

# Water and Food Analytics

Test Kits, Instruments and Accessories



**Absolute reliability** is essential in water and food analytics. When the task is to maintain and improve the quality of life, even the slightest error could have detrimental effects on consumers and producers. The only acceptable approach is careful analysis using reliable tools that deliver solid results. It's all about trust – which is precisely what Merck Millipore is renowned for.



When it comes to fast and precise analysis, Merck Millipore has been the leading specialist for more than 100 years. Our extensive portfolio covers everything from water analysis to the control of production processes up to the measurement of special food parameters. With our high-quality visual test kits you'll achieve reliable results easily and within minutes – even in on-site analyses. Our test systems consist of optimally coordinated kits and measuring instruments for a wide range of application areas. All of our test kits for instrumental analysis are accompanied by detailed certificates. And with ready-to-use standards, your quality controls become as easy and reliable as possible.



[www.merckmillipore.com/water-and-food-analytics](http://www.merckmillipore.com/water-and-food-analytics)

# Contents



## Welcome to our new brand

We are now Merck Millipore: two leading brands combined to bring you an expansive product portfolio, breadth of expertise and deep consumer insights. Our union has also led to new, globally harmonized product names, such as MQuant™, MColorpHast™ and MColortest™. The same high-quality products you know and trust now carry identical names throughout the world. As a life science tools organization at the forefront of emerging technologies, we are committed to collaborating with you to offer performance driven products and services to accelerate your research, development and production.

Parameters from A-Z

Visual and instrumental  
test kits at a glance

8

pH test strips and papers

pH determination made easy  
MColorpHast™



20

Test strips

Universal, fast and simple  
MQuant™



26

Colorimetric and  
titrimetric test kits

Variety and ease of use  
MColortest™



36

Reflectometry

Easy in-process monitoring  
Reflectoquant®



54

Photometry

Safety in water analysis  
Spectroquant®



62

Service

Simply competent

140

# Special topics

Discover our latest product innovations.

At Merck Millipore, we continue to push the boundaries of chemistry to bring you intelligent solutions to your daily challenges. Our latest advances in water and food analytics are no exceptions: breakthrough tests, instruments, packaging and services that go further to make your work easier. As you go through this catalog, you'll find "Special Topic" boxes, which give you a glimpse of these innovations. We hope you enjoy reading our highlights and learning how you can benefit from them.

> page 22



**SafetyEdge box**  
for pH test strips

> page 31



**OEM business**  
Your brand –  
our test strips

> page 39



**Waste disposal**  
Online waste  
disposal  
advice 24/7

> page **66**

**Be mobile**  
Spectroquant®  
Move 100



> page **90**

**Be sensitive**  
New sulfate, silicate  
and chloride test kits



> page **117**

**Be sure**  
Bromate in water and  
drinking water



> page **112**

**Be unlimited**  
New COD cell tests  
with unlimited  
chloride tolerance



> page **58**

**HMF in honey**  
Reflectoquant®  
HMF test



# Parameters from A-Z

## Visual and instrumental test kits at a glance

What options do the Merck Millipore rapid tests have to offer for the determination of the concentration of individual parameters?

The following table is designed to assist you in selecting the appropriate test for your requirements:

- Select the test parameter of your choice (arranged alphabetically)
- Find the measuring range that applies to your requirements and use the table to select the line of products suited to your work.
- Get all requested information on the selected product from the stated page of this brochure. There the "Applications" section will give you details on the areas for which the product in question has been tested and is suitable. While a product has not been tested for use in applications that are not listed, it is nonetheless possible to apply it in these areas.
- You can use the order number stated to order the product.
- Many other details and information on the individual products – for example working instructions, certificates of analysis, and applications – can be found by entering the first six digits of the ordering number into the search box of our internet site [www.merckmillipore.com/test-kits](http://www.merckmillipore.com/test-kits).



**A small tip** the column "System / Type" describes special features regarding the performance of the test, such as evaluation with the aid of color charts or comparators, the use of additional reagents, etc.



## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
A Absorbance	-0.300 - 3.000 A			Physical method	92
Acid Capacity Cell Test to pH 4.3 (total alkalinity)	0.40 - 8.00 mmol/l 20 - 400 mg/l CaCO <sub>3</sub>	120	1.01758.0001	Cell test	92
ADMI Color measurement				Application	92
Alkalinity (total)	see also Acid capacity to pH 4.3				
Alkalinity Test	0.1 - 10 mmol/l	200	1.11109.0001	Titration with pipette	42
Aluminium Cell Test	0.02 - 0.50 mg/l Al	25	1.00594.0001	Cell test	92
Aluminium Test	0.020 - 1.20 mg/l Al	350	1.14825.0001	Reagent test	92
Aluminium Test	0.07 - 0.8 mg/l Al	185	1.14413.0001	Color card comparator	42
Aluminium Test	0.1 - 6 mg/l Al	150	1.18386.0001	Disk comparator	42
Aluminium Test	10 - 250 mg/l Al	100	1.10015.0001	Test strip	32
Ammonia, free	0.000 - 3.0 mg/l NH <sub>3</sub> -N 0.000 - 3.65 mg/l NH <sub>3</sub>			Application	92
Ammonium Cell Test	0.010 - 2.000 mg/l NH <sub>4</sub> -N 0.01 - 2.58 mg/l NH <sub>4</sub>	25	1.14739.0001	Cell test	92
Ammonium Test	0.010 - 3.00 mg/l NH <sub>4</sub> -N 0.013 - 3.86 mg/l NH <sub>4</sub>	250 500	1.14752.0002 1.14752.0001	Reagent test	92
Ammonium Test	0.025 - 0.4 mg/l NH <sub>4</sub>	70	1.14428.0002	Color card comparator	42
Ammonium Test	0.05 - 0.8 mg/l NH <sub>4</sub>	100	1.14400.0001	Color card comparator	42
Ammonium Test	0.2 - 5 mg/l NH <sub>4</sub>	50	1.08024.0001	Sliding comparator	42
Ammonium Test	0.2 - 7 mg/l NH <sub>4</sub>	50	1.16892.0001	Test strip	60
Ammonium Test	0.2 - 8 mg/l NH <sub>4</sub>	200	1.14423.0002	Color card comparator	42
Ammonium Test	0.2 - 8 mg/l NH <sub>4</sub>	200	1.14750.0002	Disk comparator	42
Ammonium Cell Test	0.20 - 8.00 mg/l NH <sub>4</sub> -N 0.26 - 10.30 mg/l NH <sub>4</sub>	25	1.14558.0001	Cell test	92
Ammonium Test in fresh- and seawater	0.5 - 10 mg/l NH <sub>4</sub>	50	1.14657.0001	Color card	42
Ammonium Test	0.5 - 10 mg/l NH <sub>4</sub>	150	1.11117.0001	Color card	42
Ammonium Cell Test	0.5 - 16.0 mg/l NH <sub>4</sub> -N 0.6 - 20.6 mg/l NH <sub>4</sub>	25	1.14544.0001	Cell test	92
Ammonium Test	2.0 - 150 mg/l NH <sub>4</sub> -N 2.6 - 193 mg/l NH <sub>4</sub>	100	1.00683.0001	Reagent test	92
Ammonium Cell Test	4.0 - 80.0 mg/l NH <sub>4</sub> -N 5.2 - 103.0 mg/l NH <sub>4</sub>	25	1.14559.0001	Cell test	92
Ammonium Test	5.0 - 20.0 mg/l NH <sub>4</sub>	50	1.16899.0001	Test strip	60
Ammonium Test	10 - 400 mg/l NH <sub>4</sub>	100	1.10024.0001	Test strip	32
Ammonium Test	20 - 180 mg/l NH <sub>4</sub>	50	1.16977.0001	Test strip	60
Antimony	0.10 - 8.00 mg/l Sb			Application	92
AOX Cell Test	0.05 - 2.50 mg/l AOX	25	1.00675.0001	Cell test	92
Arsenic Test	0.001 - 0.100 mg/l As	30	1.01747.0001	Reagent test	92
Arsenic Test	0.005 - 0.5 mg/l As	100	1.17927.0001	Test strip	32
Arsenic Test	0.02 - 3 mg/l As	100	1.17917.0001	Test strip	32
Ascorbic Acid Test	25 - 450 mg/l Ascorbic Acid	50	1.16981.0001	Test strip	60
Ascorbic Acid Test RQeasy®	25 - 450 mg/l Ascorbic Acid	50	1.17963.0001	Test strip	60
Ascorbic Acid Test	50 - 2,000 mg/l Ascorbic Acid	100	1.10023.0001	Test strip	32
B BOD Cell Test	0.5 - 3,000 mg/l BOD	50	1.00687.0001	Cell test	94
Boron Test	0.050 - 0.800 mg/l B	60	1.14839.0001	Reagent test	94

# Index B-C

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
B Boron Cell Test	0.05 - 2.00 mg/l B	25	1.00826.0001	Cell test	94
Bromate	0.003 - 0.150 mg/l BrO <sub>3</sub>			Application	94
Bromine Test	0.020 - 10.00 mg/l Br <sub>2</sub>	200	1.00605.0001	Reagent test	94
C Cadmium Test	0.0020 - 0.500 mg/l Cd	55	1.01745.0001	Reagent test	94
Cadmium Cell Test	0.025 - 1.000 mg/l Cd	25	1.14834.0001	Cell test	94
Calcium Test	0.20 - 4.00 mg/l Ca	100	1.00049.0001	Reagent test	94
Calcium Test	2 - 200 mg/l Ca	200	1.11110.0001	Titration with pipette	42
Calcium Test	2.5 - 45.0 mg/l Ca	50	1.16993.0001	Test strip	60
Calcium Test	5 - 125 mg/l Ca	50	1.16125.0001	Test strip	60
Calcium Test	5 - 160 mg/l Ca 7 - 224 mg/l CaO 12 - 400 mg/l CaCO <sub>3</sub> 1.0 - 15.0 mg/l Ca 1.4 - 21.0 mg/l CaO 2.5 - 37.5 mg/l CaCO <sub>3</sub>	100	1.14815.0001	Reagent test	94
Calcium Test	10 - 100 mg/l Ca	60	1.10083.0001	Test strip	32
Calcium Cell Test	10 - 250 mg/l Ca 14 - 350 mg/l CaO 25 - 624 mg/l CaCO <sub>3</sub>	25	1.00858.0001	Cell test	94
Carbohydrazide	see Oxygen Scavengers Test				
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	42
Carbonate Hardness Test / Acid capacity to pH 4.3 ("SBV", ANC)	1 drop corresponds to 1.25 °e	100	1.11103.0001	Titration with dropping bottle	42
Carbonate Hardness Test in fresh- and seawater	1 drop corresponds to 1.25 °e	50	1.14653.0001	Titration with dropping bottle	42
Carbonate Hardness Test	5 - 30 °e	100	1.10648.0001	Test strip	32
Chloride Test	0.10 - 5.00 mg/l Cl	100	1.01807.0001	Reagent test	94
Chloride Cell Test	0.5 - 15.0 mg/l Cl	25	1.01804.0001	Cell test	94
Chloride Test	2 - 200 mg/l Cl	200	1.11106.0001	Titration with pipette	42
Chloride Test	2.5 - 250 mg/l Cl	100	1.14897.0001	Reagent test	94
		175	1.14897.0002		
Chloride Test	3 - 300 mg/l Cl	200	1.14753.0001	Disk comparator	42
Chloride Cell Test	5 - 125 mg/l Cl	25	1.14730.0001	Cell test	94
Chloride Test	5 - 300 mg/l Cl	400	1.14401.0001	Color card comparator	42
Chloride Test	1 drop corresponds to 25 mg/l Cl	100	1.11132.0001	Titration with dropping bottle	42
Chloride Test	500 - 3,000 mg/l Cl	100	1.10079.0001	Test strip	32
Chlorine Test (free chlorine)	0.01 - 0.3 mg/l Cl <sub>2</sub>	400	1.14434.0001	Color card comparator	42
Chlorine Test (free chlorine) USEPA approved	0.010 - 6.00 mg/l Cl <sub>2</sub>	200	1.00598.0002	Reagent test	94
		1,200	1.00598.0001		
Chlorine Cell Test (free chlorine) USEPA approved	0.03 - 6.00 mg/l Cl <sub>2</sub>	200	1.00595.0001	Cell test	94
Chlorine Test (free chlorine) in freshwater and seawater	0.1 - 2 mg/l Cl <sub>2</sub>	100	1.14670.0001	Color card	42
Chlorine Test (free chlorine) (liquid)	0.1 - 2 mg/l Cl <sub>2</sub>	600	1.14978.0001	Disk comparator	42

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
C Chlorine Test (free chlorine)	0.25 - 15 mg/l Cl <sub>2</sub>	1000	1.14976.0001	Disk comparator	42
Chlorine Test (free chlorine)	0.5 - 10.0 mg/l Cl <sub>2</sub>	50	1.16896.0001	Test strip	60
Chlorine Test (free chlorine)	0.5 - 20 mg/l Cl <sub>2</sub>	75	1.17925.0001	Test strip	32
Chlorine Test (free chlorine)	25 - 500 mg/l Cl <sub>2</sub>	100	1.17924.0001	Test strip	32
Chlorine Test (total chlorine)	0.010 - 6.00 mg/l Cl <sub>2</sub>	200	1.00602.0001	Reagent test	94
USEPA approved		1200	1.00602.0002		
Chlorine Test (free and total chlorine)	0.010 - 6.00 mg/l Cl <sub>2</sub>	200	1.00599.0001	Reagent test	96
USEPA approved		(100 each)			
Chlorine Cell Test	0.03 - 6.00 mg/l Cl <sub>2</sub>	200	1.00597.0001	Cell test	96
(free and total chlorine) USEPA approved		(100 each)			
Chlorine Test (liquid)	0.1 - 2 mg/l Cl <sub>2</sub>	800	1.14801.0001	Disk comparator	42
(free and total chlorine)		(400 each)			
Chlorine Test	0.25 - 15 mg/l Cl <sub>2</sub>	800	1.14826.0001	Disk comparator	42
(free and total chlorine)		(400 each)			
Chlorine Reagent Cl <sub>2</sub> -1 (liquid)	0.010 - 6.00 mg/l Cl <sub>2</sub>	200	1.00086.0001	Reagent test	96
Chlorine Reagent Cl <sub>2</sub> -2 (liquid)	0.010 - 6.00 mg/l Cl <sub>2</sub>	400	1.00087.0001	Reagent test	96
Chlorine Reagent Cl <sub>2</sub> -3 (liquid)	0.010 - 6.00 mg/l Cl <sub>2</sub>	600	1.00088.0001	Reagent test	96
Chlorine- and pH Test	0.1 - 1.5 mg/l Cl <sub>2</sub>	150 (chlorine)	1.11160.0001	Sliding comparator	44
(free chlorine)	pH 6.5 - 7.9	150 (pH)			
Chlorine- and pH Test	0.1 - 1.5 mg/l Cl <sub>2</sub>	200 (chlorine)	1.11174.0001	Color-matching vessel	44
(free and total chlorine)	pH 6.8 - 7.8	200 (pH)			
Chlorine Dioxide Test	0.020 - 0.55 mg/l ClO <sub>2</sub>	300	1.18754.0001	Color card comparator	44
Chlorine Dioxide Test	0.020 - 10.00 mg/l ClO <sub>2</sub>	200	1.00608.0001	Reagent test	96
Chlorine Dioxide Test	0.50 - 28 mg/l ClO <sub>2</sub>	300	1.18756.0001	Disk comparator	44
Chlorophyll-a and phaeophytin-a				Application	96
Chlorophyll-a, -b, -c				Application	96
Chromate Test	0.010 - 3.00 mg/l Cr	250	1.14758.0001	Reagent test	96
for the determination of chromium (VI)	0.02 - 6.69 mg/l CrO <sub>4</sub>				
Chromate Cell Test	0.05 - 2.00 mg/l Cr	25	1.14552.0001	Cell test	96
for the determination of chromium (VI)	0.11 - 4.46 mg/l CrO <sub>4</sub>				
and chromium (total) USEPA approved					
Chromate Test	0.01 - 0.22 mg/l CrO <sub>4</sub>	150	1.14402.0001	Color card comparator	44
Chromate Test	0.2 - 3.6 mg/l CrO <sub>4</sub>	300	1.14441.0001	Color card comparator	44
Chromate Test	0.2 - 22 mg/l CrO <sub>4</sub>	300	1.14756.0001	Disk comparator	44
Chromate Test	3 - 100 mg/l CrO <sub>4</sub>	100	1.10012.0001	Test strip	32
Chromium in electroplating baths	4 - 400 g/l CrO <sub>3</sub>			Application	96
Cobalt Test	10 - 1,000 mg/l Co	100	1.10002.0001	Test strip	32
COD Cell Test USEPA approved	4.0 - 40.0 mg/l COD	25	1.14560.0001	Cell test	96
COD Cell Test	5.0 - 80.0 mg/l COD		1.01796.0001	Cell test	96
COD Cell Test USEPA approved	10 - 150 mg/l COD	25	1.14540.0001	Cell test	96
COD Cell Test USEPA approved	15 - 300 mg/l COD	25	1.14895.0001	Cell test	96
COD Cell Test USEPA approved	25 - 1,500 mg/l COD	25	1.14541.0001	Cell test	96
COD Cell Test USEPA approved	50 - 500 mg/l COD	25	1.14690.0001	Cell test	96
COD Cell Test USEPA approved	300 - 3,500 mg/l COD	25	1.14691.0001	Cell test	98
COD Cell Test USEPA approved	500 - 10,000 mg/l COD	25	1.14555.0001	Cell test	98
COD Cell Test	5000 - 90,000 mg/l COD	25	1.01797.0001	Cell test	98



# Index C-F

## Visual and instrumental test kits

	Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
NEW	C COD Cell Test for seawater / high chloride contents	5.0 - 60.0 mg/l COD	25	1.17058.0001	Cell test	98
NEW	COD Cell Test for seawater / high chloride contents	50 - 3,000 mg/l COD	25	1.17059.0001	Cell test	98
	COD Cell Test (Hg free)	10 - 150 mg/l COD	25	1.09772.0001	Cell test	98
	COD Cell Test (Hg free)	100 - 1,500 mg/l COD	25	1.09773.0001	Cell test	98
NEW	Color, ADMI	2.0 - 500 mg/l			Physical method	98
NEW	Color, Hazen	0.2 - 500 mg/l			Physical method	98
NEW	Color, Hazen	1 - 1,000 (at 445, 455, 465 nm) mg/l			Physical method	98
NEW	Color, Spectral Absorption Coefficient	0.5 - 250 m <sup>-1</sup> mg/l			Physical method	98
NEW	Color, true color	2 - 2,500 mg/l			Physical method	98
	Color Test	5 - 150 Hz	no limit	1.14421.0001	Color card comparator	44
	Compact Laboratory for aquaculture			1.11102.0001	Compact lab	52
	Compact Laboratory for soil analysis			1.14602.0001	Compact lab	52
	Compact Laboratory for water testing			1.11151.0001	Compact lab	53
	Congo red paper	pH <3 blue-violet / >5 red-orange	3 x 4.8 m	1.09514.0003	pH test paper	24
	Copper Test	0.02 - 6.00 mg/l Cu	250	1.14767.0001	Reagent test	98
	Copper Test	0.05 - 0.5 mg/l Cu	125	1.14414.0001	Color card comparator	44
	Copper Cell Test	0.05 - 8.00 mg/l Cu	25	1.14553.0001	Cell test	98
	Copper Test in freshwater and seawater	0.15 - 1.6 mg/l Cu	50	1.14651.0001	Color card	44
	Copper Test	0.3 - 5 mg/l Cu	125	1.14418.0001	Color card comparator	44
	Copper Test	0.3 - 10 mg/l Cu	125	1.14765.0001	Disk comparator	44
	Copper Test	10 - 300 mg/l Cu	100	1.10003.0001	Test strip	32
	Copper in electroplating baths	2.0 - 80.0 g/l Cu			Application	98
	Cyanide Test	0.002 - 0.03 mg/l CN	65	1.14417.0001	Color card comparator	44
	Cyanide Test for the determination of free and readily liberated cyanide	0.0020 - 0.500 mg/l CN	100	1.09701.0001	Reagent test	98
	Cyanide Cell Test for the determination of free and readily liberated cyanide USEPA approved	0.010 - 0.500 mg/l CN	25	1.14561.0001	Cell test	100
	Cyanide Test	0.03 - 0.7 mg/l CN	200	1.14429.0001	Color card comparator	44
	Cyanide Test	0.03 - 5 mg/l CN	200	1.14798.0001	Disk comparator	44
	Cyanide Test	1 - 30 mg/l CN	100	1.10044.0001	Test strip	32
	Cyanuric acid Test	2 - 160 mg/l Cyanuric acid	100	1.19253.0001	Reagent test	100
	D DEHA (Diethylhydroxylamine)	see Oxygen Scavengers Test				
	Detergents	see Surfactants				
NEW	F Fluoride Test	0.02 - 2.00 mg/l F	250 ml	1.00822.0250	Cell test	100
	Fluoride Cell Test	0.10 - 1.80 mg/l F	25	1.00809.0001	Cell test	100
	Fluoride Test	0.025 - 0.500 mg/l F				
	Fluoride Test	0.10 - 20.0 mg/l F	100	1.14598.0001	Reagent test	100
	Fluoride Test		250	1.14598.0002		
	Fluoride Test	0.15 - 0.8 mg/l F	100	1.18771.0001	Color card	44
	Formaldehyde Test	0.02 - 8.00 mg/l HCHO	100	1.14678.0001	Reagent test	100
	Formaldehyde Test	0.1 - 1.5 mg/l HCHO	100	1.08028.0001	Sliding comparator	44
	Formaldehyde Cell Test	0.10 - 8.00 mg/l HCHO	25	1.14500.0001	Cell test	100

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page	
F	Formaldehyde Test	1.0 - 45.0 mg/l HCHO	50	1.16989.0001	Test strip	60
	Formaldehyde Test	10 - 100 mg/l HCHO	100	1.10036.0001	Test strip	32
	Free Fatty Acids	0.5 - 3.0 mg/g KOH	100	1.17046.0001	Test strip	32
	Fritest®		60	1.10652.0001	Deep-frying fats test	50
G	Glucose Test	1 - 100 mg/l Glucose	50	1.16720.0001	Test strip	60
	Glucose Test	10 - 500 mg/l Glucose	50	1.17866.0001	Test strip	32
	Gold Test	0.5 - 12.0 mg/l Au	75	1.14821.0002	Reagent test	100
H	Hardness	see Residual Hardness or Total Hardness				
	Hazen Color Number (Pt/Co, APHA, Hazen)	0 - 1,000 Pt/Co or Cu			Physical method	100
	Hydrazine Test	0.005 - 2.00 mg/l N <sub>2</sub> H <sub>4</sub>	100	1.09711.0001	Reagent test	100
	Hydrazine Test	0.1 - 1 mg/l N <sub>2</sub> H <sub>4</sub>	100	1.08017.0001	Color-matching vessel	44
	Hydrogen Peroxide	see also Peroxide				
	Hydrogen Peroxide Test	0.015 - 6.00 mg/l H <sub>2</sub> O <sub>2</sub>	100	1.18789.0001	Reagent test	100
	Hydrogen Peroxide Cell Test	2.0 - 20.0 mg/l H <sub>2</sub> O <sub>2</sub> 0.25 - 5.00 mg/l H <sub>2</sub> O <sub>2</sub>	25	1.14731.0001	Cell test	100
	Hydrogen sulfide	see Sulfide				
	Hydroquinone	see Oxygen Scavengers Test				
	Hydroxymethylfurfural Test	1.0 - 60.0 mg/l HMF	50	1.17952.0001	Test strip	60
I	Iodine Color Number	0.010 - 50.0 IFZ			Physical method	100
	Iodine Test	0.050 - 10.00 mg/l I <sub>2</sub>	200	1.00606.0001	Reagent test	100
Iron Test		0.005 - 5.00 mg/l Fe	250	1.14761.0002	Reagent test	100
			1,000	1.14761.0001		
Iron Test		0.01 - 0.2 mg/l Fe	300	1.14403.0001	Color card comparator	44
Iron Test		0.010 - 5.00 mg/l Fe	150	1.00796.0001	Reagent test	100
Iron Test in freshwater and seawater		0.05 - 1 mg/l Fe	50	1.14660.0001	Color card	44
Iron Cell Test		0.05 - 4.00 mg/l Fe	25	1.14549.0001	Cell test	100
Iron Test		0.1 - 5 mg/l Fe	500	1.14759.0001	Disk comparator	44
Iron Test		0.1 - 50 mg/l Fe	200	1.11136.0001	Color-matching vessel	44
Iron Test		0.2 - 2.5 mg/l Fe	500	1.14438.0001	Color card comparator	46
Iron Test		0.25 - 15 mg/l Fe	300	1.14404.0001	Color card comparator	46
Iron Test		0.5 - 20.0 mg/l Fe(II)	50	1.16982.0001	Test strip	60
Iron Cell Test		1.0 - 50.0 mg/l Fe	25	1.14896.0001	Cell test	100
Iron Test		3 - 500 mg/l Fe(II)	100	1.10004.0001	Test strip	32
Iron Test		20 - 200 mg/l Fe(II)	50	1.16983.0001	Test strip	60
	Isoascorbic acid (Erythorbic acid)	see Oxygen Scavengers Test				
L	Lactic Acid Test	3 - 60.0 mg/l Lactic acid	50	1.16127.0001	Test strip	60
	Lead Test	0.010 - 5.00 mg/l Pb	50	1.09717.0001	Reagent test	100
	Lead Cell Test	0.10 - 5.00 mg/l Pb	25	1.14833.0001	Cell test	100
	Lead Test	20 - 500 mg/l Pb	100	1.10077.0001	Test strip	32
	Lead(II) acetat paper	Sulfide from 10 mg/l	3 x 4.8 m	1.09511.0003	Reagent paper	34
	Litmus paper, blue	pH <7 red / >7 blue	3 x 4.8 m	1.09486.0003	pH test paper	24
	Litmus paper, red	pH <7 red / >7 blue	3 x 4.8 m	1.09489.0003	pH test paper	24
	M	Magnesium Cell Test	5.0 - 75.0 mg/l mg	25	1.00815.0001	Cell test
Magnesium Test		5 - 100 mg/l mg	50	1.16124.0001	Test strip	60
Magnesium Test		100 - 1,500 mg/l mg	50	1.11131.0001	Color card	46
Malic Acid Test		5.0 - 60.0 mg/l Malic acid	50	1.16128.0001	Test strip	60

# Index M-N

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
<b>M</b> Manganese Test	0.005 - 2.00 mg/l Mn	250	1.01846.0001	Reagent test	102
Manganese Test	0.010 - 10.0 mg/l Mn	250	1.14770.0002	Reagent test	102
		500	1.14770.0001		
Manganese Test	0.03 - 0.5 mg/l Mn	120	1.14406.0001	Color card comparator	46
Manganese Cell Test	0.10 - 5.00 mg/l Mn	25	1.00816.0001	Cell test	102
Manganese Test	0.3 - 10 mg/l Mn	120	1.14768.0001	Disk comparator	46
Manganese Test	2 - 100 mg/l Mn	100	1.10080.0001	Test strip	32
Mercury	0.025 - 1.000 Hg			Application	102
Methylethylketoxime (2-Butanoneoxime)	see Oxygen Scavengers Test				
Molybdenum Cell Test	0.02 - 1.00 mg/l Mo 0.03 - 1.67 mg/l MoO <sub>4</sub> <sup>2+</sup> 0.04 - 2.15 mg/l Na <sub>2</sub> MoO <sub>4</sub>	25	1.00860.0001	Cell test	102
Molybdenum Test	0.5 - 45.0 mg/l Mo 0.8 - 75.0 mg/l MoO <sub>4</sub> <sup>2+</sup> 1.1 - 96.6 mg/l Na <sub>2</sub> MoO <sub>4</sub>	100	1.19252.0001	Reagent test	102
Molybdenum Test	5 - 250 mg/l Mo	100	1.10049.0001	Test strip	32
Monochloramine Test	0.050 - 10.00 mg/l Cl <sub>2</sub> 0.036 - 7.25 mg/l NH <sub>2</sub> Cl 0.010 - 1.96 mg/l NH <sub>2</sub> Cl-N	150	1.01632.0001	Reagent test	102
<b>N</b> Nickel Test	0.02 - 0.5 mg/l Ni	125	1.14420.0001	Color card comparator	46
Nickel Test	0.02 - 5.00 mg/l Ni	250	1.14785.0001	Reagent test	102
Nickel Cell Test	0.10 - 6.00 mg/l Ni	25	1.14554.0001	Cell test	102
Nickel Test	0.5 - 10 mg/l Ni	500	1.14783.0001	Disk comparator	46
Nickel Test	10 - 500 mg/l Ni	100	1.10006.0001	Test strip	32
Nickel in electroplating baths	2.0 - 120 g/l Ni			Application	102
Nitrate (UV)	0.0 - 7.0 mg/l			Application	102
Nitrate Test	0.10 - 25.0 mg/l NO <sub>3</sub> -N 0.4 - 110.7 mg/l NO <sub>3</sub>	100	1.09713.0001	Reagent test	102
		250	1.09713.0002		
Nitrate Test	0.2 - 20.0 mg/l NO <sub>3</sub> -N 0.9 - 88.5 mg/l NO <sub>3</sub>	100	1.14773.0001	Reagent test	102
Nitrate Test	0.3 - 30.0 mg/l 1.3 - 132.8 mg/l	100	1.01842.0001	Reagent test	102
Nitrate Cell Test	0.5 - 18.0 mg/l NO <sub>3</sub> -N 2.2 - 79.7 mg/l NO <sub>3</sub>	25	1.14542.0001	Cell test	102
Nitrate Cell Test	0.5 - 25.0 mg/l NO <sub>3</sub> -N 2.2 - 110.7 mg/l NO <sub>3</sub>	25	1.14563.0001	Cell test	102
Nitrate Test	3 - 90 mg/l NO <sub>3</sub>	50	1.16995.0001	Test strip	60
Nitrate Cell Test	1.0 - 50.0 mg/l NO <sub>3</sub> -N 4 - 221 mg/l NO <sub>3</sub>	25	1.14764.0001	Cell test	102
Nitrate Test	5 - 90 mg/l NO <sub>3</sub>	90	1.18387.0001	Disk comparator	46
Nitrate Test	5 - 225 mg/l NO <sub>3</sub>	50	1.16971.0001	Test strip	60
Nitrate Test RQeasy®	5 - 250 mg/l NO <sub>3</sub>	50	1.17961.0001	Test strip	60
Nitrate Test in freshwater	10 - 150 mg/l NO <sub>3</sub>	100	1.11169.0001	Color card	46
Nitrate Test	10 - 150 mg/l NO <sub>3</sub>	200	1.11170.0001	Sliding comparator	46
Nitrate Test	10 - 500 mg/l NO <sub>3</sub>	25	1.10020.0002	Test strip	32
		100	1.10020.0001		

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page	
N	Nitrate Test	10 - 500 mg/l NO <sub>3</sub>	1,000	1.10092.0021	Individually sealed	32
	Nitrate Cell Test	23 - 225 mg/l NO <sub>3</sub> -N 102 - 996 mg/l NO <sub>3</sub>	25	1.00614.0001	Cell test	102
	Nitrate Cell Test in seawater	0.10 - 3.00 mg/l NO <sub>3</sub> -N 0.4 - 13.3 mg/l NO <sub>3</sub>	25	1.14556.0001	Cell test	104
	Nitrate Test in seawater	0.2 - 17.0 mg/l NO <sub>3</sub> -N 0.9 - 75.3 mg/l NO <sub>3</sub>	50	1.14942.0001	Reagent test	104
	Nitrite Test	0.005 - 0.1 mg/l NO <sub>2</sub>	110	1.14408.0001	Color card comparator	46
	Nitrite Test	0.002 - 1.00 mg/l NO <sub>2</sub> -N 0.007 - 3.28 mg/l NO <sub>2</sub>	335	1.14776.0002	Reagent test	104
			1,000	1.14776.0001		
	Nitrite Test	0.025 - 0.5 mg/l NO <sub>2</sub>	200	1.08025.0001	Sliding comparator	46
	Nitrite Cell Test	0.010 - 0.700 mg/l NO <sub>2</sub> -N 0.03 - 2.30 mg/l NO <sub>2</sub>	25	1.14547.0001	Cell test	104
	Nitrite Test in freshwater and seawater	0.05 - 1 mg/l NO <sub>2</sub>	100	1.14658.0001	Color card	46
	Nitrite Test	0.1 - 2 mg/l NO <sub>2</sub>	400	1.14424.0001	Color card comparator	46
	Nitrite Test	0.1 - 10 mg/l NO <sub>2</sub>	400	1.14774.0001	Disk comparator	46
	Nitrite Test	0.5 - 10 mg/l NO <sub>2</sub>	75	1.10057.0001	Test strip	32
	Nitrite Test	0.5 - 25.0 mg/l NO <sub>2</sub>	50	1.16973.0001	Test strip	60
			25	1.10007.0002		
	Nitrite Test	2 - 80 mg/l NO <sub>2</sub>	100	1.10007.0001	Test strip	32
	Nitrite Cell Test	1.0 - 90.0 mg/l NO <sub>2</sub> -N 3.3 - 295.2 mg/l NO <sub>2</sub>	25	1.00609.0001	Cell test	104
Nitrite Test	0.03 - 1.00 g/l NO <sub>2</sub>	50	1.16732.0001	Test strip	60	
Nitrite Test	0.1 - 3 g/l NO <sub>2</sub>	100	1.10022.0001	Test strip	32	
Nitrogen (total) Cell Test	0.5 - 15.0 mg/l N	25	1.00613.0001	Cell test	104	
Nitrogen (total) Cell Test	0.5 - 15.0 mg/l N	25	1.14537.0001	Cell test	104	
Nitrogen (total) Cell Test	10 - 150 mg/l N	25	1.14763.0001	Cell test	104	
O	Organic Carbon, Total	see TOC				
	Oxifrit Test®		60	1.10653.0001	Deep-frying fats test	50
	Oxygen Test	0.1 - 10 mg/l O <sub>2</sub>	100	1.11107.0001	Titration with pipette	46
	Oxygen Test	1 drop corresponds to 0.5 mg/l O <sub>2</sub>	100	1.17117.0001	Titration with dropping bottle	46
	Oxygen Cell Test	0.5 - 12 mg/l O <sub>2</sub>	25	1.14694.0001	Cell test	104
	Oxygen Test in freshwater and seawater	1 - 12 mg/l O <sub>2</sub>	50	1.14662.0001	Color card	46
	Oxygen demand, biochemical	see BOD				
	Oxygen demand, chemical	see COD				
	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	104
	Ozone Test	0.007 - 0.20 mg/l O <sub>3</sub>	300	1.18755.0001	Color card comparator	46
	Ozone Test	0.010 - 4.00 mg/l O <sub>3</sub>	200	1.00607.0001	Reagent test	104
1,200			1.00607.0002			
Ozone Test	0.15 - 10 mg/l O <sub>3</sub>	300	1.18758.0001	Disk comparator	46	

# Index P

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
P Palladium	0.05 - 1.25 mg/l Pd			Application	104
Peracetic Acid Test	1.0 - 22.5 mg/l Peracetic acid	50	1.16975.0001	Test strip	60
Peracetic Acid Test	5 - 50 mg/l Peracetic acid	100	1.10084.0001	Test strip	32
Peracetic Acid Test	20 - 100 mg/l Peracetic acid	50	1.17956.0001	Test strip	60
Peracetic Acid Test	75 - 400 mg/l Peracetic acid	50	1.16976.0001	Test strip	60
Peracetic Acid Test	100 - 500 mg/l Peracetic acid	100	1.10001.0001	Test strip	32
Peracetic Acid Test	500 - 2,000 mg/l Peracetic acid	100	1.17922.0001	Test strip	32
Peroxidase Test	yes/no result	100	1.17828.0001	Test strip	32
Peroxide	see also Hydrogen peroxide				
Peroxide Test	0.2 - 20.0 mg/l H <sub>2</sub> O <sub>2</sub>	50	1.16974.0001	Test strip	60
Peroxide Test	0.5 - 25 mg/l H <sub>2</sub> O <sub>2</sub>	25	1.10011.0002	Test strip	34
		100	1.10011.0001		
Peroxide Test	1 - 100 mg/l H <sub>2</sub> O <sub>2</sub>	100	1.10081.0001	Test strip	34
Peroxide Test	100 - 1,000 mg/l H <sub>2</sub> O <sub>2</sub>	50	1.16731.0001	Test strip	60
Peroxide Test	100 - 1,000 mg/l H <sub>2</sub> O <sub>2</sub>	100	1.10337.0001	Test strip	34
pH indicator papers	see separate list of pH indicator papers	3 x 4.8 m		pH test paper	24
pH indicator strips	see separate list of pH indicator strips	100		pH test strips	25
pH indicator liquid	pH 0 - 5.5	100 ml	1.09177.0100	Color card	48
pH Test	pH 1.0 - 5.0	50	1.16894.0001	Test strip	60
pH Test	pH 4.0 - 9.0	50	1.16996.0001	Test strip	60
pH Universal indicator liquid	pH 4 - 10	100 ml	1.09175.0100	Color card	48
		1 l	1.09175.1000		
pH Test	pH 4.5 - 9	100	1.08038.0001	Color-matching vessel	48
pH Test	pH 4.5 - 9	400	1.08027.0001	Sliding comparator	48
pH Test in freshwater and seawater	pH 5.0 - 9.0	200	1.18773.0001	Color card	48
pH Cell Test	pH 6.4 - 8.8	280	1.01744.0001	Cell test	104
pH Test in swimming pool	pH 6.5 - 8.2	200	1.14669.0001	Color card	48
pH Test for Cooling Lubricants	pH 7.0 - 10.0	50	1.16898.0001	Test strip	60
pH indicator liquid	pH 9 - 13	100 ml	1.09176.0100	Color card	48
Phaeophytin-a and Chlorophyll-a				Application	104
Phenol Test	0.002 - 0.100 mg/l Phenol	50 - 250	1.00856.0001	Reagent test	104
	0.025 - 5.00 mg/l Phenol				
Phenol Cell Test	0.10 - 2.50 mg/l Phenol	25	1.14551.0001	Cell test	104
Phenolphthalein paper	pH <8.5 colorless / >8.5 red	3 x 4.8 m	1.09521.0003	pH test paper	24
Phosphatase, Alkaline	see Alkaline Phosphatase				
Phosphate Test	0.010 - 5.00 mg/l PO <sub>4</sub> -P	220	1.14848.0002	Reagent test	104
(ortho-phosphate)	0.03 - 15.3 mg/l PO <sub>4</sub>	420	1.14848.0001		
	0.02 - 11.46 mg/l P <sub>2</sub> O <sub>5</sub>				
Phosphate Test	0.046 - 0.43 mg/l PO <sub>4</sub>	200	1.18394.0001	Color card comparator	48
Phosphate Test RQflex® plus	0.1 - 5.0 mg/l PO <sub>4</sub>	100	1.17942.0001	Reagent test	60
Phosphate Cell Test	0.05 - 5.0 mg/l PO <sub>4</sub> -P	25	1.00474.0001	Cell test	104
(ortho-phosphate)	0.2 - 15.3 mg/l PO <sub>4</sub>				
	0.11 - 11.46 mg/l P <sub>2</sub> O <sub>5</sub>				
Phosphate Cell Test	0.05 - 5.00 mg/l PO <sub>4</sub> -P	25	1.14543.0001	Cell test	106
(ortho-phosphate and total phosphorus)	0.2 - 15.3 mg/l PO <sub>4</sub>				
USEPA approved	0.11 - 11.46 mg/l P <sub>2</sub> O <sub>5</sub>				
Phosphate Test in freshwater and seawater	0.25 - 3 mg/l PO <sub>4</sub>	100	1.14661.0001	Color card	48







## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
P Phosphate Test	0.6 - 9.2 mg/l PO <sub>4</sub>	200	1.14846.0001	Disk comparator	48
Phosphate Test	1.3 - 13.4 mg/l PO <sub>4</sub>	200	1.11138.0001	Color-matching vessel	48
Phosphate Cell Test (ortho-phosphate)	0.5 - 25.0 mg/l PO <sub>4</sub> -P 1.5 - 76.7 mg/l PO <sub>4</sub> 1.1 - 57.3 mg/l P <sub>2</sub> O <sub>5</sub>	25	1.00475.0001	Cell test	106
Phosphate Cell Test (ortho-phosphate and total phosphorus) USEPA approved	0.5 - 25.0 mg/l PO <sub>4</sub> -P 1.5 - 76.7 mg/l PO <sub>4</sub> 1.1 - 57.3 mg/l P <sub>2</sub> O <sub>5</sub>	25	1.14729.0001	Cell test	106
Phosphate Cell Test (ortho-phosphate)	0.5 - 25.0 mg/l PO <sub>4</sub> -P 1.5 - 76.7 mg/l PO <sub>4</sub> 1.1 - 57.3 mg/l P <sub>2</sub> O <sub>5</sub>	25	1.14546.0001	Cell test	106
Phosphate Test (ortho-phosphate)	0.5 - 30.0 mg/l PO <sub>4</sub> -P 1.5 - 92.0 mg/l PO <sub>4</sub> 1.1 - 68.7 mg/l P <sub>2</sub> O <sub>5</sub>	400	1.14842.0001	Reagent test	106
Phosphate Test	3.1 - 123 mg/l PO <sub>4</sub>	190	1.14449.0001	Color card comparator	48
Phosphate Test (ortho-phosphate)	1.0 - 100.0 mg/l PO <sub>4</sub> -P 3 - 307 mg/l PO <sub>4</sub> 2 - 229 mg/l P <sub>2</sub> O <sub>5</sub>	100	1.00798.0001	Reagent test	106
Phosphate Test	4.6 - 307 mg/l PO <sub>4</sub>	300	1.18388.0001	Disk comparator	48
Phosphate Test	5 - 120 mg/l PO <sub>4</sub>	50	1.16978.0001	Test strip	60
Phosphate Cell Test (ortho-phosphate)	3.0 - 100.0 mg/l PO <sub>4</sub> -P 9 - 307 mg/l PO <sub>4</sub> 7 - 229 mg/l P <sub>2</sub> O <sub>5</sub>	25	1.00616.0001	Cell test	106
Phosphate Cell Test (ortho-phosphate and total phosphorus)	3.0 - 100 mg/l PO <sub>4</sub> -P 9 - 307 mg/l PO <sub>4</sub> 7 - 229 mg/l P <sub>2</sub> O <sub>5</sub>	25	1.00673.0001	Cell test	106
Phosphate Test	10 - 500 mg/l PO <sub>4</sub>	100	1.10428.0001	Test strip	34
Platinum	0.10 - 1.25 mg/l Pt			Application	106
Platinum-Cobalt Standard Method	see Color				
Potassium Test RQflex® plus	1.0 - 25.0 mg/l K	100	1.17945.0001	Reagent test	60
Potassium Cell Test	5.0 - 50.0 mg/l K	25	1.14562.0001	Cell test	106
Potassium Cell Test	30 - 300 mg/l K	25	1.00615.0001	Cell test	106
Potassium Test	0.25 - 1.20 g/l K	50	1.16992.0001	Test strip	60
Potassium Test	250 - 1,500 mg/l K	100	1.17985.0001	Test strip	34
Potassium iodide-starch paper	Oxidizing agents	3 x 4.8 m	1.09512.0003	Reagent paper	34
Protein-Test	0.01 - 1.4 g/l Protein	200	1.10306.0500	Reagent test	106
Protein-Test	0.5 - 10 g/l Protein	250	1.10307.0500	Reagent test	106
Q Quaternary Ammonium Compounds	see also Surfactants (cationic)				
Quaternary Ammonium Compounds	10 - 500 mg/l Benzalkonium chloride	100	1.17920.0001	Test strip	34
R Residual Hardness Test	0.05 - 0.19 °e 0.7 - 2.7 mg/l CaCO <sub>3</sub>	400	1.11142.0001	Color card	48
Residual Hardness Cell Test	0.50 - 5.00 mg/l Ca 0.070 - 0.700 °d 0.087 - 0.874 °e 0.12 - 1.25 °f 0.70 - 7.00 mg/l CaO 1.2 - 12.5 mg/l CaCO <sub>3</sub>	25	1.14683.0001	Cell test	106

# Index S

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
S SAC (Spectral absorption coefficient)	0.5 - 50.0 m <sup>-1</sup>			Physical method	108
 Silicate (Silicic Acid) Test	0.0005 - 0.5000 SiO <sub>2</sub> 0.0002 - 0.2337 Si	100	1.01813.0001	Reagent test	108
Silicate (Silicic Acid) Test	0.011 - 10.70 mg/l SiO <sub>2</sub> 0.005 - 5.00 mg/l Si	300	1.14794.0001	Reagent test	108
Silicate (Silicic Acid) Test	0.01 - 0.25 mg/l Si 0.02 - 0.53 mg/l SiO <sub>2</sub>	150	1.14410.0001	Color card comparator	48
Silicate (Silicic Acid) Test	0.3 - 10 mg/l Si 0.6 - 21 mg/l SiO <sub>2</sub>	150	1.14792.0001	Disk comparator	48
Silicate (Silicic Acid) Test	1.1 - 1,070 mg/l SiO <sub>2</sub> 0.5 - 500 mg/l Si	100	1.00857.0001	Reagent test	108
Silicic Acid	see Silicate				
Silver Test	0.25 - 3.00 mg/l Ag	100	1.14831.0001	Reagent test	108
Sodium Cell Test in nutrient solution for fertilization	10 - 300 mg/l Na	25	1.00885.0001	Cell test	108
 Spectral Absorption Coefficient, Color	0.5 - 250 m <sup>-1</sup>			Application	108
 Spectral Attenuation Coefficient	0.5 - 250 m <sup>-1</sup>			Application	108
 Sucrose Test	0.25 - 2.5 g/l	50	1.16141.0001	Test strip	60
Sulfate Test	0.50 - 50.0 SO <sub>4</sub>	100	1.01812.0001	Reagent test	108
Sulfate Cell Test USEPA approved	5 - 250 mg/l SO <sub>4</sub>	25	1.14548.0001	Cell test	108
Sulfate Test	25 - 300 mg/l SO <sub>4</sub>	200	1.14791.0001	Cell test	108
Sulfate Test	25 - 300 mg/l SO <sub>4</sub>	75	1.18389.0001	Disk comparator	48
Sulfate Test	25 - 300 mg/l SO <sub>4</sub>	90	1.14411.0001	Color card comparator	48
Sulfate Cell Test	50 - 500 mg/l SO <sub>4</sub>	25	1.00617.0001	Cell test	108
Sulfate Cell Test USEAP approved	100 - 1,000 mg/l SO <sub>4</sub>	25	1.14564.0001	Cell test	108
Sulfate Test	200 - 1,600 mg/l SO <sub>4</sub>	100	1.10019.0001	Test strip	34
Sulfide Test	0.02 - 0.25 mg/l S <sup>2-</sup>	100	1.14416.0001	Color card comparator	48
Sulfide Test	0.020 - 1.50 mg/l S <sup>2-</sup>	220	1.14779.0001	Reagent test	108
Sulfide Test	0.1 - 5 mg/l S <sup>2-</sup>	200	1.14777.0001	Disk comparator	48
Sulfite Test	0.5 - 50 mg/l Na <sub>2</sub> SO <sub>3</sub> (0.3 - 32 mg/l SO <sub>3</sub> )	200	1.11148.0001	Titration with pipette	48
Sulfite Cell Test	1.0 - 20.0 mg/l SO <sub>3</sub> 0.05 - 3.00 mg/l SO <sub>3</sub>	25	1.14394.0001	Cell test	108
Sulfite Test	1.0 - 60.0 mg/l SO <sub>3</sub> 0.8 - 48.0 mg/l SO <sub>2</sub>	150	1.01746.0001	Reagent test	108
Sulfite Test	10 - 200 mg/l SO <sub>3</sub>	50	1.16987.0001	Test strip	60
Sulfite Test	10 - 400 mg/l SO <sub>3</sub>	100	1.10013.0001	Test strip	34
Sulfurous Acid, free	see Free Sulfurous Acid				
Sulfurous Acid, total	see Total Sulfurous Acid				
Surfactants (anionic) Cell Test	0.05 - 2.00 mg/l MBAS	25	1.14697.0001	Cell test	108
Surfactants (cationic) Cell Test	0.05 - 1.50 mg/l CTAB	25	1.01764.0001	Cell test	108
Surfactants (nonionic) Cell Test	0.10 - 7.50 mg/l Triton® X-100	25	1.01787.0001	Cell test	108
Suspended Solids	25 - 750 mg/l suspended solids			Physical method	108

## Visual and instrumental test kits

Parameter	Measuring range	No. of tests	Ord. No.	System / Type	Page
T Tin Cell Test	0.10 - 2.50 mg/l Sn	25	1.14622.0001	Cell test	110
Tin Test	10 - 200 mg/l Sn	50	1.10028.0001	Test strip	34
TOC Cell Test	5.0 - 80.0 mg/l TOC	25	1.14878.0001	Cell test	110
TOC Cell Test	50 - 800 mg/l TOC	25	1.14879.0001	Cell test	110
Total Alkalinity	see Acid capacity to pH 4.3 or Alkalinity				
Total Hardness Test	0.13 - 7 °e (1 - 100 mg/l CaCO <sub>3</sub> )	300	1.08047.0001	Titration with pipette	50
Total Hardness Test	0.1 - 30.0 °d	50	1.16997.0001	Test strip	60
Total Hardness Test	0.25 - 25 °e (0.1 - 3.6 mmol/l)	300	1.08039.0001	Titration with pipette	50
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 - 300 mg/l CaO 12 - 537 mg/l CaCO <sub>3</sub>	25	1.00961.0001	Cell test	110
Total Hardness Test in freshwater	1 drop corresponds to 1.25 °e	50	1.14652.0001	Titration with dropping bottle	50
Total Hardness Test	1 drop corresponds to 1.25 °e	100	1.11104.0001	Titration with dropping bottle	50
Total Hardness Test	1 drop corresponds to 20 mg/l CaCO <sub>3</sub>	200	1.08312.0001	Titration with dropping bottle	50
Total Hardness Test	4 - 26 °e	100	1.10025.0001	Test strip	34
Total Hardness Test	4 - 26 °e	1,000	1.10032.0001	Individually sealed	34
Total Hardness Test	4 - 26 °e	5,000	1.10029.0001	Individually sealed	34
Total Hardness Test	6 - 31 °e	100	1.10046.0001	Test strip	34
Total Hardness Test	6 - 31 °e	25,000	1.10047.0013	Individually sealed	34
Total Hardness Test	<1.5 - >2.5 mmol/l CaCO <sub>3</sub>	100	1.17934.0001	Test strip	34
Total Nitrogen	see Nitrogen (total)				
Total Sugar Test (glucose and fructose)	65 - 650 mg/l total sugar	50	1.16136.0001	Test strip	60
Transmission	0.0 - 100.0 % T			Physical method	110
Turbidity	1 - 100 FAU			Physical method	110
U Urea Test	0.3 - 8 mg/l Urea	100	1.14843.0001	Disk comparator	50
Urea Test in Milk Application	0.2 - 7.0 mg/l NH <sub>4</sub>	50	1.16892.0001	Test strip	60
V Volatile Organic Acids Cell Test	50 - 3,000 mg/l acetic acid	100	1.01749.0001	Reagent test	110
Volatile Organic Acids Test	50 - 3,000 mg/l acetic acid	25	1.01809.0001	Reagent test	110
W Water Hardness	see Residual Hardness or Total Hardness				
Z Zinc Cell Test	0.025 - 1.000 mg/l Zn	25	1.00861.0001	Cell test	110
Zinc Test	0.05 - 2.50 mg/l Zn	100	1.14832.0001	Reagent test	110
Zinc Test	0.1 - 5 mg/l Zn	120	1.14780.0001	Disk comparator	50
Zinc Test	0.1 - 5 mg/l Zn	120	1.14412.0001	Color card comparator	50
Zinc Cell Test	0.20 - 5.00 mg/l Zn	25	1.14566.0001	Cell test	110
Zinc Test	4 - 50 mg/l Zn	100	1.17953.0001	Test strip	34



**1/10** of a second is the time the brain needs to recognize a human face. It then takes less than 90 seconds to perform the first complete check – and a judgment is made. Our MColorpHast™ pH test strips and papers are just as fast. Also impressive is their special packaging: the SafetyEdge box is designed to ensure secure and easy handling.





## pH test strips and papers MColorpHast™

General information	22
> SafetyEdge box	22
pH test strips and papers	24

# MColorpHast™

Simply read the color ... fast

## pH test strips and papers

With **MColorpHast™** you need no instruments or sample preparation. The pH tests deliver brilliant, color-coded results with ease and speed. What's more, they are suitable for all types of media in environmental analysis and industrial in-process controls. Even highly turbid liquids pose no problems. Our special transparent test strips ensure clear, reliable measurements – without filtration or clarification. And, it's not just the strips that are incredibly convenient, but the packaging, too. Our **SafetyEdge box** easily dispenses the strips when you need them – yet prevents them from falling out when you don't.

## SafetyEdge box

Performing pH measurements? Enjoy the ultimate in speed, simplicity and security with our SafetyEdge box.

Its tamper-proof seal ensures that the box has not been opened, while its innovative flip-top corner allows easy removal of pH indicator strips, but prevents them from falling out.

Find out more about our pH test strips on page 25 or visit: [www.merckmillipore.com/pH-tests](http://www.merckmillipore.com/pH-tests)

## Benefits

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

## Premium pH indicator papers

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

## MColorpHast™ – Non-bleeding pH indicator strips

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

*The broad pH test range offers you an optimal solution for each application area.*



### Shelf-life and storage

Our indicator papers and strips can be used for 3 to 5 years when stored at temperatures of 10 to 25°C, protected from light in a dry laboratory atmosphere. To ensure optimal protection of the tests, the package should be closed immediately after removal of each strip or paper.

### Quality assurance

Merck Millipore checks and calibrates its tests using certified buffer solutions. These buffer solutions can be traced back directly to primary reference materials originating from NIST and PTB. This enables us to maintain a consistently high quality of our pH tests.

# pH test strips and papers

## pH-indicator papers

Product	pH-measuring range	Graduation	Roll length / No. of strips	Ord. No.
<b>Roll format</b>				
pH-Box	0.5 - 13.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	3 x 4.8 m	1.09565.0001
pH-indicator paper Replacement rolls*	0.5 - 5.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0	6 x 4.8 m	1.09568.0001
pH-indicator paper Replacement rolls*	5.5 - 9.0	5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	6 x 4.8 m	1.09569.0001
pH-indicator paper Replacement rolls*	9.5 - 13.0	9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	6 x 4.8 m	1.09570.0001
pH-indicator paper Universal indicator	1 - 14	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0-11.0-12.0-13.0-14.0	3 x 4.8 m	1.10962.0003
pH-indicator paper Replacement rolls*			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*			6 x 4.8 m	1.09527.0001
pH-indicator paper Acilit®	0.5 - 5.0	0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0	3 x 4.8 m	1.09560.0003
pH-indicator paper Replacement rolls*			6 x 4.8 m	1.09568.0001
pH-indicator paper Neutralit®	5.5 - 9.0	5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	3 x 4.8 m	1.09564.0003
pH-indicator paper Replacement rolls*			6 x 4.8 m	1.09569.0001
pH-indicator paper Alkalit®	9.5 - 13.0	9.5-10.0-10.5-11.0-11.5-12.0-12.5-13.0	3 x 4.8 m	1.09562.0003
pH-indicator paper Replacement rolls*			6 x 4.8 m	1.09570.0001
pH-indicator paper Special indicator	3.8 - 5.4	<3.8-3.8-4.1-4.4-4.6-4.8-5.1-5.4	3 x 4.8 m	1.09555.0003
pH-indicator paper Special indicator	5.4 - 7.0	<5.4-5.4-5.8-6.2-6.4-6.7-7.0->7.0	3 x 4.8 m	1.09556.0003
pH-indicator paper Special indicator	6.4 - 8.0	6.4-6.7-7.0-7.2-7.5-7.7-8.0->8.0	3 x 4.8 m	1.09557.0003
pH-indicator paper Special indicator	8.2 - 10.0	<8.2-8.2-8.5-8.8-9.0-9.3-9.6-10.0	3 x 4.8 m	1.09558.0003
Litmus paper, blue Reag. Ph Eur	pH <7 red / >7 blue	-	3 x 4.8 m	1.09486.0003
Litmus paper, red Reag. Ph Eur	pH <7 red / >7 blue	-	3 x 4.8 m	1.09489.0003
Congo red paper Reag. Ph Eur	pH <3 blue-violet / >5 red-orange	-	3 x 4.8 m	1.09514.0003
Phenolphthalein paper	pH <8.5 colorless / >8.5 red	-	3 x 4.8 m	1.09521.0003
<b>Booklet format</b>				
pH-indicator paper Universal indicator	1 - 10	1.0-2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0-10.0	3 x 100	1.09525.0003

On request we are ready to supply pH-indicator paper as special customer orders in other presentations or dimensions, such as DIN A4 and larger.

\* Replacement roll without color scale



## MColorpHast™ pH-indicator strips (non-bleeding)

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

### For professional use

pH-indicator strips Special indicator for pH-measurements in turbid solutions (suspensions)	2.0 - 9.0	2.0-3.0-4.0-5.0-6.0-7.0-8.0-9.0	100	1.09502.0001
pH-indicator strips Special indicator for pH-measurements in meat	5.2 - 7.2	5.2-5.6-6.0-6.4-6.8-7.2	100	1.09632.0001
pH-indicator strips, CE-certified for in vitro diagnostics for semi-quantitative determination of pH in human urine	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	1.09584.1111
pH-indicator strips, singly 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, singly sealed	2.0 - 9.0	2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0	25,000	1.09450.0013

Individually sealed pH-indicator strips are available on request, also for other pH-ranges.

**pH indicator strips** *Singly sealed pH indicator strips can be included or stuck in books, magazines, or brochures. These pH indicator strips are also used for product promotion and product differentiation purposes by adding them to a specific product.*

**0.1 %** peracetic acid is enough to kill bacteria, viruses, fungi and even spores in the shortest possible time. That's why it is used for cold septic disinfection of beverage bottles. Complete disinfection control involves various test strips in the high and low concentration ranges. While higher concentrations of peracetic acid are required for monitoring the strength of the disinfection solution, lower ranges are more suitable when testing rinse water for potential residues. In both cases, MQuant™ test strips offer the most efficient solution for on-site analysis.





## Test strips

### MQuant™

General information	28
> Your brand – our test strips	31
MQuant™ test strips	32
Reagent papers	34

# MQuant™

Screen on the go

## Test strips

High-tech and highly portable, **MQuant™** test strips are designed for semi-quantitative determination of ions and compounds – wherever you go. These versatile strips can be used in concentration ranges as low as 1 or 10 mg/l, right up to the g/l range.

**MQuant™** strips allow you to run a swift screening of your sample's contents. This saves you considerable time and costs during analyses, quality checks and in-process controls. Thanks to the PET film backing material and the low reagent content, the test strips are also easy to dispose of.



## Benefits

- Save time and costs during screening
- Fast and easy to use
- Brilliant color scales deliver reliable results
- Waste disposal advice (for test strips with additional reagents)

### MQuant™ Free Fatty Acids | Ord. No. 1.17046.0001

Deep-frying causes oils and fats to decompose over time. One of the major by-products of decomposition is free fatty acids. When these acids exceed an acceptable threshold, they affect the quality of fried food. Hence, it is important to determine the right time to change your oil. With MQuant™ Free Fatty Acids visual test strips, you can easily monitor the quality of your deep-frying oil. This inexpensive yet reliable method requires no special training, lab instruments or sample preparation. Simply dip the test strip in the oil or fat sample and read the results.



### MQuant™ Disinfection Control

Disinfection is essential in food production, hospital, biotech and pharmaceutical environments. However, residues from cleaning agents can cause serious problems. MQuant™ test strips help you in two ways. They allow you to monitor the cleaning process by checking for effective concentrations of disinfectant. Plus, they detect any disinfection residues. This fast, simple and reliable system offers a comprehensive product range of dip-and-read strips. These include tests for the following compounds: chlorine, formaldehyde, peracetic acid, peroxide and quaternary ammonium compounds.



# MQuant™

Screen on the go

## MQuant™ – it's that simple!

01



MQuant™ test strips couldn't be easier to handle.

02



The reaction zones are wetted with the solution to be tested simply by dipping them briefly into the liquid sample. Any excess liquid is then shaken off or removed by drawing the test strip across the edge of the vessel.

03



After the specified reaction time of at most one minute has expired, the color of the reaction zone is compared with the color scale printed on the tube label and the corresponding concentration is read off.

### **Shelf-life and storage**

When stored cool (refrigeration is necessary in some cases) and dry, the test strips can be used at least up to the expiry date printed on the pack. The tube must be reclosed immediately after the removal of each strip to ensure the remaining test strips are protected.

### **Quality assurance**

Merck Millipore checks and calibrates its tests and the exact comparison colors using certified standard solutions. These solutions can be traced back directly to primary reference materials originating from NIST and PTB. This enables us to achieve a consistently high quality of our MQuant™ test strips.



# Your brand – our test strips

To support the promotion of your product, we offer customized branding of the single sealed test strips and test strip tubes. Choose from three options:

## Single sealed test strips

Individually sealed test strips can be exclusively customized to your requirements. These are ideal for inserting in books, magazines and brochures, or for adhering to products.

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

Design your own tailor-made label in close cooperation with our team. Personalize almost anything, from the design of the color card to the final product, and even the measuring range.

## Innovative customized products

Even if you need an unlisted test strip for your individual requirements, we deliver. After verifying its feasibility, we work closely with you to develop a unique and innovative product.

For more details please visit: [www.merckmillipore.com/test-strips](http://www.merckmillipore.com/test-strips)

## Test strips | Index A-P

Parameter	Graduation	No. of tests	Ord. No.	Method	Type
<b>A</b> Aluminium Test	10-25-50-100-250 mg/l Al	100	1.10015.0001	Aurin tricarboxylic acid	Reagent, incl.
Ammonium Test	10-30-60-100-200-400 mg/l NH <sub>4</sub>	100	1.10024.0001	NeBler	Reagent, incl.
Arsenic Test	0.005-0.01-0.025-0.05-0.1-0.25-0.5 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 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	Phosphormolybdenum blue	
<b>B</b> Blank strip		100	1.11860.0001		
<b>C</b> Calcium Test	10-25-50-100 mg/l Ca	60	1.10083.0001	Glyoxal bishydroxylanil	Reagent, incl.
Carbonate Hardness Test	5-10-15-20-30 °e	100	1.10648.0001	Mixed indicator	
Chloride Test	500-1,000-1,500-2,000-3,000 mg/l Cl	100	1.10079.0001	Silver chromate	
Chlorine Test (free chlorine)	0.5-1-2-5-10-20 mg/l Cl <sub>2</sub>	75	1.17925.0001	Redox reaction	
Chlorine Test (free chlorine)	25-50-100-200-500 mg/l Cl <sub>2</sub>	100	1.17924.0001	Redox reaction	
Chromate Test	3-10-30-100 mg/l CrO <sub>4</sub>	100	1.10012.0001	Diphenylcarbazide	Reagent, incl.
Cobalt Test	10-30-100-300-1,000 mg/l Co	100	1.10002.0001	Rhodanide	
Copper Test	10-30-100-300 mg/l Cu	100	1.10003.0001	2,2'-Cuproin	
Cyanide Test	1-3-10-30 mg/l CN	100	1.10044.0001	Barbituric acid derivative	Reagent, incl.
<b>F</b> Formaldehyde Test	10-20-40-60-100 mg/l HCHO	100	1.10036.0001	Triazole	Reagent, incl.
<b>G</b> Free Fatty Acids	0.5-1.0-2.0-3.0 mg/g KOH	100	1.17046.0001	pH indicator	
<b>G</b> Glucose Test	10-25-50-100-250-500 mg/l Glucose	50	1.17866.0001	Enzymatic reaction	
<b>I</b> Iron Test	3-10-25-50-100-250-500 mg/l Fe(II)	100	1.10004.0001	2,2'-Bipyridine	
<b>L</b> Lead Test	20-40-100-200-500 mg/l Pb	100	1.10077.0001	Rhodizonic acid	Reagent, incl.
<b>M</b> Manganese Test	2-5-20-50-100 mg/l Mn	100	1.10080.0001	Oxidation/Redox indicator	Reagent, incl.
Molybdenum Test	5-20-50-100-250 mg/l Mo	100	1.10049.0001	Toluene-3,4-dithiol	Reagent, incl.
<b>N</b> Nickel Test	10-25-100-250-500 mg/l Ni	100	1.10006.0001	Diacetyldioxime	
Nitrate Test	10-25-50-100-250-500 mg/l NO <sub>3</sub>	100	1.10020.0001	modified Griess' reaction	
Nitrate Test	10-25-50-100-250-500 mg/l NO <sub>3</sub>	25	1.10020.0002	modified Griess' reaction	
Nitrate Test	10-25-50-100-250-500 mg/l NO <sub>3</sub>	1,000	1.10092.0021	modified Griess' reaction	Individually sealed
Nitrite Test	0.5-1-2-5-10 mg/l NO <sub>2</sub>	75	1.10057.0001	Griess' reaction	
Nitrite Test	2-5-10-20-40-80 mg/l NO <sub>2</sub>	100	1.10007.0001	Griess' reaction	
Nitrite Test	2-5-10-20-40-80 mg/l NO <sub>2</sub>	25	1.10007.0002	Griess' reaction	
Nitrite Test	0.1-0.3-0.6-1-2-3 g/l NO <sub>2</sub>	100	1.10022.0001	Griess' reaction	
<b>P</b> Peracetic Acid Test	5-10-20-30-50 mg/l Peracetic acid	100	1.10084.0001	Redox reaction	
Peracetic Acid Test	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	Reagent, incl.





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

### MQuant™ Blank Test Strips Ord. No. 1.11860.0001

The blank test strips incorporate a paperzone not impregnated with reagent. They are used to perform tests to see whether sample solutions turn the blank zone a different color. A difference in color can indicate that the intrinsic color of the sample may affect results obtained with other MQuant™ test strips.



## Test strips | Index P-Z

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

## Reagent papers

Lead acetate paper 3 rolls each with 4.8 meters

Ord. No. 1.09511.0003

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

Potassium iodide-starch paper, Reag. Ph Eur 3 rolls each with 4.8 meters

Ord. No. 1.09512.0003

Potassium iodide paper is used for the determination of oxidizing agents

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



**MQuant™ Peroxidase Test** *In some tests the sample must be pretreated. Again, no problem – all the necessary reagents are included in the pack.*

**2.5** newborns per second. The world's population is growing rapidly, and with it the need for food. This development also influences the aqua culture industry, whose annual growth has increased by an average of 10 percent over the past 20 years. Needless to say, clean water is a prerequisite for their success. With MColortest™, Merck Millipore offers the perfect product line for fast and simple water analysis in various industries, including aqua culture farms.





## Colorimetric and titrimetric test kits MColortest™

General information	38
> <a href="#">Waste disposal advice</a>	39
Visual rapid tests	40
Product list	42
Compact laboratories	52

# MColortest™

Aim for brilliance

## Colorimetric and titrimetric test kits

With MColortest™ test kits, you can expect exceptional measurements – time after time. This is thanks to the unique brilliance of the color cards. They simplify allocation of the stated color values to ensure precise analyses. In fact, the tests are so easy to use that they require no special training. Just follow the illustrated instructions provided.

MColortest™ test kits are thoroughly checked using certified standard solutions, which can be traced back directly to primary reference materials originating from NIST und PTB. So, despite their simplicity, they offer the highest standards in reliability. This is matched by excellent stability. The kits have a shelf life of up to three years when stored between 15 and 25°C. Economy is another highlight of MColortest™ tests. Refill packs are available for many of the kits. These not only decrease your costs per determination, but also reduce environmental burden.



*The MColortest™ system comprises titrimetric and colorimetric tests (evaluation using color cards or test vessels). For more information please have a look at page 40.*

## Benefits

- Brilliant color scales and high-quality comparators for precise results
- Illustrated instructions ensure ease of use
- Tested using certified standard solutions for maximum reliability
- Long shelf life of up to 3 years
- Refill packs decrease costs and environmental burden



## Waste disposal advice



Streamline your work and protect the environment with Merck Millipore's online waste disposal service. Available for MQuant™ and MColortest™ visual test kits, as well as Spectroquant® cell and reagent test kits, this indispensable service offers quick, comprehensive instructions 24/7.

Order your waste disposal advice here:  
[www.disposal-test-kits.com](http://www.disposal-test-kits.com)

# MColortest™

## Visual rapid tests

### MColortest™ titrimetric and colorimetric methods for medium concentrations

In titration tests, the sample is titrated until the color changes. The number of drops consumed to the turning point is counted or the scale value is read off from a pipette, and corresponds to the concentration of the tested parameter. For colorimetric tests, reagents are added to the sample, resulting in a color reaction. By allocating the color to a value on a reference scale, the corresponding concentration can be read off.

#### Areas of application:

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

*The MColortest™ system comprises titrimetric and colorimetric tests (evaluation using color cards or test vessels). For more information please have a look at page 38.*

### MColortest™ with color disk comparator for medium to high concentrations

These tests evaluate the color reaction according to the transmitted light method. This makes it possible to analyze even turbid and lightly colored water samples without further sample preparation. Thanks to the robust color comparator disk, the tests can be used in industrial areas and in wet environments. The ten-stage color disk is made of lightfast and extremely durable plastic slides. Almost every test contains break-proof test vessels for safer handling.

#### Areas of application:

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

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





## MColortest™ with color card comparator for very low to medium concentrations

The test offers high measurement sensitivities, even at very low concentrations. This is due to the greater layer thickness and special construction of the comparator. In this method, the reaction color of the sample is compared with the blank sample tinted by the color cards. The unique brilliance of the print and fine color graduation enable precise analyses, even down to the ppb range.

### Areas of application:

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

*The MColortest™ system:  
The comparator method convinces  
in its use!*



**Practical refill packs** We devote our efforts not just to the actual applications themselves, but also to ensuring that we offer you economically attractive solutions. This is why refill packs are also available for many of our test kits, reducing the price for individual analyses in the process.

## Visual rapid tests | Index A-C

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>A</b> Alkalinity Test	0.1 mmol/l	200 at 8.5 mmol/l	1.11109.0001		Acidimetric	Titration with pipette
Aluminium Test	0.07-0.12-0.2-0.35-0.5-0.65-0.8 mg/l Al	185	1.14413.0001	1.18452.0002	Chromazurol S	Color card comparator
Aluminium Test	0.1-0.2-0.35-0.5-0.75-1-2-3-6 mg/l Al	150	1.18386.0001	1.18452.0002	Chromazurol S	Disk comparator
Ammonium Test	0.025-0.05-0.075-0.1-0.15-0.2-0.25-0.3-0.4 mg/l NH <sub>4</sub>	70	1.14428.0002		Indophenol blue	Color card comparator
Ammonium Test	0.05-0.1-0.15-0.2-0.3-0.4-0.5-0.6-0.8 mg/l NH <sub>4</sub>	100	1.14400.0001		Neßler	Color card comparator
Ammonium Test	0.2-0.4-0.6-1-2-3-5 mg/l NH <sub>4</sub>	50	1.08024.0001		Indophenol blue	Sliding comparator
Ammonium Test	0.2-0.5-0.8-1.2-1.6-2-3-5-8 mg/l NH <sub>4</sub>	200	1.14423.0002	1.18455.0002	Indophenol blue	Color card comparator
Ammonium Test	0.2-0.5-0.8-1.3-2-3-4.5-6-8 mg/l NH <sub>4</sub>	200	1.14750.0002	1.18455.0002	Indophenol blue	Disk comparator
Ammonium Test in freshwater and seawater	0.5-1-2-3-5-10 mg/l NH <sub>4</sub>	50	1.14657.0001		Indophenol blue	Color card
Ammonium Test	0.5-1-3-5-10 mg/l NH <sub>4</sub>	150	1.11117.0001		Neßler	Color card
<b>C</b> Calcium Test	2 mg/l Ca	200 at 170 mg/l Ca	1.11110.0001		Titriplex® III	Titration with pipette
Carbonate Hardness Test/ Acid cap. to pH 4.3 (ANC)	0.25 °e and 0.1 mmol/l	300 at 12.5 °e	1.08048.0001		Acidimetric	Titration with pipette
Carbonate Hardness Test/ Acid cap. to pH 4.3 (ANC)	1.25 °e	100 at 12.5 °e	1.11103.0001		Acidimetric	Titration with dropping bottle
Carbonate Hardness Test in freshwater and seawater	1.25 °e	50 at 12.5 °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 <sub>2</sub>	400 free chlorine	1.14434.0001	1.14803.0002	DPD	Color card comparator
Chlorine Test (free chlorine) in freshwater and seawater	0.1-0.25-0.5-1-2 mg/l Cl <sub>2</sub>	100 free chlorine	1.14670.0001		TMB	Color card
Chlorine Test (free chlorine)	0.1-0.2-0.3-0.4-0.6-0.8-1.0-1.5-2.0 mg/l Cl <sub>2</sub>	600 free chlorine	1.14978.0001	1.14979.0002	DPD Liquid	Disk comparator
Chlorine Test (free and total chlorine)	0.1-0.2-0.3-0.4-0.6-0.8-1.0-1.5-2.0 mg/l Cl <sub>2</sub>	400 free chlorine 400 total chlorine	1.14801.0001	1.14803.0002	DPD Liquid	Disk comparator
Chlorine Test (free chlorine)	0.25-0.5-0.75-1-2-4-8-10-15 mg/l Cl <sub>2</sub>	1,000 free chlorine	1.14976.0001	1.14977.0002	DPD	Disk comparator
Chlorine Test (free and total chlorine)	0.25-0.5-0.75-1-2-4-7-10-15 mg/l Cl <sub>2</sub>	400 free chlorine 400 total chlorine	1.14826.0001	1.18326.0002	DPD	Disk comparator

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

## Visual rapid tests | Index C-I

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>C</b> Chlorine- and pH Test (free chlorine)	0.1-0.2-0.3-0.6-1.0-1.5 mg/l Cl <sub>2</sub>	150 (chlorine)	1.11160.0001		DPD	Sliding comparator
	pH 6.5-6.8-7.0-7.2-7.4-7.6-7.9	150 (pH)			red Phenol	
Chlorine- and pH Test (free and total chlorine)	0.1-0.3-0.6-1.0-1.5 mg/l Cl <sub>2</sub>	200 (chlorine)	1.11174.0001	1.11157.0001	DPD	Color-matching vessel
	pH 6.8-7.1-7.4-7.6-7.8	200 (pH)		1.11143.0001	red Phenol	
Chlorine Dioxide Test	0.020-0.050-0.075-0.10-0.15-0.20-0.30-0.40-0.55 mg/l ClO <sub>2</sub>	300	1.18754.0001	1.18757.0002	DPD	Color card comparator
Chlorine Dioxide Test	0.50-0.90-1.4-1.9-3.8-7.5-13-19-28 mg/l ClO <sub>2</sub>	300	1.18756.0001	1.18757.0002	DPD	Disk comparator
Chromate Test	0.01-0.02-0.04-0.07-0.09-0.11-0.13-0.18-0.22 mg/l CrO <sub>4</sub>	150	1.14402.0001	1.18456.0002	Diphenyl-carbazide	Color card comparator
Chromate Test	0.2-0.4-0.7-1-1.3-1.8-2.2-2.9-3.6 mg/l CrO <sub>4</sub>	300	1.14441.0001	1.18456.0002	Diphenyl-carbazide	Color card comparator
Chromate Test	0.2-0.4-0.8-1.3-2.2-4-6.7-13-22 mg/l CrO <sub>4</sub>	300	1.14756.0001	1.18456.0002	Diphenyl-carbazide	Disk comparator
Color Test	5-10-20-30-40-50-70-100-150 Hz	no limit	1.14421.0001		Hazen	Color card comparator
Copper Test	0.05-0.08-0.12-0.16-0.2-0.25-0.3-0.4-0.5 mg/l Cu	125	1.14414.0001	1.18459.0002	Cuprizone	Color card comparator
Copper Test in freshwater and seawater	0.15-0.3-0.45-0.6-0.8-1.2-1.6 mg/l Cu	50	1.14651.0001		Cuprizone	Color card
Copper Test	0.3-0.6-1-1.5-2-2.5-3-5 mg/l Cu	125	1.14418.0001	1.18459.0002	Cuprizone	Color card comparator
Copper Test	0.3-0.6-1-1.5-2-3-5-7-10 mg/l Cu	125	1.14765.0001	1.18459.0002	Cuprizone	Disk comparator
Cyanide Test	0.002-0.004-0.007-0.01-0.013-0.016-0.02-0.025-0.03 mg/l CN	65	1.14417.0001	1.18457.0002	König's reaction	Color card comparator
Cyanide Test	0.03-0.06-0.1-0.15-0.2-0.3-0.4-0.5-0.7 mg/l CN	200	1.14429.0001	1.18457.0002	König's 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's reaction	Disk comparator
<b>F</b> Fluoride Test	0.15-0.3-0.5-0.8 mg/l F	100	1.18771.0001		Alizarin-komplexone	Color card
	Formaldehyde Test	0.1-0.25-0.4-0.6-0.8-1-1.5 mg/l HCHO	100	1.08028.0001		Triazole derivative
<b>H</b> Hydrazine Test	0.1-0.25-0.5-1 mg/l N <sub>2</sub> H <sub>2</sub>	100	1.08017.0001	necessary 1.08018.0001	Dimethylamino-benzaldehyde	Color-matching vessel
<b>I</b> Iron Test	0.01-0.02-0.03-0.04-0.06-0.08-0.1-0.15-0.2 mg/l Fe	300	1.14403.0001	1.18458.0002	Triazine	Color card comparator
	0.05-0.1-0.2-0.4-0.6-0.8-1 mg/l Fe	50	1.14660.0001		Triazine	Color card
	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
	0.1-0.3-0.5-1-2.5-5-7.7-12.5-25-50 mg/l Fe	200	1.11136.0001	1.08023.0001	2,2'-Bipyridine	Color-matching vessel

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

## Visual rapid tests | Index I-O

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
I Iron Test	0.2-0.4-0.6-0.8-1-1.3-1.6-2-2.5 mg/l Fe	500	1.14438.0001	1.18458.0002	Triazine	Color card comparator
	0.25-0.5-1-2-3-5-7.5-10-15 mg/l Fe	300	1.14404.0001		2,2'-Bipyridine	Color card comparator
M Magnesium Test	100-200-300-500-1,000-1,500 mg/l mg	50	1.11131.0001		Xylydyl blue	Color card
Manganese Test	0.03-0.06-0.1-0.15-0.2-0.25-0.3-0.4-0.5 mg/l Mn	120	1.14406.0001	1.18460.0002	Formaldehyde	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	Formaldehyde	Disk comparator
N Nickel Test	0.02-0.04-0.07-0.1-0.15-0.2-0.3-0.4-0.5 mg/l Ni	125	1.14420.0001	1.18461.0002	Dimethylglyoxime	Color card comparator
	0.5-1.5-2-2.5-3-4-6-8-10 mg/l Ni	500	1.14783.0001	1.18461.0002	Dimethylglyoxime	Disk comparator
Nitrate Test	5-10-20-30-40-50-60-70-90 mg/l NO <sub>3</sub>	90	1.18387.0001	1.18462.0002	Nitrospectral / sulfuric acid	Disk comparator
Nitrate Test in freshwater	10-25-50-75-100-125-150 mg/l NO <sub>3</sub>	100	1.11169.0001		Sulfanilic acid / Gentsine acid	Color card
Nitrate Test	10-25-50-75-100-125-150 mg/l NO <sub>3</sub>	200	1.11170.0001		Sulfanilic acid / Gentsine acid	Sliding comparator
Nitrite Test	0.005-0.012-0.02-0.03-0.04-0.05-0.06-0.08-0.1 mg/l NO <sub>2</sub>	110	1.14408.0001	1.18463.0002	Griess' reaction	Color card comparator
Nitrite Test	0.025-0.05-0.075-0.1-0.15-0.2-0.3-0.5 mg/l NO <sub>2</sub>	200	1.08025.0001		Griess' reaction	Sliding comparator
Nitrite Test in freshwater and seawater	0.05-0.15-0.25-0.5-1 mg/l NO <sub>2</sub>	100	1.14658.0001		Griess' reaction	Color card
Nitrite Test	0.1-0.2-0.3-0.4-0.6-0.8-1-1.3-2 mg/l NO <sub>2</sub>	400	1.14424.0001	1.18463.0002	Griess' reaction	Color card comparator
Nitrite Test	0.1-0.2-0.4-0.6-1-1.8-3-6-10 mg/l NO <sub>2</sub>	400	1.14774.0001	1.18463.0002	Griess' reaction	Disk comparator
O Oxygen Test	0.1 mg/l O <sub>2</sub>	100 at 8.5 mg/l O <sub>2</sub>	1.11107.0001	1.11152.0001 1.14663.0001	modified Winkler method	Titration with pipette
	0.5 mg/l O <sub>2</sub>	100 at 8.5 mg/l O <sub>2</sub>	1.17117.0001	necessary: 1.14663.0001	modified Winkler method	Titration with dropping bottle
	Oxygen Test in freshwater and seawater	1-3-5-7-9-12 mg/l O <sub>2</sub>	50	1.14662.0001	necessary: 1.14663.0001	modified Winkler method
Ozone Test	0.007-0.017-0.03-0.04-0.055-0.07-0.1-0.14-0.2 mg/l O <sub>3</sub>	300	1.18755.0001	1.18759.0002	DPD	Color card comparator
Ozone Test	0.15-0.35-0.5-0.7-1.4-2.7-5-7-10 mg/l O <sub>3</sub>	300	1.18758.0001	1.18759.0002	DPD	Disk comparator

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

## Visual rapid tests | Index P-S

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
<b>P</b> pH Universal indicator, liquid	pH 4-4.5-5-5.5-6-6.5-7-7.5-8-8.5-9-9.5-10	100 ml	1.09175.0100		Mixed indicator	Color card
pH Universal indicator, liquid	pH 4-4.5-5-5.5-6-6.5-7-7.5-8-8.5-9-9.5-10	1 l	1.09175.1000		Mixed indicator	Color card
pH Indicator liquid	pH 9-10-11-12-13	100 ml	1.09176.0100		Mixed indicator	Color card
pH Indicator liquid	pH 0-0.5-1-1.5-2-2.5-3-3.5-4-4.5-5-5.5	100 ml	1.09177.0100		Mixed indicator	Color card
pH Test	pH 4.5-5-5.5-6-6.5-7-7.5-8-8.5-9	400	1.08027.0001		Mixed indicator	Sliding comparator
pH Test	pH 4.5-5-5.5-6-6.5-7-7.5-8-8.5-9	100	1.08038.0001	1.08043.0001	Mixed indicator	Color-matching vessel
pH Test in freshwater and seawater	pH 5.0-5.3-5.6-6.0-6.3-6.6-7.0-7.3-7.6-8.0-8.3-8.6-9.0	200	1.18773.0001		Mixed freshwater and seawater indicator	Color card
pH Test in swimming pool	pH 6.5-6.8-7.1-7.4-7.6-7.8-8.2	200	1.14669.0001		Phenol red	Color card
Phosphate Test	0.046-0.092-0.14-0.18-0.25-0.34-0.43 mg/l PO <sub>4</sub>	200	1.18394.0001	1.18465.0002	Phosphor-molybdenum blue	Color card comparator
Phosphate Test in freshwater and seawater	0.25-0.5-0.75-1.0-1.5-2-3 mg/l PO <sub>4</sub>	100	1.14661.0001		Phosphor-molybdenum blue	Color card
Phosphate Test	0.6-1.2-1.8-2.5-3.1-4.6-6.1-7.7-9.2 mg/l PO <sub>4</sub>	200	1.14846.0001	1.18465.0002	Phosphor-molybdenum blue	Disk comparator
Phosphate Test	1.3-3.3-6.7-10-13.4 mg/l PO <sub>4</sub>	200	1.11138.0001	1.08046.0001	Phosphor-molybdenum blue	Color-matching vessel
Phosphate Test	3.1-6.1-10.7-18.4-30.7-61.3-123 mg/l PO <sub>4</sub>	190	1.14449.0001	1.18466.0002	Vanadium molybdate	Color card comparator
Phosphate Test	4.6-9.2-18-28-37-49-61-123-307 mg/l PO <sub>4</sub>	300	1.18388.0001	1.18466.0002	Vanadium molybdate	Disk comparator
<b>R</b> Residual Hardness Test	0.05-0.1-0.19 °e	400	1.11142.0001		Mixed indicator	Color card
<b>S</b> Silicate (Silicic Acid) Test	0.02-0.04-0.09-0.13-0.17-0.21-0.32-0.43-0.53 mg/l SiO <sub>2</sub>	150	1.14410.0001	1.18323.0002	Silico-molybdenum blue	Color card comparator
Silicate (Silicic Acid) Test	0.6-1.3-2.1-3.2-4.3-6.4-11-15-21 mg/l SiO <sub>2</sub>	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 <sub>4</sub>	75	1.18389.0001	1.18467.0002	Tannic acid	Disk comparator
Sulfate Test	25-50-80-110-140-200-300 mg/l SO <sub>4</sub>	90	1.14411.0001	1.18467.0002	Tannic acid	Color card comparator
Sulfide Test	0.02-0.04-0.06-0.08-0.1-0.13-0.16-0.2-0.25 mg/l S	100	1.14416.0001	1.18468.0002	Dimethyl-p-phenylendiamine	Color card comparator
Sulfide Test	0.1-0.3-0.5-0.7-1-2-3-4-5 mg/l S	200	1.14777.0001	1.18468.0002	Dimethyl-p-phenylendiamine	Disk comparator
Sulfite Test	0.5 mg/l Na <sub>2</sub> SO <sub>3</sub> (0.3 mg/l SO <sub>3</sub> ) at 40 mg/l Na <sub>2</sub> SO <sub>3</sub>	200	1.11148.0001		Iodate / Starch	Titration with pipette



Beer processing	Food testing	Juices	Milk products	Mineral water	Softdrinks	Aquaculture	Boiler water, cooling water	Drinking water	Groundwater, surface water	Industrial water	Process water	Seawater	Swimming pools	Wastewater	Agriculture	Disinfection control	Electroplating	Parameter	
Food and beverages						Water (Analytics)									Others				
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		pH Universal indicator, liquid
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		pH Universal indicator, liquid
														■		■		pH Indicator liquid	
														■		■		pH Indicator liquid	
■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		pH Test
						■	■	■	■	■	■								pH Test
						■	■	■	■	■	■	■	■	■					pH Test in freshwater and seawater
												■							pH Test in swimming pool
	■			■		■	■	■	■	■	■	■		■	■		■		Phosphate Test
						■	■	■	■	■	■	■		■					Phosphate Test in freshwater and seawater
	■			■		■	■	■	■	■	■	■		■	■		■		Phosphate Test
	■			■		■	■	■	■	■	■	■		■	■		■		Phosphate Test
				■		■	■	■	■	■	■	■		■	■		■		Phosphate Test
				■		■	■	■	■	■	■	■		■	■		■		Phosphate Test
							■												Residual Hardness Test
				■			■	■	■	■	■	■		■					Silicate (Silicic Acid) Test
				■			■	■	■	■	■	■		■					Silicate (Silicic Acid)Test
				■				■	■					■					Sulfate Test
				■				■	■					■					Sulfate Test
				■		■		■	■					■	■				Sulfide Test
				■		■		■	■					■	■				Sulfide Test
■	■	■	■	■	■		■	■	■					■					Sulfite Test

## Visual rapid tests | Index T-Z

Parameter	Graduation	No. of tests	Ord. No.	Ord. No. Refill pack	Method	Type
T Total Hardness Test	0.13 °e and 1 mg/l CaCO <sub>3</sub>	300 at 3.8 °e	1.08047.0001	1.08040.0001	Titriplex® III	Titration with pipette
Total Hardness Test	0.25 °e and 0.1 mmol/l	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 in freshwater	1.25 °e	50 at 12.5 °e	1.14652.0001		Titriplex® III	Titration with dropping bottle
Total Hardness Test	1.25 °e	100 at 12.5 °e	1.11104.0001		Titriplex® III	Titration with dropping bottle
Total Hardness Test	20 mg/l CaCO <sub>3</sub>	200 at 200 mg/l	1.08312.0001		Titriplex® III	Titration with dropping bottle
U Urea Test	0.3-0.6-1-1.5-2-3-4-5-8 mg/l (NH <sub>2</sub> ) <sub>2</sub> CO	100	1.14843.0001	1.14845.0002	Indophenol blue	Disk comparator
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



## Deep-frying fats tests

Parameter	Graduation	No. of test	Ord. No.	Ord. No. Refill pack	Method
Fritest®	Perfect – still good – change of fat advisable – deep-frying fat gone off	60 (Refill pack 30)	1.10652.0001	1.10651.0001	Colorimetric, acc. to the alkali color count principle
Oxifrit Test®	fresh deep-frying fat – change of fat advisable – deep-frying fat gone off	60 (Refill pack 30)	1.10653.0001	1.10654.0001	Colorimetric, acc. to the principle of determination of oxidized fatty acids (OFAs)

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

## Accessories for MColortest™ and MQuant™

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

# MColorstest™ compact laboratories

Quality meets mobility

## MColorstest™ compact laboratory for aquaculture | Ord. No. 1.11102.0001

Compact laboratory for the determination of pH, carbonate hardness, total hardness, ammonium/ammonia, nitrite and nitrate in freshwater and seawater.

This parameter combination can be used to monitor the most important quality-relevant constituents in freshwater and, in some cases, in the seawater of an aquarium. With the help of available data, these results can be used to control parameter concentrations that must be observed for fish stock. An appropriate range of separate tests is also available for other parameters that must be monitored.

### Scope of delivery

Parameter	Measuring range	No. of tests	Ord. No. Refill pack
MColorstest™ Ammonium Test in freshwater and seawater	0.5 - 10 mg/l NH <sub>4</sub>	50	1.14657.0001
MColorstest™ Carbonate Hardness Test	1.25 °e	50 at 12.5 °e	1.14653.0001
MColorstest™ Total Hardness Test in freshwater	1.25 °e	50 at 12.5 °e	1.14652.0001
MColorstest™ Nitrate Test in freshwater	10 - 150 mg/l NO <sub>3</sub>	100	1.11169.0001
MColorstest™ Nitrite Test in freshwater and seawater	0.05 - 1 mg/l NO <sub>2</sub>	100	1.14658.0001
MColorstest™ pH Test in freshwater and seawater	pH 5.0 - 9.0	200	1.18773.0001
Test vessels with 5 ml and 10 ml graduations for MColorstest™ and MQuant™ Tests		1 pack = 30 pcs	1.17989.0001

## Agroquant® soil laboratory 3 x N and pH | Ord. No. 1.14602.0001

Compact laboratory with test strips, reagents, balance, timer and accessories for the determination of nitrate, nitrite, ammonium nitrogen and pH in soils, water, plant, animal fodder, compost, solid and liquid manure.

### Scope of delivery

Parameter	Measuring range	No. of tests	Ord. No. Refill pack
MColorstest™ Ammonium Test	0.5 - 10 mg/l NH <sub>4</sub>	50	1.14657.0001
MQuant™ Ammonium Test	10 - 400 mg/l NH <sub>4</sub>	100	1.10024.0001
MQuant™ Nitrate Test	10 - 500 mg/l NO <sub>3</sub>	100	1.10020.0001
pH indicator strips Universal indicator	pH 2.0 - 9.0	100	1.09584.0001
pH indicator strips Special indicator	pH 2.0 - 9.0	100	1.09502.0001
Agroquant® Extraction Reagent			
Potassium chloride for analysis EMSURE®			1.04936

## MColorstest™ compact laboratory for water testing | Ord. No. 1.11151.0001

Compact laboratory for the determination of pH, ammonium, biological oxygen demand (BOD), carbonate hardness, total hardness, residual hardness, nitrate, nitrite, phosphate and oxygen.

The tests of this compact laboratory can be used to rapidly check all major parameters of standing or flowing surface water, and to assess the current water quality. The compact laboratory is optimally suited for use in school lessons as well as for professional applications e.g. by water monitors.

### Scope of delivery

Parameter	Measuring range	No. of tests	Ord. No. Refill pack
MColorstest™ Ammonium Test	0.2 - 5 mg/l NH <sub>4</sub>	50	1.08024.0001
MColorstest™ Carbonate Hardness Test / Acid cap. to pH 4.3 (ANC)	0.25 - 25 °e ANC: 0.1 - 7.2 mmol/l	300 at 12.5 °e	1.08048.0001
MColorstest™ Total Hardness Test	0.25 °e and 0.1 mmol/l	300 at 12.5 °e	1.08033.0001
MColorstest™ Nitrate Test	10 - 150 mg/l NO <sub>2</sub>	200	1.11170.0001
MColorstest™ Nitrite Test	0.025 - 0.5 mg/l NO <sub>2</sub>	200	1.08025.0001
MColorstest™ pH Test	pH 4.5 - 9	400	1.08027.0001
MColorstest™ Phosphate Test in freshwater and seawater	0.5 - 3 mg/l PO <sub>4</sub>	100	1.14661.0001
MColorstest™ Oxygen Test	0.1 mg/l O <sub>2</sub>	100 at 8.5 mg/l O <sub>2</sub>	1.11152.0001
Flat-bottomed tubes inclusive screw caps for MColorstest™ Tests		1 pack = 12 pcs	1.14902.0001
Thermometer			
MColorstest™ Oxygen Reaction bottle		1 bottle	1.14663.0001
Test vessels with 5 ml and 10 ml graduation for MColorstest™ and MQuant™ Tests		1 pack = 30 pcs	1.17989.0001



**7,000 years** ago man began to domesticate wild bees. Today the honeybee is a genus of its own and plays an important role in pollination in almost every agricultural area. Popular worldwide, honey is produced by everyone from private beekeepers to industrial manufacturers. As a result, reliable monitoring has become essential. This is best achieved using the Reflectoquant® system: a mobile laboratory with the accuracy of instrumental analysis. It allows you to perform critical analyses and obtain quantitative results directly on site.





# Reflectometry Reflectoquant®

General information	56
> HMF in honey	58
RQflex® 10	59
RQflex® 10 plus	59
Test kits	60

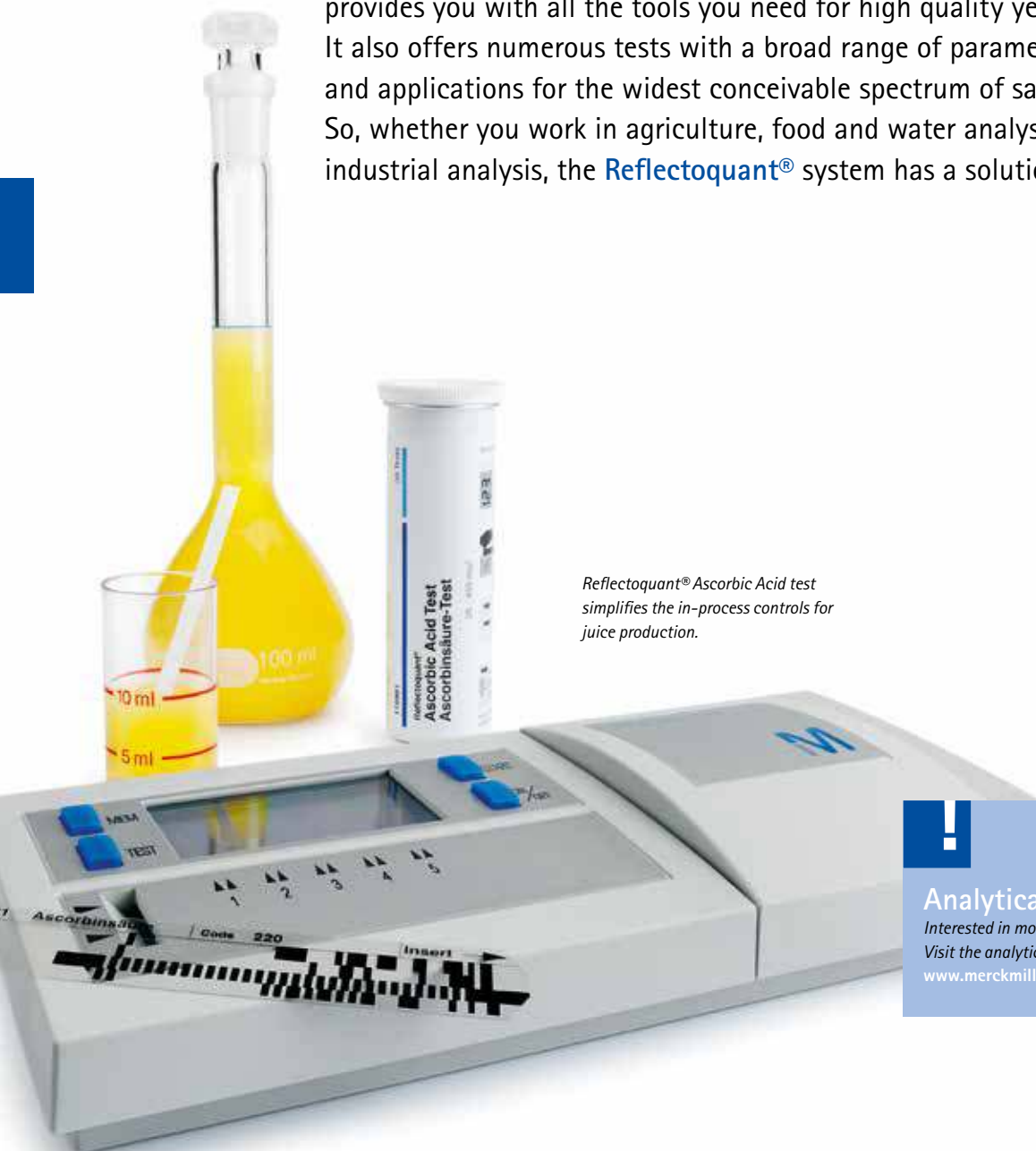
# Reflectoquant®

Take your test further

## Reflectometric measurements

Can't take your sample to the lab for testing? Then take your lab to the sample with the **Reflectoquant®** system. Compact and easy-to-use, the system allows you to monitor raw materials in all stages of your production processes, and obtain precise quantitative results – directly on site.

Consisting of test strips, test kits and reflectometers, this comprehensive program provides you with all the tools you need for high quality yet low cost analysis. It also offers numerous tests with a broad range of parameters, measuring ranges and applications for the widest conceivable spectrum of sample materials. So, whether you work in agriculture, food and water analysis, cleaning control or industrial analysis, the **Reflectoquant®** system has a solution that is made for you.



*Reflectoquant® Ascorbic Acid test  
simplifies the in-process controls for  
juice production.*



**Analytical application finder**

*Interested in more application examples?*

*Visit the analytical application finder on our website!*

[www.merckmillipore.com/aaf](http://www.merckmillipore.com/aaf) > Reflectometry



## Benefits

- Compact and handy – ideal for on-site use
- Reliable, documented quantitative results due to barcode calibration
- Numerous application notes available
- Low analysis costs
- Test strips with minute amounts of chemicals – easy to dispose of

## Our product range

The basic components of a compact solution to analyze more than 20 parameters



**RQflex® 10**  
Instrument and basic accessories to measure test strips



**RQflex® 10 plus**  
Most flexible instrument to measure test strips and solutions (cell tests)

<b>Test kits</b>	<b>Reflectoquant® Tests</b> Many parameters need only test strips. If further reagents and tools are needed, they are included in the kits	■	■
	<b>Reflectoquant® plus Tests</b> Cell test kits for higher sensitivity especially in agricultural and water analysis		■
<b>Application instructions</b>	<b>Application finder – Reflectometry</b> Tested protocols to prepare food and beverage samples for analysis	■	■
<b>Quality control</b>	<b>Standards</b> Merck Millipore's standard solutions (see page 139) or materials to prepare your own standard solution	■	■
<b>Data transfer</b>	<b>RQdata</b> Interface and software package for transfer and documentation of results on IBM-compatible PCs	■	■

# Reflectoquant® system

Fast and inexpensive alternative to supervise raw material ingredients during production

## HMF in honey

The amount of hydroxymethylfurfural (HMF) in honey is an important quality criterion. The Reflectoquant® HMF test is the very first rapid test for the determination of hydroxymethylfurfural content.

Check our application, "HMF in honey", for a valuable alternative to time-consuming HPLC analysis.

### Ascorbic acid in food

Ascorbic acid (vitamin C) counts as an essential quality characteristic in many foods. A loss of vitamin C means a deterioration of food quality, which can even be tasted. **Check our Reflectoquant® Ascorbic Acid Test applications for over 15 sample materials.**

### Reducing (total) sugar in potatoes

In fried or baked goods like potato chips, acrylamide may be produced by the reaction between asparagine and reducing sugars (fructose, glucose, etc.). The recommended upper level of reducing sugars in potatoes should not exceed a set limit. **Check our application "Total sugar in potatoes" for Reflectoquant® Total Sugar Test.**

### Nitrate in vegetables

Nitrate in itself is not harmful to human health. Its metabolic products, on the other hand, can damage health. Limits have been set for nitrate levels in foods, like drinking water, infant foods and vegetables. **Check our Reflectoquant® Nitrate Test applications for over 15 sample materials.**

## RQflex® 10 and RQflex® 10 plus reflectometers

RQflex® 10	Ord. No.
Reflectometer for the evaluation of Reflectoquant® test strips	1.16970.0001

### Scope of delivery and features:

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



RQflex® 10 plus	Ord. No.
Reflectometer for the evaluation of Reflectoquant® test strips and Reflectoquant® plus test kits	1.16955.0001

### Scope of delivery and features:

as above for Ord. No. 1.16970.0001, also contains cell adapter and eight empty cells



## RQflex® sample preparation

Application	Product	Ord. No.
Decoloration	Polyvinylpyrrolidone Divergan® RS, 100 g	1.07302.0100
Preserving milk samples	Sodium azide tablets, 5,000 tabs	1.06687.0001
	Potassium dichromate tablets, 5,000 tabs	1.04858.0001

## RQflex® accessories

Product	Ord. No.
RQdata for RQflex® 10 and RQflex® 10 plus	1.16998.0001
Interface and software package for transfer and documentation of results on IBM-compatible PCs	
Test-strip adapter for RQflex® 10 and RQflex® 10 plus	1.16953.0001
Cell adapter for RQflex® 10 plus	1.16729.0001
Empty cells for RQflex® 10 plus, 100 disposable cells	1.16727.0001

## RQflex® Quality Assurance

Product	Ord. No.
Recalibration set for RQflex® 10 and RQflex® 10 plus	1.16954.0001
RQcheck check set for RQflex® 10 and RQflex® 10 plus	1.16957.0001

**IQ, OQ and PQ documents** for all Reflectoquant® Instruments.  
Please contact your local dealer to find out more about this service.



## Reflectoquant® tests | Index A-Z

Parameter	Graduation	No. of tests	Ord. No.	Method	Type
<b>A</b> Ammonium Test	0.2 - 7.0 mg/l NH <sub>4</sub>	50	1.16892.0001	Indophenol blue	Reagent, incl.
Ammonium Test	5.0 - 20.0 mg/l NH <sub>4</sub>	50	1.16899.0001	Indophenol blue	Reagent, incl.
Ammonium Test	20 - 180 mg/l NH <sub>4</sub>	50	1.16977.0001	Nessler	Reagent, incl.
Ascorbic Acid Test	25 - 450 mg/l ascorbic acid	50	1.16981.0001	Phosphormolybd. blue	
Ascorbic Acid Test RQeasy®	25 - 450 mg/l ascorbic acid	50	1.17963.0001	Phosphormolybd. blue	
<b>B</b> Blank Strip		50	1.16730.0001		
<b>C</b> Calcium Test	2.5 - 45.0 mg/l Ca	50	1.16993.0001	Glyoxalbishydroxyanil	Reagent, incl.
Calcium Test	5 - 125 mg/l Ca	50	1.16125.0001	Phthaleinkomplexone	
Chlorine Test (free chlorine)	0.5 - 10.0 mg/l Cl <sub>2</sub>	50	1.16896.0001	Redox reaction	Reagent, incl.
<b>F</b> Formaldehyde Test	1.0 - 45.0 mg/l HCHO	50	1.16989.0001	Triazole	Reagent, incl.
<b>G</b> Glucose Test	1 - 100 mg/l glucose	50	1.16720.0001	Enzymatic reaction	
<b>H</b> Hydroxymethylfurfural Test	1.0 - 60 mg/l HMF	50	1.17952.0001	Enzymatic reaction	
<b>I</b> Iron Test	0.5 - 20.0 mg/l Fe(II)	50	1.16982.0001	Triazine	
Iron Test	20 - 200 mg/l Fe(II)	50	1.16983.0001	2,2'-Bipyridine	
<b>L</b> Lactic Acid Test	3 - 60.0 mg/l lactic acid	50	1.16127.0001	Enzymatic reaction	
<b>M</b> Magnesium Test	5 - 100 mg/l mg	50	1.16124.0001	Phthaleinkomplexone	
Malic Acid Test	5.0 - 60.0 mg/l malic acid	50	1.16128.0001	Enzymatic reaction	
<b>N</b> Nitrate Test	3 - 90 mg/l NO <sub>3</sub>	50	1.16995.0001	Modified Griess' reaction	
Nitrate Test	5 - 225 mg/l NO <sub>3</sub>	50	1.16971.0001	Modified Griess' reaction	
Nitrate Test RQeasy®	5 - 250 mg/l NO <sub>3</sub>	50	1.17961.0001	Modified Griess' reaction	
Nitrite Test	0.5 - 25.0 mg/l NO <sub>2</sub>	50	1.16973.0001	Griess' reaction	
Nitrite Test	0.03 - 1.00 g/l NO <sub>2</sub>	50	1.16732.0001	Aromatic amine	
<b>P</b> Peracetic Acid Test	1.0 - 22.5 mg/l peracetic acid	50	1.16975.0001	Redox reaction	
Peracetic Acid Test	20 - 100 mg/l peracetic acid	50	1.17956.0001	Redox reaction	
Peracetic Acid Test	75 - 400 mg/l peracetic acid	50	1.16976.0001	Redox reaction	
Peroxide Test	0.2 - 20.0 mg/l H <sub>2</sub> O <sub>2</sub>	50	1.16974.0001	Enzymatic reaction	
Peroxide Test	100 - 1,000 mg/l H <sub>2</sub> O <sub>2</sub>	50	1.16731.0001	Enzymatic reaction	
pH Test	pH 1.0 - 5.0	50	1.16894.0001	Mixed indicator	
pH Test	pH 4.0 - 9.0	50	1.16996.0001	Mixed indicator	
pH Test for Cooling Lubricants	pH 7.0 - 10.0	50	1.16898.0001	Mixed indicator	
Phosphate Test RQflex® plus	0.1 - 5.0 mg/l PO <sub>4</sub>	100	1.17942.0001	Phosphormolybd. blue	
Phosphate Test	5 - 120 mg/l PO <sub>4</sub>	50	1.16978.0001	Phosphormolybd. blue	Reagent, incl.
Potassium Test RQflex® plus	1.0 - 25.0 mg/l K	100	1.17945.0001	Kalignost, turbidimetric	
Potassium Test	0.25 - 1.20 g/l K	50	1.16992.0001	Dipicrylamine	Reagent, incl.
<b>S</b> Sucrose Test	0.25 - 2.5 g/l	50	1.16141.0001	Enzymatic reaction	Reagent, incl.
Sulfite Test	10 - 200 mg/l SO <sub>3</sub>	50	1.16987.0001	Nitroprusside / Zn-hexacyanoferrate	
<b>T</b> Total Hardness Test	0.1 - 30.0 °d	50	1.16997.0001	Phthaleinkomplexone	
Total Sugar Test (glucose and fructose)	65 - 650 mg/l total sugar	50	1.16136.0001	Enzymatic reaction	Reagent, incl.
<b>U</b> Urea Test in Milk Application	0.2 - 7.0 mg/l NH <sub>4</sub>	50	1.16892.0001	Indophenol blue	Reagent, incl.



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

# Article 11.1

The United Nations General Assembly declared the human right to safe and clean drinking water on July 28, 2010. Merck Millipore helps support these rights with the Spectroquant® system: a highly precise measuring instrument, which you can rely on anytime and anywhere in the world.





## Photometry Spectroquant®

General information	64
Instruments	66
> Take your lab to the sample:	
<b>Move 100 colorimeter</b>	<b>66</b>
Picco – colorimeters	68
Move – colorimeter	72
Multy – colorimeter	74
NOVA – photometers	76
Pharo – spectrophotometers	80
Sample preparation	84
Crack Sets	85
Thermoreactors	86
Test kits	90
> Be sensitive: New sulfate, silicate and chloride test kits	<b>90</b>
Test kits for samples with salt content	112
> Be unlimited: COD cell tests with unlimited chloride tolerance	<b>112</b>
Special application methods	117
> Be sure: Bromate in water and drinking water	<b>117</b>
Test kits for Hach instruments	118
Supplementary software for breweries	120
Quality Assurance	122

# Photometric measurements

Spectroquant®

## Safety in water analysis

Today quality assurance is a decisive factor in water and wastewater analysis – after all, the results must be reliable. Only by ensuring start-to-finish quality-assurance your measurements can be counted as secure and reproducible, and are recognized as analytical results.

Our **Spectroquant®** analysis system and the components that make up our professional AQA concept make your Internal Quality Control (IQC) operations reliable and secure.



*The Spectroquant® analysis system: user-friendly cell and reagent tests – unmistakable thanks to barcode identification*



## The Spectroquant® system at a glance

### Instruments and accessories

Spectroquant® colorimeters and photometers combine high measurement quality with simple handling: Spectroquant® Picco | Spectroquant® Move | Spectroquant® Multy | Spectroquant® NOVA | Spectroquant® Pharo

### Sample preparation

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

### Test kits

More than 180 Spectroquant® test kits offer competent solutions for the widest conceivable range of applications: Reagent test kits | Cell test kits | Test kits for samples with salt content | Test kits for Hach instruments

### Quality certificates

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

### Quality assurance

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



# Spectroquant® instruments

Count on quality

From practical pocket colorimeters to powerful lab bench photometers – the **Spectroquant® range** offers solutions for all water analysis requirements. Thanks to their outstanding precision and simple, robust handling, you enjoy the ultimate in convenience and reliability.

For swift, secure results, all **Spectroquant® instruments** are pre-programmed to work seamlessly with **Spectroquant® test kits**. What's more, our Pharo and NOVA photometers offer an integrated Analytical Quality Assurance (AQA) program, which allows you to accurately and automatically monitor all components of your analysis and ensure GLP-compliant operations. No matter which **Spectroquant® instrument** you choose, high quality measurements are guaranteed.



## Take your lab to the sample

The new Spectroquant® Move 100 mobile colorimeter is the ideal companion for on-site waste water and drinking water analysis.

Compact and robust, it allows you to test every important parameter within a wide choice of measuring ranges – for accurate answers on the go.

Learn more about the Spectroquant® Move 100 on page 72 or visit: [www.merckmillipore.com/move100](http://www.merckmillipore.com/move100)



## Spectroquant® instruments at a glance

### Colorimeters

Spectroquant® Picco – Easy, mobile colorimeter in a practical carry case					
Picco COD / CSB	Compact instrument for the measurement of COD (chemical oxygen demand)		1		■
Picco Cl <sub>2</sub> / O <sub>3</sub> / ClO <sub>2</sub> / CyA / pH	Compact instrument for the measurement of chlorine, ozone, chlorine dioxide, cyanuric acid, pH		10		■
Spectroquant® Move – Robust colorimeter for rapid, reliable on-site analysis					
Move	Ideal instrument for on-site waste water and drinking water analysis		>100		■
Spectroquant® Multy – Comprehensive and rechargeable mobile lab colorimeter					
Multy	Compact and portable for routine measurements of different parameters		>130	■	■

### Photometers

Spectroquant® NOVA – Compact and robust filter photometers					
Spectroquant® NOVA 30 A	Basic instrument for routine measurements in wastewater	■	>60	■	■
Spectroquant® NOVA 60	Routine measurements for drinking and wastewater and all other water types	■	>170	■	
Spectroquant® NOVA 60 A	As for NOVA 60, can also be operated with rechargeable powerpack	■	>170	■	■
Spectroquant® Pharo – Versatile spectrophotometers for universal application					
Spectroquant® Pharo 100	Spectrophotometer for all routine measurements as well as for individual applications in the VIS range	■	>170	■	*
Spectroquant® Pharo 300	Spectrophotometer for all routine measurements as well as for individual applications in the UV / VIS range	■	>170	■	*

\* Possible with optional 12 V adaptor

Barcode reading  
No. of test parameter  
Mains operation  
Battery operation



# Spectroquant® Picco colorimeters

Simplify your analysis

**Spectroquant® Picco colorimeters** are so easy to operate, that they require no special training. The instruments are pre-programmed for use with Spectroquant® test kits, and every stage of the procedure is clearly described. If you need to test just one or two parameters, then the Spectroquant® Picco is the ideal instrument for you.



## General technical data for all Picco colorimeters

Technical data	
<b>Optics</b>	temperature-compensated LED and photosensor amplifier
<b>Sample Chamber</b>	waterproof
<b>Power supply</b>	9 V battery, providing 40 h of operation (equivalent to approx. 600 measurement cycles of 4 minutes)
<b>Auto-OFF</b>	automatic switch-off
<b>Dimensions case</b>	270 x 225 x 80 mm (L x W x H)
<b>Dimensions instrument</b>	190 x 110 x 55 mm (L x W x H, without adapter)
<b>Weight instrument</b>	0.4 kg
<b>Ambient temperature</b>	0°C to +40°C
<b>Allowable relative humidity</b>	30 - 90 %, non condensing
<b>CE-conformity</b>	DIN EN 50 081-1, VDE 0839 part 81-1 1993-03, DIN EN 50 082-2, VDE 0839 part 82-2 1996-02



### Features

- Easy to use, require no training
- Pre-programmed for Spectroquant® test kits
- Practical carry case for convenient transportation
- Backlit display
- Real-time-clock and date storage function for measurement results
- Absorption measurement
- Water proofed instrument

# Spectroquant® Picco colorimeters

Spectroquant® Colorimeter Picco COD / CSB

Ord. No. 1.73608.0001

for the determination of COD

<b>Delivery incl.</b>	Case with photometer, 9 V battery, adapter for 16 mm round cells, lid for adapter, operating manual
<b>Measurement accuracy</b>	±3.5 %
<b>Measuring wavelength</b>	430 nm (LED plus filter) and 605 nm (LED)
<b>Measuring time</b>	3 - 4 seconds
<b>Auto-OFF</b>	8 minutes after last key press



Spectroquant® test kit	Measuring range	Number of tests	Ord. No.
COD Cell Test	10 - 150 mg/l	25	1.14540.0001
COD Cell Test	25 - 1,500 mg/l	25	1.14541.0001
COD Cell Test	300 - 3,500 mg/l	25	1.14691.0001
COD Cell Test	0.50 - 10.00 g/l	25	1.14555.0001
Absorbance	-100 - 2,500 mA		

**Remark:** For the digestion of COD a thermoreactor is required. Details see in chapter Spectroquant® Thermoreactors.

## Accessories for Spectroquant® Picco colorimeters

Product	Content	Ord. No.
Empty cells 24 mm with screw caps	package of 12 pcs	1.73650.0001
Empty cells 16 mm with screw caps	package of 25 pcs	1.14724.0001



**Spectroquant® Colorimeter Picco Cl<sub>2</sub> / O<sub>3</sub> / ClO<sub>2</sub> / CyA / pH**

Ord. No. 1.73607.0001

for the determination of free and total chlorine, ozone, chlorine dioxide, cyanuric acid and pH

<b>Delivery incl.</b>	Case with photometer, 9 V battery, adapter for 16 mm round cells, lid for adapter, 3 x 24 mm round cells, operating manual
<b>Measuring wavelength</b>	528 nm (LED plus filter)
<b>Measuring time</b>	3 - 4 seconds
<b>Auto-OFF</b>	8 minutes after last key press



Spectroquant® test kit	Measuring range in mg/l	Number of tests	Ord. No.
Chlorine Test, free	0.02 - 5.00	200	1.00598.0002
Chlorine Test, free	0.02 - 5.00	1,200	1.00598.0001
Chlorine Test, total	0.02 - 5.00	200	1.00602.0001
Chlorine Test, total	0.02 - 5.00	1,200	1.00602.0002
Chlorine Test, free and total	0.02 - 5.00	200	1.00599.0001
Chlorine Reagent 1 (liquid)	0.02 - 5.00	200	1.00086.0001
Chlorine Reagent 2 (liquid)	0.02 - 5.00	400	1.00087.0001
Chlorine Reagent 3 (liquid)	0.02 - 5.00	600	1.00088.0001
Ozone Test	0.02 - 3.40	200	1.00607.0001
Ozone Test	0.02 - 3.40	1,200	1.00607.0002
Chlorine Dioxide Test	0.05 - 9.50	200	1.00608.0001
Cyanuric Acid Test	2 - 160	100	1.19253.0001
pH Cell Test	pH 6.4 - 8.8	280	1.01744.0001
Absorbance	-100 - 2,500 mA		

Free Chlorine: Use Reagent 1+2  
 Total Chlorine: Use Reagent 1+2+3



**Spectroquant® Reference Standard**  
 For chlorine, chlorine dioxide and ozone Ord. No. 1.19301.0001  
 For more information >> page 124



# Spectroquant® Move 100 colorimeter

Get answers on the move



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


With over 100 pre-programmed methods and a wide choice of measuring ranges, you have the most suitable test for accurate results – wherever you go. Thanks to IP 68 classification, the Spectroquant® Move 100 can even be used in wet or dusty environments. The instrument is pre-programmed for use with Spectroquant® test kits, which come with enhanced Quality Certificate documentation to simplify Analytical Quality Assurance (AQA).



## Features

- Drinking and waste water analysis with one instrument on-the-spot
- 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



Spectroquant® Move 100 colorimeter		Ord. No. 1.73632.0001
<b>Scope of delivery</b>	Instrument in light carrying case, 4 batteries, 3 round vials each 24 and 16 mm Ø, 1 adapter for 16 mm vials, screw driver, guarantee certificate, certificate of compliance, instruction manual	
<b>Display</b>	Backlit graphic-display	
<b>Interfaces</b>	IR interface for data transfer RJ45 connector for internet updates	
<b>Optics</b>	LED, interference filter, photosensor, transparent measurement chamber Wavelengths: 430, 530, 560, 580, 610 and 660 nm	
<b>Wavelength accuracy</b>	±1 nm	
<b>Photometric accuracy</b>	1.000 Abs ±0.020 Abs 2.600 Abs ±0.052 Abs (± 2 % FS) (measured with standard solutions - T = 20 - 25°C)	
<b>Photometric resolution</b>	0.005 A	
<b>Operation</b>	Acid and solvent resistant tactile film keyboard	
<b>Power supply</b>	4 batteries (Type AA/LR 6); Lifetime: approx. 26 hours continuous use or 3,500 tests	
<b>Weight</b>	approx. 450 g	
<b>Dimensions</b>	approx. 210 x 95 x 45 mm (instrument) approx. 395 x 295 x 106 mm (case)	
<b>IP classification</b>	Dust and waterproof acc. to IP 68	
<b>Storage capacity</b>	approx. 1,000 data sets	



## Accessories for Spectroquant® Move 100 colorimeter

Product	Content	Ord. No.
Spectroquant® Data Transfer	Instrument, USB cable, 4 batteries, screwdriver, CD-ROM, operating instructions, guarantee certificate	1.73633.0001
Spectroquant® Verification Standard	6 sealed cells containing stable, colored solutions for measuring the absorbance at 430 nm, 530 nm, 560 nm, 580 nm, 610 nm and 660 nm plus 1 sealed blank cell, quality certificate, user instructions >> <b>more information see page 124</b>	1.19302.0001
Update cable for Spectroquant® Move 100 Colorimeter	This cable enables to update the latest Software on Spectroquant® Move 100	1.73634.0001

# Spectroquant® Multy colorimeter

Test anywhere, anytime

The **Spectroquant® Multy** is ideal for users who seek a comprehensive yet inexpensive solution for photometric water analysis. It is pre-programmed for over 130 methods based on Spectroquant® test kits, which cover all essential parameters in drinking water and waste water analysis.

The rechargeable batteries and practical carry case allow you to work anywhere, anytime. While the battery-charging feature means you can charge and run the instrument off the mains power supply.



## Features

- Suitable for drinking water and waste water analysis
- Pre-programmed for over 130 methods using Spectroquant® test kits
- Carry case for convenient transportation
- Rechargeable batteries for complete mobility
- Connection port for printing and data transfer

## Spectroquant® Colorimeter Multy

Ord. No. 1.73630.0001

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



## Accessories for Spectroquant® Multy colorimeter

Product	Content	Ord. No.
Empty cells 24 mm with screw caps	package of 12 pcs	1.73650.0001
Empty cells 16 mm with screw caps	package of 25 pcs	1.14724.0001


 Spectroquant® Verification Standard

For accuracy and reproducibility checks Ord. No. 1.19302.0001

For more information &gt;&gt; page 124

# Spectroquant® NOVA photometers

Maximize efficiency – in the lab or on the go

**Spectroquant® NOVA** lab bench photometers pack maximum convenience into minimum size. They allow you to easily analyze water test kits right in your lab. Compact and robust, Spectroquant® NOVA filter photometers have no moving parts and take very little space. Hence, they can be easily carried to other labs, and – in the case of the 30A and 60A versions – even taken on-site. Accurate results are another major benefit. The wide choice of parameters and measuring ranges of Spectroquant® test kits eliminates dilution errors.

Furthermore, you can easily verify the instruments' calibration using the automated Analytical Quality Assurance (AQA) program and Spectroquant® PhotoCheck solutions. The system not only helps secure your results, but also supports audits with comprehensive reports and documentation, which can be easily downloaded.



## Features

- Rapid analysis in the lab saves time and costs
- Variety of measuring ranges and parameters for accurate results
- Robust, compact format enables easy transportation between labs
- Spectroquant® PhotoCheck facilitates verification of instrument's calibration
- Comprehensive documentation simplifies audits

## Spectroquant® NOVA 30 A

Basic instrument for convenient waste water analysis with cell tests.

- Compact, robust and mobile when required
- Barcode reading system for cell tests
- AQA support and documentation
- Runs all important cell tests for waste water analysis

Spectroquant® Photometer NOVA 30 A		Ord. No. 1.09748.0001
Net version, incl. rechargeable battery, graphic display 128 x 64 pixel		
<b>Wavelength</b>	6 filters in array-technique with reference beam: 340, 445, 525, 550, 605, 690 nm $\pm$ 2 nm, half band width 10 nm (30 nm for 340 nm)	
<b>Photometric reproducibility</b>	0.001 A at 1.000 A	
<b>Photometric resolution</b>	0.001 A	
<b>Types of determination</b>	Absorbance, concentration, transmission	
<b>Measur. range of absorbance</b>	-0.300 A to 3.200 A	
<b>Lamp</b>	Tungsten halogen lamp, preset, no warm-up time, measuring time 2 s	
<b>Date/Time</b>	real time clock integrated in the photometer	
<b>Cell compartment</b>	16 mm $\varnothing$ cells	
<b>Test recognition</b>	AutoSelect function (bar-code reading system) automatic cell recognition	
<b>Method-update</b>	via Internet	
<b>AQA</b>	3 quality control modes	
<b>Turbidity correction</b>	simultaneous multiwavelength measurement to correct turbidity	
<b>Interface</b>	RS 232 C serial interface for printer and computer	
<b>Methods</b>	Programming of more than 60 methods for Spectroquant® cell tests, as well as physical measurements and pre-programmed applications	
<b>Storage capacity</b>	up to 500 results	
<b>Power supply</b>	100 - 240 V~, 50 - 60 Hz	
<b>Temperature</b>	Storage: -25°C to +65°C, operations: +5°C to +40°C	
<b>Allowable relative humidity</b>	Annual mean: $\leq$ 75 %, 30 days/year: 95 %, other days: 85 %	
<b>Dimensions</b>	140 x 270 x 260 mm (H x D x W)	
<b>Weight</b>	2.8 kg incl. battery	



### Spectroquant® PhotoCheck

For checking the photometer, further details see page 125.

# Spectroquant® NOVA photometers

## Spectroquant® NOVA 60 and 60 A

For routine analysis of all water types with a universal range of applications

- Over 150 test kits with various measuring ranges
- Stores up to 50 user-defined methods
- Barcode reading system for all test kits
- AQA support and documentation
- Runs cell tests and reagent tests
- NOVA 60 A can also be used for mobile analysis

### Spectroquant® Photometer NOVA 60

Ord. No. 1.09751.0001

Net version, graphic display 128 x 64 pixel

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





**Cleaning agents** for cells and glass vessels.  
For more information see page 83.

### Spectroquant® Photometer NOVA 60 A

Ord. No. 1.09752.0001

Net version incl. rechargeable battery, graphic display 128 x 64 pixel

All technical details same as NOVA 60 (Ord. No. 1.09751.0001)

Weight 2.8 kg incl. battery

## Accessories for Spectroquant® NOVA photometers

### Cases

Ord. No.

Case for Spectroquant® NOVA 30 and NOVA 60 photometers

1.09769.0001

### PC software and cable

Ord. No.

Multi-Achat II for Windows (German Version + English Version on CD-ROM).  
PC software for transferring data from the Spectroquant® NOVA 30, NOVA 60,  
and NOVA 400 photometers. Additional tool enables control WTW pH, oxygen  
and conductivity meters. System requirements: Windows 98/2000/XP/WIN 7 (32-Bit)

1.14964.0001

PC cable for Spectroquant® NOVA 30, NOVA 60, NOVA 400 photometers (for serial bus)

1.14667.0001

### Halogen lamps

Ord. No.

Halogen lamp for Spectroquant® NOVA 30 and NOVA 60 photometers

1.09749.0001

Halogen lamp for Spectroquant® NOVA 400 spectrophotometer

1.09778.0001

### Rectangular and round cells

Ord. No.

Rectangular cells 10 mm (1 pack = 2 pcs)

1.14946.0001

Rectangular cells 20 mm (1 pack = 2 pcs)

1.14947.0001

Rectangular cells 50 mm (1 pack = 2 pcs)

1.14944.0001

Semi-microcells 50 mm (1 pack = 2 pcs)

1.73502.0001

Rectangular cells quartz 10 mm (1 pack = 2 pcs)

1.00784.0001

Empty cells 16 mm Ø (1 pack = 25 pcs) with screw cap

1.14724.0001

Positioning Aid for 10 mm plastic cuvette

1.00787.0001

Zero Cell (1 pack = 1 pc) >> more information see page 125

1.73503.0001

# Spectroquant® Pharo spectrophotometers

Expand your measurement possibilities

Program your own methods, record spectra or kinetic profiles, and make multi-wavelength measurements. It's all possible with **Spectroquant® Pharo spectrophotometers**. They combine the advantages of a system photometer with the versatility of a spectrophotometer – to give you complete freedom in water analysis.

Optimally suited for use with Spectroquant® test kits, the spectrophotometers are equipped with a barcode scanning system that automatically identifies cells and selects measuring ranges. Despite their sophistication, the instruments offer the simplest possible operation thanks to their intuitive menu interface and large-format display. You also benefit from an integrated Analytical Quality Assurance (AQA) program, which helps you easily ensure GLP-compliant operations. Furthermore, USB and RS-232 interfaces are provided to facilitate data transfer to printers, PCs and USB sticks.



## Features

- Unlimited possibilities with own-method programming and numerous pre-programmed test kits
- Simplest possible handling with barcode ID for all Spectroquant® test kits
- Automatically identifies cells and selects measuring ranges
- Integrated AQA program to ensure GLP compliance
- USB and RS-232 interfaces for data transfer and printing



## Spectroquant® Pharo 100

For all routine measurements as well as individual use in the VIS range

- Wavelength spectrum from 320 to 1,100 nm
- Barcode reading system for test kits
- AQA support and documentation
- Universal applications

Spectroquant® Spectrophotometer Pharo 100		Ord. No. 1.00706.0001
<b>Spectrophotometer with plug-in power supply, backlit graphic display</b>		
<b>Wavelength range</b>	320 - 1,100 nm	
<b>Technology</b>	Stabilized single-beam	
<b>Source lamp</b>	Tungsten halogen lamp	
<b>Measuring modes</b>	Concentration, absorbance, transmission, multi wavelengths, scans and kinetics in absorbance or transmission mode	
<b>Spectral bandwidth</b>	4 nm	
<b>Wavelength resolution</b>	1 nm	
<b>Wavelength accuracy</b>	±1 nm	
<b>Photometric range</b>	±3.3 A	
<b>Absorbance resolution</b>	0.001 A	
<b>Absorbance accuracy</b>	0.003 A bei <0.600 A; 0.5 % of the reading for 0.600 ≤ A ≤ 2,000	
<b>Scan</b>	Scans in 1 nm increments with free selectable wavelength range	
<b>Cells</b>	16 mm round, 10, 20, 50 mm rectangular with automatic cell size recognition	
<b>Test recognition</b>	Autom. bar-code reading system for all Spectroquant® cell and reagent tests	
<b>Method update</b>	via Internet / PC or via USB stick	
<b>Instrument-supported quality assurance</b>	AQA 1: Instrument check using PhotoCheck and/or Certipur® UV/VIS standards AQA 2: System check using CombiCheck resp. Certipur® standards AQA 3: Testing samples for interferences by means of the MatrixCheck function	
<b>Communication interfaces</b>	1 USB-A, 1 USB-B, 1 RS 232	
<b>Data storage</b>	1000 single measured values; 4 MB for scans and kinetics, i.e. approx. 100 scans (300 - 900 nm) and 400 kinetic curves with 150 single values each	
<b>Languages</b>	German, English, Spanish, French, Italian, Brazilian-Portuguese, Bulgarian, Chinese (simplified), Chinese (traditional), Czech, Greek, Hungarian (Magyar), Indonesian, Japanese, Malay, Mazedonian, Norwegian, Polish, Portuguese (see Brazilian-Portuguese), Russian, Slovenian, Thai*	
<b>Methods and profiles</b>	Programmed methods of all Spectroquant® cell and reagent tests, 100 userdefined methods, 20 profiles for kinetic and absorption scans each	
<b>Protection class</b>	IP 30	
<b>Power supply</b>	Country specific power supply, length of the connection cable: 2.0 m	
<b>Power requirements</b>	100 - 240 V ~ / 50 - 60 Hz / 0.70 A	
<b>Temperature</b>	Operating: +10°C to +35°C, Storage: -25°C to +65°C	
<b>Allowable relative humidity</b>	Annual mean: ≤75 %; 30 days / year: 95 %; other days: 85 %	
<b>Dimensions</b>	404 x 197 x 314 mm (width x height x depth)	
<b>Weight</b>	approx. 4.5 kg (without plug-in power supply)	

\*please contact your Merck Millipore representative for availability of additional languages



# Spectroquant® Pharo spectrophotometers

## Spectroquant® Pharo 300

For all routine measurements as well as individual use in the UV-VIS range

- Wavelength spectrum from 190 to 1,100 nm
- Barcode reading system for test kits
- AQA support and documentation
- Virtually limitless range of applications

### Spectroquant® UV/VIS Spectrophotometer Pharo 300

Ord. No. 1.00707.0001

Spectrophotometer with plug-in power supply for all routine measurements and for individual use in the UV/VIS range, backlit graphic display

<b>Wavelength range</b>	190 - 1,100 nm
<b>Technology</b>	Stabilized single-beam
<b>Source lamp</b>	Xenon flashlamp
<b>Measuring modes</b>	Concentration, absorbance, transmission, multi wavelengths, scans and kinetics in absorbance or transmission mode
<b>Spectral bandwidth</b>	4 nm
<b>Wavelength resolution</b>	1 nm
<b>Wavelength accuracy</b>	±1 nm
<b>Photometric range</b>	±3.3 A
<b>Absorbance resolution</b>	0.001 A
<b>Absorbance accuracy</b>	0.003 A bei <0.600 A / 0.5 % of the reading for 0.600 ≤ A ≤ 2.000
<b>Scan</b>	Scans in 1 nm increments with free selectable wavelength range
<b>Cells</b>	16 mm round, 10, 20, 50 mm rectangular with automatic cell size recognition
<b>Test recognition</b>	Automatic bar-code reading system for all Spectroquant® cell and reagent tests
<b>Method update</b>	via Internet/PC or via USB stick
<b>Instrument-supported quality assurance</b>	AQA 1: Instrument check using PhotoCheck and/or Certipur® UV/VIS standards AQA 2: System check using CombiCheck resp. Certipur® standards AQA 3: Testing samples for interferences by means of the MatrixCheck function
<b>Communication interfaces</b>	1 USB-A, 1 USB-B, 1 RS 232
<b>Data storage</b>	1,000 single measured values; 4 MB for scans and kinetics, i.e. approx. 100 scans (300 - 900 nm) and 400 kinetic curves with 150 single values each
<b>Languages</b>	German, English, Spanish, French, Italian, Brazilian-Portuguese, Bulgarian, Chinese (simplified), Chinese (traditional), Czech, Greek, Hungarian (Magyar), Indonesian, Japanese, Malay, Mazedonian, Norwegian, Polish, Portuguese (see Brazilian-Portuguese), Russian, Slovenian, Thai*
<b>Methods and profiles</b>	Programmed methods of all Spectroquant® cell and reagent tests, 100 userdefined methods, 20 profiles for kinetic and absorption scans each
<b>Protection class</b>	IP 31
<b>Power supply</b>	Country specific power supply, length of the connection cable: 2.0 m
<b>Power requirements</b>	100 - 240 V ~ / 50 - 60 Hz / 0.70 A
<b>Temperature</b>	Operating: +10°C to +35°C, Storage: -25°C to +65°C
<b>Allowable relative humidity</b>	Annual mean: ≤75 %, 30 days / year: 95 %, other days: 85 %
<b>Dimensions</b>	404 x 197 x 314 mm (width x height x depth)
<b>Weight</b>	approx. 4.5 kg (without plug-in power supply)



\*please contact your Merck Millipore representative for availability of additional languages



## Certipur® UV/VIS standards

for checking the photometer, further details see page 125.

## Accessories for Spectroquant® Pharo spectrophotometers

Cases and cables for portable use*	Ord. No.
Halogen lamp modul for Spectroquant® spectrophotometer Pharo 100	1.00660.0001
Case for Spectroquant® spectrophotometer Pharo 100 and Pharo 300	1.00670.0001
12 V adapter for Spectroquant® spectrophotometer Pharo 100 and Pharo 300 (car, PowerPack)	1.00786.0001
* For the mobile use of the Spectroquant® Pharo spectrophotometers we recommend using a PowerPack rechargeable battery with a 12 V plug adapter as the power source.	
Rectangular and round cells	Ord. No.
Rectangular cells 10 mm (1 pack = 2 pcs)	1.14946.0001
Rectangular cells 20 mm (1 pack = 2 pcs)	1.14947.0001
Rectangular cells 50 mm (1 pack = 2 pcs)	1.14944.0001
Semi-microcells 50 mm (1 pack = 2 pcs)	1.73502.0001
Rectangular cells quartz 10 mm (1 pack = 2 pcs)	1.00784.0001
Empty cells 16 mm Ø (1 pack = 25 pcs) with screw cap	1.14724.0001
Positioning Aid for 10 mm plastic cuvette	1.00787.0001
Zero Cell (1 pack = 1 pc) >> more information see page 125	1.73503.0001

## Accessories for Spectroquant® photometer and spectrophotometer

The cleanliness of the working environment and accessories is an unconditional prerequisite for the accuracy of the measurements. All instruments used must be clean and dry. After the analysis has been completed, the volumetric flasks, pipettes, reagent vessels, and cells used must be thoroughly washed with water immediately and subsequently rinsed with distilled water. The cell surfaces must be absolutely clean, dry, and clear. Any stains or marks adhering to surfaces can be wiped off using a dry cloth. Greasy marks can be removed by immersing the vessel in question in 2 - 5 % Extran and subsequently rinsing with distilled water.

**Cleaning validation** The Spectroquant® non ionic surfactants cell test (page 108) supports an effective cleaning validation. Details on [www.merckmillipore.com](http://www.merckmillipore.com), search "Extran".



Cleaning agents for cells and glass vessels	Ord. No.
Extran detergent, MA 02 neutral (1 pack = 2.5 l)	1.07553.2500
Extran detergent, MA 05 liquid, alkaline, phosphate-free concentrate (1 pack = 2.5 l)	1.40000.2500

*Extran MA 02 neutral is adequate for normal stains and marks. **Caution!** Do not use in connection with the determination of phosphorus, since Extran MA 02 neutral contains phosphates. The pH of a 2 - 5 % solution is approx. 7.2 - 7.5.*

*Extran MA 05 phosphate-free is advisable to use in the case of stubborn stains. **Caution!** Do not use for alkali-sensitive material such as aluminium etc. The pH of a 2 - 5 % solution is approx. 11.6 - 12.0.*

# Spectroquant® sample preparation

Simply effective and comfortable

Sample preparation is an integral component of the **Spectroquant® analysis system**. Some test kits already contain all the reagents necessary for preparing the sample material for analysis. COD, TOC, AOX, total nitrogen, total phosphorus, total chromium, and silver can be swiftly and easily determined with our tests. The test kits contain all the necessary reagents – even those required for the decomposition.

But it's not always a matter of determining the total content. This is why decomposition reagents for sample preparation are also available as separate packs – as **Spectroquant® Crack Sets**. In this way you retain your working flexibility, while at the same time you save having to order all the chemicals in the test kit. Samples can then be effortlessly decomposed in the **Spectroquant® thermoreactors**.

*The reagents contained in the package and the analysis instructions accessible at [www.merckmillipore.com/photometry](http://www.merckmillipore.com/photometry) make sample digestion a child's play.*



# Spectroquant® Crack Sets

## Spectroquant® Crack Sets at a glance

### Spectroquant® Crack Set 10

Ord. No. 1.14687.0001

for 100 digestions

#### Scope of delivery and features:

The Crack Set 10 for 100 decompositions contains digestion reagents for the determination of the total content of cadmium, chromium, copper, iron, lead, nickel, phosphorus, and zinc for use in conjunction with the thermoreactor.

#### Contents:

Digestion reagent, acid, neutralizing agent for pH adjustment.

### Spectroquant® Crack Set 10 C

Ord. No. 1.14688.0001

for 25 digestions

#### Scope of delivery and features:

The "C" stands for cells. This means that the cells necessary for the decomposition in the thermoreactor are contained in the set. The digestion reagent is pre-dosed, and the set's application is identical to that of the Crack Set 10.

#### Contents:

Digestion reagent filled into round cells, acid, neutralizing agent for pH adjustment.

### Spectroquant® Crack Set 20

Ord. No. 1.14963.0001

for 90 digestions

#### Scope of delivery and features:

The Crack Set 20 contains digestion reagents for the determination of total nitrogen for use with the thermoreactor.

#### Contents:

Digestion reagent, lye.

## Analytical application finder

Find more application notes about how to prepare different samples for photometric analysis with Spectroquant® test kit with our analytical application finder:

[www.merckmillipore.com/aaf](http://www.merckmillipore.com/aaf) > Photometry



When the objective is to determine the total content of certain parameters, the Crack Sets contain all the necessary reagents.

# Spectroquant® thermoreactors

Simply comfortable

Developed in practice for practice, we offer a system of Spectroquant® thermoreactors that fulfils every conceivable requirement. Preinstalled standard programmes for routine digestions help avoid operating mistakes from occurring in the first place.



## Features

- Practically oriented tuning of the digestion reagents to the thermoreactors
- Simple handling thanks to user-friendly description of the digestion procedures
- Flexible selection between standard programmes and individual programming
- Time-saving COD rapid digestion method

The eight standard digestion programmes of the Spectroquant® thermoreactor family for day-to-day 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, and Zn
120°C	30 min	for AOX and total phosphorus, cyanide
120°C	60 min	for Ag
100°C	30 min	

A description of the digestion procedures is already integrated in the instruction sheets included with the test kits. For special digestion variants there are applications available as downloads from the internet.

## General technical data for all thermoreactors

Technical data	
<b>Scope of delivery</b>	Incl. integrated protective hood for the determination of COD and TOC, as well as of total contents of cadmium, chromium, copper, cyanide, iron, lead, nickel, nitrogen, phosphorus, silver, and zinc.
<b>Display</b>	LCD display for temperature and time, desired and actual values for heating time and temperature continually shown in the LCD display
<b>Heater</b>	On/off display (the LED blinks red during the heating phase and is permanently on during the digestion phase), contact guard on the surface of the heating-block

## Spectroquant® thermoreactors at a glance

Spectroquant® TR 320 thermoreactor – the starter model	
<b>Functions</b>	<b>Area of application</b>
<ul style="list-style-type: none"> <li>• 8 stored standard programmes</li> <li>• Simultaneous digestion of 12 samples</li> </ul>	The instrument features all you need for handling digestions simply and correctly.

Spectroquant® TR 420 thermoreactor – the advanced instrument for experts	
<b>Functions</b>	<b>Area of application</b>
<ul style="list-style-type: none"> <li>• Free temperature and time selection</li> <li>• 8 stored standard and 8 free programmes</li> <li>• Simultaneous digestion of 24 samples</li> <li>• Thermosensor and PC cable available</li> <li>• AQA documentation for control purposes</li> <li>• Individual programming for future assignments</li> </ul>	The instrument already has all digestion programmes necessary for wastewater analysis preinstalled, but can also be individually used in the temperature range up to 170°C and with digestion times of up to three hours.

Spectroquant® TR 620 thermoreactor – the two-in-one instrument for professional use	
<b>Functions</b>	<b>Area of application</b>
<ul style="list-style-type: none"> <li>• As for the TR 420 thermoreactor, but with two separate temperature-selectable heating zones</li> </ul>	As a two-in-one professional model this instrument features all the advantages of the TR 420. It has two separate controllable heating blocks, which makes it possible to run different digestion programmes at one and the same time. It is e.g. capable of simultaneously digesting 12 COD and 12 TOC samples at the different temperatures required, yielding results after just 120 minutes.



# Spectroquant® thermoreactors

## Spectroquant® Thermoreactor TR 320

Ord. No. 1.71200.0001

<b>Holes</b>	12 for cell tests Ø 16 mm
<b>Temperature selection</b>	100°C, 120°C and 148°C ±1.0°C
<b>Controlling accuracy</b>	±1°C ±1 digit
<b>Heating time</b>	8 temperature heating-time programs for simplest possible operation: 148°C (20 min or 120 min), 150°C (120 min), 120°C (30 min, 60 min or 120 min), 100°C (30 + 60 min) automatic power switch-off at the end of the heating time
<b>Mains version</b>	115 V~ / 230 V~, 50 Hz / 60 Hz convertible
<b>Dimensions</b>	180 x 256 x 307 mm (H x W x D)
<b>Weight</b>	2.85 kg




## Spectroquant® Thermoreactor TR 420

Ord. No. 1.71201.0001

<b>Holes</b>	24 for cell tests Ø 16 mm
<b>Temperature selection</b>	Room temperature -170°C ±1.0°C
<b>Controlling accuracy</b>	±1°C ±1 digit
<b>Timer</b>	0 - 180 min freely selectable
<b>Heating time</b>	8 temperature heating-time programmes 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), as well as eight freely selectable programmes, automatic power switch-off at the end of the heating time
<b>Optional accessories</b>	Thermosensor: heating-block temperature-monitoring option via integrated serial interface and control software for AQA, brass adapter with integrated Pt sensor fitting the holes incl. connector cable (for checking equipment)
<b>Mains version</b>	115 V~ / 230 V~, 50 Hz / 60 Hz convertible
<b>Dimensions</b>	180 x 256 x 307 mm (H x W x D)
<b>Weight</b>	3.6 kg





Spectroquant® Thermoreactor TR 620		Ord. No. 1.71202.0001
<b>Holes</b>	24 (2 x 12) for cell tests Ø 16 mm, the temperature of each of the two heating zones can be set and controlled separately	
<b>Temperature selection</b>	Room temperature -170°C ±1.0°C	
<b>Controlling accuracy</b>	±1°C ±1 digit	
<b>Timer</b>	0 - 180 min freely selectable	
<b>Heating time</b>	8 temperature heating-time programmes 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) as well as eight freely selectable programmes, automatic power switch-off at the end of the heating time	
<b>Optional accessories</b>	Thermosensor: heating-block temperature-monitoring option via integrated serial interface and control software for AQA, brass adapter with integrated Pt sensor fitting the holes incl. connector cable (for checking equipment)	
<b>Mains version</b>	115 V~ / 230 V~, 50 Hz / 60 Hz convertible	
<b>Dimensions</b>	180 x 256 x 307 mm (H x W x D)	
<b>Weight</b>	3.6 kg	



## Accessories for Spectroquant® thermoreactors

### Thermosensor for thermoreactors TR 420/620

Ord. 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

Ord. No. 1.71204.0001

# Spectroquant® test kits

Assured quality

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

## Smart technology

Our test kits offer even greater convenience when used with Spectroquant® NOVA and Pharo photometers. A barcode identification system automatically matches the kits with the instruments' methods. In addition, blank values are pre-programmed, so there is no need to perform these individually. Such features not only ensure error-free measurements, but also save time and costs.

## Proven security

Each Spectroquant® test kit is accompanied by a lot certificate with batch-specific information containing details and results for each quality test conducted. We also supply a comprehensive quality certificate, which can be used for audits at accredited laboratories. Both certificates can be downloaded from our website: [www.merckmillipore.com/photometry](http://www.merckmillipore.com/photometry).



## Be sensitive

### New sulfate, silicate and chloride test kits

Our three new Spectroquant® photometric test kits have one thing in common: They offer the most sensitive ranges. Now you can detect even lower concentrations of sulfate, silicate and chloride in cooling or boiler water – to lower the risk of costly corrosion.

More details on page 94 and 108



## Benefits

- Preprogrammed blank values ensure fast, reliable results and save costs
- Barcode identification system enables rapid and simple operation
- Validated, standard-compliant reagents guarantee secure analysis
- Batch and quality certificates available 24/7 from our website

### Reagent test kits

These convenient test kits contain highly stable, ready-to-use reagent mixtures and an AutoSelector which uses the barcode system to automatically choose the appropriate method in Spectroquant® NOVA or Pharo photometers. By selecting the appropriate cell format, you can easily vary the measuring range. The packaging insert presents an overview of the reaction principle, working procedures and application areas. Spectroquant® reagent test kits offer an extremely long shelf life of up to three years at room temperature.



### Cell test kits

The cell test kits contain virtually all reagents necessary for the analysis. When used with a Spectroquant® NOVA or Pharo photometer, the system intuitively selects the correct analysis method in the instrument. All important information regarding contents, safety and batch number are provided on the kit's label. Like in the reagent tests, here the provided packaging insert presents as well an overview of the reaction principle, working procedures and application areas. Spectroquant® cell test kits also offer an extremely long shelf life of up to three years at room temperature.



# Spectroquant® test kits

## Index A

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
A Absorbance	-3.300 - 3.300 A	-0.300 - 3.000 A •	-2.600 - 2.600 A	-2.600 - 2.600 A	-	-	
Acid Capacity Cell Test to pH 4.3 (total alkalinity) <sup>1)</sup>	0.40 - 8.00 mmol/l 20 - 400	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 <sub>3</sub>	120	1.01758.0001
ADMI Color measurement							
Alkalinity (total)							
Aluminium Cell Test	0.02 - 0.50	0.02 - 0.50 •	0.05 - 0.50	0.05 - 0.50	Al	25	1.00594.0001
Aluminium Test	0.020 - 1.20	0.020 - 1.20	20 - 700 µg/l	20 - 700 µg/l	Al	350	1.14825.0001
Ammonia, free	0.000 - 3.0 0.000 - 3.65	-	-	-	NH <sub>3</sub> -N NH <sub>3</sub>	-	-
Ammonium Cell Test	0.010 - 2.000 0.01 - 2.58	0.010 - 2.000 • 0.01 - 2.58	10 - 2.000 µg/l 10 - 2.576 µg/l	10 - 2.000 µg/l 10 - 2.576 µg/l	NH <sub>4</sub> -N NH <sub>4</sub>	25	1.14739.0001
Ammonium Test	0.010 - 3.00 0.013 - 3.86	0.010 - 3.00 0.013 - 3.86	0.02 - 1.30 0.03 - 1.67	0.02 - 1.30 0.03 - 1.67	NH <sub>4</sub> -N NH <sub>4</sub>	250 500	1.14752.0002 1.14752.0001
Ammonium Cell Test	0.20 - 8.00 0.26 - 10.30	0.20 - 8.00 • 0.26 - 10.30	0.20 - 8.00 0.26 - 10.30	0.20 - 8.00 0.26 - 10.30	NH <sub>4</sub> -N NH <sub>4</sub>	25	1.14558.0001
Ammonium Cell Test	0.5 - 16.0 0.6 - 20.6	0.5 - 16.0 • 0.6 - 20.6	-	-	-	25	1.14544.0001
Ammonium Test	2.0 - 150 2.6 - 193	2.0 - 150 2.6 - 193	1.0 - 50.0 1.3 - 64.4	1.0 - 50.0 1.3 - 64.4	NH <sub>4</sub> -N NH <sub>4</sub>	100	1.00683.0001
Ammonium Cell Test	4.0 - 80.0 5.2 - 103.0	4.0 - 80.0 • 5.2 - 103.0	4.0 - 80.0 5.2 - 103.0	4.0 - 80.0 5.2 - 103.0	NH <sub>4</sub> -N NH <sub>4</sub>	25	1.14559.0001
Antimony	0.10 - 8.00	0.10 - 8.00	-	-	Sb	-	-
AOX Cell Test	0.05 - 2.50	0.05 - 2.50 •	0.05 - 2.50	0.05 - 2.50	AOX	25	1.00675.0001
AOX Sample Preparation Set	-	-	-	-	-	25	1.00677.0001
AOX Enrichment Set	-	-	-	-	-	2	1.00678.0001
AOX Standard 0.2 - 2.0 mg/l	-	-	-	-	-	8 - 16	1.00680.0001
Arsenic Test	0.001 - 0.100	0.001 - 0.100	5 - 100 µg/l	5 - 100 µg/l	As	30	1.01747.0001
Arsenic reagent 2: Sulfuric acid 95 - 97 % for analysis EMSURE® ISO	-	-	-	-	-	50	1.00731.1000
Arsenic reagent 7: Zinc granular for analysis, particle size about 3 - 8 mm EMSURE® ISO	-	-	-	-	-	27	1.08780.0500
Absorption Tube for Arsenic with ground joint NS29	-	-	-	-	-	1	1.73501.0001

• useable in NOVA 30

<sup>1)</sup> The cell test contains three 16 mm cells with a barcode label. After measurement the cells can be emptied and cleaned for subsequent measurements.

**Data for other brands of photometers** to use  
Spectroquant® test kits with photometers from other suppliers, simply download  
the free programming data from our website: [www.service-test-kits.com](http://www.service-test-kits.com)

Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	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	-	±0.03	1, 6, 8, 9, 11, 13, 15, 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-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	5.0	-	±0.052	1, 2, 5, 9, 11, 13, 15, 17, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.6 + 5.0	10, 20, 50	±0.016	1, 2, 5, 9, 11, 13, 15, 17, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	1.0	-	±0.19	1, 2, 5, 6, 8, 9, 11, 13, 15, 16, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.5	-	±0.4	1, 6, 8, 11, 13, 16, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.1 / 0.2 + 5.0	10	±1.7	1, 4, 8, 12, 16, 18
Indophenol blue	analogous EPA 350.1, APHA 4500-NH <sub>3</sub> F, ISO 7150-1, DIN 38406-5	0.1	-	±1.9	1, 4, 8, 16, 18
Brilliant green	Application, see more information in Pharo and NOVA manual	4.0 + 1.0 + 5.0	10	-	11, 18
Iron(III)-thiocyanate	adsorption analogous EN ISO 9562	0.2 + 1.0 + 7.0	-	±0.20	5, 8, 9, 10, 11, 13, 15, 18
-	additionally required for AOX measurement	-	-	-	
-	for multiple use, additionally required for AOX measurement	-	-	-	
-	for 8 - 16 quality tests, analogous DIN EN ISO 9562	5.0 / 10.0	-	-	5, 8, 9, 10, 11, 13, 15, 18
Silver DDTC	analogous EPA 206.4, APHA 3500-As B, ASTM D2972-08A	1.0 + 5.0 + 20 (+ 350)	10, 20	±0.003	5, 8, 10, 11, 13, 15, 18
-	additionally required for Arsenic measurement	-	-	-	
-	additionally required for Arsenic measurement	-	-	-	
-	for multiple use, additionally required for Arsenic measurement	-	-	-	

**Areas of application:**

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

# Spectroquant® test kits

## Index B-C

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>B</b> BOD Cell Test <sup>1)</sup>	0.5 - 3000	0.5 - 3000 •	0.5 - 3000	0.5 - 3000	BOD	50	1.00687.0001
BOD (Oxygen) Reaction bottle	-	-	-	-	-	1	1.14663.0001
BOD Nutrient Salt Mixture (with allyl thiourea)	-	-	-	-	-	12 l	1.00688.0001
BOD Standard 210 ±20 mg/l	-	-	-	-	-	10 l	1.00718.0001
Boron Test	0.050 - 0.800	0.050 - 0.800	-	-	B	60	1.14839.0001
Boron Cell Test	0.05 - 2.00	0.05 - 2.00	0.05 - 2.00	0.05 - 2.00	B	25	1.00826.0001
Bromate	0.003 - 0.120	0.003 - 0.120	-	-	BrO <sub>3</sub>	-	-
Bromine Test	0.020 - 10.00	0.020 - 10.00	0.10 - 5.00	0.10 - 5.00	Br <sub>2</sub>	200	1.00605.0001
<b>C</b> Cadmium Test <sup>2)</sup>	0.0020 - 0.500	0.0020 - 0.500	5 - 500 µg/l	5 - 500 µg/l	Cd	55	1.01745.0001
Cadmium Cell Test <sup>2)</sup>	0.025 - 1.000	0.025 - 1.000 •	25 - 1.000 µg/l	25 - 1.000 µg/l	Cd	25	1.14834.0001
Calcium Test	0.20 - 4.00	0.20 - 4.00	-	-	Ca	100	1.00049.0001
Calcium Test	5 - 160 7 - 224 12 - 400 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 13 - 400	5 - 160 7 - 224 13 - 400	Ca CaO CaCO <sub>3</sub> Ca CaO CaCO <sub>3</sub>	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 <sub>3</sub>	25	1.00858.0001
Carbohydrazide							
Chloride Test	0.10 - 5.00	0.10 - 5.00	0.50 - 5.00	0.50 - 5.00	Cl	100	1.01807.0001
Chloride Cell Test	0.5 - 15.0	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	10 - 250	Cl	100 175	1.14897.0001 1.14897.0002
Chloride Cell Test	5 - 125	5 - 125 •	5 - 125	5 - 125	Cl	25	1.14730.0001
Chlorine Test (free chlorine) USEPA approved <sup>3b)</sup>	0.010 - 6.00	0.010 - 6.00	0.02 - 3.00	0.02 - 3.00	Cl <sub>2</sub>	200 1,200	1.00598.0002 1.00598.0001
Chlorine Cell Test <sup>1)</sup> (free chlorine) USEPA approved <sup>3b)</sup>	0.03 - 6.00	0.03 - 6.00 •	0.05 - 5.00	0.05 - 5.00	Cl <sub>2</sub>	200	1.00595.0001
Chlorine Test (total chlorine) USEPA approved <sup>3c)</sup>	0.010 - 6.00	0.010 - 6.00	0.02 - 3.00	0.02 - 3.00	Cl <sub>2</sub>	200 1200	1.00602.0001 1.00602.0002

• useable in NOVA 30

1) The cell test contains three 16 mm cells with a barcode label. After measurement the cells can be emptied and cleaned for subsequent measurements.

2) For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

3) This method is officially recognized by the USEPA as an alternative method for the investigation of a) wastewater, b) drinking water, and, respectively, c) drinking water and wastewater.

Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
mod. Winkler method	-	-	-	±0.5	2, 8, 9, 10, 11, 13, 16, 18
-	4 bottles are necessary for 1 determination, 6 for 2, 8 for 3 etc.	-	-	-	
-	for 12 x 1 l nutrient salt solution, additionally required for BOD measurement, anal. DIN EN 1899	20	-	-	
-	for 10 x 1 l standard solution, analogous DIN EN 1899	-	-	-	
Rosocyanine	analogous EPA 213.3, ASTM D3082-09, APHA 4500-B B	0.5 + 0.8 + 1.0 + 1.5 + 5.0 + 6.0	10	±0.030	1, 9, 11, 13, 15, 18
Azomethine H	analogous DIN 38405-17	1.0 + 4.0	-	±0.09	1, 9, 11, 13, 15, 16, 18
3,3'- Dimethyl-naphtidine	Application, see more information in Pharo and NOVA manual	10 + 0.10 + 0.20	50		7, 9, 13, 15
DPD	-	10	10, 20, 50	±0.100	5, 7, 9, 17
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, 16
Glyoxalbis-hydroxyanil		0.10 + 5.0	10, 20	±3	1, 2, 5, 6, 9, 13, 15, 16,
	for determinations in the low measuring range see manual NOVA / Pharo	0.5 + 5.0	10	±1.0	
Phthalein-komplexone	-	0.5 + 1.0	-	±9	1, 2, 5, 6, 9, 13, 15, 16,
	see Oxygen Scavengers Test				
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	10	50	±0.07	2, 5, 6, 9, 12, 13, 15, 18
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	10	-	±0.4	2, 5, 6, 9, 12, 13, 15, 18
Iron(III)-thiocyanate	analogous EPA 325.1, APHA 4500-Cl <sup>-</sup> E	1.0 / 5.0 + 0.5 + 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 <sup>-</sup> E	0.5 + 1.0	-	±5	1, 2, 5, 6, 8, 9, 10, 12, 13, 15, 16, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	10, 20, 50	±0.034	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	5.0	-	±0.14	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	10, 20, 50	±0.032	2, 5, 7, 9, 13, 17, 18

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

# Spectroquant® test kits

## Index C

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>C</b> Chlorine Test 100 tests free chlorine + 100 tests chlorine (total) USEPA approved <sup>3c)</sup>	0.010 - 6.00	0.010 - 6.00	0.02 - 3.00	0.02 - 3.00	Cl <sub>2</sub>	200	1.00599.0001
Chlorine Cell Test <sup>1)</sup> 100 tests free chlorine + 100 tests chlorine (total) USEPA approved <sup>3c)</sup>	0.03 - 6.00	0.03 - 6.00 •	0.05 - 5.00	0.05 - 5.00	Cl <sub>2</sub>	200	1.00597.0001
Chlorine Reagent Cl <sub>2</sub> -1 (liquid) <sup>4)</sup>	0.010 - 6.00	0.010 - 6.00 •	0.02 - 5.00	0.02 - 5.00	Cl <sub>2</sub>	200	1.00086.0001
Chlorine Reagent Cl <sub>2</sub> -2 (liquid) <sup>4)</sup>	0.010 - 6.00	0.010 - 6.00 •	0.02 - 5.00	0.02 - 5.00	Cl <sub>2</sub>	400	1.00087.0001
Chlorine Reagent Cl <sub>2</sub> -3 (liquid) <sup>4)</sup>	0.010 - 6.00	0.010 - 6.00 •	0.02 - 5.00	0.02 - 5.00	Cl <sub>2</sub>	600	1.00088.0001
Cells and accessories for the photometric chlorine measurement with liquid reagents 1.00086, 1.00087 and 1.00088	-	-	-	-	Cl <sub>2</sub>	25	1.00089.0001
Chlorophyll-a and Phaeophytin-a	-	-	-	-	Chl-a Phaeo	-	-
Chlorophyll-a, -b, -c	-	-	-	-	Chl-a Chl-b Chl-c	-	-
Chlorine Dioxide Test	0.020 - 10.00	0.020 - 10.00	0.10 - 5.00	0.10 - 5.00	ClO <sub>2</sub>	200	1.00608.0001
Chromate Test <sup>2)</sup> for the determination of chromium (VI)	0.010 - 3.00 0.02 - 6.69	0.010 - 3.00 0.02 - 6.69	10 - 1.400 µg/l 22 - 3.123 µg/l	10 - 1.400 µg/l 22 - 3.123 µg/l	Cr CrO <sub>4</sub>	250	1.14758.0001
Chromate Cell Test for the determination of chromium (VI) and chromium (total) USEPA approved <sup>3a)</sup>	0.05 - 2.00 0.11 - 4.46	0.05 - 2.00 • 0.11 - 4.46	0.05 - 2.00 0.11 - 4.46	0.05 - 2.00 0.11 - 4.46	Cr CrO <sub>4</sub>	25	1.14552.0001
Chromium in electroplating baths (inherent color)	4 - 400 g/l	4 - 400 g/l •	-	-	CrO <sub>3</sub>	-	-
COD Cell Test USEPA approved <sup>3a)</sup>	4.0 - 40.0	4.0 - 40.0 •	-	-	COD	25	1.14560.0001
COD Cell Test	5.0 - 80.0	5.0 - 80.0 •	5.0 - 80.0	5.0 - 80.0	COD	25	1.01796.0001
COD Cell Test USEPA approved <sup>3a)</sup>	10 - 150	10 - 150 •	10 - 150	10 - 150	COD	25	1.14540.0001
COD Cell Test USEPA approved <sup>3a)</sup>	15 - 300	15 - 300 •	15 - 300	15 - 300	COD	25	1.14895.0001
COD Cell Test USEPA approved <sup>3a)</sup>	25 - 1.500	25 - 1.500 •	25 - 1.500	25 - 1.500	COD	25	1.14541.0001
COD Cell Test USEPA approved <sup>3a)</sup>	50 - 500	50 - 500 •	50 - 500	50 - 500	COD	25	1.14690.0001

• useable in NOVA 30

**1)** The cell test contains three 16 mm cells with a barcode label. After measurement the cells can be emptied and cleaned for subsequent measurements.

**2)** For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

**3)** This method is officially recognized by the USEPA as an alternative method for the investigation of **a)** wastewater, **b)** drinking water, and, respectively, **c)** drinking water and wastewater.

**4)** Combination for free or total chlorine, see comment cells and accessories Ord. No. 1.00089.0001.







Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	10, 20, 50	±0.033	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	5.0	–	±0.11	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	16, 50	±0.036	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	16, 50	±0.036	2, 5, 7, 9, 13, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl <sub>2</sub> G, DIN EN ISO 7393-2	10	16, 50	±0.036	2, 5, 7, 9, 13, 17, 18
DPD	additionally required for Chlorine Reagent Cl <sub>2</sub> -1, Cl <sub>2</sub> -2, Cl <sub>2</sub> -3 for free chlorine: Cl <sub>2</sub> -1 and Cl <sub>2</sub> -2 for total chlorine: Cl <sub>2</sub> -1, Cl <sub>2</sub> -2 and Cl <sub>2</sub> -3 Measuring range of NOVA 30: 0.03 – 6.00 mg/l Cl <sub>2</sub>	–	–	–	
–	Application on Pharo, analogous APHA 10200 H, ASTM D3731-87, DIN 38412, ISO 10260	–	10, 20, 50	–	1, 2, 13
Trichromatic Method	Application on Pharo, analogous APHA 10200 H, ASTM D3731-87	–	10, 50	–	1, 2, 13
DPD	analogous APHA 4500-ClO <sub>2</sub> D, DIN 38408-5	10	10, 20, 50	±0.046	5, 7, 9, 15, 17
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
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 Pharo and NOVA manual	5.0 + 4.0	10, 20, 50	–	10
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	3.0	–	±1.5	2, 5, 6, 9, 11, 13, 15, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	–	±1.6	2, 6, 5, 9, 11, 13, 15, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	3.0	–	±7	2, 5, 6, 11, 13, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	–	±8	2, 5, 6, 11, 13, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	3.0	–	±29	2, 8, 10, 11, 18
Oxidation with chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	–	±12	2, 8, 10, 11, 18

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

# Spectroquant® test kits

## Index C

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>C</b> COD Cell Test USEPA approved <sup>3a)</sup>	300 - 3.500	300 - 3.500 •	300 - 3.500	300 - 3.500	COD	25	1.14691.0001
COD Cell Test USEPA approved <sup>3a)</sup>	500 - 10.000	500 - 10.000 •	500 - 10.000	500 - 10.000	COD	25	1.14555.0001
COD Cell Test	5.000 - 90.000	5.000 - 90.000 •	5.000 - 90.000	5.000 - 90.000	COD	25	1.01797.0001
 COD Cell Test for seawater / high chloride contents	5.0 - 60.0	5.0 - 60.0 •	5.0 - 60.0	5.0 - 60.0	COD	25	1.17058.0001
 COD Cell Test for seawater / high chloride contents	50 - 3.000	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	10 - 150	COD	25	1.09772.0001
COD Cell Test (Hg free)	100 - 1.500	100 - 1.500 •	100 - 1.500	100 - 1.500	COD	25	1.09773.0001
 Color, ADMI	2.0 - 500	–	–	–	–	–	–
 Color, Hazen	0.2 - 500	0 - 500	–	–	Pt, Pt/Co, Hazen, CU	–	–
 Color, Hazen	1 - 1.000 (at 445, 455, 465 nm)	0 - 1.000 (at 445 nm)	0 - 1.000 (at 430 nm)	25 - 1.000 (at 430 nm)	Pt, Pt/Co, Hazen, CU	–	–
 Color, Spectral Absorption Coefficient	0.5 - 250 m <sup>-1</sup>	0.5 - 50.0 m <sup>-1</sup>	–	–	–	–	–
 Color, true color	2 - 2.500	–	–	–	Pt, Pt/Co, CU	–	–
Copper Test <sup>2)</sup>	0.02 - 6.00	0.02 - 6.00	0.10 - 6.00	0.10 - 6.00	Cu	250	1.14767.0001
Copper Cell Test <sup>2)</sup>	0.05 - 8.00	0.05 - 8.00 •	0.05 - 8.00	0.05 - 8.00	Cu	25	1.14553.0001
Copper in electroplating baths (inherent color)	2.0 - 80.0 g/l	2.0 - 80.0 g/l •	–	–	Cu	–	–
Cyanide Test (free and readily liberated cyanide)	0.0020 - 0.500	0.0020 - 0.500	5 - 200 µg/l	5 - 200 µg/l	CN	100	1.09701.0001

• useable in NOVA 30

<sup>2)</sup> For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

<sup>3)</sup> This method is officially recognized by the USEPA as an alternative method for the investigation of **a)** wastewater, **b)** drinking water, and, respectively, **c)** drinking water and wastewater.


Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
Oxidation with chromosulfuric acid, determination as chromium(III)	analogous EPA 410.4, APHA 5220 D, ASTM D1252-06B, ISO 15705	2.0	–	±64	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	–	±144	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	–	±1,287	1, 3, 8, 10, 11, 12, 14, 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	–	±2.7	2, 3, 4, 6, 8, 10, 11, 13, 16, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	chloride depletion method corresponds to DIN 38409-41-2, method corresponds to DIN ISO 15705, analogous EPA 410.4, APHA 5220 D and ASTM D1252-06 B	20 + 25 + 3.0	–	±46	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	–	±7	9, 11, 13, 18
Oxidation with chromosulfuric acid, determination as chromium(III)	–	2.0	–	±32	11, 18
own coloring	physical measurement analogous APHA 2120 F	–	10, 50	–	
own coloring	physical measurement according APHA 2120 B, DIN EN ISO 6271-2, at 340 nm	–	10, 20, 50	–	
own coloring	physical measurement according APHA 2120 B, DIN EN ISO 6271-2	–	50	–	
own coloring	physical measurement according EN ISO 7887, at 445, 525 and 620 nm with NOVA 60, at 436, 525 and 620 nm with Pharo 100/300	–	10, 20, 50	–	
own coloring	physical measurement according EN ISO 7887, at 410 nm	–	10, 20, 50	–	
Cuprizone	–	5.0	10, 20, 50	±0.035	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18
Cuprizone	–	5.0	–	±0.14	1, 2, 5, 6, 8, 9, 10, 11, 13, 16, 18
–	Application, see more information in Pharo 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

**Areas of application:**

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

# Spectroquant® test kits

## Index C-L

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>C</b> Cyanide Cell Test (free and readily liberated cyanide) USEPA approved <sup>3a)</sup>	0.010 - 0.500	0.010 - 0.500 •	10 - 350 µg/l	10 - 350 µg/l	CN	25	1.14561.0001
Cyanuric Acid Test	2 - 160	2 - 160	2 - 160	2 - 160	Cyanuric acid	100	1.19253.0001
<b>D</b> DEHA (Diethylhydroxylamine) Detergents							
<b>F</b> Fluoride Cell Test	0.10 - 1.80 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	0.08 - 2.00	F	250	1.00822.0250
Fluoride Test	0.10 - 20.0	0.10 - 20.0	0.10 - 2.00	0.10 - 2.00	F	100 250	1.14598.0001 1.14598.0002
Formaldehyde Test	0.02 - 8.00	0.02 - 8.00	-	-	HCHO	100	1.14678.0001
Formaldehyde Cell Test	0.10 - 8.00	0.10 - 8.00 •	-	-	HCHO	25	1.14500.0001
<b>G</b> Gold Test	0.5 - 12.0	0.5 - 12.0	-	-	Au	75	1.14821.0002
<b>H</b> Hardness							
Hazen Color Number (Pt/Co / APHA / Hazen)	1 - 1.000	0 - 1.000	0 - 1.000	25 - 1.000	Pt, Pt/Co, Hazen, CU		
Hydrazine Test	0.005 - 2.00	0.005 - 2.00	10 - 1.200 µg/l	10 - 1.200 µg/l	N <sub>2</sub> H <sub>4</sub>	100	1.09711.0001
Hydrogen Peroxide Test	0.015 - 6.00	0.015 - 6.00	0.02 - 5.50	-	H <sub>2</sub> O <sub>2</sub>	100	1.18789.0001
Hydrogen Peroxide Cell Test	2.0 - 20.0 0.25 - 5.00	2.0 - 20.0 0.25 - 5.00	-	-	H <sub>2</sub> O <sub>2</sub> H <sub>2</sub> O <sub>2</sub>	25	1.14731.0001
Hydrogen sulfide							
Hydroquinone							
<b>I</b> Iodine color number	0.010 - 50.0	0.010 - 50.0	-	-	IFZ	-	
Iodine Test	0.050 - 10.00	0.050 - 10.00	0.10 - 5.00	0.10 - 5.00	I <sub>2</sub>	200	1.00606.0001
Iron Test <sup>2)</sup>	0.005 - 5.00	0.005 - 5.00	0.01 - 2.00	0.01 - 2.00	Fe	250 1,000	1.14761.0002 1.14761.0001
Iron Test <sup>2)</sup>	0.010 - 5.00	0.010 - 5.00	0.10 - 5.00	0.10 - 5.00	Fe	150	1.00796.0001
Iron Cell Test <sup>2)</sup>	0.05 - 4.00	0.05 - 4.00 •	0.05 - 4.00	0.05 - 4.00	Fe	25	1.14549.0001
Iron Cell Test <sup>2)</sup>	1.0 - 50.0	1.0 - 50.0 •	-	-	Fe	25	1.14896.0001
Isoascorbic acid (erythorbic acid)							
<b>L</b> Lead Test <sup>2)</sup>	0.010 - 5.00	0.010 - 5.00	0.05 - 5.00	0.05 - 5.00	Pb	50	1.09717.0001
Lead Cell Test <sup>2)</sup>	0.10 - 5.00	0.10 - 5.00 •	0.10 - 5.00	0.10 - 5.00	Pb	25	1.14833.0001

• useable in NOVA 30

<sup>2)</sup> For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

<sup>3)</sup> This method is officially recognized by the USEPA as an alternative method for the investigation of **a)** wastewater, **b)** drinking water, and, respectively, **c)** drinking water and wastewater.

Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
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				
Alizarinkomplexone	analogous EPA 340.3, APHA 4500-F E for determinations in the low measuring range see manual NOVA / Pharo	5.0 10	– 50	±0.06 ±0.024	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, 18
Alizarinkomplexone	analogous EPA 340.3, APHA 4500-F E	0.5 + 2.0 + 5.0	10	±0.12	9, 10, 11, 13, 15, 18
Chromotropic acid	–	3.0 + 4.5	10, 20, 50	±0.03	7, 9, 10, 11, 15, 18
Chromotropic acid	–	2.0	–	±0.18	7, 9, 10, 11, 15, 18
Rhodamine B	–	2.0 + 6.0	10	±0.4	10, 13, 16,
	see Total Hardness or Residual Hardness				
own coloring	see Color, Hazen	–	10, 20, 50	–	5, 9, 10, 11, 12, 13, 15, 18
4-(Dimethylamino)-benzaldehyde	analogous DIN 38413-1	2.0 + 5.0	10, 20, 50	±0.007	5
Neocuproin	–	8.0 + 5.0	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, 16, 18
	see Sulfide				
	see Oxygen Scavengers Test				
own coloring	analogous to DIN 6162 A	–	10, 20, 50	–	3, 11, 12
DPD	–	10	10, 20, 50	±0.048	7, 9, 17
Triazine	–	5.0	10, 20, 50	±0.014	1, 2, 5, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18
1,10-Phenanthroline	distinction 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	distinction between Fe(II) and Fe(III) possible see Oxygen Scavengers Test	1.0	–	±0.9	6, 8, 10, 11, 13, 18
PAR	–	0.5 + 8.0	10, 20, 50	±0.028	2, 5, 8, 9, 10, 11, 15, 18
PAR	–	5.0	–	±0.08	1, 2, 6, 9, 10, 12, 13, 15, 16, 18

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

# Spectroquant® test kits

## Index M-N

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>M</b> Magnesium Cell Test	5.0 - 75.0	5.0 - 75.0 •	5.0 - 75.0	5.0 - 75.0	mg	25	1.00815.0001
<b>NEW</b> Manganese Test	0.005 - 2.00	0.005 - 2.00	0.05 - 1.80	0.05 - 1.80	Mn	250	1.01846.0001
Manganese Test	0.010 - 10.00	0.010 - 10.00	0.05 - 6.00	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	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	0.02 - 1.00	0.02 - 1.00	-	Mo Mo <sub>4</sub> <sup>2+</sup> Na <sub>2</sub> MoO <sub>4</sub>	25	1.00860.0001
Molybdenum Test	0.03 - 1.67 0.04 - 2.15	0.03 - 1.67 0.04 - 2.15	0.03 - 1.67 0.04 - 2.15	0.5 - 45.0 0.8 - 75.0 1.1 - 96.6	Mo Mo <sub>4</sub> <sup>2+</sup> Na <sub>2</sub> MoO <sub>4</sub>	100	1.19252.0001
Monochloramine Test	0.050 - 10.00 0.036 - 7.25 0.010 - 1.96	0.050 - 10.00 0.036 - 7.25 0.010 - 1.96	0.10 - 5.00 0.07 - 3.63 0.02 - 0.99	0.10 - 5.00 0.10 - 5.00	Cl <sub>2</sub> NH <sub>2</sub> Cl NH <sub>2</sub> Cl-N	150	1.01632.0001
<b>N</b> Nickel Test <sup>2)</sup>	0.02 - 5.00	0.02 - 5.00	0.02 - 5.00	0.02 - 5.00	Ni	250	1.14785.0001
Nickel Cell Test <sup>2)</sup>	0.10 - 6.00	0.10 - 6.00 •	0.10 - 6.00	0.10 - 6.00	Ni	25	1.14554.0001
Nickel in electroplating baths (inherent color)	2.0 - 120 g/l	2.0 - 120 g/l •	-	-	Ni	-	-
<b>NEW</b> Nitrate (UV)	0.0 - 7.0	-	-	-	NO <sub>3</sub> -N	-	-
Nitrate Test <sup>2)</sup>	0.10 - 25.0 0.4 - 110.7	0.10 - 25.0 0.4 - 110.7	-	-	NO <sub>3</sub> -N NO <sub>3</sub>	100 250	1.09713.0001 1.09713.0002
Nitrate Test <sup>2)</sup>	0.2 - 20.0 0.9 - 88.5	0.2 - 20.0 0.9 - 88.5	0.5 - 15.0 2.2 - 66.4	0.5 - 15.0 2.2 - 66.4	NO <sub>3</sub> -N NO <sub>3</sub>	100	1.14773.0001
<b>NEW</b> Nitrate Test	0.3 - 30.0 1.3 - 132.8	0.3 - 30.0 1.3 - 132.8	0.3 - 30.0 1.3 - 132.8	0.3 - 30.0 1.3 - 132.8	NO <sub>3</sub> -N NO <sub>3</sub>	100	1.01842.0001
Nitrate Cell Test <sup>2)</sup>	0.5 - 18.0 2.2 - 79.7	0.5 - 18.0 • 2.2 - 79.7	0.5 - 15.0 2.2 - 66.4	0.5 - 15.0 2.2 - 66.4	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.14542.0001
Nitrate Cell Test <sup>2)</sup>	0.5 - 25.0 2.2 - 110.7	0.5 - 25.0 • 2.2 - 110.7	-	-	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.14563.0001
Nitrate Cell Test <sup>2)</sup>	1.0 - 50.0 4 - 221	1.0 - 50.0 • 4 - 221	-	-	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.14764.0001
Nitrate Cell Test	23 - 225 102 - 996	23 - 225 • 102 - 996	-	-	NO <sub>3</sub> -N NO <sub>3</sub>	25	1.00614.0001

• useable in NOVA 30

<sup>2)</sup> For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
Phthaleinkomplexone	-	1.0	-	±4.0	1, 2, 9, 10, 15, 18
PAN	-	8.0 + 2.0 + 0.25	10, 20, 50	±0.008	1, 2, 9, 10, 13, 15
Formaldioxime	analogous DIN 38406-2	5.0	10, 20, 50	±0.36	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 Pharo 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
Mercaptoacetic acid	-	10	20	±1.0	5, 11
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 Pharo and NOVA manual	5.0	10, 20, 50	-	10
direct measurement in the UV range	Application on Pharo 300, analogous to APHA 4500-NO <sub>3</sub> <sup>-</sup> B, quartz cuvette required	50 + 1.0	10	-	9, 13
2,6-Dimethylphenol	analogous DIN 38405-9	0.5 + 4.0	10, 20, 50	±0.12	2, 6, 8, 9, 11, 13, 15, 17, 18
Nitrospectral	-	1.5 + 5.0	10, 20	±0.3	2, 6, 9, 11, 13, 15, 17, 18
Cadmium Reduction	-	10	50	±1.0	1, 2, 6, 8, 9, 10, 11, 13, 15, 17, 18
Nitrospectral	-	1.5	-	±0.5	1, 2, 6, 8, 9, 11, 13, 15, 17, 18
2,6-Dimethylphenol	analogous DIN 38405-9	1.0	-	±0.5	1, 2, 6, 9, 11, 13, 15, 17, 18
2,6-Dimethylphenol	analogous DIN 38405-9	0.5 + 1.0	-	±1.0	1, 2, 8, 9, 11, 13, 15, 18
2,6-Dimethylphenol	analogous DIN 38405-9	0.1 + 1.0	-	±5.0	1, 8, 11, 13, 18

**Areas of application:**

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

# Spectroquant® test kits

## Index N-P

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>N</b> Nitrate Cell Test in seawater	0.10 - 3.00	0.10 - 3.00	0.10 - 3.00	-	NO <sub>3</sub> -N	25	1.14556.0001
	0.4 - 13.3	0.4 - 13.3	0.4 - 13.3	-	NO <sub>3</sub>		
Nitrate Test in seawater	0.2 - 17.0	0.2 - 17.0	-	-	NO <sub>3</sub> -N	50	1.14942.0001
	0.9 - 75.3	0.9 - 75.3	-	-	NO <sub>3</sub>		
Nitrite Test	0.002 - 1.00	0.002 - 1.00	5 - 400 µg/l	5 - 400 µg/l	NO <sub>2</sub> -N	335	1.14776.0002
	0.007 - 3.28	0.007 - 3.28	16 - 1.313 µg/l	16 - 1.313 µg/l	NO <sub>2</sub>	1,000	1.14776.0001
Nitrite Cell Test	0.010 - 0.700	0.010 - 0.700 •	10 - 700 µg/l	10 - 700 µg/l	NO <sub>2</sub> -N	25	1.14547.0001
	0.03 - 2.30	0.03 - 2.30	33 - 2.299 µg/l	33 - 2.299 µg/l	NO <sub>2</sub>		
Nitrite Cell Test	1.0 - 90.0	1.0 - 90.0 •	1.0 - 90.0	-	NO <sub>2</sub> -N	25	1.00609.0001
	3.3 - 295.2	3.3 - 295.2	3.3 - 295.2	-	NO <sub>2</sub>		
Nitrogen (total) Cell Test	0.5 - 15.0	0.5 - 15.0 •	-	-	N	25	1.00613.0001
Nitrogen (total) Cell Test	0.5 - 15.0	0.5 - 15.0 •	0.5 - 15.0	0.5 - 15.0	N	25	1.14537.0001
Nitrogen (total) Cell Test	10 - 150	10 - 150 •	-	-	N	25	1.14763.0001
<b>O</b> Organic Carbon, Total							
Oxygen Cell Test	0.5 - 12.0	0.5 - 12.0 •	0.5 - 12.0	0.5 - 12.0	O <sub>2</sub>	25	1.14694.0001
Oxygen Demand, Biological							
Oxygen Demand, Chemical							
Oxygen Scavengers Test	0.020 - 0.500	0.020 - 0.500	0.020 - 0.500	-	DEHA	200	1.19251.0001
	0.027 - 0.666	0.027 - 0.666	0.027 - 0.666	-	Carbohy		
	0.05 - 1.32	0.05 - 1.32	0.053 - 1.315	-	Hydro		
	0.08 - 1.95	0.08 - 1.95	0.078 - 1.950	-	ISA		
	0.09 - 2.17	0.09 - 2.17	0.087 - 2.170	-	MEKO		
Ozone Test	0.010 - 4.00	0.010 - 4.00	0.02 - 2.00	0.02 - 2.00	O <sub>3</sub>	200	1.00607.0001
						1,200	1.00607.0002
<b>P</b> Palladium	0.05 - 1.25	0.05 - 1.25	-	-	Pd	-	-
Peroxide							
pH Cell Test <sup>1)</sup>	pH 6.4 - 8.8	pH 6.4 - 8.8 •	pH 6.4 - 8.8	pH 6.4 - 8.8	pH	280	1.01744.0001
Phaeophytin-a and Chlorophyll-a							
Phenol Test	0.002 - 0.100	0.002 - 0.100	0.10 - 5.00	0.10 - 5.00	Phenol	50 -	1.00856.0001
	0.025 - 5.00	0.025 - 5.00				250	
Phenol Cell Test	0.10 - 2.50	0.10 - 2.50	0.10 - 2.50	0.10 - 2.50	Phenol	25	1.14551.0001
Phosphate Test <sup>2)</sup> (ortho-phosphate)	0.010 - 5.00	0.010 - 5.00	0.01 - 2.50	0.01 - 2.50	PO <sub>4</sub> -P	220	1.14848.0002
	0.03 - 15.3	0.03 - 15.3	0.03 - 7.66	0.03 - 7.66	PO <sub>4</sub>	420	1.14848.0001
	0.02 - 11.46	0.02 - 11.46	0.02 - 5.73	0.02 - 5.73	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test <sup>2)</sup> (ortho-phosphate)	0.05 - 5.00	0.05 - 5.00 •	0.05 - 4.00	0.05 - 4.00	PO <sub>4</sub> -P	25	1.00474.0001
	0.2 - 15.3	0.2 - 15.3	0.15 - 12.26	0.15 - 12.26	PO <sub>4</sub>		
	0.11 - 11.46	0.11 - 11.46	0.11 - 9.17	0.11 - 9.17	P <sub>2</sub> O <sub>5</sub>		

• useable in NOVA 30

1) The cell test contains three 16 mm cells with a barcode label. After measurement the cells can be emptied and cleaned for subsequent measurements.

2) For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.



Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
Resorcinol	-	2.0	-	±0.09	1, 2, 8, 9, 11, 13, 15, 16, 18
Resorcinol	-	1.0 + 1.5 + 5.0	10	±0.4	1, 2, 8, 9, 11, 13, 15, 16, 18
Griess' reaction	analogous EPA 354.1, APHA 4500-NO <sub>2</sub> <sup>-</sup> B, DIN EN 26777	5.0	10, 20, 50	±0.005	2, 5, 8, 9, 10, 11, 13, 15, 16, 18
Griess' reaction	analogous EPA 354.1, APHA 4500-NO <sub>2</sub> <sup>-</sup> B, DIN EN 26777	5.0	-	±0.010	2, 5, 8, 9, 10, 11, 13, 15, 16, 18
Iron sulfate	-	8.0	-	±2.6	5, 10, 13, 16, 18
Koroleff digestion, 2,6-dimethylphenol	digestion analogous DIN EN ISO 11905-1, determination analogous DIN 38405-9	1.0 + 10	-	±0.5	1, 2, 5, 8, 11, 13, 14, 18
Koroleff digestion, nitrospectral	digestion analogous to DIN EN ISO 11905-1	1.5 + 10	-	±0.6	1, 2, 5, 8, 11, 13, 14, 18
Koroleff digestion, 2,6-dimethylphenol	digestion analogous DIN EN ISO 11905-1, determination analogous DIN 38405-9	1.0 + 9.0	-	±5.0	1, 8, 11, 14, 18
	see TOC				2, 5, 11, 13, 17
mod. Winkler method	-	-	-	±0.3	
	see BOD				
	see COD				
Iron reduction	-	0.2 + 10	20	±0.022	5
DPD	analogous DIN 38408-3	10	10, 20, 50	±0.027	7, 9, 15, 17
-	Application, see more information in Pharo and NOVA manual see Hydrogen Peroxide	5.0 + 1.0 + 0.20	10	-	10, 18
Indicator	-	10	-	±0.1 pH	2, 5, 7, 9, 13, 15, 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 ±0.026	8, 9, 11, 13, 16, 18
MBTH		10	-	±0.11	8, 11, 13, 16, 18
Phosphor-molybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	5.0	10, 20, 50	±0.016	1, 2, 5, 9, 11, 13, 15, 16, 18
Phosphor-molybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	5.0	-	±0.09	1, 2, 5, 9, 11, 13, 15, 16, 18

**Areas of application:**

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

# Spectroquant® test kits

## Index P-R

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>P</b> Phosphate Cell Test (ortho-phosphate and total phosphorus) USEPA approved <sup>3c)</sup>	0.05 - 5.00	0.05 - 5.00 •	0.05 - 4.00	0.05 - 4.00	PO <sub>4</sub> -P	25	1.14543.0001
	0.2 - 15.3	0.2 - 15.3	0.15 - 12.26	0.15 - 12.26	PO <sub>4</sub>		
	0.11 - 11.46	0.11 - 11.46	0.11 - 9.17	0.11 - 9.17	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test <sup>2)</sup> (ortho-phosphate)	0.5 - 25.0	0.5 - 25.0 •	0.5 - 20.0	0.5 - 20.0	PO <sub>4</sub> -P	25	1.00475.0001
	1.5 - 76.7	1.5 - 76.7	1.5 - 61.3	1.5 - 61.3	PO <sub>4</sub>		
	1.1 - 57.3	1.1 - 57.3	1.1 - 45.8	1.1 - 45.8	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate and total phosphorus) USEPA approved <sup>3c)</sup>	0.5 - 25.0	0.5 - 25.0 •	0.5 - 20.0	0.5 - 20.0	PO <sub>4</sub> -P	25	1.14729.0001
	1.5 - 76.7	1.5 - 76.7	1.5 - 61.3	1.5 - 61.3	PO <sub>4</sub>		
	1.1 - 57.3	1.1 - 57.3	1.1 - 45.8	1.1 - 45.8	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate)	0.5 - 25.0	0.5 - 25.0 •	0.5 - 25.0	0.5 - 25.0	PO <sub>4</sub> -P	25	1.14546.0001
	1.5 - 76.7	1.5 - 76.7	1.5 - 76.7	1.5 - 76.7	PO <sub>4</sub>		
	1.1 - 57.3	1.1 - 57.3	1.1 - 57.3	1.1 - 57.3	P <sub>2</sub> O <sub>5</sub>		
Phosphate Test (ortho-phosphate)	0.5 - 30.0	0.5 - 30.0	0.5 - 30.0	0.5 - 30.0	PO <sub>4</sub> -P	400	1.14842.0001
	1.5 - 92.0	1.5 - 92.0	1.5 - 92.0	1.5 - 92.0	PO <sub>4</sub>		
	1.1 - 68.7	1.1 - 68.7	1.1 - 68.7	1.1 - 68.7	P <sub>2</sub> O <sub>5</sub>		
Phosphate Test (ortho-phosphate)	1.0 - 100.0	1.0 - 100.0	1.0 - 60.0	1.0 - 60.0	PO <sub>4</sub> -P	100	1.00798.0001
	3 - 307	3 - 307	3.1 - 184	3.1 - 184	PO <sub>4</sub>		
	2 - 229	2 - 229	2.3 - 137.5	2.3 - 137.5	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate)	3.0 - 100.0	3.0 - 100.0 •	3.0 - 100.0	3.0 - 100.0	PO <sub>4</sub> -P	25	1.00616.0001
	9 - 307	9 - 307	9 - 307	9 - 307	PO <sub>4</sub>		
	7 - 229	7 - 229	7 - 229	7 - 229	P <sub>2</sub> O <sub>5</sub>		
Phosphate Cell Test (ortho-phosphate and total phosphorus)	3.0 - 100.0	3.0 - 100.0 •	3.0 - 100.0	3.0 - 100.0	PO <sub>4</sub> -P	25	1.00673.0001
	9 - 307	9 - 307	9 - 307	9 - 307	PO <sub>4</sub>		
	7 - 229	7 - 229	7 - 229	7 - 229	P <sub>2</sub> O <sub>5</sub>		
Platinum	0.10 - 1.25	0.10 - 1.25	-	-	Pt	-	-
Platinum-Cobalt Standard Method							
Potassium Cell Test	5.0 - 50.0	5.0 - 50.0 •	5.0 - 50.0	5.0 - 50.0	K	25	1.14562.0001
Potassium Cell Test	30 - 300	30 - 300 •	30 - 300	30 - 300	K	25	1.00615.0001
Protein Test	0.01 - 1.4 g/l	0.01 - 1.4 g/l	-	-	Protein	200	1.10306.0500
Protein Test	0.5 - 10 g/l	0.5 - 10 g/l	-	-	Protein	250	1.10307.0500
<b>R</b> Residual Hardness Cell Test	0.50 - 5.00	0.50 - 5.00 •	0.50 - 5.00	0.50 - 5.00	Ca	25	1.14683.0001
	0.070 - 0.700	0.070 - 0.700	0.070 - 0.700	0.070 - 0.700	°d		
	0.087 - 0.874	0.087 - 0.874	0.087 - 0.874	0.087 - 0.874	°e		
	0.12 - 1.25	0.12 - 1.25	0.12 - 1.25	0.12 - 1.25	°f		
	0.70 - 7.00	0.70 - 7.00	0.70 - 7.00	0.70 - 7.00	CaO		
	1.2 - 12.5	1.2 - 12.5	1.2 - 12.5	1.2 - 12.5	CaCO <sub>3</sub>		

• useable in NOVA 30

<sup>2)</sup> For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

<sup>3)</sup> This method is officially recognized by the USEPA as an alternative method for the investigation of **a)** wastewater, **b)** drinking water, and, respectively, **c)** drinking water and wastewater.





Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
Phosphor-molybdenum 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
Phosphor-molybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	1.0	-	±0.5	1, 2, 4, 8, 11, 13, 16, 18
Phosphor-molybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	1.0	-	±0.4	1, 2, 4, 8, 11, 13, 16, 18
Vanadato-molybdate	analogous APHA 4500-P C	5.0	-	±0.4	5, 16
Vanadato-molybdate	analogous APHA 4500-P C	1.2 + 5.0	10, 20	±0.2	5, 16
Phosphor-molybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	0.5 + 8.0	10	±1.5	1, 2, 4, 8, 11, 12, 13, 18
Phosphor-molybdenum 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
Phosphor-molybdenum blue	analogous EPA 365.2+3, APHA 4500-P E, DIN EN ISO 6878	0.2	-	±1.3	1, 4, 8, 11, 13, 16, 18
-	Application, see more information in Pharo and NOVA manual see Color	5.0 + 1.0 + 0.50	10	-	10, 18
Kalignost, turbidimetric	-	2.0	-	±2.2	9, 12, 13, 15, 16
Kalignost, turbidimetric	-	0.5	-	±13	1, 16
Bradford Method	Method not programmed in the photometers	-	10	-	
Biuret Method	Method not programmed in the photometers	-	10	-	
Phthalein komplexone	-	0.2 + 4.0	-	±0.14	2, 5, 9

**Areas of application:**

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

# Spectroquant® test kits

## Index S

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
S SAC (Spectral absorption coefficient)	–	0.5 - 250 m <sup>-1</sup>	–	–	–	–	–
 Silicate (Silicic Acid) Test	0.0005 - 0.5000 0.0002 - 0.2337	0.0005 - 0.5000 0.0002 - 0.2337	0.004 - 0.500 0.002 - 0.234	0.004 - 0.500 0.002 - 0.234	SiO <sub>2</sub> Si	100	1.01813.0001
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	0.11 - 8.56 0.05 - 4.00	SiO <sub>2</sub> Si	300	1.14794.0001
Silicate (Silicic Acid) Test	1.1 - 1.070 0.5 - 500	1.1 - 1.070 0.5 - 500	11 - 1.070 5 - 500	11 - 1.070 5 - 500	SiO <sub>2</sub> Si	100	1.00857.0001
Silver Test	0.25 - 3.00	0.25 - 3.00	–	–	Ag	100	1.14831.0001
Sodium Cell Test in nutrient solutions for fertilization	10 - 300	10 - 300 •	10 - 300	10 - 300	Na	25	1.00885.0001
 Spectral Absorption Coefficient, Color	0.5 - 250 m <sup>-1</sup>	0.5 - 50 m <sup>-1</sup>	–	–	–	–	–
 Spectral Attenuation Coefficient	0.5 - 250 m <sup>-1</sup>	–	–	–	–	–	–
 Sulfate Test	0.50 - 50.0	0.50 - 50.0	1.0 - 25.0	1.0 - 25.0	SO <sub>4</sub>	100	1.01812.0001
Sulfate Cell Test USEPA approved <sup>3a)</sup>	5 - 250	5 - 250 •	5 - 250	5 - 250	SO <sub>4</sub>	25	1.14548.0001
Sulfate Test	25 - 300	25 - 300	–	–	–	200	1.14791.0001
Sulfate Cell Test	50 - 500	50 - 500 •	50 - 500	–	SO <sub>4</sub>	25	1.00617.0001
Sulfate Cell Test USEPA approved <sup>3a)</sup>	100 - 1.000	100 - 1.000 •	100 - 1.000	100 - 1.000	SO <sub>4</sub>	25	1.14564.0001
Sulfide Test	0.020 - 1.50	0.020 - 1.50	0.10 - 1.50	0.10 - 1.50	S <sup>2-</sup>	220	1.14779.0001
Sulfite Cell Test	1.0 - 20.0 0.05 - 3.00	0.8 - 16.0 1.0 - 20.0 0.05 - 3.00 0.04 - 2.40	1.0 - 20.0	1.0 - 20.0	SO <sub>2</sub> SO <sub>3</sub> SO <sub>3</sub> SO <sub>2</sub>	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	1.0 - 60.0	SO <sub>3</sub> SO <sub>2</sub>	150	1.01746.0001
Surfactants (anionic) Cell Test	0.05 - 2.00	0.05 - 2.00	0.05 - 2.00	0.05 - 2.00	MBAS	25	1.14697.0001
Surfactants (cationic) Cell Test	0.05 - 1.50	0.05 - 1.50	0.05 - 1.50	–	CTAB	25	1.01764.0001
Surfactants (nonionic) Cell Test	0.10 - 7.50	0.10 - 7.50 •	0.10 - 7.50	0.10 - 7.50	Triton® X-100	25	1.01787.0001
Suspended solids	25 - 750	25 - 750 •	50 - 750	50 - 750	susp. solids	–	–

• useable in NOVA 30

3) This method is officially recognized by the USEPA as an alternative method for the investigation of a) wastewater, b) drinking water, and, respectively, c) drinking water and wastewater.

Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
-	physical measurement according DIN 38404, at 436 nm (Pharo 100) and 254 + 436 nm (Pharo 300)	-	10, 20, 50	-	9, 15
Silicomolybdenum blue	analogous APHA 4500-SiO <sub>2</sub> D+E, ASTM D859-10, DIN 38405-21	10 + 0.5	50	±0.0055	5, 9, 13, 15
Silicomolybdenum blue	analogous APHA 4500-SiO <sub>2</sub> D+E, ASTM D859-10, DIN 38405-21	5.0	10, 20, 50	±0.024	5, 6, 9, 13, 16
Molybdosilicate	analogous APHA 4500-SiO <sub>2</sub> C	0.5 + 2.0 + 4.0 / 5.0	10	±2.1	5, 6, 9, 13, 15
Eosine, 1,10-phenanthroline	reagents for the digestion in the thermoreactor are included in the test kit	1.0 + 10	10, 20	±0.07	10, 18
Iron(III)-thiocyanate	determination as chloride	0.5	-	±13	1
-	see Color, Spectral Absorption Coefficient	-	-	-	
-	physical measurement according DIN 38404, at 254 nm	-	10, 20, 50	-	
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E	0.5 + 10	10, 20, 50	±0.97	1, 2, 6, 9, 11, 13, 15, 18
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	5.0	-	±8	1, 6, 9, 11, 13, 15, 16
Tannic acid	-	2.5	10	±14	6, 9, 11, 13, 15
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	2.0	-	±16	1, 6, 9, 11, 13, 15, 16
Barium sulfate, turbidimetric	analogous EPA 375.4, APHA 4500-SO <sub>4</sub> <sup>2-</sup> E, ASTM D516-11	1.0	-	±34	1, 4, 6, 8, 9, 11, 13, 15, 16, 18
Dimethyl-p-phenylenediamine	analogous EPA 376.2, APHA 4500-S <sup>2-</sup> D, ISO 10530, DIN 38405-26	5.0	10, 20, 50	±0.017	2, 8, 9, 11, 13, 15, 16, 18
Ellman's reagent	for determinations of the low measuring range see manual NOVA / Pharo	3.0 7.0	- 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	-	±0.11	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	-	16, 20	-	

**Areas of application:**

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

# Spectroquant® test kits

## Index T-Z

Parameter	Measuring range of the Spectroquant® instruments [mg/l]				Reference form	No. of tests	Ord. No.
	Pharo 100/300	NOVA 30/60	Multy	Move 100			
<b>T</b> Tin Cell Test	0.10 - 2.50	0.10 - 2.50	0.10 - 2.50	-	Sn	25	1.14622.0001
TOC Cell Test	5.0 - 80.0	5.0 - 80.0 •	5.0 - 80.0	-	TOC	25	1.14878.0001
TOC Cell Test	50 - 800	50 - 800 •	50 - 800	-	TOC	25	1.14879.0001
Screw caps for Spectroquant® TOC digestion	-	-	-	-	-	6	1.73500.0001
TOC-Standard 1000 ±10 mg/l	-	-	-	-	-	100 ml	1.09017.0100
Total Alkalinity							
Total Hardness Cell Test	5 - 215	5 - 215 •	5 - 215	5 - 215	Ca	25	1.00961.0001
	0.7 - 30.1	0.7 - 30.1	0.7 - 30.1	0.7 - 30.1	°d		
	0.9 - 37.6	0.9 - 37.6	0.9 - 37.6	0.9 - 37.6	°e		
	1.2 - 53.7	1.2 - 53.7	1.2 - 53.7	1.2 - 53.7	°f		
	7 - 300	7 - 300	7 - 300	7 - 300	CaO		
	12 - 537	12 - 537	12 - 537	12 - 537	CaCO <sub>3</sub>		
Total Nitrogen							
Transmission	0.0 - 100.0 %	0.0 - 100.0 % •	-	-	T	-	-
Turbidity	1 - 100	1 - 100	1 - 100	1 - 100	FAU	-	-
<b>V</b> Volatile Organic Acid Cell Test	50 - 3.000	50 - 3.000 •	50 - 3.000	50 - 3.000	acetic acid	25	1.01749.0001
<b>V</b> Volatile Organic Acid Test	50 - 3.000	50 - 3.000 •	50 - 3.000	50 - 3.000	acetic acid	100	1.01809.0001
<b>W</b> Water Hardness							
<b>Z</b> Zinc Cell Test <sup>2)</sup>	0.025 - 1.000	0.025 - 1.000 •	25 - 1.000 µg/l	25 - 1.000 µg/l	Zn	25	1.00861.0001
Zinc Test <sup>2)</sup>	0.05 - 2.50	0.05 - 2.50	-	-	Zn	100	1.14832.0001
Zinc Reagent 6 (Isobutylmethylketone GR)	-	-	-	-	-	200	1.06146.1000
Zinc Cell Test <sup>2)</sup>	0.20 - 5.00	0.20 - 5.00 •	0.20 - 5.00	0.20 - 5.00	Zn	25	1.14566.0001

• useable in NOVA 30

<sup>2)</sup> For determination of total content of this parameter use one of the Crack Sets before the photometric procedure, see page 84.

Method	Comments	Pipette volume [ml]	Cell size [mm] NOVA/Pharo	Accuracy [mg/l]	Areas of application
Pyrocatechol violet	-	5.0	-	±0.08	5, 10, 16, 18
Indicator	Oxidation analogous APHA 5310 D	3.0 + 25	-	±3.7	9, 11, 13, 15, 18
Indicator	Oxidation analogous APHA 5310 D	1.0 + 3.0 + 9.0	-	±42	8, 11, 13, 18
-	for multiple use, additionally required for TOC measurement	-	-	-	
-	analogous EN 1484-H43, DIN 38409-H3 see Acid Capacity to pH 4.3	-	-	-	
Phthalein komplexone	-	1.0	-	±8	2, 9, 13, 15
	see Nitrogen (total)				
-	-	10, 20, 50	-	-	
-	-	-	50	-	
Hydroxamic acids / iron(III) salt	-	0.5 + 1.0	-	±82	4, 8, 11, 18
Hydroxamic acids / iron(III) salt	-	0.75 + 0.5 + 1.0	16	±82	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:**

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

# Spectroquant® test kits for samples with salt content

## Simply competent

The higher salt content of seawater may interfere with the reagents of test kits developed for drinking and waste water. We have tested our **Spectroquant® test kits range for the suitability to analyse seawater and samples with salt content**. Select the test parameter of your choice from the table which informs about the limit of tolerance of the mentioned salts and whether the test kit works in seawater.

## Be unlimited

The first COD cell tests with unlimited chloride tolerance

Our new Spectroquant® test kits facilitate measurements in the low range of 5.0 - 60.0 mg/l COD and in the higher range of 50 - 3,000 mg/l COD. This makes them excellent for analyzing a wide variety of industrial waste water and seawater samples.

More details on page 98  
and 114 or visit:  
[www.merckmillipore.com/  
cod-high-chloride](http://www.merckmillipore.com/cod-high-chloride)





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

Test kit	Ord. No.	Seawater	Limit of tolerance, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>A</b> Acid Capacity Cell Test	1.01758.0001	no	–	–	–
Aluminium Cell Test	1.00594.0001	yes	20	20	20
Aluminium Test	1.14825.0001	yes	10	20	20
Ammonium Cell Test	1.14739.0001	no	5	5	5
Ammonium Cell Test	1.14558.0001	yes	20	10	15
Ammonium Cell Test	1.14544.0001	yes	20	15	20
Ammonium Cell Test	1.14559.0001	yes	20	20	20
Ammonium Test	1.14752.0001	yes <sup>1)</sup>	10	10	20
	1.14752.0002				
Ammonium Test	1.00683.0001	yes	20	20	20
AOX Cell Test	1.00675.0001	no	0.4	20	20
Arsenic Test	1.01747.0001	no	10	10	10
<b>B</b> BOD Cell Test	1.00687.0001	yes	20	20	20
Boron Cell Test	1.00826.0001	yes	10	20	20
Boron Test	1.14839.0001	no	20	5	20
Bromine Test	1.00605.0001	no	10	10	10
<b>C</b> Cadmium Cell Test	1.14834.0001	no	1	10	1
Cadmium Test	1.01745.0001	no	1	10	1
Calcium Cell Test	1.00858.0001	no	2	2	1
Calcium Test	1.14815.0001	yes	20	20	10
Calcium Test	1.00049.0001	no	–	–	–
Chloride Test	1.01807.0001	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	yes	–	10	0.1
	1.14897.0002				
Chlorine Cell Test	1.00595.0001	no	10	10	10
Chlorine Cell Test	1.00597.0001	no	10	10	10
Chlorine Test	1.00598.0001	no	10	10	10
	1.00598.0002				
Chlorine Test	1.00602.0001	no	10	10	10
	1.00602.0002				
Chlorine Test	1.00599.0001	no	10	10	10
Chlorine Reagent (liquid)	1.00086.0001				
(free and total)	1.00087.0001				
	1.00088.0001	no	10	10	10
Chlorine dioxide Test	1.00608.0001	no	10	10	10
Chromate Cell Test (Chromium VI)	1.14552.0001	yes	10	10	10
Chromium (total) Cell Test	1.14552.0001	no	1	10	10
Chromate Test	1.14758.0001	yes	10	10	10

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

# Spectroquant® test kits for samples with salt content

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

Test kit	Ord. No.	Seawater	Limit of tolerance, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>C</b> COD Cell Test	1.14560.0001	no	0.4	10	10
COD Cell Test	1.01796.0001	no	0.4	10	10
COD Cell Test	1.14540.0001	no	0.4	10	10
COD Cell Test	1.14895.0001	no	0.4	10	10
COD Cell Test	1.14690.0001	no	0.4	20	20
COD Cell Test	1.14541.0001	no	0.4	10	10
COD Cell Test	1.14691.0001	no	0.4	20	20
COD Cell Test	1.14555.0001	no	1.0	10	10
COD Cell Test	1.01797.0001	no	10	20	20
<b>NEW</b> COD Cell Test for seawater / high chloride contents	1.17058.0001	yes	35	10	10
<b>NEW</b> 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
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	no	–	–	–
<b>NEW</b> <b>F</b> Fluoride Test	1.00822.0250	yes <sup>2)</sup>	0.05	0.05	0.001
Fluoride Cell Test	1.00809.0001	no	10	10	10
Fluoride Test	1.14598.0001	yes	20	20	20
	1.14598.0002				
Formaldehyde Cell Test	1.14500.0001	no	5	0	10
Formaldehyde Test	1.14678.0001	no	5	0	10
<b>G</b> Gold Test	1.14821.0001	yes	10	20	5
<b>H</b> Hardness, see Total Hardness Cell Test					
Hydrazine Test	1.09711.0001	no	20	5	2
Hydrogenperoxide Cell Test	1.14731.0001	yes	20	20	20
Hydrogenperoxide Test	1.18789.0001	no	0.1	1	5
<b>I</b> Iodine Test	1.00606.0001	no	10	10	10
Iron Cell Test	1.14549.0001	yes	20	20	20
Iron Cell Test	1.14896.0001	no	5	5	5
Iron Test	1.14761.0001	yes	20	20	20
	1.14761.0002				
Iron Test	1.00796.0001	yes	20	20	20
<b>L</b> Lead Cell Test	1.14833.0001	no	20	20	1
Lead Test	1.09717.0001	no	20	5	15

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

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

Test kit	Ord. No.	Seawater	Limit of tolerance, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>M</b> Magnesium Cell Test	1.00815.0001	yes	2	2	1
Manganese Test	1.00816.0001	no	20	20	20
<b>NEW</b> Manganese Test	1.01846.0001	no	20	25	5
Manganese Test	1.14770.0001	yes	20	20	20
	1.14770.0002				
Molybdenum Cell Test	1.00860.0001	no	20	20	5
Molybdenum Test	1.19252.0001	no	-	-	-
Monochloramine Test	1.01632.0001	no	10	10	20
<b>N</b> Nickel Cell Test	1.14554.0001	no	20	20	20
Nickel Test	1.14785.0001	no	20	20	20
Nitrate Cell Test	1.14542.0001	no	0.4	-	20
Nitrate Cell Test	1.14563.0001	no	0.2	-	20
Nitrate Cell Test	1.14764.0001	no	0.5	-	20
<b>NEW</b> Nitrate Cell Test	1.00614.0001	no	2	-	20
Nitrate Test	1.01842.0001	no	0.001	-	0.001
Nitrate Test	1.14773.0001	no	0.4	-	20
Nitrate Test	1.09713.0001	no	0.2	-	20
	1.09713.0002				
Nitrate Cell Test (seawater)	1.14556.0001	yes	20	-	20
Nitrate Test (seawater)	1.14942.0001	yes	20	-	20
Nitrite Cell Test	1.14547.0001	yes	20	20	15
Nitrite Cell Test	1.00609.0001	yes	20	20	15
Nitrite Test	1.14776.0001	yes	20	20	15
	1.14776.0002				
Nitrogen (total) Cell Test	1.14537.0001	no	0.5	-	10
Nitrogen (total) Cell Test	1.00613.0001	no	0.2	-	10
Nitrogen (total) Cell Test	1.14763.0001	no	2	-	20
<b>O</b> Oxygen Cell Test	1.14694.0001	no	10	5	1
Oxygen Scavengers Test	1.19251.0001	no	-	-	-
Ozone Test	1.00607.0001	no	10	10	10
	1.00607.0002				
<b>P</b> pH Cell Test	1.01744.0001	yes	-	-	-
Phenol Cell Test	1.14551.0001	yes	20	20	15
Phenol Test	1.00856.0001	yes	20	20	20
Phosphate (ortho-phosphate) Cell Test	1.00475.0001	yes	20	20	20
Phosphate (ortho-phosphate) Cell Test	1.14543.0001	yes	5	10	10
Phosphorus (total) Cell Test	1.14543.0001	no	1	10	10
Phosphate (ortho-phosphate) Cell Test	1.00474.0001	yes	5	10	10
Phosphate (ortho-phosphate) Cell Test	1.14729.0001	yes	20	20	20
Phosphorus (total) Cell Test	1.14729.0001	yes	5	20	20

# Spectroquant® test kits for samples with salt content

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

Test kit	Ord. No.	Seawater	Limit of tolerance, salts in %		
			NaCl	NaNO <sub>3</sub>	Na <sub>2</sub> SO <sub>4</sub>
<b>P</b> Phosphate (ortho-phosphate) Cell Test	1.00616.0001	yes	20	20	20
Phosphate (ortho-phosphate) Cell Test	1.00673.0001	yes	20	20	20
Phosphorus (total) Cell Test	1.00673.0001	yes	20	20	20
Phosphate Test	1.14848.0001	yes	5	10	10
	1.14848.0002				
Phosphate Test	1.00798.0001	yes	15	20	10
Phosphate Cell Test	1.14546.0001	yes	20	20	20
Phosphate Test	1.14842.0001	yes	20	20	20
Potassium Cell Test	1.14562.0001	yes	20	20	20
Potassium Cell Test	1.00615.0001	yes	20	20	20
<b>R</b> Residual Hardness Cell Test	1.14683.0001	no	0.01	0.01	0.01
<b>S</b> Silicate (Silicic Acid) Test	1.01813.0001	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
Silver Test	1.14831.0001	no	0	1	5
Sodium Cell Test	1.00885.0001	no	–	10	1
Sulfate Test	1.01812.0001	no	10	0.03	–
Sulfate Cell Test	1.14548.0001	yes	10	0.1	–
Sulfate Cell Test	1.00617.0001	yes	10	0.1	–
Sulfate Cell Test	1.14564.0001	yes	10	0.5	–
Sulfate Test	1.14791.0001	no	0.2	0.2	–
Sulfide Test	1.14779.0001	no	0.5	1	1
Sulfite Cell Test	1.14394.0001	no	20	20	20
Sulfite Test	1.01746.0001	no	20	20	20
Surfactants (anionic) Cell Test	1.14697.0001	no	0.1	0.01	10
Surfactants (cationic) Cell Test	1.01764.0001	no	0.1	0.1	20
Surfactants (nonionic) Cell Test	1.01787.0001	no	2	5	2
<b>T</b> Tin Cell Test	1.14622.0001	yes	20	20	20
TOC Cell Test	1.14878.0001	no	0.5	10	10
TOC Cell Test	1.14879.0001	no	5	20	20
Total Hardness Cell Test	1.00961.0001	no	2	2	1
<b>V</b> Volatile Organic Acid Cell Test	1.01749.0001	no	20	20	10
Volatile Organic Acid Test	1.01809.0001	no	20	20	10
<b>Z</b> 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

# Special application methods for Spectroquant® photometers



## Be sure



### Secure drinking water

Determine the bromate content of water without the challenges of ion chromatography. How? Through the easy photometric method described in our application note Bromate in Water and Drinking Water.

Learn more about the bromate application and request your copy: [www.merckmillipore.com/bromate](http://www.merckmillipore.com/bromate)

Some special segments require special measurements – besides the photometric test kits.

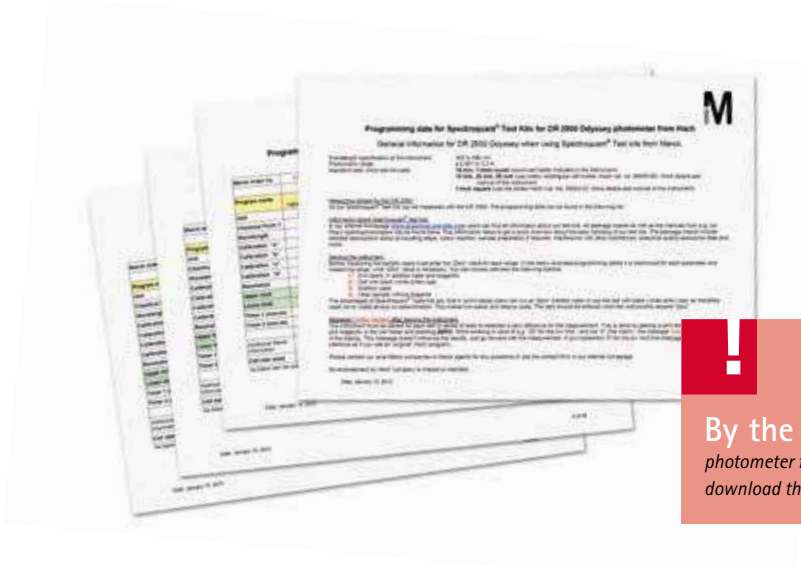
Application method	Description	Spectroquant® instrument	Page
ADMI Color measurement	ADMI weighted ordinate method for colored water and wastewater	Pharo 100/300	92
Ammonia, free	method for surface water / drinking water, waste water, and aquarium water / measurement of free ammonia under consideration of the pH and temperature of the sample after spectrophotometric determination of the ammonium content, additionally required 1.14752	Pharo 100/300	92
Antimony	method for water and waste water	NOVA 60, Pharo 100/300	92
Bromate	method for drinking water	NOVA 60, Pharo 100/300	94
Chlorophyll-a and phaeophytin-a	method for surface water, analogous APHA 10200 H, ASTM D3731-87, DIN 38412, ISO 10260	Pharo 100/300	96
Chlorophyll-a, -b, -c	method for surface water, analogous APHA 10200 H, ASTM D3731-87	Pharo 100/300	96
Chromium in electroplating baths	Inherent color	NOVA 30/60, Pharo 100/300	96
Color, Hazen	physical measurement according APHA 2120B, DIN EN ISO 6271-2	Move 100, Multy, NOVA 30/60, Pharo 100/300	98
Color, Spectral Absorption Coefficient	physical measurement according EN ISO 7887	NOVA 60, Pharo 100/300	98
Color, true color	physical measurement according EN ISO 7887	Pharo 100/300	98
Copper electroplating baths	Inherent color	NOVA 30/60, Pharo 100/300	98
Mercury	method for water and waste water	NOVA 60, Pharo 100/300	102
Nickel electroplating baths	Inherent color	NOVA 30/60, Pharo 100/300	102
Nitrate – direct measurement in the UV range	method for surface and drinking water	Pharo 300	102
Palladium	method for water and waste water	NOVA 60, Pharo 100/300	104
Platinum	method for water and waste water	NOVA 60, Pharo 100/300	106
Spectral Attenuation Coefficient	physical measurement according DIN 38404	Pharo 300	108

# Spectroquant® test kits for Hach instruments

The **Spectroquant® test kits** do not require any further device-specific calibration, but instead use the original programmes installed by Hach and work according to the specifications supplied by Hach in the respective instrument operation manual. Thus you don't need to forego Merck Millipore's quality documentation when using Hach instruments. The corresponding batch certificates can be downloaded from the internet at [www.merckmillipore.com/coa](http://www.merckmillipore.com/coa).

## Suitable test kits for Hach instruments | Overview A-Z

Parameter	Measuring range [mg/l]	No. of tests	Merck Millipore Ord. No.	Hach Ord. No.	
<b>C</b> Chlorine Powder Packs for photometers of other manufacturers for 10-ml-samples (free Chlorine)	0 - 2.00 Cl <sub>2</sub>	100	1.19254.0001	21055-69 21055-28	
	Chlorine Powder Packs for photometers of other manufacturers for 25-ml-samples (free Chlorine)	0 - 10.00 Cl <sub>2</sub>	100	1.19256.0001	14070-99 14070-28
Chlorine Powder Packs for photometers of other manufacturers for 10-ml-samples (total Chlorine)	0 - 2.00 Cl <sub>2</sub>	100	1.19257.0001	21056-69 21056-28	
	Chlorine Powder Packs for photometers of other manufacturers for 25-ml-samples (total Chlorine)	0 - 10.00 Cl <sub>2</sub>	100	1.19258.0001	14064-99 14064-28
COD Cell Tests for photometers of other manufacturers USEPA approved	0 - 40.0 COD	25	1.18750.0001	24158-25 24158-15 24158-51	
	COD Cell Tests for photometers of other manufacturers USEPA approval pending	0 - 150.0 COD	25	1.18751.0001	21258-25 21258-15 21258-51
	COD Cell Tests for photometers of other manufacturers USEPA approval pending	0 - 1,500 COD	25	1.18752.0001	21259-25 21259-15 21259-51
COD Cell Tests for photometers of other manufacturers USEPA approval pending	0 - 15,000 COD	25	1.18753.0001	24159-25 24159-15 24159-51	
<b>I</b> Iron Powder Packs for photometers of other manufacturers for 10-ml-samples	0 - 3.00 Fe	100	1.73007.0001	21057-69 21057-28	
	<b>M</b> Molybdenum Test	0.5 - 45.0 Mo 0.8 - 75.0 MoO <sub>4</sub> <sup>2+</sup> 1.1 - 96.6 Na <sub>2</sub> MoO <sub>4</sub>	100	1.19252.0001	26041-00
<b>N</b> Nitrite Powder Packs for photometers of other manufacturers for 25-ml-samples	0 - 0.300 NO <sub>2</sub> -N	100	1.73010.0001	14065-99 14065-28	
<b>O</b> Oxygen Scavengers Test	0.020 - 0.500 DEHA	200	1.19251.0001	24466-00	
	0.027 - 0.667 Carbohy				
	0.053 - 1.315 Hydro				
	0.078 - 1.950 ISA				
	0.087 - 2.175 MEKO				
<b>S</b> Sulfate Powder Packs for photometers of other manufacturers for 10-ml-samples	0 - 70.0 SO <sub>4</sub>	100	1.73014.0001	21067-69	
	Sulfate Powder Packs for photometers of other manufacturers for 25-ml-samples	0 - 70.0 SO <sub>4</sub>	100	1.73015.0001	12065-99 12065-28



**By the way** ALL Spectroquant® test kits can be programmed on any photometer from other suppliers – so also on Hach instruments. You can easily download the programming data at [www.service-test-kits.com](http://www.service-test-kits.com)

Method	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
DPD	analogous EPA 330.5, APHA 4500-Cl G	25 ml	1 inch	2, 7, 9, 11, 13, 16, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl G	10 ml	1 inch	2, 7, 9, 11, 13, 16, 17, 18
DPD	analogous EPA 330.5, APHA 4500-Cl G	25 ml	1 inch	2, 7, 9, 11, 13, 16, 17, 18
Oxidation with Chromosulfuric acid, determination as chromate	analogous EPA 410.4, APHA 5220 D and ISO 15705	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 and ISO 15705	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 and ISO 15705	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 and ISO 15705	0.2 ml	16 mm	3, 4, 5, 8, 10, 11, 13, 18
Phenanthroline	analogous APHA 3500-Fe D	10 ml	1 inch	1, 2, 5, 7, 8, 9, 10, 11, 13, 15, 17, 18
Mercaptoacetic acid		25 ml	1 inch	5, 11
Diazotization		25 ml	1 inch	1, 2, 3, 5, 8, 9, 10, 11, 13, 15, 18
Iron Reduction		10 ml	1 inch	5
Barium chloride	analogous EPA 375.4	10 ml	1 inch	1, 5, 6, 7, 8, 9, 10, 11, 13, 15, 18
Barium chloride	analogous EPA 375.4	25 ml	1 inch	1, 5, 6, 7, 8, 9, 10, 11, 13, 15, 18

**Areas of application:**

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

# Spectroquant® supplementary software

## Analysis methods for the brewery industry

Setting the standard for the brewery industry, Merck Millipore offers a comprehensive range of 21 methods for analysis throughout the beer brewing process. The new Spectroquant® Pharo software package, "Analysis methods for the brewery industry", provides complete beer analysis – from raw materials to finished product.

The test procedures follow the MEBAK (Mittleuropäische Brautechnische Analysenkommission) or EBC (European Brewery Convention) methods and are described in the accompanying manual. Users are guided step-by-step through reagent preparation, sample processing and analysis. Merck Millipore has also included information about test solution stability and storage, that can't be found in the standard MEBAK method description, to further support the success of your analysis.





## Benefits

- Saves time and reduces errors thanks to pre-calibrated methods.
- Easy handling – the method descriptions are clear and can be used like a “cookery book”.
- Accurate measurements thanks to user-defined calibration when required.

Method	Sample type	Pharo 100	Pharo 300
α Acids	beer and wort	■	■
Anthocyanogenes, Harris and Ricketts method	beer and wort	■	■
Bitterness – beer (EBC method)	beer		■
Bitterness – wort (EBC method)	wort		■
Iron, spectrophotometric (EBC method)	beer	■	■
Color, spectrophotometric (EBC method)	beer and wort	■	■
Flavanoids (EBC method)	beer	■	■
Free Amino Nitrogen, Ninhydrin method – light beer (EBC method)	light beer	■	■
Free Amino Nitrogen, Ninhydrin method – light wort (EBC method)	light wort	■	■
Free Amino Nitrogen, Ninhydrin method – dark beer (EBC method)	dark beer	■	■
Free Amino Nitrogen, Ninhydrin method – dark wort (EBC method)	dark wort	■	■
Total Carbohydrates (EBC method)	beer	■	■
Total Polyphenols (EBC method)	beer and wort	■	■
Iso-α Acids	beer and wort		■
Copper, Cuprethol method (EBC method)	beer	■	■
Nickel (EBC method)	beer	■	■
Photometric Iodine Test	beer and wort	■	■
Reducing Power, spectrophotometric	beer	■	■
Thiobarbituric Acid Number (TAN)	beer, wort, and congress wort	■	■
Vicinal Diketones (Diacetyl, 2,3-Pentandione), spectrophotometric (EBC method)	beer	■	■
Steam-volatile Phenols	beer and malt	■	■

Spectroquant® Supplementary Software “Analysis Methods for the Brewery Industry”

Ord. No. 1.00703.0001

### Scope of delivery

USB stick with the Supplementary Software “Analysis Methods for the Brewery Industry”, the unlock software, the manuals in English and German. Installation booklet

# Spectroquant® quality assurance

Simply complete

All Merck Millipore products undergo stringent testing to guarantee absolute reliability. However, users are still required to perform **analytical quality assurance [AQA]** in accordance with good laboratory practices (GLP). This thorough process includes Installation Qualification [IQ], Operational Qualification [OQ], and Performance Qualification [PQ].

To simplify your work and ensure accurate results, we offer a complete **Spectroquant® AQA concept** based on established media, which covers all stages of Internal Quality Control (IQC). Furthermore, we provide comprehensive IQ, OQ and PQ documentation for all Spectroquant® instruments. Target values and tolerances are either supplied in certificates or pre-programmed in the instruments.

**Certificate of quality**  
Qualitätszertifikat / Certificado de calidad

Applicability of Spectroquant® Test Kits for Self-Monitoring.  
Eignung der Spectroquant® Testsätze zur Selbstüberwachung  
Aptitud de los equipos de ensayo Spectroquant® para autovigilancia

The characteristic data of the procedure of the following test kit were determined in accordance with ISO 8466-1 and DIN 38402 A51 "Calibration of analysis methods" during the production control process.  
Die Verfahrensdaten für den unten genannten Testsatz wurden gemäß ISO 8466-1 und DIN 38402 A51 "Kalibrierung von Analyseverfahren" bei der Produktion und Kontrolle ermittelt.  
Los datos característicos del procedimiento para el equipo de ensayo abajo citado se determinaron según ISO 8466-1 y DIN 38402 A51 "Calibración de procedimientos analíticos" durante el control final de producción.

**Spectroquant® COD Cell Test, Cat. No. 114540**  
**Spectroquant® CSB-Küvettest, Art.-Nr. 114540**  
**Spectroquant® Test en cubetas DQO, Art. Núm. 114540**

Measuring Range / Messbereich / Intervalo de medida	10 – 190 mg/l COD / CSB / DQO
Sensitivity: 0.010 A (absorbance) = Empfindlichkeit: 0.010 E (Extinktion) = Sensibilidad: 0.010 A (absorbancia) =	2 mg/l COD / CSB / DQO
Lower Limit of Detection (LLD) Nachweisgrenze Límite de detección	5.0 mg/l COD / CSB / DQO
Method Detection Limit (MDL) Bestimmungsgrenze Límite de determinación	10 mg/l COD / CSB / DQO
Confidence Interval (P = 95 %) (average value of lots) Vertrauensbereich (95 % Wahrscheinlichkeit) (Mittelwert aller Chargen) Intervalo de confianza (95 % de probabilidad) (valor medio de todos los lotes)	± 3 mg/l COD / CSB / DQO
Standard Deviation of the Method (average value of lots) Verfahrensstreuungsabweichung (Mittelwert aller Chargen) Desviación estándar del procedimiento (valor medio de todos los lotes)	± 1.2 mg/l COD / CSB / DQO
Variation Coefficient of the Method (average value of lots) Verfahrensvariationskoeffizient (Mittelwert aller Chargen) Coeficiente de variación del procedimiento (valor medio de todos los lotes)	± 1.4 %
Number of Lots for calculation Anzahl Probationschargen zur Berechnung Número de lotes de producción para el cálculo	54
Accuracy / Genauigkeit / Exactitud	± 7 mg/l COD / CSB / DQO

Merck KGaA, Darmstadt, 19.09.2011  
Ralf Ott  
Ralf Ott  
Merck KGaA, 64271 Darmstadt, Germany

**Lot Certificate**  
Chargenzertifikat / Certificado del lote

**Spectroquant® COD Cell Test**  
**Spectroquant® CSB-Küvettest / Spectroquant® Test en cubetas DQO**

Measuring Range Messbereich / Intervalo de medida	10 – 190 mg/l COD/CSB/DQO	Target value Substanz Valor nominal (Standard / Normale) mg/l COD/CSB/DQO	Result Messergebnis / Resultado mg/l COD/CSB/DQO
Lot No. / Charge-Nr. / Lote no.	11454001		
Expiry date Verfallsdatum / Fecha de caducidad	20120331		
Standard / Standard / Patrón			
Preparation / Vorbereitung / Preparación			
Measurement / Messung / Medida			
Cell / Küvette / Cuveta			
Tube / Reagenzglas / Tubo			
Time / Zeit / Tiempo			
Calculation Formula / Rechenformel / Fórmula de cálculo			
Unit / Einheit / Unidad			
Order no. / Bestell-Nr. / Número de pedido			
Original supplier / Ursprungsanbieter / Proveedor original			
Storage / Lagerung / Almacenamiento			
Confidence interval (P=95%) Vertrauensbereich (95 % Wahrscheinlichkeit) / Intervalo de confianza (95 % de probabilidad)			
Standard Deviation of the Method Verfahrensstreuungsabweichung / Desviación estándar del procedimiento			
Variation Coefficient of the Method Verfahrensvariationskoeffizient / Coeficiente de variación del procedimiento			

**Lot Certificate**  
Chargenzertifikat / Certificado del lote

**Spectroquant® COD Cell Test**  
**Spectroquant® CSB-Küvettest / Spectroquant® Test en cubetas DQO**

Measuring Range Messbereich / Intervalo de medida	10 – 190 mg/l COD/CSB/DQO	Target value Substanz Valor nominal (Standard / Normale) mg/l COD/CSB/DQO	Result Messergebnis / Resultado mg/l COD/CSB/DQO
Lot No. / Charge-Nr. / Lote no.	11454001		
Expiry date Verfallsdatum / Fecha de caducidad	20120331		
Standard / Standard / Patrón			
Preparation / Vorbereitung / Preparación			
Measurement / Messung / Medida			
Cell / Küvette / Cuveta			
Tube / Reagenzglas / Tubo			
Time / Zeit / Tiempo			
Calculation Formula / Rechenformel / Fórmula de cálculo			
Unit / Einheit / Unidad			
Order no. / Bestell-Nr. / Número de pedido			
Original supplier / Ursprungsanbieter / Proveedor original			
Storage / Lagerung / Almacenamiento			
Confidence interval (P=95%) Vertrauensbereich (95 % Wahrscheinlichkeit) / Intervalo de confianza (95 % de probabilidad)			
Standard Deviation of the Method Verfahrensstreuungsabweichung / Desviación estándar del procedimiento			
Variation Coefficient of the Method Verfahrensvariationskoeffizient / Coeficiente de variación del procedimiento			

Quality control  
Qualitätskontrolle / Control de calidad

## Installation Qualification [IQ] – preparing the system

The purpose of the Installation Qualification is to verify that the entire delivery matches the purchase order and to assure that the instrument is installed correctly. Installation Qualification documents are available for all Spectroquant® instruments.

## AQA – analytical quality assurance

### Photometer Check – AQA 1

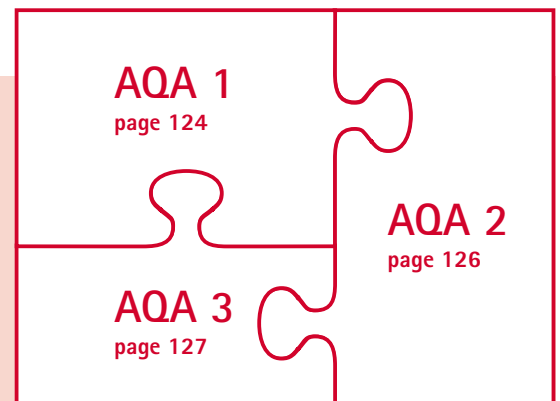
Easy to perform with certified color standards and/or Certipur® UV/VIS standards

### System Check – AQA 2

Reliable documentation by measuring the recovery with CombiCheck standard solution, Certified Reference Material standard solutions (CRM), or Certipur® standard solutions

### Matrix Check – AQA 3

Through one-time spiking with CombiCheck R-2 solution or multiple dilution/spiking with self-prepared solutions



**AQA concept** Spectroquant® NOVA and Pharo photometers support you in ensuring GLP-compliant operations: The AQA concept is pre-programmed in the instruments, which easily guides you through all stages of Analytical Quality Assurance.

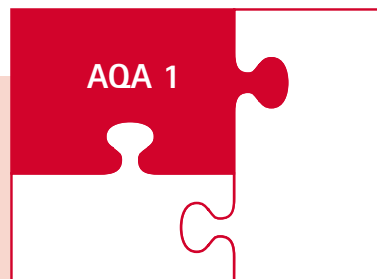
# Spectroquant® AQA

## Operational Qualification [OQ] – checking the instrument

Operational Qualification is used to assure the functionality of the instruments over the entire operating range, according to the defined procedures.

### Photometer Check – AQA 1

In the Spectroquant® AQA concept this is equivalent with the AQA 1 mode. The Spectroquant® colorimeters and photometers are checked by means of certified color standards and when needed by means of the Certipur® UV/VIS standards



### For Spectroquant® Picco Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH

Spectroquant® Reference Standard for chlorine, chlorine dioxide and ozone

Ord. No. 1.19301.0001

#### Scope of delivery and features:

The Spectroquant® Reference Standard is used to carry out checks of accuracy and reproducibility of measuring results with the Spectroquant® Picco Cl<sub>2</sub>/O<sub>3</sub>/ClO<sub>2</sub>/CyA/pH colorimeter and the Spectroquant® Multy colorimeter.

The standards are supplied in sealed vials and are individually calibrated on instruments traceable to N.I.S.T. SRM 2032, 935a.

The kit contains one Zero standard and 3 cuvettes for checking 3 different concentrations – according to the appropriate values for each parameter:	Chlorine	0.3–1.2–3.0 mg/l
	Chlorine Dioxide	0.5–2.3–5.7 mg/l
	Ozone	0.2–0.8–2.0 mg/l



### For Spectroquant® Move 100 and Spectroquant® Multy colorimeter

Spectroquant® Verification Standard for Spectroquant® Multy colorimeter

Ord. No. 1.19302.0001

#### Scope of delivery and features:

The Spectroquant® Verification Standard is used to carry out checks of accuracy and reproducibility of measuring results with the Spectroquant® Move 100 and the Spectroquant® Multy colorimeter. The standards are supplied in sealed vials and are individually calibrated on instruments traceable to N.I.S.T. SRM 2032, 935a.

The kit contains one Zero standard and 6 cuvettes for checking the 6 different wavelengths of the Move 100 and Multy colorimeter.



## For Spectroquant® NOVA and Spectroquant® Pharo photometer

The Spectroquant® NOVA and Spectroquant® Pharo photometer provide an instrument-supported AQA concept which combines the three essential parts of quality control to ensure correct results. **All target values and tolerances are pre-programmed in the instruments.** This makes your AQA checks very easy.

### Spectroquant® PhotoCheck

Ord. No. 1.14693.0001

#### Scope of delivery and features:

Spectroquant® PhotoCheck is a complete set of highly stable color solutions. A check in a reference spectrophotometer – which itself is monitored using primary standards (NIST standards) – confirms that this checking medium can be traced back to international standards. Spectroquant® PhotoCheck can hence be tracked back to international standards and is thus for test-instrument checking purposes according to DIN EN ISO 9001 resp. 14001. All results can be subsequently transferred to a printer or a PC for documentation purposes.



### Certipur® UV/VIS standards

The consistent and correct functioning of your UV/VIS spectrophotometer can be checked using the Certipur® standards. The Certipur® solutions can be used to check the following parameters as per Ph. Eur.:

- Absorption
- Stray light
- Wavelength accuracy

Operations as per GLP, GMP, USP and DIN 9001 or EN 45001 demand these regular controls.



Designation	Content	Ord. No.	Pharo 100	Pharo 300
UV/VIS Standard 1	Potassium dichromate solution for absorbance acc. to DAB and Ph. Eur. 2 x 10 ml $K_2Cr_2O_7$ – 60.06 mg/l in $H_2SO_4$ – 0.01 N and 6 x 10 ml $H_2SO_4$ – 0.01 N	1.08160.0001	■	■
UV/VIS Standard 1A	Potassium dichromate solution for absorbance at 430 nm acc. to DAB und Ph. Eur. 2 x 10 ml $K_2Cr_2O_7$ – 600.06 mg/l in $H_2SO_4$ – 0.01 N and 6 x 10 ml $H_2SO_4$ – 0.01 N	1.04660.0001	■	■
UV/VIS Standard 2	Sodium nitrite solution for stray light testing acc. to DAB and Ph. Eur. 3 x 10 ml $NaNO_2$ – 50 g/l in $H_2O$	1.08161.0001	■	■
UV/VIS Standard 3	Sodium iodide solution for stray light testing acc. to DAB and Ph. Eur. 3 x 10 ml $NaI$ – 10 g/l in $H_2O$	1.08163.0001		■
UV/VIS Standard 6	Holmium oxide solution reference material for wavelength testing acc. to DAB and Ph. Eur. 3 x 10 ml $Ho_2O_3$ – 40 g/l in $HClO_4$ (10 % v/v)	1.08166.0001	■	■

### Spectroquant® Zero Cell (1 pack)

Ord. No. 1.73503.0001

#### Scope of delivery and features:

Spectroquant® Zero Cell is a 16 mm round cell filled with distilled water to be used for the Zero Adjustment of the Spectroquant® NOVA and Pharo photometers. This Spectroquant® Zero Cell is available as replacement of the Zero Cell contained in the initial supply of each Spectroquant® NOVA and Pharo photometer. It is recommended to renew the Zero Cell every two years to assure the correct Zero Adjustment of the photometer.

# Spectroquant® AQA

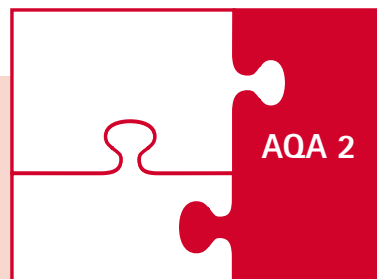
Performance Qualification [PQ] – checking the complete system and sample matrix

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

## System Check – AQA 2

The System Check is performed in order to check the entire system (instrument + test kit + standard + pipette and/or cuvette + operator). In the Spectroquant® AQA concept this is equivalent with the AQA 2 mode. It is a method-specific check using standard solutions.

The recommended standard solutions for each Spectroquant® test kit are listed on page 128.



▶ Spectroquant® CombiCheck

Product information see page 134 – 137

▶ Standard solutions (CRM) for photometric applications

Product information see page 138

▶ Certipur® standard solution

Product information see page 139

Spectroquant® PipeCheck

Ord. No. 1.14962.0001

### Scope of delivery and features:

In connection with Internal Quality Control measures (IQC) pipettes are required to be tested at regular intervals. This check is usually carried out by weighing the volume of a liquid on a calibrated precision balance. Such a balance is, however, not always readily available. With Spectroquant® PipeCheck you can check your pipettes and document the measurement results accordingly, even if you don't have a balance.

*When e.g. a 5.0-ml pipette is due for checking, 5.0 ml of distilled water is injected into the Spectroquant® PipeCheck cell. The measured absorbance must match that measured in the reference cell.*



## Matrix Check – AQA 3



The Matrix Check, or AQA 3 mode, identifies measurement errors due to interferences from foreign substances within the sample. Under certain circumstances, their interference can be so great that the recovery of the parameter is significantly less than 100 %. For this reason, various foreign substances have been investigated to define the maximum concentration at which they may be present in samples without interfering with the determination. These limits are stated in the package insert of each Spectroquant® test kit.

For samples with a very complex or even unknown composition, interferences can be analyzed on the basis of recovery rates and rectified through appropriate countermeasures, such as pre-treating the sample. Depending on the concentration of the sample, there are two AQA 3 methods to choose from:

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

▶ Spectroquant® CombiCheck

Product information see page 134 – 137

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

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

▶ Standard solutions (CRM) for photometric applications

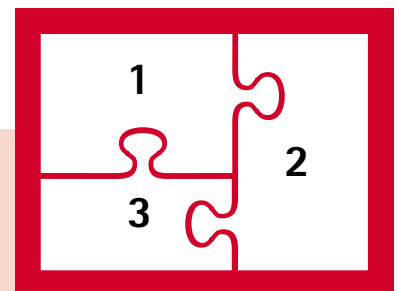
Product information see page 138

▶ Certipur® standard solution

Product information see page 139

Comprehensive quality assurance using the IQ, OQ, and PQ documents will transform your measurement results into proven, verifiable analytical results. **Please contact your local dealer to find out more about this service.**

## More about AQA – password protected control of the complete system



By issuing a password (Spectroquant® NOVA photometer) or defining hierarchically structured user groups (Spectroquant® Pharo spectrophotometers) you yourself can ensure that the AQA intervals of your photometer are observed. You can instruct the instrument to refuse to carry out a measurement in the event that the quality control measurements and intervals are not adhered to. The method in question is released for further measurements only after it has been successfully subjected to the corresponding quality-assurance checks.

The documentation of the AQA measures in the measurement report is a further enhancement of GLP-compliant operation. Once it has passed the quality-control check, each result is given the suffix "AQA" in the report. Secure proof that the system is tested.

# Spectroquant® analytical quality control

## Quality assurance

The following tables show you at a glance which quality-assurance product – such as e.g. Spectroquant® CombiCheck or standard solutions – can be used in conjunction with which test kit. In cases where a parameter is not stable – for instance chlorine – then we naturally provide assistance to the users of our products and offer an application by which such a standard can be prepared. These applications can be found in the preface to our photometer and colorimeter manuals and also in the internet at [www.merckmillipore.com/photometry](http://www.merckmillipore.com/photometry). This ensures that every user is given the optimum support to achieve good results.

## Index A-B

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>A</b> Acid Capacity Cell Test to pH 4.3 (total alkalinity)	1.01758.0001			2)	
Aluminium Cell Test	1.00594.0001			1)	1.19770.0100
Aluminium Test	1.14825.0001	1.14692.0001		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	1.14752.0001 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)	1.19773.0100
<b>B</b> BOD Cell Test	1.00687.0001			EN 1899, 210 mg/l	1.00718 1.00718
Boron Cell Test	1.00826.0001			1)	1.19500.0100
Boron Test	1.14839.0001			1)	1.19500.0100
Bromate				2)	
Bromine Test	1.00605.0001			DIN EN ISO 7393 2)	

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

2) Own standards. Worksheets how to prepare these standards can be downloaded from our website [www.merckmillipore.com/aaf](http://www.merckmillipore.com/aaf) > Photometry > Field of Activity/Sample = Standard

3) For photometers of other manufacturers



## Index C

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>C</b> Cadmium Cell Test	1.14834.0001	1.14677.0001		<sup>1)</sup>	1.19777.0100
Cadmium Test	1.01745.0001				1.19777.0100
Calcium Cell Test	1.00858.0001			<sup>2)</sup>	
Calcium Test	1.00049.0001			<sup>1)</sup>	1.19778.0100
Calcium Test	1.14815.0001			<sup>1)</sup>	1.19778.0100
 Chloride Cell Test	1.01804.0001			<sup>1)</sup>	1.19897.0500
Chloride Cell Test	1.14730.0001	1.14676.0001 1.14675.0001		<sup>1)</sup>	1.19897.0500
 Chloride Test	1.01807.0001			<sup>1)</sup>	1.19897.0500
Chloride Test	1.14897.0001 1.14897.0002	1.14696.0001		<sup>1)</sup>	1.19897.0500
Chlorine Cell test (free)	1.00595.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Test (free)	1.00598.0002 1.00598.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Test (total)	1.00602.0001 1.00602.0002			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Cell Test (free and total)	1.00597.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Test (free and total)	1.00599.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Powder Packs <sup>3)</sup> (free)	1.19254.0001 1.19256.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Powder Packs <sup>3)</sup> (total)	1.19257.0001 1.19258.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chlorine Dioxide Test	1.00608.0001			DIN EN ISO 7393 <sup>2)</sup>	
Chromate Cell Test	1.14552.0001			<sup>1)</sup>	1.19780.0500
Chromate Test	1.14758.0001			<sup>1)</sup>	1.19780.0500
COD Cell Test	1.14560.0001	1.14695.0001	1.25028.0100	<sup>2)</sup>	
COD Cell Test	1.01796.0001	1.14695.0001	1.25028.0100	<sup>2)</sup>	
COD Cell Test	1.14540.0001	1.14676.0001	1.25029.0100	<sup>2)</sup>	
COD Cell Test	1.14895.0001	1.14696.0001	1.25029.0100 1.25030.0100	<sup>2)</sup>	
COD Cell Test	1.14690.0001	1.14696.0001	1.25029.0100 1.25030.0100 1.25031.0100	<sup>2)</sup>	
COD Cell Test	1.14541.0001	1.14675.0001	1.25029.0100 1.25030.0100 1.25031.0100 1.25032.0100	<sup>2)</sup>	
COD Cell Test	1.14691.0001	1.14738.0001	1.25031.0100 1.25032.0100 1.25033.0100	<sup>2)</sup>	
COD Cell Test	1.14555.0001	1.14689.0001	1.25032.0100 1.25033.0100 1.25034.0100	<sup>2)</sup>	
COD Cell Test	1.01797.0001	1.25034.0100 1.25035.0100		<sup>2)</sup>	

# Spectroquant® analytical quality control

## Index C-L

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>C</b> COD Cell Test (Hg-free)	1.09772.0001		1.25028.0100 1.25029.0100	<sup>2)</sup>	
COD Cell Test (Hg-free)	1.09773.0001		1.25030.0100 1.25031.0100 1.25032.0100	<sup>2)</sup>	
COD Cell Test <sup>3)</sup>	1.18750.0001	1.14695.0001		<sup>2)</sup>	
COD Cell Test <sup>3)</sup>	1.18751.0001	1.14676.0001		<sup>2)</sup>	
COD Cell Test <sup>3)</sup>	1.18752.0001	1.14675.0001		<sup>2)</sup>	
COD Cell Test <sup>3)</sup>	1.18753.0001	1.14689.0001		<sup>2)</sup>	
<b>NEW</b> COD Cell Test for seawater / high chloride contents	1.17058.0001			<sup>2)</sup>	
<b>NEW</b> COD Cell Test for seawater / high chloride contents	1.17059.0001			<sup>2)</sup>	
Copper Cell Test	1.14553.0001	1.14677.0001		<sup>1)</sup>	1.19786.0100
Copper Test	1.14767.0001	1.14677.0001			1.19786.0100
Cyanide Test	1.09701.0001			<sup>1)</sup>	1.19533.0500
Cyanuric Acid Test	1.19253.0001			<sup>2)</sup>	
<b>F</b> Fluoride Cell Test	1.14557.0001			<sup>1)</sup>	1.19814.0500
Fluoride Cell Test	1.00809.0001			<sup>1)</sup>	1.19814.0500
Fluoride Test	1.00822.0250			<sup>1)</sup>	1.19814.0500
Fluoride Test	1.14598.0001 1.14598.0002			<sup>1)</sup>	1.19814.0500
Formaldehyde Cell Test	1.14500.0001			<sup>2)</sup>	
Formaldehyde Test	1.14678.0001			<sup>2)</sup>	
<b>G</b> Gold Test	1.14821.0002			<sup>1)</sup>	1.70216.0100
<b>H</b> Hydrazine Test	1.09711.0001			<sup>2)</sup>	
Hydrogen Peroxide Cell Test	1.14731.0001			<sup>2)</sup>	
Hydrogen Peroxide Test	1.18789.0001			<sup>2)</sup>	
<b>I</b> Iodine Test	1.00606.0001			DIN EN ISO 7393 <sup>2)</sup>	
Iron Cell Test	1.14549.0001	1.14677.0001		<sup>1)</sup>	1.19781.0100
Iron Cell Test	1.14896.0001			<sup>1)</sup>	1.19781.0100
Iron Test	1.14761.0002 1.14761.0001	1.14677.0001		<sup>1)</sup>	1.19781.0100
Iron Test	1.00796.0001	1.14677.0001		<sup>1)</sup>	1.19781.0100
Iron Powder Packs <sup>3)</sup>	1.73007.0001	1.14677.0001		<sup>1)</sup>	1.19781.0100
<b>L</b> Lead Cell Test	1.14833.0001	1.14692.0001		<sup>1)</sup>	1.19776.0100
Lead Test	1.09717.0001	1.14692.0001		<sup>1)</sup>	1.19776.0100

<sup>1)</sup> Standard solution, ready-to-use, 1,000 mg/l analyt. Traceable to SRM of NIST (see Ord. No. Certipur® standard solution)

<sup>2)</sup> Own standards. Worksheets how to prepare these standards can be downloaded from our website [www.merckmillipore.com/aaf](http://www.merckmillipore.com/aaf) > Photometry > Field of Activity/Sample = Standard

<sup>3)</sup> For photometers of other manufacturers

## Index M-N

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>M</b> Magnesium Cell Test	1.00815.0001			2)	
Manganese Cell Test	1.00816.0001	1.14677.0001		1)	1.19789.0100
Manganese Test	1.01739.0001			1)	1.19789.0100
 Manganese Test	1.01846.0001			1)	1.19789.0100
Manganese Test	1.14770.0001	1.14677.0001		1)	1.19789.0100
	1.14770.0002				
Molybdenum Cell Test	1.00860.0001			1)	1.70227.0001
Molybdenum Test	1.19252.0001			1)	1.70227.0001
Monochloramine Test	1.01632.0001			2)	
<b>N</b> Nickel Cell Test	1.14554.0001	1.14692.0001		1)	1.09989.0001
Nickel Test	1.14785.0001	1.14692.0001		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)	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	1.09713.0001 1.09713.0002	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	1.14776.0002 1.14776.0001		1.25041.0100	1)	1.19899.0500
Nitrite Cell Test	1.00609.0001		1.25042.0100	1)	1.19899.0500
Nitrite Powder Packs <sup>3)</sup>	1.73010.0001			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)	

# Spectroquant® analytical quality control

## Index O-S



Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>O</b> Oxygen Cell Test	1.14694.0001			<sup>2)</sup>	
Oxygen Scavengers Test	1.19251.0001			<sup>2)</sup>	
Ozone-Test	1.00607.0001 1.00607.0002			DIN EN ISO 7393 <sup>2)</sup>	
<b>P</b> pH Cell Test	1.01744.0001			Buffer solution pH 7.00	1.09439.1000
Phenol Cell Test	1.14551.0001			<sup>2)</sup>	
Phenol Test	1.00856.0001			<sup>2)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00474.0001	1.14676.0001		<sup>1)</sup>	1.19898.0500
Phosphate (ortho-phosphate) Cell Test	1.14543.0001	1.14676.0001		<sup>1)</sup>	1.19898.0500
Phosphorus (total) Cell Test	1.14543.0001		1.25046.0100 1.25047.0100	<sup>1)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00475.0001	1.14675.0001		<sup>1)</sup>	1.19898.0500
Phosphate (ortho-phosphate) Cell Test	1.14729.0001	1.14675.0001		<sup>1)</sup>	1.19898.0500
Phosphorus (total) Cell Test	1.14729.0001		1.25047.0100 1.25048.0100	<sup>1)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00616.0001			<sup>1)</sup>	1.19898.0500
Phosphorus (total) Cell Test	1.00673.0001		1.25048.0100 1.25049.0100	<sup>1)</sup>	
Phosphate (ortho-phosphate) Cell Test	1.00673.0001			<sup>1)</sup>	1.19898.0500
Phosphate (ortho-phosphate) Cell Test	1.14546.0001			<sup>1)</sup>	1.19898.0500
Phosphate Test (ortho-phosphate)	1.14848.0001 1.14848.0002	1.14676.0001		<sup>1)</sup>	1.19898.0500
Phosphate Test (ortho-phosphate)	1.00798.0001			<sup>1)</sup>	1.19898.0500
Phosphate Test (ortho-phosphate)	1.14842.0001			<sup>1)</sup>	1.19898.0500
Potassium Cell Test	1.14562.0001			<sup>1)</sup>	1.70230
Potassium Cell Test	1.00615.0001			<sup>1)</sup>	1.70230
<b>R</b> Residual Hardness Cell Test	1.14683.0001			<sup>1)</sup>	1.19778.0100
<b>S</b> Silicate (silicic acid) Test	1.01813.0001			<sup>1)</sup>	1.70236.0100
Silicate (silicic acid) Test	1.14794.0001			<sup>1)</sup>	1.70236.0100
Silicate (silicic acid) Test	1.00857.0001			<sup>1)</sup>	1.70236.0100
Silver Test	1.14831.0001			<sup>1)</sup>	1.19797.0100
Sodium Cell Test	1.00885.0001			<sup>2)</sup>	
Sulfate Cell Test	1.14548.0001	1.14676.0001	1.25050.0100 1.25051.0100	<sup>1)</sup>	1.19813.0500
Sulfate Cell Test	1.00617.0001	1.14676.0001	1.25051.0100 1.25052.0100	<sup>1)</sup>	1.19813.0500

<sup>1)</sup> Standard solution, ready-to-use, 1,000 mg/l analyt. Traceable to SRM of NIST (see Ord. No. Certipur® standard solution)

<sup>2)</sup> Own standards. Worksheets how to prepare these standards can be downloaded from our website [www.merckmillipore.com/aaf](http://www.merckmillipore.com/aaf) > Photometry > Field of Activity/Sample = Standard

<sup>3)</sup> For photometers of other manufacturers

## Index S-Z

Test kit	Ord. No. Test kit	Ord. No. CombiCheck	Ord. No. Standard solution, CRM	Alternative Standard	Ord. No. Certipur® standard sol.
<b>S</b> Sulfate Cell Test	1.14564.0001	1.14675.0001	1.25051.0100 1.25052.0100 1.25053.0100	<sup>1)</sup>	1.19813.0500
 Sulfate Test	1.01812.0001			<sup>1)</sup>	1.19813.0500
Sulfate Test	1.14791.0001	1.14676.0001	1.25050.0100 1.25051.0100	<sup>1)</sup>	1.19813.0500
Sulfate Powder Packs <sup>3)</sup>	1.73014.0001 1.73015.0001		1.25050.0100	<sup>1)</sup>	1.19813.0500
Sulfide Test	1.14779.0001			<sup>2)</sup>	
Sulfite Cell Test	1.14394.0001			<sup>2)</sup>	
Sulfite Test	1.01746.0001			<sup>2)</sup>	
Surfactants (anionic) Cell Test	1.14697.0001			<sup>2)</sup>	
Surfactants (cationic) Cell Test	1.01764.0001			<sup>2)</sup>	
Surfactants (nonionic) Cell Test	1.01787.0001			<sup>2)</sup>	
<b>T</b> Tin Cell Test	1.14622.0001			<sup>2)</sup>	
TOC Cell Test	1.14878.0001			<sup>1)</sup>	1.09017.0100
TOC Cell Test	1.14879.0001			<sup>1)</sup>	1.09017.0100
Total Hardness Cell Test	1.00961.0001			<sup>2)</sup>	
Total Nitrogen Cell Test	1.00613.0001	1.14695.0001	1.25043.0100 1.25044.0100	<sup>2)</sup>	
Total Nitrogen Cell Test	1.14537.0001	1.14695.0001	1.25043.0100 1.25044.0100	<sup>2)</sup>	
Total Nitrogen Cell Test	1.14763.0001	1.14689.0001	1.25044.0100 1.25045.0100	<sup>2)</sup>	
 <b>V</b> Volatile Organic Acid Cell Test	1.01749.0001			<sup>2)</sup>	
 Volatile Organic Acid Test	1.01809.0001			<sup>2)</sup>	
<b>Z</b> Zinc Cell Test	1.00861.0001			<sup>1)</sup>	1.19806.0100
Zinc Cell Test	1.14566.0001	1.14692.0001		<sup>1)</sup>	1.19806.0100
Zinc Test	1.14832.0001			<sup>1)</sup>	1.19806.0100

# Spectroquant® CombiCheck

## Checking the entire system

The multiparameter standard solutions contained in the various Spectroquant® CombiCheck packs are optimally suited for checking the overall system, from the individual test kit and the measurement instrument itself, all the way to your individual working procedures. These standards can also be directly traced back to NIST primary standards. Each CombiCheck pack contains one standard solution and one addition solution.

If the check shows that the specified concentration of the standard solution is reached, the entire analysis system is in order. If, however, deviations from the specified values become apparent, the causes of these deviations must be tracked down. With the aid of the addition solution it is possible to identify measurement errors that are caused by the sample matrix (for example the presence of interfering substances). If the recovery rate is found to be insufficient (beyond the specified tolerances) the reason for the error must be analyzed and eliminated by taking the appropriate countermeasures, such as e.g. pretreating the sample correspondingly.

Ord. No. 1.14676.0001		Spectroquant® CombiCheck 10				
		to control quality of photometric methods of below listed parameter				
	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks	
Standard Solution Reagent R-1	Ammonium	4.00 ±0.30 mg/l NH <sub>4</sub> -N	1.14558.0001	1.0	96	
	Chloride	25 ±6 mg/l Cl	1.14730.0001	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 <sub>3</sub> -N	1.14556.0001	2.0	48	
		2.50 ±0.25 mg/l NO <sub>3</sub> -N	1.14773.0001 <sup>2)</sup>	1.5	64	
	Phosphate <sup>4)</sup>	0.80 ±0.08 mg/l PO <sub>4</sub> -P	1.00474.0001	5.0	18	
		0.80 ±0.08 mg/l PO <sub>4</sub> -P	1.14543.0001	5.0	18	
		0.80 ±0.08 mg/l PO <sub>4</sub> -P	1.14848.0001/ .0002 <sup>3)</sup>	5.0	18	
		0.80 ±0.08 mg/l PO <sub>4</sub> -P	1.14848.0001 <sup>2)/</sup> .0002 <sup>3)</sup>	10.0	9	
	Sulfate	100 ±15 mg/l SO <sub>4</sub>	1.14548.0001	5.0	19	
		100 ±15 mg/l SO <sub>4</sub>	1.00617.0001	2.0	48	
		100 ±15 mg/l SO <sub>4</sub>	1.14791.0001 <sup>1)</sup>	2.5	38	
Addition Solution Reagent R-2 (for spiking of samples)	Ammonium	3.00 ±0.25 mg/l NH <sub>4</sub> -N	1.14558.0001	0.1	280	
	Chloride	25 ±6 mg/l Cl	1.14730.0001	0.1	280	
	COD	30 ±8 mg/l COD	1.14540.0001	0.1	280	
		45 ±8 mg/l COD	1.18751.0001	0.1	280	
	Nitrate	1.50 ±0.20 mg/l NO <sub>3</sub> -N	1.14556.0001	0.1	280	
		2.50 ±0.40 mg/l NO <sub>3</sub> -N	1.14773.0001 <sup>2)</sup>	0.1	280	
	Phosphate <sup>4)</sup>	0.60 ±0.07 mg/l PO <sub>4</sub> -P	1.00474.0001	0.1	280	
		0.60 ±0.07 mg/l PO <sub>4</sub> -P	1.14543.0001	0.1	280	
		0.60 ±0.07 mg/l PO <sub>4</sub> -P	1.14848.0001 <sup>2)/</sup> .0002 <sup>3)</sup>	0.1	280	
		0.30 ±0.05 mg/l PO <sub>4</sub> -P	1.14848.0001/ .0002 <sup>3)</sup>	0.1	280	
	Sulfate	40 ±5 mg/l SO <sub>4</sub>	1.14548.0001	0.1	280	
		100 ±15 mg/l SO <sub>4</sub>	1.00617.0001	0.1	280	
		80 ±10 mg/l SO <sub>4</sub>	1.14791.0001 <sup>1)</sup>	0.1	280	

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

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

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

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

Spectroquant® CombiCheck 20					Ord. No. 1.14675.0001
to control quality of photometric methods of below listed parameter					
Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks	
Ammonium	12.0 ±1.0 mg/l NH <sub>4</sub> -N	1.14544.0001	0.5	192	Standard Solution Reagent R-1
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 <sub>3</sub> -N	1.14563.0001	1.0	96	
	9.0 ±0.9 mg/l NO <sub>3</sub> -N	1.14542.0001	1.5	64	
	9.0 ±0.9 mg/l NO <sub>3</sub> -N	1.09713.0001/ .0002 <sup>1)</sup>	1.5	64	
	9.0 ±0.9 mg/l NO <sub>3</sub> -N	1.14773.0001 <sup>1)</sup>	1.0	96	
	9.0 ±0.9 mg/l NO <sub>3</sub> -N	1.14942.0001 <sup>1)</sup>	0.5	192	
Phosphate <sup>4)</sup>	8.0 ±0.7 mg/l PO <sub>4</sub> -P	1.00475.0001	1.0	96	
	8.0 ±0.7 mg/l PO <sub>4</sub> -P	1.14729.0001	1.0	96	
Sulfate	500 ±75 mg/l SO <sub>4</sub>	1.14564.0001	1.0	96	
Ammonium	8.0 ±0.8 mg/l NH <sub>4</sub> -N	1.14544.0001	0.1	280	Addition Solution Reagent R-2
Chloride	40 ±7 mg/l Cl	1.14730.0001	0.1	280	
COD	200 ±40 mg/l COD	1.14541.0001	0.1	280	(for spiking of samples)
	300 ±40 mg/l COD	1.18752.0001	0.1	280	
Nitrate	7.5 ±0.8 mg/l NO <sub>3</sub> -N	1.14563.0001	0.1	280	
	5.0 ±0.6 mg/l NO <sub>3</sub> -N	1.14542.0001	0.1	280	
	15.0 ±1.5 mg/l NO <sub>3</sub> -N	1.09713.0001/ .0002 <sup>1)</sup>	0.1	280	
	5.0 ±0.6 mg/l NO <sub>3</sub> -N	1.14773.0001 <sup>1)</sup>	0.1	280	
	7.5 ±0.8 mg/l NO <sub>3</sub> -N	1.14942.0001 <sup>1)</sup>	0.1	280	
Phosphate <sup>4)</sup>	5.0 ±0.5 mg/l PO <sub>4</sub> -P	1.00475.0001	0.1	280	
	5.0 ±0.5 mg/l PO <sub>4</sub> -P	1.14729.0001	0.1	280	
Sulfate	150 ±30 mg/l SO <sub>4</sub>	1.14564.0001	0.1	280	

Spectroquant® CombiCheck 30					Ord. No. 1.14677.0001
to control quality of photometric methods of below listed parameter					
Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks	
Cadmium	0.500 ±0.060 mg/l Cd	1.14834.0001	5.0	19	Standard Solution Reagent R-1
Copper	2.00 ±0.20 mg/l Cu	1.14553.0001	5.0	19	
	2.00 ±0.20 mg/l Cu	1.14767.0001 <sup>1)</sup>	5.0	19	
Iron	1.00 ±0.15 mg/l Fe	1.14549.0001	5.0	19	
	1.00 ±0.15 mg/l Fe	1.14761.0001/ .0002 <sup>1)</sup>	5.0	19	
	1.00 ±0.15 mg/l Fe	1.00796.0001 <sup>1)</sup>	8.0	12	
	1.00 ±0.15 mg/l Fe	1.73007.0001	10.0	9	
Manganese	1.00 ±0.15 mg/l Mn	1.00816.0001	7.0	13	
	1.00 ±0.15 mg/l Mn	1.14770.0001/ .0002 <sup>3)</sup>	10.0	9	
Cadmium	0.300 ±0.045 mg/l Cd	1.14834.0001	0.1	280	Addition Solution Reagent R-2
Copper	3.00 ±0.30 mg/l Cu	1.14553.0001	0.1	280	
	3.00 ±0.30 mg/l Cu	1.14767.0001 <sup>1)</sup>	0.1	280	(for spiking of samples)
Iron	3.00 ±0.30 mg/l Fe	1.14549.0001	0.1	280	
	3.00 ±0.30 mg/l Fe	1.14761.0001/ .0002 <sup>1)</sup>	0.1	280	
	1.88 ±0.20 mg/l Fe	1.00796.0001 <sup>1)</sup>	0.1	280	
Manganese	1.43 ±0.15 mg/l Mn	1.00816.0001	0.1	280	
	1.00 ±0.15 mg/l Mn	1.14770.0001/ .0002 <sup>3)</sup>	0.1	280	

# Spectroquant® CombiCheck



## Ord. No. 1.14692.0001 Spectroquant® CombiCheck 40 to control quality of photometric methods of below listed parameter

to control quality of photometric methods of below listed parameter

	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks
Standard Solution Reagent R-1	Aluminium	0.75 ±0.08 mg/l Al	1.14825.0001 <sup>1)</sup>	5.0	19
	Lead	2.00 ±0.20 mg/l Pb	1.14833.0001	5.0	19
		2.00 ±0.20 mg/l Pb	1.09717.0001 <sup>1)</sup>	8.0	11
	Nickel	2.00 ±0.20 mg/l Ni	1.14554.0001	5.0	19
		2.00 ±0.20 mg/l Ni	1.14785.0001 <sup>1)</sup>	5.0	19
Zinc	2.00 ±0.40 mg/l Zn	1.14566.0001	0.5	192	
Addition Solution Reagent R-2 (for spiking of samples)	Aluminium	1.00 ±0.10 mg/l Al	1.14825.0001 <sup>1)</sup>	0.1	280
	Lead	1.00 ±0.15 mg/l Pb	1.14833.0001	0.1	280
		0.63 ±0.10 mg/l Pb	1.09717.0001 <sup>1)</sup>	0.1	280
	Nickel	2.00 ±0.20 mg/l Ni	1.14554.0001	0.1	280
		2.00 ±0.20 mg/l Ni	1.14785.0001 <sup>1)</sup>	0.1	280
Zinc	2.00 ±0.40 mg/l Zn	1.14566.0001	0.1	280	

## Ord. No. 1.14695.0001 Spectroquant® CombiCheck 50 to control quality of photometric methods of below listed parameter

to control quality of photometric methods of below listed parameter

	Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks
Standard Solution Reagent R-1	Ammonium	1.00 ±0.10 mg/l NH <sub>4</sub> -N	1.14739.0001	5.0	19
		1.00 ±0.10 mg/l NH <sub>4</sub> -N	1.14752.0002/ .0001 <sup>1)</sup>	5.0	19
	COD	20.0 ±4.0 mg/l COD	1.14560.0001	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	10.0	9
5.0 ±0.7 mg/l N		1.14537.0001	10.0	9	
Addition Solution Reagent R-2 (for spiking of samples)	Ammonium	1.00 ±0.10 mg/l NH <sub>4</sub> -N	1.14739.0001	0.1	280
		1.00 ±0.10 mg/l NH <sub>4</sub> -N	1.14752.0002/ .0001 <sup>1)</sup>	0.1	280
	COD	10.0 ±3.0 mg/l COD	1.14560.0001	0.1	280
		15.0 ±3.0 mg/l COD	1.01796.0001	0.1	280
		15.0 ±3.0 mg/l COD	1.18750.0001	0.1	280
	Nitrogen	3.0 ±0.5 mg/l N	1.00613.0001	0.1	280
3.0 ±0.5 mg/l N		1.14537.0001	0.1	280	

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

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

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

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



**Spectroquant® CombiCheck 60** Ord. No. 1.14696.0001
**to control quality of photometric methods of below listed parameter**

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks	
Chloride	125 ±13 mg/l Cl	1.14897.0001/ .0002 <sup>1)</sup>	1.0	96	<b>Standard Solution</b> <b>Reagent R-1</b>
COD	250 ±25 mg/l COD	1.14690.0001	2.0	48	
	250 ±20 mg/l COD	1.14895.0001	2.0	48	
Chloride	50 ±7 mg/l Cl	1.14897.0001/ .0002 <sup>1)</sup>	0.1	280	<b>Addition Solution</b> <b>Reagent R-2</b> (for spiking of samples)
COD	75 ±15 mg/l COD	1.14690.0001	0.1	280	
	75 ±10 mg/l COD	1.14895.0001	0.1	280	

**Spectroquant® CombiCheck 70** Ord. No. 1.14689.0001
**to control quality of photometric methods of below listed parameter**

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks	
Ammonium	50.0 ±5.0 mg/l NH <sub>4</sub> -N	1.14559.0001	0.1	960	<b>Standard Solution</b> <b>Reagent R-1</b>
Ammonium (2.0 - 75.0 mg/l)	50.0 ±5.0 mg/l NH <sub>4</sub> -N	1.00683.0001 <sup>1)</sup>	0.2	480	
Ammonium (5 - 150 mg/l)	50 ±5 mg/l NH <sub>4</sub> -N	1.00683.0001 <sup>1)</sup>	0.1	960	
COD	5,000 ±400 mg/l COD	1.14555.0001	1.0	96	
	5,000 ±400 mg/l COD	1.18753.0001	0.2	480	
Nitrogen	50 ±7 mg/l N	1.14763.0001	1.0	96	
Ammonium	20.0 ±2.0 mg/l NH <sub>4</sub> -N	1.14559.0001	0.1	280	<b>Addition Solution</b> <b>Reagent R-2</b> (for spiking of samples)
Ammonium (2.0 - 75.0 mg/l)	10.0 ±1.0 mg/l NH <sub>4</sub> -N	1.00683.0001 <sup>1)</sup>	0.1	280	
Ammonium (5 - 150 mg/l)	20 ±2 mg/l NH <sub>4</sub> -N	1.00683.0001 <sup>1)</sup>	0.1	280	
COD	2,000 ±200 mg/l COD	1.14555.0001	0.1	280	
Nitrogen	20 ±6 mg/l N	1.14763.0001	0.1	280	

**Spectroquant® CombiCheck 80** Ord. No. 1.14738.0001
**to control quality of photometric methods of below listed parameter**

Parameter	Concentration and working tolerance	can be used for test kits Ord. No.	Standard solution [ml]	Number of quality checks	
COD	1,500 ±150 mg/l COD	1.14691.0001	2.0	48	<b>Standard Solution</b> <b>Reagent R-1</b>
Nitrate	25.0 ±2.5 mg/l NO <sub>3</sub> -N	1.14764.0001	0.5	190	
Phosphate <sup>4)</sup>	15.0 ±1.0 mg/l PO <sub>4</sub> -P	1.00475.0001	1.0	96	
	15.0 ±1.0 mg/l PO <sub>4</sub> -P	1.14729.0001	1.0	96	
COD	1,000 ±100 mg/l COD	1.14691.0001	0.1	280	<b>Addition Solution</b> <b>Reagent R-2</b> (for spiking of samples)
Nitrate	10.0 ±1.5 mg/l NO <sub>3</sub> -N	1.14764.0001	0.1	280	
Phosphate <sup>4)</sup>	5.0 ±0.5 mg/l PO <sub>4</sub> -P	1.00475.0001	0.1	280	
	5.0 ±0.5 mg/l PO <sub>4</sub> -P	1.14729.0001	0.1	280	

# Standard solutions (CRM) for photometric applications

By using the certified, diluted standard solutions for photometric applications you can verify your measurement results without extra effort. These standard solutions are **traceable to SRM from NIST** and are completely ready-to-use. Time-consuming dilution is no longer necessary – which eliminates possible sources of error. The lot certificates document all batch-specific and analysis-relevant data, such as exact concentration and expanded measurement uncertainty. Most importantly, it provides you with the certitude that the diluted, **certified standard solutions are traceable directly to primary standard reference materials from NIST**. This ensures that quality standards are comparable internationally.

## Standard solutions, CRM (100 ml in H<sub>2</sub>O)

Product	Concentration	Expanded Measurement uncertainty	Ord. No.
<b>A</b> Ammonium standard solution	0.400 mg/l NH <sub>4</sub> -N	±0.012 mg/l	1.25022.0100
Ammonium standard solution	1.00 mg/l NH <sub>4</sub> -N	±0.04 mg/l	1.25023.0100
Ammonium standard solution	2.00 mg/l NH <sub>4</sub> -N	±0.07 mg/l	1.25024.0100
Ammonium standard solution	6.00 mg/l NH <sub>4</sub> -N	±0.13 mg/l	1.25025.0100
Ammonium standard solution	12.00 mg/l NH <sub>4</sub> -N	±0.4 mg/l	1.25026.0100
Ammonium standard solution	50.0 mg/l NH <sub>4</sub> -N	±1.2 mg/l	1.25027.0100
<b>C</b> COD standard solution	20.0 mg/l	±0.7 mg/l	1.25028.0100
COD standard solution	100 mg/l	±3 mg/l	1.25029.0100
COD standard solution	200 mg/l	±4 mg/l	1.25030.0100
COD standard solution	400 mg/l	±5 mg/l	1.25031.0100
COD standard solution	1,000 mg/l	±11 mg/l	1.25032.0100
COD standard solution	2,000 mg/l	±32 mg/l	1.25033.0100
COD standard solution	8,000 mg/l	±68 mg/l	1.25034.0100
COD standard solution	50,000 mg/l	±894 mg/l	1.25035.0100
<b>N</b> Nitrate standard solution	0.50 mg/l NO <sub>3</sub> -N	±0.05 mg/l	1.25036.0100
Nitrate standard solution	2.50 mg/l NO <sub>3</sub> -N	±0.06 mg/l	1.25037.0100
Nitrate standard solution	15.0 mg/l NO <sub>3</sub> -N	±0.4 mg/l	1.25038.0100
Nitrate standard solution	40.0 mg/l NO <sub>3</sub> -N	±1 mg/l	1.25039.0100
Nitrate standard solution	200 mg/l NO <sub>3</sub> -N	±5 mg/l	1.25040.0100
Nitrite standard solution	0.200 mg/l NO <sub>2</sub> -N	±0.009 mg/l	1.25041.0100
Nitrite standard solution	40.0 mg/l NO <sub>2</sub> -N	±1.3 mg/l	1.25042.0100
Nitrogen (total) standard solution	2.50 mg/l N	±0.06 mg/l	1.25043.0100
Nitrogen (total) standard solution	12.0 mg/l N	±0.3 mg/l	1.25044.0100
Nitrogen (total) standard solution	100 mg/l N	±3 mg/l	1.25045.0100
<b>P</b> Phosphorus (total) standard solution	0.400 mg/l PO <sub>4</sub> -P	±0.016 mg/l	1.25046.0100
Phosphorus (total) standard solution	4.00 mg/l PO <sub>4</sub> -P	±0.08 mg/l	1.25047.0100
Phosphorus (total) standard solution	15.0 mg/l PO <sub>4</sub> -P	±0.4 mg/l	1.25048.0100
<b>S</b> Sulfate standard solution	40 mg/l SO <sub>4</sub>	±6 mg/l	1.25050.0100
Sulfate standard solution	125 mg/l SO <sub>4</sub>	±6 mg/l	1.25051.0100
Sulfate standard solution	400 mg/l SO <sub>4</sub>	±20 mg/l	1.25052.0100
Sulfate standard solution	800 mg/l SO <sub>4</sub>	±27 mg/l	1.25053.0100



**Certificate of Analysis** *The lot certificate for each standard solution can be accessed easily online at any time: [www.merckmillipore.com/coa](http://www.merckmillipore.com/coa)*

# Certipur® standard solutions

With the Certipur® standard solutions you can make standards of different concentrations to meet your needs by dilution. The Certipur® standard solutions are **traceable to standard reference material from NIST** and according to the DIN EN ISO/IEC 17025 Accreditation.



## Certipur® standard solutions

Parameter	Concentration in mg/l	Volume in ml	Ord. No.
<b>A</b> Aluminium	1,000	100	1.19770.0100
Ammonium	1,000	500	1.19812.0500
Antimony	1,000	100	1.70204.0100
Arsenic	1,000	100	1.19773.0100
<b>B</b> Boron	1,000	100	1.19500.0100
<b>C</b> Cadmium	1,000	100	1.19777.0100
Calcium	1,000	100	1.19778.0100
Chloride	1,000	500	1.19897.0500
Chromate	1,000	500	1.19780.0500
Chromium	1,000	100	1.19779.0100
Cobalt	1,000	100	1.19785.0100
Copper	1,000	100	1.19786.0100
Cyanide	1,000	500	1.19533.0500
<b>F</b> Fluoride	1,000	500	1.19814.0500
<b>G</b> Gold	1,000	100	1.70216.0100
<b>I</b> Iron	1,000	100	1.19781.0100
<b>L</b> Lead	1,000	100	1.19776.0100
<b>M</b> Magnesium	1,000	100	1.19788.0100
Manganese	1,000	100	1.19789.0100
Mercury	1,000	100	1.70226.0100
Molybdenum	1,000	100	1.70227.0001
<b>N</b> Nickel*	1,000	100	1.09989.0001
Nitrate	1,000	500	1.19811.0500
Nitrite	1,000	500	1.19899.0500
<b>P</b> Palladium	1,000	100	1.14282.0100
Phosphate	1,000	500	1.19898.0500
Platinum	1,000	100	1.70219.0100
Potassium	1,000	100	1.70230.0100
<b>S</b> Silver	1,000	100	1.19797.0100
Silicon	1,000	100	1.70236.0100
Sulfate	1,000	500	1.19813.0500
<b>T</b> Tin	1,000	100	1.70242.0100
TOC	1,000	100	1.09017.0100
<b>V</b> Vanadium	1,000	100	1.70245.0100
<b>Z</b> Zinc	1,000	100	1.19806.0100

\* Titrisol®

# Service

## Simply competent

We offer our customers around the world a comprehensive range of services, from detailed information on our website, professional training courses, practical application advice through to issues concerning environmentally compatible disposal.

### Our service at a glance

#### Environmental aspects

- ISO 14001 certificate
- Safe shipping
- Waste disposal
- Waste disposal advice – online

#### Online service

- Quick links
- Search
- Material Data Sheets and Certificate of Analysis
- Direct access to product information
- Applications for Reflectoquant® and Spectroquant® test kits
- Photometer Method Update

#### Customized support

- On-the-spot consultancy
- Training courses and seminars
- Application laboratory
- Research and Development
- Reference laboratory
- Validation and accreditation for Spectroquant® test kits

#### Safety aspects

- More safety for your lab technicians
- More safety features
- More information for safer handling

## Environmental aspects

Merck Millipore does more than merely sell chemicals and test kits – we recognize our responsibility for our products throughout their entire lifespan. Merck Millipore gives top priority to protecting the environment. Therefore, right from the start of development we involve our Environment, Health, Safety, Security and Quality department that is responsible for global coordination of environmental and safety management. And we follow the obligation to respect our environment in many aspects – here are some examples:

### ISO 14001 certificate

Merck Millipore performs environmental and safety audits at all our production sites in order to identify weaknesses and continually improve the utilization of resources. These internal audits are supplemented by additional audits by third parties. As of December 2008, 26 of our sites held ISO 14001 certification.

### Safe shipping

Merck Millipore ships its products to customers and subsidiaries all over the world. Safety is an overriding objective of our shipments, which should pose no danger to people or the environment. The goods and raw materials should arrive at their destination intact. Since many of the products that Merck Millipore ships are classified as dangerous goods, strict transport regulations are adhered to worldwide.

### Waste disposal

With the help from Merck Millipore, laboratories can play an active role in protecting the environment: Merck Millipore provides the convenient Retrologistik® disposal service for safe and simple disposal of chemical waste and package materials. The recycling of used test kits is already a constituent part of our product development. Taking these principles into due consideration, Merck Millipore has implemented an extensive and customer-friendly concept for the entire range of Spectroquant® products. Based on this concept, not only used packaging materials, but also used chemicals and reagents, are recycled by means of environmentally compatible methods.

### Waste disposal advice – online

This new service combines customer support and environmental protection. The step-by-step instructions – also given online – guide users through a straightforward process on how to properly dispose of used Merck Millipore test kits, such as Spectroquant®, MColortest™, MQuant™, among others. These easy-to-order instructions bring greater uniformity to working practices and – more importantly – help laboratories play an active role in protecting the environment.

► [www.disposal-test-kits.com](http://www.disposal-test-kits.com)

# Service

## Detailed information on all products on the web

Explore our large product and service portfolio online.

- ▶ [www.merckmillipore.com](http://www.merckmillipore.com) offers you the whole Merck Millipore product range.

To find more information on water and food analysis products you may visit

- ▶ [www.merckmillipore.com/test-kits](http://www.merckmillipore.com/test-kits).

To look for special photometry information use

- ▶ [www.merckmillipore.com/photometry](http://www.merckmillipore.com/photometry).

### Quick links

Take a look at the quick links leading you to general information on our test kits, such as application finder, photometer method update, or this catalog as a download.

### Search

Search for product name, product number or key word. As you are typing your search string, you will get suggestions in a drop-down list. Choose from the list and you will be immediately directed to the corresponding product page.

### Material Data Sheets and Certificate of Analysis

Using the "Quick Search" feature you get directly to a pre-filled search field for MSDS or CoA.

### Direct access to product information

Entering the six-digit product number will lead you to the corresponding product page. In "About this product" you will find (depending on the product) instructions for use, applications, technical information documents such as certificates and safety data sheets, and more brochures. Here you will find alternative Merck Millipore products for your chosen product above as well as accessories you need!

### Photometer Method Update

You can update the software on your Merck Millipore photometer any time and free of charge! This gives you the assurance that your results will be correct, as it's our responsibility to calibrate the tests for the instrument. Use the same instrument to conduct all new tests without having to program it yourself. Benefit from always having an up-to-date instrument! Look for "method update photometer" under quick links.

### Applications for Reflectoquant® and Spectroquant® test kits

Many of our test kits can be used directly for the analysis of drinking water and for wastewater investigation. There are, however, some areas – like food and beverage applications or testing of solid or slurry samples – that require special sample pre-treatment measures. **Examples:** Hydroxymethylfurfural in honey, calcium in milk, lipase in cocoa, ascorbic acid in lollipops and candies or chloride in concrete, phosphorus in waste-dump percolating water, boron in soils.

To minimize the effort needed for you to conduct such analyses, we keep a stock of more than 300 applications ready for you to assist you in your work. The complete analytical procedure is detailed in the document, from how to prepare samples to determining measurement parameters and comparing the process with other methods. New applications are added on a regular basis.

Look for the analytical application finder on our website. Choose either photometry or reflectometry. The tool uses three search parameters – field of activity, sample and parameter – to locate the applications that users are looking for. Applications are easily converted into PDF files. If you already know the test kits you would like to work with, just enter the six-digit product number in the search field to view the applications listed for that parameter on the product detail page.

► [www.merckmillipore.com/aaf](http://www.merckmillipore.com/aaf)



# Service

## Customized support and safety aspects

### On-the-spot consultancy

In addition to giving advice in matters of analysis and technical instruction by our local specialists, we have also installed competent and practically oriented hotlines in almost all countries throughout the world. Inquiries are answered immediately or else forwarded to our specialists from the development sector.

### Training courses and seminars

Regular training courses are run to give users tips and hints of use in analysis and to help them avoid making errors in their day-to-day operations. These training courses and seminars are always held with a small number of participants to ensure an intensive and lively exchange of ideas. This provides the opportunity to deal with questions raised by the participants individually and in detail.

### Application laboratory

Our central application laboratory works on new applications for our range of test kits. We regularly check developments in the market and your inquiries in order to define the parameters and sample materials that are of most interest. If you do not find an application on our website, please contact us for further consultancy.

### Research and Development

Merck Millipore builds upon the foundations of its technological expertise and functional processes – from research to knowledge of our customers' demands. From that and from our contacts to national standard committees, we develop market-oriented ideas for new test kits and their applications.

### Reference laboratory

If you wish to compare your results with those yielded by reference methods gained in accredited laboratories, we can offer you this service, too, in collaboration with our independent external partners in the field.

### Validation and accreditation for Spectroquant® test kits

If you are planning to validate our Spectroquant® test kits and to get accredited, you may contact our local product specialists to support you by providing special checklists and spreadsheets.



### More safety for your lab technicians

In developing our test kits, wherever possible we avoid the use of harmful chemicals, e.g. chloroform, cadmium, or benzene.

### More safety features

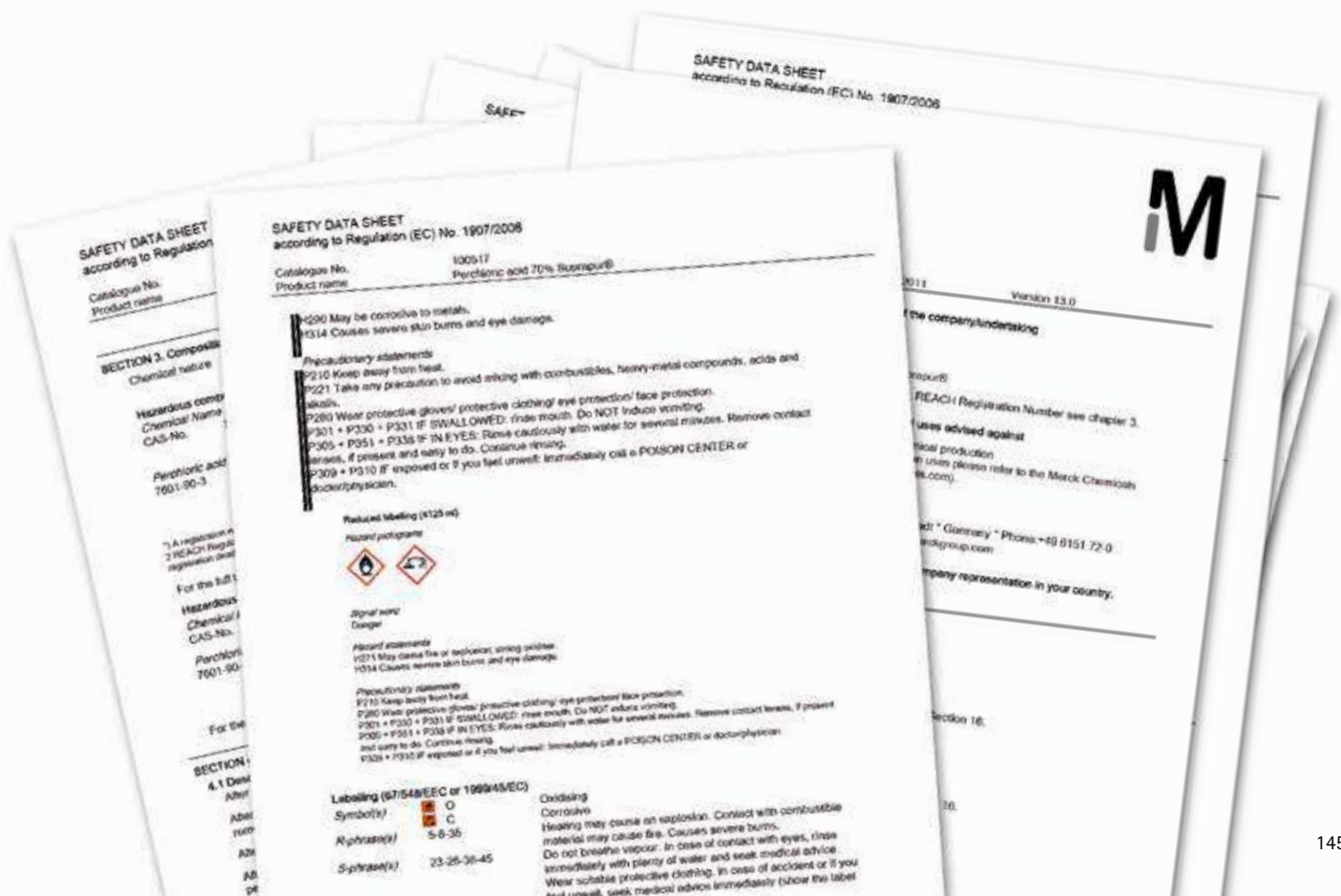
Identification and safety labels on test kits go without saying. At Merck Millipore you find them even on every Spectroquant® cell test and on all reagent bottles. This information helps you to avoid any potential risk. Robust test vessels with leak-proof caps ensure safe handling. Of course, our products implement all relevant statutory requirements and we supply comprehensive and easy-to-use waste disposal advice for our customers.

▶ [www.merckmillipore.com/ghs](http://www.merckmillipore.com/ghs)

### More information for safer handling

People dealing with laboratory chemicals should be informed about potential risks. Informative **Material Safety Data Sheets (MSDS)** are available for our test kits free of charge and in over 30 languages. They provide important information and useful advice concerning ingredients, technical handling of chemicals, workplace safety measures and ecological data – topics on which other companies do not offer any information at all or only very rarely.

▶ [www.merckmillipore.com/msds](http://www.merckmillipore.com/msds)



**One** of our central goals is to reduce the amount of hazardous or toxic chemicals our test kits contain. As a result, they not only provide precise, reliable results – they also help preserve our environment. For years, Merck Millipore has been manufacturing products that help to improve our environment ... and are easier on nature themselves. In addition to our test kits for water and food analytics, we can also supply lower-impact products for a wide range of other applications.





We provide information and advice to our customers to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.



For further information on Merck Millipore  
and our products contact:

Merck KGaA  
64271 Darmstadt, Germany  
[www.merckmillipore.com/test-kits](http://www.merckmillipore.com/test-kits)  
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