1.00673.0001			¹⁾	1.19898.0500
	Phosphate (ortho-phosphate) Cell Test	1.14546.0001			¹⁾	1.19898.0500
	Phosphate Test (ortho-phosphate)	1.14848.0002	1.14676.0001		¹⁾	1.19898.0500
	Phosphate Test (ortho-phosphate)	1.00798.0001			¹⁾	1.19898.0500
	Phosphate Test (ortho-phosphate)	1.14842.0001			¹⁾	1.19898.0500
	Potassium Cell Test	1.14562.0001			¹⁾	1.70230.0100
	Potassium Cell Test	1.00615.0001			¹⁾	1.70230.0100
R	Residual Hardness Cell Test	1.14683.0001			¹⁾	1.19778.0100
S	Silicate (silicic acid) Test	1.01813.0001		1.32244.0100	¹⁾	1.70236.0100
	Silicate (silicic acid) Test	1.14794.0001			¹⁾	1.70236.0100
	Silicate (silicic acid) Test	1.00857.0001			¹⁾	1.70236.0100
	Sodium Cell Test	1.00885.0001			²⁾	1.19897.0500
	Sulfate Cell Test	1.14548.0001	1.14676.0001	1.25050.0100 1.25051.0100	¹⁾	1.19813.0500
	Sulfate Cell Test	1.00617.0001	1.14676.0001	1.25051.0100 1.25052.0100	¹⁾	1.19813.0500
	Sulfate Cell Test	1.14564.0001	1.14675.0001	1.25051.0100 1.25052.0100 1.25053.0100	¹⁾	1.19813.0500
	Sulfate Cell Test	1.02532.0001			¹⁾	1.19813.0500
	Sulfate Test	1.02537.0001	1.14676.0001	1.25050.0100 1.25051.0100	¹⁾	1.19813.0500

¹⁾ Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see column Cat. No. Certipur® standard solution)

²⁾ Own standards. Application Notes/Protocols how to prepare these standards can be downloaded from our website **SigmaAldrich.com**

³⁾ For photometers of other manufacturers

Analytical Quality Assurance - Cross Reference per Test Kit Parameter (S–Z)

	Test kit	Cat. No. Test kit	Cat. No. CombiCheck	Cat. No. Standard solution, CRM	Alternative standard	Cat. No. Certipur® standard sol.
S	Sulfate Test	1.01812.0001			¹⁾	1.19813.0500
	Sulfide Test	1.14779.0001			²⁾	
	Sulfite Cell Test	1.14394.0001			²⁾	
	Sulfite Test	1.01746.0001			²⁾	
	Surfactants (anionic) Cell Test	1.02552.0001			²⁾	
	Surfactants (cationic) Cell Test	1.01764.0001			1102974 ²⁾	
	Surfactants (nonionic) Cell Test	1.01787.0001		1.33022.0100 1.33023.0100	²⁾	
T	Tin Cell Test	1.17265.0001			²⁾	1.70242.0100
	TOC Cell Test	1.14878.0001		1.32247.0100 1.32248.0100 1.32249.0100	¹⁾	1.09017.0100
	TOC Cell Test	1.14879.0001		1.32251.0100 1.32252.0100 1.32253.0100	¹⁾	1.09017.0100
	Total Hardness Cell Test	1.00961.0001			NIST3109A ²⁾	
	Total Nitrogen Cell Test	1.00613.0001	1.14695.0001	1.25043.0100 1.25044.0100	²⁾	
	Total Nitrogen Cell Test	1.14537.0001	1.14695.0001	1.25043.0100 1.25044.0100	²⁾	
	Total Nitrogen Cell Test	1.14763.0001	1.14689.0001	1.25044.0100 1.25045.0100	²⁾	
V	Volatile Organic Acid Cell Test	1.01749.0001			²⁾	
	Volatile Organic Acid Test	1.01809.0001			²⁾	
Z	Zinc Cell Test	1.00861.0001	1.18701.0001		¹⁾	1.19806.0100
	Zinc Cell Test	1.14566.0001			¹⁾	1.19806.0100
	Zinc Test	1.14832.0001	1.18701.0001		¹⁾	1.19806.0100

¹⁾ Standard solution, ready-to-use, 1,000 mg/L analyt. Traceable to SRM of NIST (see column Cat. No. Certipur® standard solution)

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³⁾ For photometers of other manufacturers

 **can't find a
parameter?**
Please contact our **Customer Service**.

clear results in turbidity testing

How clear is your solution?

All solutions have some level of turbidity, and this can be an important measurement to track in a number of contexts. One application is to check the function of filtration units like those in pools and spas, or those in food and beverage production plants. Turbidity testing can also be a key part of process control, for example in monitoring coagulation in wastewater treatment to ensure solids are being efficiently removed.

Turbiquant™ turbidimeter is designed for simple and accurate analysis. It offers rapid, reliable measurements, and can be combined with our non-toxic calibration standards for safe and clear results. Turbiquant™ turbidimeter can be used both in the lab, or on-site: with a waterproof casing and durable carrying case, it is robust enough to handle the conditions wherever you need to conduct your analysis. The instrument is available with either an infrared (IR) or tungsten (T) light source to best suit your needs.

IR: Infrared lamp with light at 860 nm

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

T: Tungsten lamp with white light in the visible range

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



Turbiquant™ Turbidimeters

Quantifying turbidity

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Turbiquant™ Turbidimeters

Quantifying turbidity

What is turbidity?

Turbidity is “the decrease in the transparency of a liquid caused by the presence of undissolved substances” (DIN EN 27027). Clear water has low turbidity; muddy water containing suspended particles like bacteria, sediments, or sewage, has high turbidity.

How is it measured?

During nephelometric turbidity measurement, light enters the turbidimeter, is scattered by the sample, and is detected at a 90° angle from where it entered. Measurements of turbidity are expressed in nephelometric turbidity units (NTU). Samples with high turbidity (e.g. untreated wastewater) scatter more light than less turbid solutions, so more signal reaches the detector placed at 90°. For confirmation of nephelometric measurements, attenuation of light transmitted through samples is also measured by a detector placed directly opposed to the light source: a more turbid sample results in less light reaching the detector because it is scattered in other directions. The combination of these two measurements is the “NTU ratio”.

Turbiquant™ calibration standards

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

Description	Cat. No.
Turbiquant™ 1100 IR / 1100 T Calibration Standard Set	1.18335.0001
3 standards 0.02 – 10.0 – 1,000 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.

NTU = Nephelometric Turbidity Units 90° scattered light measurement according to section 2130 of the “Standard Methods for the Examination of Water and Wastewater”, 21st 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).

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



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.



Mobility

Compact and portable
turbidimeter for
fast results

compliance

Measure samples acc. to
EN ISO 7027 or USEPA 180.1

Turbiquant™ 1100 - Portable instrument for on-the-spot analysis

	Turbiquant™ 1100 IR	Turbiquant™ 1100 T
Cat. No.	1.18324.0001	1.18325.0001
Measuring principle	nephelometric – 90° scattered light, conform with EN ISO 7027	nephelometric – 90° scattered light, follows USEPA recommendations
Light source	IR LED	white light tungsten lamp
Indication of units	NTU / FNU	NTU / FNU
Measuring range	0.02–1,100 NTU	0.02–1,100 NTU
Resolution	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	
Accuracy	±2 % of reading or ±0.1 NTU for range 0 – 500 NTU ±3 % of reading for range 500 – 1,100 NTU	
Reproducibility	–	–
Calibration	automatic 1 to 3 points	automatic 1 to 3 points
Response time	14 seconds	14 seconds
Cuvettes	25 x 45 mm	25 x 45 mm
Sample volume	15 mL	15 mL
Serial input / output	–	–
Protection type	designed to meet IP 67	designed to meet IP 67
Power requirements	4 alkali manganese batteries, AAA / Micro	4 alkali manganese batteries, AAA / Micro
Test certificates	CE	CE
Warranty	2 years	2 years

Reflectoquant® System

Portable instrumental test strip readout

Accuracy on-the-go

How fresh is your honey?

Rapid quantitative detection of hydroxymethylfurfural (HMF) in honey

The Application

The freshness of honey is determined by measuring the content of HMF, an organic compound that arises from the dehydration of fructose (e.g. when honey is heated for easier filling). It is barely detectable in freshly-centrifuged honey, but increases, 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, and is ideal for monitoring raw materials, as well as manufacturing and filling processes.

Benefits

- Accurate quantitative results just a few minutes after sample preparation
- Barcode calibration for reliability
- Small and portable instrument for on-the-spot analysis
- Cost-effective

Read the application note Reflectometry – Hydroxymethylfurfural (HMF) in Honey.
Contact our Customer Service.





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Disinfection Control
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Reflectometry
Reflectoquant® System

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Reflectoquant® System

Portable instrumental test strip readout

Reflectometric measurements

Bring the lab to your samples with the portable 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 system provides all the tools you need for high-quality, cost-effective analysis. It offers 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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Accurate, on-the-spot determination of nitrate content

The Application

Humans ingest nitrate mostly through vegetables (70%), but also through drinking water (20%) and cured meats (10%). While nitrate itself is not harmful, 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 food and beverage products such as vegetables, infant meals, and drinking water.

Benefits

- Fast analysis with reliable results
- Compact and portable instrument for on-site result determination
- Application notes available for over 15 different sample materials
- Cost-effective analysis
- Environmentally friendly

**Fast
results**

with barcode
calibration

**Reliable
results**

with $\pm 10-15\%$
accuracy

**Easy
disposal**



Further Reflectoquant® applications

Test vitamin C content in food

Vitamin C (ascorbic acid) is found in many foods. Its depletion from those foods is monitored as it is often indicative of a decline in food quality and taste. See our Reflectoquant® Ascorbic Acid Test application notes for determinations of vitamin C in over 15 different sample materials.

Reflectoquant® Ascorbic Acid Test | Cat. No. 1.16981.0001

Monitor acrylamide formation

When starchy foods like fries are heated during their preparation, asparagine and reducing sugars (fructose, glucose, etc.) can react to create acrylamide, a toxic and carcinogenic compound. As a result, reducing sugars should be monitored and kept below a maximum limit in order to avoid dangerous acrylamide levels. View our application note, "Total Sugar in Potatoes" to see how the Reflectoquant® Total Sugar Test is used.

Reflectoquant® Total Sugar Test | Cat. No. 1.16136.0001

Reflectoquant® System

Portable instrumental test strip readout



RQflex® 20 reflectometer

RQflex® 20 reflectometer is designed for fast determination of more than 30 parameters using Reflectoquant® test strips. The instrument can store up to 50 different test methods and 200 measurement results.

Product	Scope of Delivery	Cat. No.
RQflex® 20	Includes test strip adapter and recalibration set, double optical system (option for evaluation of two reaction zones), memory for five methods, memory slots for 50 results (with date, time, parameter, and result), batch-specific calibration function (barcode technology), battery operation with four 1.5 V batteries, quick guide for reflectometer and tests	1.17246.0001

RQflex® accessories | sample preparation | quality assurance

Product	Application	Cat. No.
Test strip adapter for RQflex® 20		1.17267.0001
Recalibration set for RQflex® 20		1.16954.0001
RQCheck set for RQflex® 20		1.17247.0001
Polyvinylpyrrolidone Divergan® RS, 100 g	Decolorization	1.07302.0100
Sodium azide tablets, 5,000 tabs	Preserving milk samples	1.06687.0001

Equipment validation documents

Installation qualification (IQ), operational qualification (OQ) and performance qualification (PQ) are essential parts of quality assurance, achieved through equipment validation. We provide IQ, OQ and PQ document templates for your Reflectoquant® instrument.



Analytical application

VWR® Fast Analysis

Is your diet drink really sugar free?

To produce diet beverages, your entire production system must be free of sugar. If you use the same production line for both diet and non-diet beverages, this needs to be monitored closely. 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.

Reflectoquant® Glucose Test | Cat. No. 1.16720.0001

Reflectoquant® Total Sugar Test | Cat. No. 1.16136.0001



Food & Beverage Workflow
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Reflectoquant® System

Portable instrumental test strip readout

Reflectoquant® Tests Parameter A–Z

	Parameter	Graduation	No. of tests	Cat. No.	Method	Type
A	Ammonium Test	0.2 – 7.0 mg/L NH ₄	50	1.16892.0001	Indophenol blue	Reagent, incl.
	Ammonium Test	5.0 – 20.0 mg/L NH ₄	50	1.16899.0001	Indophenol blue	Reagent, incl.
	Ammonium Test	20 – 180 mg/L NH ₄	50	1.16977.0001	Nessler	Reagent, incl.
	Ascorbic Acid Test	25 – 450 mg/L ascorbic acid	50	1.16981.0001	Phosphormolybd. blue	
B	Blank Strip		50	1.16730.0001		
C	Calcium Test for RQflex® 10 / 10 plus	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 ₂	50	1.16896.0001	Redox reaction	Reagent, incl.
F	Formaldehyde Test	1.0 – 45.0 mg/L HCHO	50	1.16989.0001	Triazole	Reagent, incl.
G	Glucose Test	1 – 100 mg/L glucose	50	1.16720.0001	Enzymatic reaction	
H	Hydroxymethylfurfural Test	1.0 – 60.0 mg/L HMF	50	1.17952.0001	Enzymatic reaction	
I	Iron Test	0.5 – 20.0 mg/L Fe(II)	50	1.16982.0001	Triazine	
L	Lactic Acid Test	3.0 – 60.0 mg/L lactic acid	50	1.16127.0001	Enzymatic reaction	
M	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	
N	Nitrate Test	3 – 90 mg/L NO ₃	50	1.16995.0001	Modified Griess' reaction	
	Nitrate Test	5 – 225 mg/L NO ₃	50	1.16971.0001	Modified Griess' reaction	
	Nitrate Test RQeasy®	5 – 250 mg/L NO ₃	50	1.17961.0001	Modified Griess' reaction	
	Nitrite Test	0.5 – 25.0 mg/L NO ₂	50	1.16973.0001	Griess' reaction	
	Nitrite Test	0.03 – 1.00 g/L NO ₂	50	1.16732.0001	Aromatic amine	
P	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 ₂ O ₂	50	1.16974.0001	Enzymatic reaction	
	Peroxide Test	20.0 – 100 mg/L H ₂ O ₂	50	1.17968.0001	Enzymatic reaction	
	Peroxide Test	100 – 1,000 mg/L H ₂ O ₂	50	1.16731.0001	Enzymatic reaction	
	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 ₄	100	1.17942.0001	Phosphormolybd. blue	
	Phosphate Test	5 – 120 mg/L PO ₄	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.
S	Sucrose Test	0.25 – 2.50 g/L	50	1.16141.0001	Enzymatic reaction	Reagent, incl.
	Sulfite Test	10 – 200 mg/L SO ₃	50	1.16987.0001	Nitroprusside / Zn-hexacyanoferrate	
T	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.
U	Urea Test in Milk Application	0.2 – 7.0 mg/L NH ₄	50	1.16892.0001	Indophenol blue	Reagent, incl.

MQuant® Liquid

Colorimetric and titrimetric tests

Brilliant colors, brilliant results

What is the phosphate content of your water?

Detecting phosphate in water samples from different sources

The Application

Phosphate levels in water are often regulated and must be kept within established limits for both environmental and safety concerns. From measuring phosphate in environmental water to prevent eutrophication, to measuring phosphate added to drinking water as a part of corrosion control, there many reasons phosphate monitoring may be an important part of your water analysis.

Our Solution: MQuant® liquid tests for phosphate with color comparators

The MQuant® liquid phosphate tests are designed for sensitive, fast analysis of a range of water sample types. For drinking water, groundwater, freshwater, mineral water, process water, or even seawater, there is an MQuant® liquid test available which can perform the appropriate testing. These tests include a color comparator, allowing you to judge the sample reaction color against a high-quality color scale for accurate evaluation. They are also available for a wide range of phosphate concentrations to meet your specific needs.

Benefits

- Easy-to-use visual tests with fast results
- Unique brilliance and fine color graduation for precise analysis
- Excellent sensitivity from very low (ppb range) to medium concentrations
- Traceable to primary reference materials from NIST and PTB
- Shelf life of up to 3 years at 15-25 °C



MQuant® Liquid

Colorimetric and titrimetric test kits

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Water Workflow
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MQuant® Liquid

Colorimetric and titrimetric tests

High to medium concentrations, especially for turbid solutions

MQuant® liquid tests with disk comparator

These tests evaluate the color reaction based on transmitted light, so even turbid and slightly colored water samples can be analyzed without further preparation. The ten-tier color disk is made of durable plastic that will not fade with light exposure, and is suitable for industrial areas and wet environments. Almost all vessels are break-proof for safer handling.

Application areas:

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



All reagents and the disk comparator are included in the MQuant® liquid test with disk comparator

Medium concentrations

MQuant® liquid tests - titrimetric

The sample is titrated until its color changes. The number of drops consumed to the turning point is counted, or the scale value is read from a pipette to determine the concentration of the tested parameter.

MQuant® liquid tests - colorimetric

Reagents are added to the sample, resulting in a colored reaction product. The concentration is determined by assigning the color to a value on a reference scale.

Application areas:

- Aquaculture for freshwater and seawater
- Surface water
- Swimming pool water
- Classroom demonstrations



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

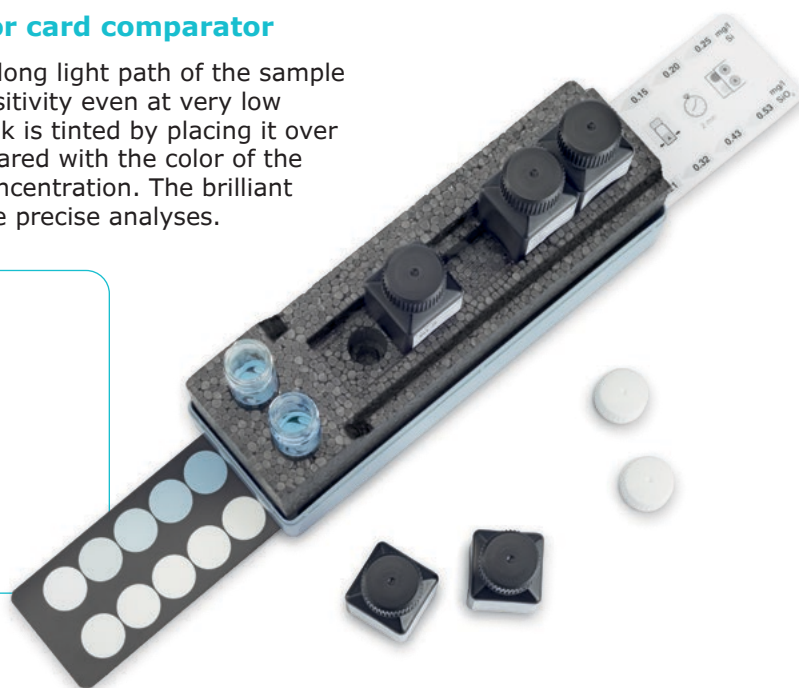
Very low to medium concentrations

MQuant® liquid tests with color card comparator

The build of the comparator and the long light path of the sample tubes ensure high measurement sensitivity even at very low (ppb range) concentrations. The blank is tinted by placing it over the color card so that it can be compared with the color of the reaction product to determine the concentration. The brilliant print and fine color graduation enable precise analyses.

Application areas:

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



MQuant® liquid test with color card comparator offer unparalleled reliability!

Accessories for MQuant® Liquid

Product	Cat. No.
Flat-bottomed long tubes with screw caps for MQuant® tests with color card comparator	1.14901.0001
Flat-bottomed tubes with screw caps for titrimetric and colorimetric MQuant® tests	1.14902.0001
Flat-bottomed tubes with screw caps for MQuant® tests with color disk comparator	1.17988.0001
Test vessels with 5-ml and 10-ml graduation for MQuant® tests	1.17989.0001

MQuant® Liquid

Colorimetric and titrimetric tests

MQuant® Compact Laboratory for Water Testing

This compact laboratory allows you to quickly measure all major parameters of standing or flowing surface water, and accurately assess the current water quality. The convenient carrying case provides everything you need in order to measure ammonium, carbonate hardness (acid-binding capacity), nitrate, nitrite, oxygen and oxygen consumption (biological oxygen demand after n days; BODn), total and residual hardness, pH, and temperature. The portability of the MQuant® Compact Laboratory is ideal for on-site environmental testing of ground- and surface water.

Kit content | Cat. No. 1.11151.0001

Parameter	Measuring range	No. of tests	Cat. No. Refill pack
MQuant® Ammonium Test	0.2 – 5 mg/L NH ₄	50	1.08024.0001
MQuant® 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
MQuant® Total Hardness Test	0,2 – 20 °d (10 – 360 mg/l CaCO ₃)	150 at 12.5 °e	1.08039.0001
MQuant® Nitrate Test	10 – 150 mg/L NO ₂	100	1.11170.0001
MQuant® Nitrite Test	0.025 – 0.5 mg/L NO ₂	200	1.08025.0001
MQuant® pH Test	pH 4.5 – 9	200	1.08027.0001
MQuant® Phosphate Test in freshwater and seawater	0.25 – 3.0 mg/L PO ₄	100	1.14661.0001
MQuant® Oxygen Test	0,1-10 mg/l O ₂	100 at 8.5 mg/L O ₂	1.11107.0001
Flat-bottomed tubes including screw caps for MQuant® Tests		3 pcs	Part of kit

All necessary accessories such as vessels, color cards and a thermometer are included in the case solution



**Economical
refill packs**

**Easy, fast,
and direct
readout of
color cards**



Is the ammonium level of your water sample safe for aquatic life?

**Sensitive measurement of ammonium in freshwater
and seawater**

The Application

Ammonium is a common water pollutant and can be toxic to aquatic life. Measuring ammonium in water is required by many international authorities, and levels must be kept within maximum limits.

Our Solution: MQuant® Ammonium Test | Cat. No. 1.14657.0001

We offer test kits for fast, reliable measurement of ammonium ions and unionized ammonium in fresh- or seawater. Kits are designed for use with the MQuant® liquid system, and have measurement sensitivity in the range of 0.5–10 mg/L NH_4 .

Benefits

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

MQuant® Liquid

Colorimetric and titrimetric tests

MQuant® Liquid Test Parameter

	Parameter	Graduation	No. of tests	Cat. No.	Cat. No. Refill pack	Method	Type
A	Alkalinity Test	0.1 mmol/L	200 at 8.5 mmol/L	1.11109.0001		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 ₄	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 ₄	100	1.14400.0001		Neßler	Color-card comparator
	Ammonium Test	0.2–0.4–0.6–1–2–3–5 mg/L NH ₄	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 ₄	200	1.14423.0002		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 ₄	200	1.14750.0002		Indophenol blue	Disk comparator
	Ammonium Test	0.5–1–3–5–10 mg/L NH ₄	150	1.11117.0001		Neßler	Color-card comparator
	Ammonium Test in freshwater and seawater	0.5–1–3–5–10 mg/L NH ₄	50	1.14657.0001		Indophenol blue	Color-card
C	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 ₂ 2.5 mg/L CO ₂ 5 mg/L CO ₂	100 at 30 mg/L 100 at 60 mg/L 100 at 120 mg/L	1.17179.0001		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 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	1.14753.0001	1.18322.0002	Mercury(II)-thiocyanate	Disk comparator
	Chloride Test	5–10–20–40–75–150–300 mg/L Cl	400	1.14401.0001	1.18322.0002	Mercury(II)-thiocyanate	Color-card comparator
	Chloride Test	25 mg/L Cl	100 at 150 mg/L Cl	1.11132.0001		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 ₂	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 ₂	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 ₂	600 free chlorine	1.14978.0001	1.14979.0002	DPD Liquid	Disk comparator

	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Ground-water, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electro-plating
	Food & Beverages						Water									Others		
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MQuant® Liquid

Colorimetric and titrimetric tests

MQuant® Liquid Test Parameter

	Parameter	Graduation	No. of tests	Cat. No.	Cat. No. Refill pack	Method	Type
C	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 ₂	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 ₂	1,000 free chlorine	1.14976.0001	1.14977.0002	DPD	Disk comparator
	Chlorine Test (free and total chlorine)	0.25–0.50–0.75–1–2–4–7–10–15 mg/L Cl ₂	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 ₂ / 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 ₂ 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 ₂	300	1.18754.0001		DPD	Color-card comparator
	Chromate Test	0.011–0.022–0.045–0.07–0.09–0.11–0.13–0.18–0.22 mg/L CrO ₄	150	1.14402.0001		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 ₄	300	1.14441.0001		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 ₄	300	1.14756.0001		Diphenyl-carbazide	Disk 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	1.18459.0003	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
F	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
H	Hydrazine Test	0.10–0.25–0.5–1.0 mg/L N ₂ H ₂	100	1.08017.0001	necessary 1.08018.0001	Dimethylamino-benzaldehyde	Color-matching vessel

	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Ground-water, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electro-plating
	Food & Beverages						Water									Others		
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MQuant® Liquid

Colorimetric and titrimetric tests

MQuant® Liquid Test Parameter

	Parameter	Graduation	No. of tests	Cat. No.	Cat. No. Refill pack	Method	Type
I	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	1.14660.0001		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	1.11136.0001	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
	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
M	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	1.14406.0001	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
N	Nickel Test	0.02–0.04–0.07–0.10–0.15–0.2–0.3–0.4–0.5 mg/L Ni	125	1.14420.0001	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	1.14783.0001	1.18461.0002	Dimethyl-glyoxime	Disk comparator
	Nitrate Test	5–10–20–30–40–50–60–70–90 mg/L NO ₃	90	1.18387.0001		Nitrospectral / sulfuric acid	Disk comparator
	Nitrate Test	10–25–50–75–100–125–150 mg/L NO ₃	200	1.11170.0001		Sulfanilic acid	Sliding comparator
	Nitrate Test in freshwater	10–25–50–75–100–125–150 mg/L NO ₃	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 ₂	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 ₂	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 ₂	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 ₂	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 ₂	400	1.14774.0001	1.18463.0002	Griess' reaction	Disk comparator
O	Oxygen Test	0.1 mg/L O ₂	100 at 8.5 mg/L O ₂	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 ₂	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 ₃	300	1.18755.0001		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 ₃	300	1.18758.0001		DPD	Disk comparator

	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Ground-water, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electro-plating
	Food & Beverages						Water									Others		
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MQuant® Liquid

Colorimetric and titrimetric tests

MQuant® Liquid Test Parameter

	Parameter	Graduation	No. of tests	Cat. No.	Cat. No. Refill pack	Method	Type
P	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
	Phosphate Test	0.046–0.092–0.14–0.18–0.25–0.34–0.43 mg/L PO ₄	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 ₄	100	1.14661.0001		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 ₄	200	1.14846.0001	1.18465.0002	Phosphomolybdenum blue	Disk comparator
	Phosphate Test	1.3–3.3–6.7–10–13 mg/L PO ₄	200	1.11138.0001	1.08046.0001	Phosphomolybdenum blue	Color-matching vessel
	Phosphate Test	3.1–6.1–11–18–31–61–123 mg/L PO ₄	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 ₄	300	1.18388.0001	1.18466.0002	Vanadium molybdate	Disk comparator
R	Residual Hardness Test	0.05–0.10–0.19 °e	400	1.11142.0001		Mixed indicator	Color-card
S	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 ₂	150	1.14410.0001	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 ₂	150	1.14792.0001	1.18323.0002	Silico-molybdenum blue	Disk comparator
	Sulfate Test	25–50–75–100–130–160–190–240–300 mg/L SO ₄	75	1.18389.0001		Tannic acid	Disk comparator
	Sulfate Test	25–50–80–110–140–200–300 mg/L SO ₄	90	1.14411.0001		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		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		Dimethyl-p-phenyldiamine	Disk comparator
	Sulfite Test	0.5 mg/L Na ₂ SO ₃ (0.32 mg/L SO ₃)	200 at 40 mg/L Na ₂ SO ₃	1.11148.0001		Iodate / Starch	Titration with pipette
T	Total Hardness Test	0.13 °e and 1 mg/L CaCO ₃	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 ₃	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 ₃	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
Z	Zinc Test	0.1–0.2–0.3–0.4–0.5–0.7–1–2–5 mg/L Zn	120	1.14780.0001	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	1.14412.0001	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	Ground-water, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electro-plating
	Food & Beverages						Water									Others		
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MQuant® Test Strips

Rapid visual analysis

Just a quick dip

What is the quality of your milk?

Detect peroxidase activity in milk

The Application

Milk pasteurization is the process of gently heating milk in order to inactivate or destroy the enzymes and microorganisms that contribute to spoilage or risk of disease. The enzyme lactoperoxidase (POD) is naturally present in milk and is inactivated if heated to temperatures higher than 85 °C. Its activity can be used to check that milk has not been heated too harshly, and therefore that pasteurization was performed correctly. For dairies, a yes/no statement in terms of POD is usually sufficient.

Our Solution: MQuant® Peroxidase Test strips

With the qualitative MQuant® Peroxidase Test strips, you can now determine POD in your milk sample much more quickly than traditional photometry with comparable reliability to the photometric reference method (DIN 10483-1). The simplicity of the method allows for it to be performed directly at the sampling site, and makes it more cost-effective because no additional equipment is required.

Benefits

- Simple and fast determination of peroxidase activity
- Reliable
- Flexible – can be used on-site
- Low cost
- Easy evaluation with a color scale and no additional instrumentation

Learn more at: **VWR® Selector**



MQuant® Test Strips

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Disinfection Control
> Page 32

MQuant® Test Strips

Rapid visual analysis

Test strips

Highly reliable and portable, MQuant® test strips are designed for semi-quantitative determination of ions and other compounds. These versatile strips can be used in concentration ranges from <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. The PET film backing material and the low reagent content also make the test strips easy to dispose of.



What is the glucose content of your food?

Semi-quantitative glucose measurement

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 is no time for lab analysis.

Benefits

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

**Fast results,
easy usage,
safe disposal**

**Brilliant
color scales
for exact
results**

**Many
Measuring
ranges
available**



Further MQuant® 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 MQuant® Free Fatty Acids test strips, you can easily monitor the quality of your oil and determine the right time for a change.

MQuant® Free Fatty Acids | Cat. No. 1.17046.0001



Ensure safe disinfections

Disinfection is critical in many different sectors such as food production, hospitals, biotech, and pharmaceutical. It is necessary to determine both that the correct concentration of a given disinfectant is used, and that residues do not remain when the process is complete to not be passed on to the final product. MQuant® test strips help you monitor these steps of cleaning by checking concentrations of disinfectants including chlorine, formaldehyde, peracetic acid, peroxide and quaternary ammonium compounds.



MQuant® Test Strips

Rapid visual analysis

it's that
simple!



1 Sample preparation

MQuant® test strips tolerate a range of interferences and most can be used without any sample pre-treatment. For challenging samples, we offer special reagents and a range of application notes for your convenience.

2 Testing



Remove one MQuant® test strip from the protective tube.



Dip strip into the test solution to wet reaction zones and remove excess liquid.



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.

3 Disposal

MQuant® test strips can be safely and easily disposed of with regular waste. *Take note of any regional regulations to dispose of/recycle the aluminium tube and other packaging material.*

Shelf-life and storage

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

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.



Don't guess, measure!

Accurate chemical analyses and digital documentation with a NEW smartphone test strip reader

The Application

Quick and easy testing for laboratory and in-process control of water, food, and beverage samples without compromising accuracy and reproducibility.

Our Solution: The MQuant® StripScan App

Digital readouts of pH and chemical analytes are now at your fingertips with the MQuant® StripScan app. A camera readout of MQuant® test strips on a reference card provides instant results on your smartphone. You can synchronize your data to the StripScan web platform to compare, graph, and share your results.

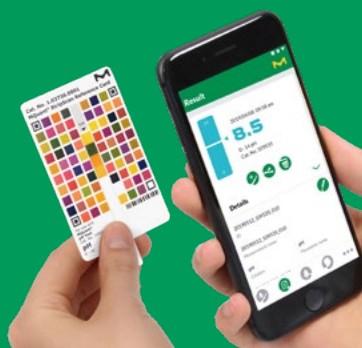
Benefits

- Get reliable results faster
- Acquire and manage your data digitally
- Ensure traceability and allow collaboration

pH Reference Card | Cat. No. 1.03736.0001

Nitrate Reference Card | Cat. No. 1.03733.0001

Download free-of-charge from the App Store or Google Play
mquant-stripscan.com/login



MQuant® Test Strips

Rapid visual analysis

MQuant® Test Strips Parameter A–Z

	Parameter	Graduation	No. of tests	Cat. No.	Method	Type
A	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 ₄	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	Blank strip		100	1.11860.0001		
C	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 ₂	75	1.17925.0001	Redox reaction	
	Chlorine Test (free chlorine)	25–50–100–200–500 mg/L Cl ₂	100	1.17924.0001	Redox reaction	
	Chromate Test	3–10–30–100 mg/L CrO ₄	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.
F	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	
G	Glucose Test	10–25–50–100–250–500 mg/L Glucose	50	1.17866.0001	Enzymatic reaction	
I	Iron Test	3–10–25–50–100–250–500 mg/L Fe(II)	100	1.10004.0001	2,2'-Bipyridine	
L	Lead Test	20–40–100–200–500 mg/L Pb	100	1.10077.0001	Rhodizonic acid	Reagent, incl.
M	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.
N	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 ₃	100	1.10020.0001	modified Griess' reaction	
	Nitrate Test	10–25–50–100–250–500 mg/L NO ₃	25	1.10020.0002	modified Griess' reaction	
	Nitrate Test	10–25–50–100–250–500 mg/L NO ₃	1,000	1.10092.0021	modified Griess' reaction	Individually sealed
	Nitrite Test	0.5–1–2–5–10 mg/L NO ₂	75	1.10057.0001	Griess' reaction	
	Nitrite Test	2–5–10–20–40–80 mg/L NO ₂	100	1.10007.0001	Griess' reaction	
	Nitrite Test	2–5–10–20–40–80 mg/L NO ₂	25	1.10007.0002	Griess' reaction	
	Nitrite Test	0.1–0.3–0.6–1–2–3 g/L NO ₂	100	1.10022.0001	Griess' reaction	

	Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Ground-water, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electro-plating
	Food & Beverages						Water									Others		
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MQuant® Test Strips

Rapid visual analysis

MQuant® Test Strips Parameter A–Z

	Parameter	Graduation	No. of tests	Cat. No.	Method	Type
P	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	
	Peroxide Test	0.5–2–5–10–25 mg/L H ₂ O ₂	100	1.10011.0001	Enzymatic reaction	
	Peroxide Test	0.5–2–5–10–25 mg/L H ₂ O ₂	25	1.10011.0002	Enzymatic reaction	
	Peroxide Test	1–3–10–30–100 mg/L H ₂ O ₂	100	1.10081.0001	Enzymatic reaction	
	Peroxide Test	100–200–400–600–800–1,000 mg/L H ₂ O ₂	100	1.10337.0001	Enzymatic reaction	
	Phosphate Test	10–25–50–100–250–500 mg/L PO ₄	100	1.10428.0001	Molybdate ion	Reagent, incl.
Q	Potassium Test	250–450–700–1,000–1,500 mg/L K	100	1.17985.0001	Dipicrylamine	Reagent, incl.
	Quaternary Ammonium Compounds	10–25–50–100–250–500 mg/L Benzalkonium chloride	100	1.17920.0001	Indicator	
S	Sulfate Test	<200–>400–>800–>1200–>1600 mg/L SO ₄	100	1.10019.0001	Ba-thorin complex	
	Sulfite Test	10–40–80–180–400 mg/L SO ₃	100	1.10013.0001	Nitroprusside/ Zn-hexacyanoferrate	
T	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	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
Z	Zinc Test	0–4–10–20–50 mg/L Zn	100	1.17953.0001	Dithizone	

Your brand – Merck quality

Want to add your branding to our test strips or papers for pH or chemical parameters?

Choose from the following options:

- **Individually-sealed and branded test strips**
Ideal for inserting in books, magazines, and brochures, or for adhering to products.
- **Branded tubes with either our catalog items or customized strips/papers**
Provide your customers with consistent, high-quality Merck products with your branding on the packaging or modify the appearance of the test strips/papers and color card as well.
- **Innovative customized products**
If the test you need is not offered, we can discuss solutions for your individual requirements.

For our minimum order quantity requirements, or additional details, please contact our Customer Service.

Beer processing	Food testing	Juices	Milk products	Mineral water	Soft drinks	Aquaculture	Boiler water, cooling water	Drinking water	Ground-water, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electro-plating
Food & Beverages						Water									Others		
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MQuant® Reagent Papers

Description	Cat. No.
Lead(II) acetate paper, 3 rolls, each 4.8 meters, for the determination of sulfide & hydrogen sulfide	1.09511.0003
Potassium iodide-starch paper, grade value Reag. Ph. Eur., 3 rolls, each 4.8 meters for the determination of oxidizing agents	1.09512.0003



Testing colored samples?

MQuant® blank strips have a reagent-free test field. This allows you to check whether the sample solution changes the test field's color significantly, potentially leading to mis-matches with the color scale and inaccurate results.

pH Testing so basic

Need to measure pH in a challenging solution?

Quick and clear pH measurements of turbid or colored samples

The application

Analyzing turbid or colored liquids with conventional pH-indicator strips can be extremely difficult. Suspended particles accumulate on the reaction zone and can obscure the color, making the pH impossible to read. Using pH electrodes requires extensive cleaning and maintenance.

Our solution: MQuant® transparent-back, non-bleeding pH-indicator strips and papers

Our pH-indicator strips and papers for turbid or colored solutions eliminate the need for sample preparation steps like filtration or clarification. The pH reaction zone is backed by a transparent carrier film, so you can easily read the pH on the back without interference from suspended particulates or colored sample solution.

Benefits

- Non-bleeding strips prevent contamination of the medium
- Transparent strips for clear results in lightly colored or turbid liquids
- Quick and easy method with no sample preparation
- Brilliant color scales for reliable results
- SafetyEdge box for security and convenience



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Food & Beverage Workflow
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Disinfection Control
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MQuant® pH

Test strips and papers

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MQuant® pH

Test strips and papers

pH test strips and papers

MQuant® pH-indicator strips and papers make pH measurement easier than ever: no instruments, sample preparation, maintenance, or cleaning electrodes. Simply read the color. This 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 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 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-indicator strips for special requirements like testing turbid samples or meat.

**Fast and
easy Method**

**Non-bleeding
strips**

**Brilliant
colors**



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

Premium pH-indicator papers

Our pH-indicator papers come in a roll format that protects the high-quality impregnated filter papers from external factors such as moisture, light, and ambient gases. This also ensures that they can be stored for longer.

MQuant® pH non-bleeding pH-indicator strips

Special indicator dyes are covalently bound to the paper on the test strips, preventing the indicator from bleeding, and allowing the strips to be left in the measurement medium indefinitely without contaminating the sample.

MQuant® pH

Test strips and papers

pH-indicator strips (non-bleeding)

Parameter	pH measuring range	Graduation	No. of test strips	Cat. 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, 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	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 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

Shelf-life and storage of pH strips and papers

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

pH-indicator papers

Parameter	pH measuring range	Graduation	Number of rolls x roll length	Cat. No.
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 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 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 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 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
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

*Replacement roll without color scale

Individually sealed strips

Upon request, we offer individually packed and sealed test strips for both standard and special pH ranges. They are customizable with your branding, making them ideal for inserting into magazines, into brochures, or for adhering to your products.



Be ready for anything

All the tools you need for analysis and monitoring

One trusted source.

We have everything you need for your workflow – from unique solutions for microbiological monitoring and chromatography to ultrapure water and a complete range of reagents and solvents, our high-quality products ensure consistently accurate results.

But that's not all we offer.

By combining our analytical and regulatory expertise, we ensure your results are also supported by solid documentation. And by creating products and solutions that lower costs, increase efficiency, and make optimal use of resources, we help you boost productivity.

We not only supply top-quality products for analysis, but also give you complete peace of mind. Find all product offerings at vwr.com/environmental-kit-selector



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Supelco® products



Millipore® products



Sigma-Aldrich® products



Milli-Q® products

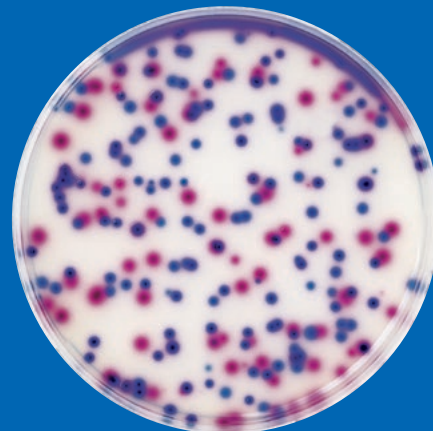
Microbiological Testing



Easy, rapid, and reliable tools to ensure your production facilities are free from microbiological contaminants

Rapidly verify the presence or absence 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
Cat. No. 1.01298.0001
- ReadyCult® Enterococci 100
Cat. No. 1.01299.0001



Screen any type of microbiological contamination

- ChromoCult® coliform agar: different colors for *E. coli* and Coliforms colonies enable easy quantification and confirmation
Cat. No. 1.10426.0500
- Ready-to-use agar plates: no additional steps required
Cat. No. 1.46757.0200, 1.46689.0020, 1.46757.0020

Bioburden Analysis

Simple tests for liquid sample bioburden with optimal microbiological recovery

- Comply with international standards (EP/USP) and water testing regulations
- EZ-Fit® Manifold, 1-, 3-, or 6-place
Cat. No. EZFITSAM1, EZFITSAM3, EZFITSAM6
- EZ-Fit® single-use filtration units
Cat. No. EFHAW10MS, EFHAW100I, EFHAW100B, EFHAW250I, EFHAB10MS, EFHVW10IS
- EZ-Stream™ Pump | Cat. No. EZSTREAM1
- EZ-Pak® Membranes | Cat. No. EZAAWG474
for use with EZ-Pak® Dispenser Curve
Cat. No. EZCURVE01





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Disinfection Control
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Surface Monitoring

Reduce quality risks and ensure hygienic conditions through rapid cleaning verification tests

- Adenosine triphosphate (ATP) monitoring systems for detection of biological residues on surfaces and in process water
- **MVP ICON® System:** multi-parameter HACCP & Hygiene Monitoring system | Cat. No. **78300BC**
- **HY-LiTE® 2 System:** hygiene monitoring system for production and industrial applications | Cat. No. **1.30100.0001**
- **Equipment-free tests for surface hygiene monitoring:**
FLASH® Allergen-indicator Total Protein Test: colorimetric swab test for presence/absence of total protein residue including allergens | Cat. No. **63003BC**
- **HY-RiSE® Test:** Colorimetric strip test for surface and hand hygiene monitoring | Cat. No. **1.31200.0001**

Microbial Air Monitoring

Use our robust and high-precision microbial air samplers to easily and effectively monitor ambient air. They can all be used with a broad range of microbial culture media in 90 mm Petri dishes for total count, yeast, mold, as well as specified microorganisms.

- **MAS-100 NT** is a high-precision microbial air sampler with flow rate controlled by a mass flow sensor to achieve a flow rate accuracy of 100 L/min +/- 2.5%. The instrument is validated acc. ISO 14698 / EN 17141. | Cat. No. **1.09191.0001**
- **MAS-100 VF** is compact, battery operated and validated acc. ISO 14698 / EN 17141 | Cat. No. **1.17103.0001**
- **MAS-100 ECO** for food and beverage industries is robust and easy to use | Cat. No. **1.09227.0001**



Millipore®

Preparation, Separation,
Filtration & Monitoring Products

Analytical Chromatography

HPLC Columns

We offer a wide selection of HPLC and UHPLC columns based on fully porous particles (FPP), superficially porous particles (SPP), and monolithic column materials. They meet today's challenging needs of fast HPLC and LC-MS in many application fields including environmental testing.



Superficially Porous Particles (SPP)

Fast results with maximum resolution on any U/HPLC system

- Ascentis® Express Fused-Core® U/HPLC columns with superior column efficiency.
- Ascentis® Express PAH for fast PAH Analysis
- Ascentis® Express PFAS and PFAS delay column for superior LC-MS testing of PFAS

Fully Porous Particles (FPP)

HPLC columns from nano capillary, UHPLC, and analytical dimensions to semi-preparative LC

- Purospher™ STAR HPLC and UHPLC columns for peak symmetry and extended pH stability.
- Discovery® and Ascentis® columns provide a broad range of selectivities.
- SeQuant® ZIC-HILIC for separation of polar compounds.
- Titan™ monodisperse UHPLC columns.

Monolithic Silica UHPLC Columns

Rapid and cost-efficient analysis of matrix-rich samples

- Chromolith® and Chromolith® HR monolithic silica HPLC columns for extended column lifetime at very low column back-pressure.
- Matrix-rich samples can be analyzed without the need for sophisticated and time-consuming sample preparation for substantial cost savings.

Reliable &
reproducible
separations

quantitation &
identification
of compounds

Highest
quality

Lowest
impurities

Compliant
with ACS &
Reag. Ph Eur

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

Instrumental inorganic analysis



Absorption and
filtration



Absorbents for
spilled liquids



Drying agents



Auxiliaries for
purification and
sample preparation



Indicators



Cleaning
applications

Complementary Products



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.

- **Carrez Clarification Kit for sample preparation in food analysis:** precipitate proteins, eliminate turbidity, break emulsions in meat or milk samples | Cat. No. **1.10537.0001**
- **Charcoal activated:** for de-colorization | Cat. No. **1.02005.0010**

Efficient & economical analysis

Pesticide Standards

Pesticides are released into the environment in order to kill pests, but residues from these toxic chemicals also end up in the air, water, and even in food. International regulations require regular analysis of soil and water using accurate standards to ensure that they are free of pesticides.

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

- Pesticides, neat and in solution
- Certified reference materials (CRMs): *TraceCERT*® and matrix standards
- Matrix standards for proficiency testing (PT)
- Isotope-labeled pesticides and pesticide metabolite standards



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, the official method for determining protein content in food.

- **Reagent test kits for easy determination of total dietary fiber** | Cat. No. **1.12979.0001**
- **Kjeldahl tablets for nitrogen determination**, also offered in micro-scale
Cat. No. **1.15348.0250, 1.17958.0250, 1.16469.0250, 1.18348.0250, 1.10958.0250, 1.18469.0250**



Brewery Workflow
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Karl Fischer Reagents & Standards for Water Determination

It is important to measure water contents in products and raw materials because it can affect their quality, shelf life, texture, chemical stability, and reactivity. Karl Fischer titration is a universally-recognized method to determine exactly water content in all types of substances like chemicals, oils, fats, pharmaceutical, foods, beverages and polymers.

We offer all the products required for a precise water determination with Karl Fischer titration

- Volumetric Karl Fischer reagents:
 - One- and two-component reagents
 - Special reagents for aldehydes and ketones, or oils and fats
- Coulometric Karl Fischer reagents:
 - For cells with and without a diaphragm
- Water standards for:
 - Titer determination
 - Results verification
 - Instrument checks

Bioburden Analysis

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



Food & Beverage Workflow
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Water Purification Systems



Milli-Q® IQ 7003/05/10/15 pure and ultrapure water systems

We offer a broad range of pure and ultrapure water systems for all lab applications. Our innovative Milli-Q® systems combine the most advanced purification technologies, accurate monitoring, and final polishing cartridges for best-in-class water purity.

- Water at your fingertips**
 Compact and ergonomic Q-POD® and E-POD® dispensers simplify use and display essential data on a large touchscreen.
- Work more efficiently**
 Convenient POD functions enable rapid, intuitive, and precise dispensing. Enjoy walk-away filling with a volumetric dispense mode, and hands-free filling with a foot pedal option.
- Save bench space**
 Only the POD is needed for daily use. The system can be conveniently placed under the bench or wall-mounted.
- Tailor water quality to your application**
 Application POD-Paks provide final polishing to match water quality to your specific needs.
- Sustainable solutions**
 Technologies such as Advanced RO, Elix® EDI and mercury-free UV lamps reduce water and electricity consumption, as well as chemical waste, helping you reach your sustainability targets. Look for our “Greener Alternative Product” label on certain Milli-Q® benchtop systems.



Milli-Q®

Lab Water Solutions

Supelco®

Analytical Products

Merck KGaA
Frankfurter Strasse 250
64293 Darmstadt, Germany

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For further information, please contact your local
VWR organization or have a look at the VWR webpages:
vwr.com

