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# Water Analysis Made Simple



*INTERNATIONAL EDITION*

**MASTER CATALOG 2014-2015**



# DR 1900 Portable Spectrophotometer

**NEW!**



The DR 1900 is the lightest and most compact portable spectrophotometer. Even in dusty or wet conditions, testing is easy with the highest number of preprogrammed methods and an easy-to-use interface.

- Carry Anywhere
- Test What You Need
- Ensure Accuracy In The Field
- Make Testing Easier
- Take Into Field Environments

**See page 89.**

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**Be Right™**

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Hach provides the best solutions for your specific application needs, whether it's analyzing source water, controlling processes or monitoring effluent. Hach is your partner in water analysis.

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**To find a local authorized Hach distributor, visit: [www.hach.com/global-distributor-support](http://www.hach.com/global-distributor-support)**

Contact the offices above for: Orders, Quotations, Products and Procedures, Claims and Returns, Instrument Service (except Canada\*), and Free Technical Literature. If you are calling Hach from outside the United States, dial 970-669-3050, press 0 and ask for International Customer support. If you are calling from inside the United States, call 800-227-4224.

## HACH COMPANY

World Headquarters  
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www.hach.com

To place an order or to contact a local sales person  
or distributor, see the inside back cover.

Please circulate to:  Water Quality Lab  Water Treatment Operator  Purchasing

# DR 900 Colorimeter

## NEW!



Fastest and simplest  
water testing for the  
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- Your Favorites, at Your Fingertips
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**See page 90.**

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**Be Right™**



**FOR CUSTOMER  
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**INFO MANAGEMENT**

## NEW PRODUCTS!

### DR 6000 Spectrophotometer

Has the most pre-programmed testing methods, including high-speed wavelength scanning across the UV and Visible Spectrum.

See page 83.

**NEW!**



### sensION®+ Data Logger System

Interval measurements, 500 data point memory and wireless data transfer to your PC. Data management as fast and simple as it can be.

See page 43.

**NEW!**



### DR 1900 Spectrophotometer

Carry more water methods with you wherever you need them most.

See page 89.

**NEW!**



**NEW!**

### IntelliCAL™ Water Quality pH Probes

High-performance Red Rod lab electrodes for use with HQd meters.

See pages 25-26.

### DR 900 Colorimeter

Fastest and simplest water testing for the most demanding field environments.

See page 90.

**NEW!**



### Pocket Pro Testers

Pocket Pro's superior probe and calibration diagnostics deliver confidence in your results.

See pages 65-66.

**NEW!**





## NEW PRODUCTS!

**NEW!** Ballast Water  
BW680 Handheld  
Fluorometer

Provides a simple, rapid method for determining the efficacy of ballast water treatment systems.

See page 120.

**AISE sc and NISE sc Probes**

ISE probes for the on-line measurement of ammonium and nitrate provide trending information with minimal maintenance at an affordable price.

See pages 329 and 357.

**NEW!****LuminUltra PhotonMaster™** **NEW!**  
Luminometer

ATP microbiological testing solutions provide feedback on contamination sooner for proactive control!

See page 249.

**5500sc Phosphate & Silica Analyzers**

Lower maintenance,  
Less downtime.

See pages 371 and 373.

**NEW!****NEW!****TitraLab™ Automatic Titrator**

TitraLab automatic analyzer is specifically designed for drinking water and various food & beverage applications.

See pages 110-111.

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**AF7000 Monitor**

Toughness that won't quit,  
means you'll know when  
to respond.

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# HACH EPA COMPLIANT METHODS

## EPA-Approved Methods

The EPA has evaluated and approved new technological methods developed by Hach Company. All EPA-Approved methods are cited in the Federal Register and compiled in the Code of Federal Regulations at 40 CFR 136 and CFR 141.

## EPA-Accepted Methods

The EPA has reviewed Hach methods and accepted them for use in compliance monitoring. These methods are defined by EPA as Acceptable versions of previously approved methods. These methods are generally not published in the Federal Register or in the Code of Federal Regulations. A facsimile of the EPA- Acceptance letter is available upon request.

## EPA-Equivalent Methods

All EPA-Approved methods have specification criteria built into their procedural steps. When an approved or accepted EPA method has been packaged by Hach from the EPA reference method as a test method that meets or exceeds these specification criteria, these methods are deemed to be equivalent for use in EPA compliance monitoring (40 CFR 136.6). EPA does not normally issue equivalence letters of packaged reference methods. Hach maintains the formulation, procedure, and data demonstrating equivalency and is available upon request.

## Hach Approved Methods

These methods may be used for compliance monitoring. They have either obtained an EPA Approval or Acceptance letter, or the method is a packaged product that follows an EPA Reference method and is deemed Equivalent under 40 CFR 136.6. With any method used for compliance reporting, always consult with your local regulatory authority.



Analyte	Sample Matrix†	Hach Method	Approval Type	Reference Method	See Page
Acidity, as CaCO <sub>3</sub> , Phenolphthalein, Buret	WW	8010	Accepted	SM 2310 B	150
Acidity, Phenolphthalein, Digital Titration	WW	8202	Equivalent	SM 2310 B	150
Alkalinity, Digital Titration	WW	8203	Equivalent	SM 2320 B, EPA 310.2	152
Ammonia as Nitrogen	WW	TNT830	Equivalent	EPA 350.1, EPA 351.1, EPA 351.2	154
Ammonia as Nitrogen	WW	TNT831	Equivalent	EPA 350.1, EPA 351.1, EPA 351.2	154
Ammonia as Nitrogen	WW	TNT832	Equivalent	EPA 350.1, EPA 351.1, EPA 351.2	154
Ammonia Nitrogen, Electrode	WW	10001	Equivalent	SM 4500-NH <sub>3</sub> D, E, F, or G	29
Ammonia Nitrogen, Known Addition, Electrode	WW	10002	Equivalent	SM 4500-NH <sub>3</sub> D, E, F, or G	29
Ammonia, as Nitrogen, Nessler	WW	8038	Accepted	SM 4500-NH <sub>3</sub> C	154
Arsenic, Total	WW	8013	Accepted	SM 3500-As B or C	156
BOD, Luminescence	WW	10360	Approved	40 CFR 136	22
BOD, Polarographic	WW	8043	Accepted	SM 5210 B	45
Calcium, Total, Buret	DW	8222	Accepted	SM 3500-Ca B or D	160
Calcium, Total, Buret	WW	8222	Accepted	SM 3500-Ca B or D	160
Chemical Oxygen Demand	WW	8000	Approved	40 CFR 136.3	170
Chemical Oxygen Demand, TNTplus	WW	TNT821 / 8000	Approved	Hach Method 8000, 40 CFR 136.3	170
Chemical Oxygen Demand, TNTplus	WW	TNT822 / 8000	Approved	Hach Method 8000, 40 CFR 136.3	170
Chloride, Mercuric Nitrate, Digital Titration	WW	8206	Equivalent	SM 4500-Cl C	162
Chloride, Silver Nitrate, Buret	WW	8225	Accepted	SM 4500-Cl B	162
Chloride, Silver Nitrate, Digital Titration	WW	8207	Equivalent	SM 4500-Cl B	162
Chlorine, Free, DPD	DW	8021	Accepted	SM 4500-Cl G	163
Chlorine, Free Amperometric Titration	DW	8334	Equivalent	SM 4500-Cl D	164
Chlorine, Free Amperometric Titration	WW	8334	Equivalent	SM 4500-Cl D	164
Chlorine, Total, DPD ULR	DW	8370	Accepted	SM 4500-Cl G	163
Chlorine, Total Amperometric Forward Titration	DW	10026	Accepted	SM 4500-Cl D	164
Chlorine, Free, DPD MR	DW	10245	Accepted	SM 4500-Cl G	166
Chlorine, Free, DPD MR	WW	10245	Accepted	SM 4500-Cl G	166
Chlorine, Free, DPD HR	DW	10069	Accepted	SM 4500-Cl G	164
Chlorine, Free, DPD HR	WW	10069	Accepted	SM 4500-Cl G	164

†DW = Drinking Water; SS = Sewage Sludge; SW = Surface Water; WW = Wastewater



800-227-4224

Outside the United States, call 970-669-3050



Analyte	Sample Matrix†	Hach Method	Approval Type	Reference Method	See Page
Chlorine, Free, DPD TNT	DW	10102	Accepted	SM 4500-Cl G	164
Chlorine, Free, DPD TNT	WW	10102	Accepted	SM 4500-Cl G	164
Chlorine, Free and Total, TNTplus	WW	TNT867	Equivalent	SM 4500-Cl G	163
Chlorine, Total Residual, DPD	DW	8167	Accepted	SM 4500-Cl G	163
Chlorine, Total Residual, DPD	WW	8167	Accepted	SM 4500-Cl G	163
Chlorine, Total Residual	DW	8168	Accepted	SM 4500-Cl D	164
Chlorine, Total Residual	WW	8168	Accepted	SM 4500-Cl D	164
Chlorine, Total Residual, Amperometric Back Titration	WW	10025	Accepted	SM 4500-Cl C	164
Chlorine, Total Residual, DPD, ULR	WW	10014	Accepted	SM 4500-Cl G	163
Chlorine, Total, DPD, ULR	DW	8370	Accepted	SM 4500-Cl G	163
Chlorine, Total, DPD, ULR	WW	8370	Accepted	SM 4500-Cl G	163
Chlorine, Total Residual, DPD MR	DW	10250	Accepted	SM 4500-Cl G	166
Chlorine, Total Residual, DPD MR	WW	10250	Accepted	SM 4500-Cl G	166
Chlorine, Total Residual, DPD HR	DW	10070	Accepted	SM 4500-Cl G	164
Chlorine, Total Residual, DPD HR	WW	10070	Accepted	SM 4500-Cl G	164
Chlorine, Total Residual, DPD TNT	DW	10101	Accepted	SM 4500-Cl G	164
Chlorine, Total Residual, DPD TNT	WW	10101	Accepted	SM 4500-Cl G	164
Chlorine Dioxide, DPD/Glycine	DW	10126	Accepted	SM 4500-ClO <sub>2</sub> D	167
Chromium VI, TNTplus	WW	TNT854	Accepted	SM 3500-Cr B or D	168
Chromium VI, Dissolved	WW	8023	Accepted	SM 3500-Cr B or D	168-169
Coliform, Fecal, EC Medium with/MUG	DW		Approved	SM 9221 D Approved Media	248
Coliform, Total and <i>E. coli</i> , m-ColiBlue24	DW	10029	Approved	40 CFR 141.21	248
Coliforms, <i>E. coli</i> , m-TEC	SW	8367	Equivalent	EPA 1103.1	248
Coliforms, Fecal and Total, MPN, A1 Medium	DW	8368	Equivalent	SM 9221 B	250
Coliforms, P/A Media	DW		Approved	SM 9221 D Approved Media	248
Conductivity	DW	8160	Accepted	SM 2510 B	15-70
Conductivity	WW	8160	Accepted	SM 2510 B	15-70
Copper, Bicinchoninate Procedure	WW	8506	Approved	40 CFR 136	173
<i>E. coli</i> in Wastewater	WW	10029	Approved	40 CFR 136	248
<i>E. coli</i> , m-ColiBlue24, Enumeration	SW	10029	Approved	40 CFR 136	248
<i>E. coli</i> , m-ColiBlue24, P/A	DW	10029	Approved	40 CFR 141.21	248
Fecal and Total Coliform	WW	8001	Accepted	SM 9221 B/E	248
Fecal and Total Coliform	DW	8001	Accepted	SM 9221 B/E	248
Fecal and Total Coliform	SW	8001A	Accepted	SM 9221 E	248
Fecal and Total Coliform	SS	8001A	Accepted	SM 9221 E	248
Fecal and Total Coliform	DW	8001A	Accepted	SM 9221 E	248
Fecal Coliform, Sludge, MPN, A1 Medium	WW	10028	Equivalent	SM 9221 D/E	250
Fecal Coliform, Sludge, MPN, LTB/EC Medium	WW	10027	Equivalent	SM 9221 D/E	250
Fecal <i>Streptococci</i> , MPN	WW	8172	Equivalent	SM 9230 B	—
Fluoride, SPADNS	DW	8029	Accepted	SM 4500-F B/D	177
Fluoride, SPADNS	WW	8029	Equivalent	SM 4500-F B/D	177
Fluoride, Electrode	DW	8323*	*	SM 4500-F B or C, EPA 340.2, ASTM D1179-93	177
Fluoride, Electrode	WW	8323	Equivalent	SM 4500-F B or C	177
Fluoride, SPADNS2, Arsenic Free	WW	10225	Equivalent	SM 4500-F B or C	177
Fluoride, SPADNS2, Arsenic Free	DW	10225	Approved	40 CFR 141	177
Hardness, Calcium, Digital Titration	WW	8204	Equivalent	SM 3500-Ca B or D	160

†DW = Drinking Water; SS = Sewage Sludge; SW = Surface Water; WW = Wastewater

\*For Drinking Water reporting, use the ISE equipment in this method to perform the specified Reference Method.

Continued on next page.

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# HACH EPA COMPLIANT METHODS

Analyte	Sample Matrix†	Hach Method	Approval Type	Reference Method	See Page
Hardness, Calcium and Total, Buret	WW	8222	Accepted	SM 3500-Ca B or D	181
Hardness, Total, Buret	WW	8226	Accepted	SM 2340 B or C	180
Hardness, Total, Digital Titration	WW	8213	Equivalent	SM 2340 B or C	180
Hydrogen Ion, pH	WW	8156	Accepted	SM 4500-H+ B	—
Iron, 1,10-Phenanthroline	WW	8008	Approved	40 CFR 136	184
Iron, 1,10-Phenanthroline	WW	TNT858	Equivalent	Hach Method 8008	184
Lead, Total, Voltametry	DW	1001	Approved	40 CFR 141.23	186
Lead, Total, Dithizone	WW	8033	Accepted	SM 3500-Pb B or D	186
Manganese, Periodate Oxidation	WW	8034	Approved	40 CFR 136	187
Nickel, Total	WW	8037	Accepted	SM 3500-Ni D	190
Nitrate, Dimethylphenol	DW	TNT835 / 10206	Approved	40 CFR 141	191
Nitrate, Dimethylphenol	DW	TNT836 / 10206	Approved	40 CFR 141	191
Nitrate, Electrode	DW	8359*	*	SM 4500-NO3 D	31
Nitrate, Electrode	WW	8358	Equivalent	SM 4500-NO3 D	31
Nitrite as Nitrogen	WW	TNT839 / 8507	Equivalent	EPA 353.2	193
Nitrite as Nitrogen	WW	TNT840/ 8507	Equivalent	EPA 353.2	193
Nitrite Nitrogen	WW	8507	Approved	40 CFR 136	193
Nitrogen, Total Kjeldahl (TKN)	WW	TNT880/10242	**	40 CFR 136	194
Oil and Grease, Gravimetric	WW	10056 / 10300	Equivalent	EPA 1664 or SM 5220 B	195
Oxygen, Dissolved, Luminescence	WW	10360	Approved	40 CFR 136	20-22
Oxygen, Dissolved, Polarographic	WW	8157	Accepted	SM 4500-O G	42-45
Oxygen, Dissolved, Winkler, Buret	WW	8229	Accepted	SM 4500-O C	175
Oxygen, Dissolved, Digital Titration	WW	8215	Equivalent	SM 4500-O C	175
pH	DW	8156	Accepted	EPA 150.1, 150.2; SM 4500-H+ B	15-70
pH	WW	8156	Accepted	EPA 150.1, 150.2; SM 4500-H+ B	15-70
Phenols, 4AAP	WW	8047	Accepted	EPA 420.1	199
Phosphate, Ortho	WW	8048	Accepted	EPA 365.1	201
Phosphate, Ortho	WW	TNT843 / 8048	Equivalent	EPA 365.1	201
Phosphate, Ortho	WW	TNT844 / 8048	Equivalent	EPA 365.1	201
Phosphate, Ortho	WW	TNT845 / 8048	Equivalent	EPA 365.1	201
Phosphorus, Total	WW	8190	Accepted	EPA 365.1, 365.3	201
Phosphorus, Total	WW	TNT843 / 8190	Equivalent	EPA 365.1, 365.3	201
Phosphorus, Total	WW	TNT844 / 8190	Equivalent	EPA 365.1, 365.3	201
Phosphorus, Total	WW	TNT845 / 8190	Equivalent	EPA 365.1, 365.3	201
Solids, Dissolved	WW	8277	Equivalent	SM 2540 C	—
Solids, Filterable	WW	8163	Equivalent	SM 2540 C	—
Solids, Settleable	WW	8165	Equivalent	SM 2540 F	—
Solids, Total	WW	8271	Equivalent	SM 2540 B	—
Solids, Total Non-filterable	WW	8158	Accepted	SM 2540 D	—
Solids, Volatile, Non-filterable	WW	8164	Equivalent	EPA 160.4	—
Specific Conductance	WW	8160	Accepted	EPA 120.1; SM 2510 B	15-70
Sulfate as SO <sub>4</sub>	WW	8051	Accepted	ASTM D516-90, 02	208
Sulfide as S	WW	8131	Accepted	SM 4500-S <sub>2</sub> E or F	208
Sulfite as SO <sub>3</sub> , Buret	WW	8071	Accepted	SM 4500-SO <sub>3</sub> B	209
Sulfite, Digital Titration	WW	8216	Equivalent	SM 4500-SO <sub>3</sub> B	209
Turbidity	DW	8195	Approved	40 CFR 141	93-98
Turbidity	DW	GLI	Approved	40 CFR 141	—
Zinc, Zincon	WW	8009	Approved	40 CFR 136.3	216

†DW = Drinking Water; SS = Sewage Sludge; SW = Surface Water; WW = Wastewater

\*For Drinking Water reporting, use the ISE equipment in this method to perform the specified Reference Method.

\*\*Pending approval in Federal Register, per EPA. Check with your local or regional authority for use.





# HACH TECHNICAL TRAINING CENTER

Where participants from all professional backgrounds can benefit from educational, hands-on experience.

Anyone can push buttons on an instrument. But a guided exploration of the “why” behind analytical routines can help operators build greater confidence in their understanding of the instrumentation and the chemistries, in their ability to perform their own analytical tests, and in the quality of their test results.

That’s the whole purpose behind the **Hach Technical Training Center (HTTC)**—to help participants explore the theories behind their analytical routines, master various laboratory techniques, and return to their jobs with increased understanding and confidence. By employing a hands-on approach to teach users more about their instrumentation, Hach Technical Training Center classes make for an invaluable resource in operator and analyst education.



**THINK TRAINING. THINK HACH.**

## State-Approved Training

HTTC offers state-approved classes for continuing education credits in many states. Workshops cover a variety of topics in water treatment including:

- Laboratory Skills
- Process Instrument Verification
- Distribution Monitoring
- Simplified Wastewater Analysis
- Chlorine Testing
- And more!



Classes are small and include a balance of lecture, classroom demonstration, and hands-on experience with Hach instrumentation. Instructors for each class have extensive experience in instruction and water analysis.

Class offerings, schedules, and locations are available at [hach.com/training](http://hach.com/training). If you are interested in having classes taught at your facility, contact us about incentives for hosting Hach State-Approved Training classes.

## Customized Training

In addition to our scheduled classes, HTTC also offers customized training which is designed for your individual needs and taught at your location or at the Hach Company in Loveland, Colorado. For information and pricing, call **800-227-4224 x2344** or e-mail: [httc@hach.com](mailto:httc@hach.com).

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# HACH SOLUTIONS: BEVERAGE INDUSTRY



## Your Partner for Water Analysis in the Beverage Industry.

Accurate determination of parameters such as: alcohol, CO<sub>2</sub>, O<sub>2</sub>, brix, color, organic acids, and pH is important for quality control in the brewing and beverage industries.

Our industry standard products from Hach and Orbisphere provide accurate, consistent and reliable results in the lab, in-process and at-line to help you control quality, minimize costs and maximize uptime.

### Benefits

- **Quality checks** that help you meet your performance objectives
- **Control your costs** with lab & process analytical products, designed specifically for each product step
- **Local beverage team** for technical and service support ensures we are always on hand when you need us

### ORBISPHERE 6110 Total Package Analyzer

See page 344.



### DR 6000 Spectrophotometer

See page 83.



### ORBISPHERE M1100 High and Low Level Sensor

See page 342.



### Hach Craft Brewers Kit

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### ORBISPHERE 3100 Portable Analyzer

See page 343.



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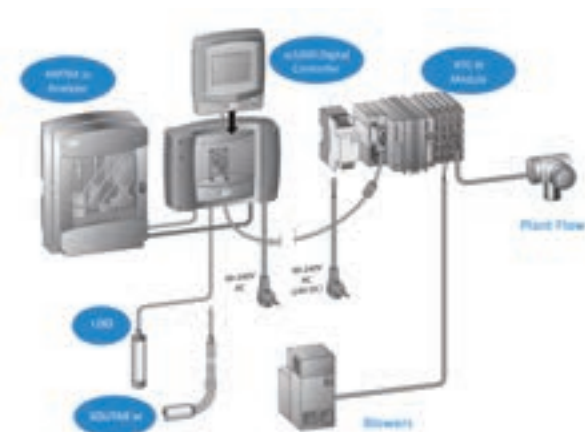
## Why overtreat?

### Simply set your process control limits and let RTC do the rest.

Hach's off-the-shelf Real-Time Control (RTC) Systems adjust treatment processes in real time, keeping your facility compliant while reducing treatment costs. Controlling your process has never been so simple.

#### PHOSPHORUS

The RTC-P optimizes the phosphorus removal processes by adjusting chemical dosing in real time through the continuous measurement of phosphate concentration and flow, allowing you to maintain consistent effluent phosphorus values and enhance your chemical phosphorus control system for unprecedented chemical savings.

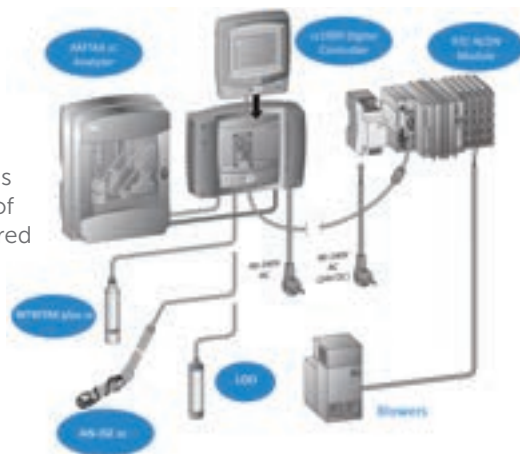
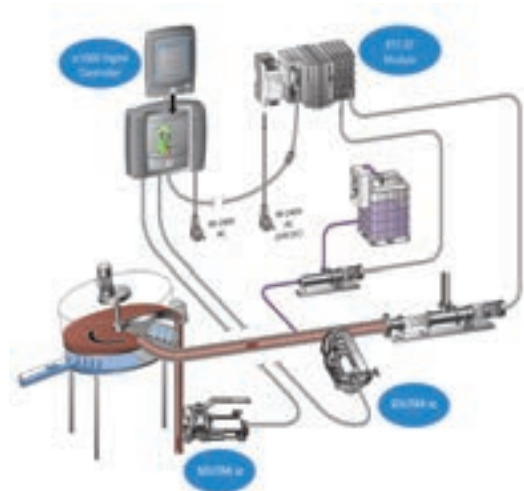


#### NITRIFICATION

Designed specifically for continuously-aerated biological wastewater treatment plants, the RTC-N uses both an open and closed-loop controller that collects influent and effluent ammonia concentration, flow rate, mixed liquor suspended solids and temperature to calculate the optimal DO set-point necessary to control your aeration system based on your desired effluent ammonia set-point.

#### NITRIFICATION/DENITRIFICATION

Designed specifically for oxidation ditches and sequencing batch reactors, the RTC-N/DN optimizes nitrogen elimination by determining optimal times for nitrification and denitrification based on the continuous measurement of ammonia and nitrate concentrations. The system assesses absolute measured values and the rate of change of the ammonia and nitrate measurements.



#### SLUDGE

Designed specifically for use in sludge thickening devices (e.g. belt, gravity, dissolved air floatation or drum thickeners), the RTC sludge modules automatically adjust a desired specific polymer dosing rate based on the measured influent total suspended solids (TSS) concentration and feed flow rate. To meet exactly your targeted TSS concentration a feedback controller based on the TSS measurement in thickened sludge can be activated

**Your Process. Under Control.**

**For more information on Hach's complete portfolio of RTC Systems, please contact your Hach representative, or visit: [hach.com/rtc](http://hach.com/rtc)**

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# HACH SOLUTIONS: POWER INDUSTRY



## Hach Offers the Most Comprehensive Water Analysis Solution for Continuous Power Generation.

With more than 60 years as the leading expert in water quality analysis, you can trust Hach's knowledgeable and responsive support team to address your unique needs for the water applications throughout your entire process:

- **Influent Water Treatment**
- **Condensate**
- **Boiler Feed Water**
- **Cooling Water**
- **Wastewater**

### 5500sc Phosphate and Silica Analyzers

See pages 371 and 373.



### 9245/9240 Sodium Analyzer

See page 375.



### ORBISPHERE K1100 Dissolved Oxygen Sensor

See page 338.



### ORBISPHERE 3100 Portable DO Analyzer

See page 343.



### 8362 Ultrapure Water pH/ORP Sensors

Visit: [hach.com](http://hach.com)



### 8315 Contacting Conductivity Sensor

Visit: [hach.com](http://hach.com)



### DR 3900 Spectrophotometer

See page 85.



### DR 6000 Spectrophotometer

See page 83.



To see the complete portfolio of our instruments and service offerings for Power Generation, visit:

**[hach.com/power](http://hach.com/power)**

# HACH SOLUTIONS: HAZARDOUS AREA LOCATIONS

Optimize your treatment process and avoid unnecessary maintenance costs with products built to withstand harsh environments.

## Products with Class I Div 1, Class I Div 2, and ATEX Zone 1 Certification Options

**BioTector B7000  
TOC Analyzer**  
*See page 381.*



**Differential and Combination  
pH Sensors**  
*See pages 362-367.*



**Inductive and Contacting  
Conductivity Sensors**  
*See pages 334-338.*



## Products with Class I Division 2 Certification Options

**BioTector  
B3500c  
TOC Analyzer**  
*Visit: hach.com*



**LDO2, Optical Process DO Probe**  
*See page 339.*



**TSS Ex sc, Suspended Solids  
Immersion Sensor**  
*See page 379.*



## Products with ATEX Certification Options

**ORBISPHERE  
3650 Ex,  
Portable O<sub>2</sub>/H<sub>2</sub>  
Analyzer**  
*Visit: hach.com*



**3660 Ex ORBISPHERE,  
O<sub>2</sub> Controller**  
*Visit: hach.com*



**Please contact your Hach representative directly for ordering information on products requiring hazardous area certification.**

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## HACH ServicePlus® PROGRAMS

# PROBLEM?

At Hach, we understand that your facilities' problems are unique and we have developed **Hach ServicePlus Certified Programs** that are vital to helping you solve your maintenance and support problems. Whether it is a lack of resources or skills, an instrument that is down, compliance concerns or the need for a predictable budget, we have programs to fit the unique challenges you face in your organization.



# PROBLEM SOLVED.

### Satisfaction Guaranteed

Hach warranties all field and factory service.

### Certified Technical Expertise

As an ISO 9001:2008 certified company, Hach's network of highly experienced Field and Factory Service Technicians are trained to maintain the highest standards for quality assurance ensuring optimal instrument performance. Optimal performance yields optimal accuracy.

### Genuine Hach Parts

Why put your instrument at risk? Hach Service uses only genuine Hach parts which pass stringent QA/QC checks.

### Flexible Programs

From complex analyzers to simple handhelds Hach offers customizable programs to fit your exact needs.

**Hach's ServicePlus Programs** combined with premier factory technical support have provided peace of mind and guaranteed instrument performance for over 60 years with service options that only Hach certified experts can provide. Not only do we service Hach Brand instruments, but we also service many non-Hach products as well.



# WHY RISK PERFORMANCE? CHOOSE HACH FOR PEACE OF MIND.

No matter what partnership program you choose, all Hach ServicePlus® Partnership Programs provide the following benefits:

## **Freedom from instrument maintenance.**

Hach takes care of everything, including repairs, calibrations, certification and preventative maintenance. Priority support can provide maximum uptime and real savings to your operation. Be sure to ask about our reagent restocking/replenishment services!

## **Confidence in Hach service professionals.**

Hach experts have years of experience working on Hach equipment, and applying their certified expertise will ensure that your equipment stays as good as new! Our highly trained experts will professionally fill any instrument knowledge gaps you may have.

## **Fixed maintenance budget for the entire year.**

All parts, labor, travel and advanced technical support are included in the annual contract. Even preventative maintenance parts included so you don't need to keep an inventory of parts. Write just one purchase order per year!

## **Maximize instrument performance.**

With a Partnership Program, Hach will schedule and perform preventative maintenance at factory recommended intervals ensuring that your Hach instrument will continue to provide you with best-in-class accuracy.

## **Exclusive priority technical support.**

Go to the front of the queue. Receive priority emergency repair at no additional cost. Or use your exclusive toll-free priority technical support phone number to quickly get your questions answered by Hach instrumentation experts.

## **Field Service Partnership (FSP)**

- Ideal for process instrumentation
- On-site preventative maintenance and repairs by a certified Hach Field Service Technician
- Start-up on-site\*
- Unscheduled travel to site for repairs
- Fast on-site response time for emergencies

## **Bench Service Partnership (BSP)**

- Ideal for lab products, especially spectrophotometers
- At factory, preventative maintenance and repairs by a certified Hach Service Technician
- Return shipping of instrument after maintenance

## **WarrantyPlus™ Upgrade**

*(Upgrade from basic factory warranty.)*

- Ideal for process or lab products\*\*
- On-site preventative maintenance and repairs by a certified Hach Field Service Technician
- Start-up on-site—includes basic operational training\*
- Unscheduled travel to site for repairs
- Fast on-site response time for emergencies

## **Custom Programs**

Hach can create a customized Service Program to meet your unique requirements. The customized program may include uptime-assurance, reagent replenishment services, or other services described here.

\*Not required for all products and does not include method specific training—consult with your local sales team. \*\*Some lab products require shipment to factory for repair.

## **Hach supports many non-Hach instruments.**

Do you have Non-Hach instrumentation that you would like supported under your Partnership Program? Just let us know.

*This service plan overview is for reference only. Please see service terms and conditions for details.*

**[hach.com/service](https://hach.com/service) | 800-227-4224, ext. 6178**

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# BURIED IN DATA?



Don't get slowed down by:

- piles of paperwork
- time-consuming reports
- mind-numbing calculations

# MAKE IT MEANINGFUL!

- Easy-to-understand dashboards
- Trends analysis charts
- What-if models
- Internal and regulatory reports



**Water Information Management Solution™ Software**

**[hachwims.com](http://hachwims.com)**



# LABORATORY & FIELD INSTRUMENTS

METERS & PROBES



**NEW!**

**High-performance  
Red Rod lab electrodes  
for use with HQd meters.**



**NEW!**

**Pocket Pro and Pocket  
Pro+ testers measure  
water quality parameters  
in a broad range of  
applications.**

**HQd™  
Benchtop  
Meters**



**NEW!**

**Hach sensION®+  
Data Logger, an  
all-in-one system—  
now making  
testing AND DATA  
MANAGEMENT  
fast and simple.**



**Be Right™**

# UNIVERSAL METERS & PROBES



## HQd™ Meters & IntelliCAL™ Probes

### SMART PROBES

Hach, the leader in water quality, has developed a customized solution for water quality testing that takes the guesswork out of your measurements. Designed for your water applications, the Hach smart probes feature a built-in temperature sensor, and automatically recognize the testing parameter, calibration history, and method settings to minimize errors and setup time.

## sensION®+ Meters & Probes

### COMPLETE SIMPLICITY

Hach sensION+, an all-in-one system with guided menu navigation makes general testing fast and simple. Each system is designed to be used in a wide variety of applications and comes complete with everything you need to start testing.



	HQd	sensION+
<b>Ease of Use</b>	★★★★★	★★★★★
<b>Accuracy &amp; Performance</b>	★★★★★	★★★★★
<b>Durability</b>	★★★★★	★★★★★
<b>Flexibility</b>	★★★★★	★★★

# SPECIALTY METERS & PROBES



## H-Series Meters & Probes

### NON-GLASS

Hach's rugged, non-glass H-Series family of pH sensors resist damage and store dry to eliminate maintenance in laboratory and field testing of difficult applications. Use with Hach's H-Series benchtop or portable meters in areas where glass is not preferred such as rugged, outdoor, and food applications.



## MP Meters

### GO PROBELESS

Hach's MP Meters offer single-handed, portable operation for spot checking the pH, ORP, conductivity, resistivity, Total Dissolved Solids (TDS) and temperature of clean water. Fast and accurate in the laboratory, MP Meters are also rugged enough for daily process checks in challenging environments.



# HACH'S METERS & PROBES FAMILY

## UNIVERSAL METERS & PROBES

## SPECIALTY METERS & PROBES

Smart

Simple

Non-glass

Probeless

**HQd Meters & IntelliCAL Probes**

**sensiON+ Meters & Probes**

**H-Series Meters & Probes**

**MP Meters**

- Compliance monitoring for drinking water and wastewater
- Laboratory verification of process instrumentation
- Industrial plant control
- Environmental monitoring
- Rugged field applications

- Compliance monitoring for drinking water and wastewater
- Laboratory verification of process instrumentation
- Industrial plant control
- Environmental monitoring
- Beverage quality testing

- Food processing
- Beverage quality testing
- Academic teaching
- Pharmaceutical research/development
- Industrial plant control

- Industrial plant control
- Boiler/cooling water applications
- Water treatment control
- Distribution monitoring
- Pool and spa maintenance
- Tap or spigot sampling

### PARAMETERS

pH				
Glass	■	■	■	■
Non-glass (ISFET)			■	
Conductivity	■	■	■	■
Resistivity	■	■		■
Salinity	■	■	■	
TDS	■	■	■	■
Ammonia	■	■	■	
Ammonium	■	■		
Chloride	■	■		
Dissolved Oxygen				
Luminescent (LDO®)	■			
BOD Probe (with LDO)	■			
Galvanic			■	
Polarographic		■		
Fluoride	■	■	■	
Temperature	■	■	■	■
Nitrate	■	■	■	
ORP/Redox	■	■	■	■
Sodium	■	■	■	

### ATTRIBUTES

Multi-parameter Options	■	■	■	■
Simultaneous Display	■	■		
Stainless Steel Probes	■		■	
Auto Probe Recognition	■			
Multiple Cable Lengths	■			
Multi-language Display	■	■		
On-screen Instructions	■			
Wireless Communication*			■	
USB Connectivity	■	■	■	

\*For Bluetooth® capable models only

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# HQd IntelliCAL pH PROBE SELECTION GUIDE

★ BEST    ✓ GOOD    □ NOT APPLICABLE

METERS & PROBES

		Standard IntelliCAL pH Electrodes					
Electrode Model	PHC101 Rugged	PHC201	PHC301	PHC281	PHC101 Standard	PHC805	
<b>SPECIFICATIONS</b>							
Reference system	Ag/AgCl						
Body material	stainless steel	epoxy	Zeonor	Zeonor	epoxy	glass	
Electrolyte	gel	gel	refillable	refillable	gel	refillable	
Junction Diaphragm	open	porous pin	porous pin	open	open	porous pin	
Glass bulb	standard	standard	standard	standard	standard	standard	
<b>APPLICATIONS</b>							
<b>General Purpose</b>							
General Use	✓	★	★	✓	✓	★	
High performance				★			
Field Measurements	★	✓	✓	✓	✓		
High Temp (≥ 100 °C)							
Low Temp (< 0 °C)							
<b>Waters</b>							
Drinking Water	✓	✓	✓	★		✓	
Wastewater	★	✓	✓		★	✓	
Seawater	✓	✓	★	✓	✓	★	
Boiler / Cooler				✓			
Pool / Spa		★			✓		
<b>Food &amp; Beverage Applications</b>							
Beer			✓	✓		✓	
Bottled Water			✓	★		✓	
Milk / Dairy							
Wine			✓			✓	
Penetration applications—cheese, meat, fruit							
Flat surface measurement—cheese, meat, agar							
<b>Challenging Applications</b>							
Alkaline samples (pH > 12)							
Emulsions—cosmetics, creams, paint, oil							
Low Ionic Strength (LIS)—DI water, deionized water, treated effluent				★			
Non-aqueous / Semi-solid							
Pharma / Bio— TRIS buffer, proteins, enzymes			✓	✓			
Viscous liquids, suspended solids, slurries							
<b>Other Applications</b>							
Education		★	★		✓	✓	
Micro samples_ test tubes, small sample volume							
Surface measurements							
Soil (slurry in water)	✓	★	★		✓		

# HQd IntelliCAL pH PROBE SELECTION GUIDE

High-Performance (Red Rod) IntelliCAL pH Electrodes				Specialty IntelliCAL pH Electrodes			
PHC705	PHC725	PHC735	PHC745	PHC705A	PHC729	PHC307	PHC108
Red Rod				Red Rod		Ag/AgCl	
glass refillable porous pin standard	glass refillable annular ring standard	glass refillable annular ring standard	glass refillable sleeve standard	glass refillable porous pin alkaline	glass refillable annular ring flat	glass refillable porous pin micro	stainless steel gel pin + open spear
★	★					★	
★	★	★	★	★	★		✓
★	★	★	★	★	★		
★	★	★	★				
★	★	★					
✓	✓	✓	✓				
★	★	✓	✓				
✓	✓	★	★				
	★	★					
✓	★	★					
★	✓	★	✓				
✓	✓	★					
							★
					★		
		✓	★				
★	★	★	✓				
		✓	★				
★	★	✓	✓				
		✓	★				
						★	
					★		
							★

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# HQd PORTABLE METERS



Now offering a complete water analysis portfolio of testing parameters with standard, rugged, and ultra options. Hach's HQd system gives maximum measurement flexibility and ease of operation with interchangeable probes and automatic parameter recognition.

<b>Parameter</b>	<b>HQ11d DEDICATED pH/mV PORTABLE METER</b>	<b>HQ14d DEDICATED CONDUCTIVITY PORTABLE METER</b>	<b>HQ30d SINGLE INPUT MULTI-PARAMETER PORTABLE METER</b>	<b>HQ40d DUAL INPUT MULTI-PARAMETER PORTABLE METER</b>
Temperature	■	■	■	■
pH				
Glass	■		■	■
Non-glass (ISFET)				
mV	■		■	■
Conductivity		■	■	■
TDS		■	■	■
Salinity		■	■	■
Resistivity		■	■	■
Dissolved Oxygen				
Luminescent (LDO)			■	■
BOD Sensor (with LDO)			■	■
ORP/Redox	■		■	■
Ion Selective Electrodes				
Ammonia			■	■
Ammonium			■	■
Chloride			■	■
Fluoride			■	■
Nitrate			■	■
Sodium			■	■

<b>Specifications</b>	<b>HQ11d DEDICATED pH/mV PORTABLE METER</b>	<b>HQ14d DEDICATED CONDUCTIVITY PORTABLE METER</b>	<b>HQ30d SINGLE INPUT MULTI-PARAMETER PORTABLE METER</b>	<b>HQ40d DUAL INPUT MULTI-PARAMETER PORTABLE METER</b>
IP Rating	IP67	IP67	IP67	IP67
Internal Data Storage	500*	500*	500*	500*
Inputs	M12 digital (1) for IntelliCAL probes	M12 digital (1) for IntelliCAL probes	M12 digital (1) for IntelliCAL probes	M12 digital (2) for IntelliCAL probes
Outputs	USB to PC / flash stick	USB to PC / flash stick	USB to PC / flash stick	USB to PC / flash stick
Resolution	0.1/ 0.01/ 0.001	0.1/ 0.01/ 0.001	0.1/ 0.01/ 0.001	0.1/ 0.01/ 0.001
Interface Languages	13**	13**	13**	13**
Warranty	3 years	3 years	3 years	3 years
Compliance	CE.WEEE	CE.WEEE	CE.WEEE	CE.WEEE
Benchtop	with stand	with stand	with stand	with stand
GLP Features	■	■	■	■
PC Data Transfer Software	included	included	included	included
Backlight	■	■	■	■
Battery Operation	■	■	■	■
AC and USB Operation	optional	optional	optional	included
<b>Prod. No.</b>	<b>HQ11D53000000</b>	<b>HQ14D53000000</b>	<b>HQ30D53000000</b>	<b>HQ40D53000000</b>

\*Expanded storage with external USB storage device. \*\*English, German, Spanish, Portuguese, French, Italian, Dutch, Turkish, Polish, Danish, Swedish, Russian, Czech

See pages 32-37 for HQd Bundles & Kits. See pages 39-38 for HQd Accessories.



# HQd BENCHTOP METERS

All the benefits of the digital HQd system, with simplified data transfer and easy-to-read results on a large, backlit screen.



METERS & PROBES

Parameter	HQ411d DEDICATED pH/mV BENCHTOP METER	HQ430d SINGLE INPUT MULTI-PARAMETER BENCHTOP METER	HQ440d DUAL INPUT MULTI-PARAMETER BENCHTOP METER
Temperature	■	■	■
pH			
Glass	■	■	■
Non-glass (ISFET)			
mV	■	■	■
Conductivity		■	■
TDS		■	■
Salinity		■	■
Resistivity		■	■
Dissolved Oxygen			
Luminescent (LDO)		■	■
BOD Sensor (with LDO)		■	■
ORP/Redox	■	■	■
Ion Selective Electrodes			
Ammonia		■	■
Ammonium		■	■
Chloride		■	■
Fluoride		■	■
Nitrate		■	■
Sodium		■	■

Specifications	HQ411d DEDICATED pH/mV BENCHTOP METER	HQ430d SINGLE INPUT MULTI-PARAMETER BENCHTOP METER	HQ440d DUAL INPUT MULTI-PARAMETER BENCHTOP METER
IP Rating	IP54	IP54	IP54
Internal Data Storage	500*	500*	500*
Inputs	M12 digital (1) for IntelliCAL probes	M12 digital (1) for IntelliCAL probes	M12 digital (2) for IntelliCAL probes
Outputs	USB to PC / flash stick	USB to PC / flash stick	USB to PC / flash stick
Resolution	0.1/ 0.01/ 0.001	0.1/ 0.01/ 0.001	0.1/ 0.01/ 0.001
Interface Languages	13**	13**	13**
Warranty	3 years	3 years	3 years
Compliance	CE.WEEE	CE.WEEE	CE.WEEE
GLP Features	■	■	■
PC Data Transfer Software	included	included	included
Backlight	■	■	■
Battery Operation	■	■	■
Probe Stand	optional for all models	optional for all models	optional for all models
Prod. No.	<b>HQ411D</b>	<b>HQ430D</b>	<b>HQ440D</b>

\*Expanded storage with external USB storage device. \*\*English, German, Spanish, Portuguese, French, Italian, Dutch, Turkish, Polish, Danish, Swedish, Russian, Czech

See pages 32-37 for HQd Bundles & Kits. See pages 39-38 for HQd Accessories.

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# HQd IntelliCAL PROBES

## DISSOLVED OXYGEN IntelliCAL LDO101 – Rugged Luminescent Dissolved Oxygen (LDO) Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Rugged Luminescent Dissolved Oxygen Probe with Lumiphore Sensor and Stainless Steel outer body.	0.05 to 20.00 mg/L (0 to 200%)	Continuous Use: 0 to 50°C	N/A	45 mm (D) x 250 mm (L)



Prod. No.	Description
<b>LDO10105</b>	Electrode Only (5 m cable)
<b>LDO10110</b>	Electrode Only (10 m cable)
<b>LDO10115</b>	Electrode Only (15 m cable)
<b>LDO10130</b>	Electrode Only (30 m cable)

*Replacement Items / Accessories*  
**581200** Replacement LDO101 Sensor Cap

*Recommended Kits*  
**8505100** HQ30d Portable Meter Package with LDO101 Rugged Optical DO Probe (See page 36 for complete information on kit contents.)

*Rugged LDO101 is designed for DO measurements in the field where extra protection and durability are required.*

## DISSOLVED OXYGEN IntelliCAL LDO101 – Standard Luminescent Dissolved Oxygen (LDO) Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Standard Luminescent Dissolved Oxygen Probe with Lumiphore Sensor and PC/ABS (plastic) body.	0.05 to 20.00 mg/L (0 to 200%)	Continuous Use: 0 to 50°C	N/A	15 mm (D) x 200 mm (L)



Prod. No.	Description
<b>LDO10101</b>	Electrode Only (1 m cable)
<b>LDO10103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*  
**581200** Replacement LDO101 Sensor Cap

*Recommended Kits*  
**8506300** HQ30d Portable Meter Package with LDO101 Optical DO Probe (See page 37 for complete information on kit contents.)

## BOD IntelliCAL LBOD101 – Standard Luminescent Dissolved Oxygen BOD (LBOD) Probe with integrated stirrer

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Luminescent Dissolved Oxygen Probe with Lumiphore Sensor, PC/ABS (plastic) body and integrated stirrer for BOD measurement.	0.05 to 20.00 mg/L (0 to 200%)	Continuous Use: 0 to 50°C	N/A	15.875 mm (D)* x 200 mm (L)



Prod. No.	Description
<b>LBOD10101</b>	Electrode Only (1.8 m cable)

*Replacement Items / Accessories*  
**5838000** Replacement LBOD101 Sensor Cap  
**5850800** Replacement Stirrer Assembly for LBOD101 Probe

*Recommended Kits*  
**HQDBODMGR** HQ440d Benchtop Meter Package with LBOD101 Optical BOD Probe and WIMS BOD Manager Software (See page 73 for complete information on kit contents.)

See page 158 for BOD Nutrients.

\*Fits BOD bottle neck size

## pH IntelliCAL PHC101 pH Probe – Rugged Low-Maintenance pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Rugged digital combination non-refillable, gel-filled pH electrode with stainless steel outer body, double junction Ag/AgCl reference, open junction diaphragm, built-in temperature sensor and standard size glass bulb.	2 to 14 pH	Continuous Use: 0 to 50°C	Open	45 mm (D) x 250 mm (L)	<b>PHC10105</b> <b>PHC10110</b> <b>PHC10115</b> <b>PHC10130</b>	Electrode Only (5 m cable) Electrode Only (10 m cable) Electrode Only (15 m cable) Electrode Only (30 m cable)

*Recommended Kits*  
**8505400** HQ40d Portable Meter Package with PHC101 Rugged pH Probe and LDO101 Rugged LDO Probe (See page 36 for complete information on kit contents.)

See page 67 for pH Buffers, Cleaning and Storage Solutions.



*Rugged PHC101 is designed for low-maintenance pH measurements in the field where extra protection and durability are required.*

## pH IntelliCAL PHC201 – Low-Maintenance, General Purpose pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard digital combination non-refillable, gel-filled pH electrode with epoxy body, double junction Ag/AgCl reference, ceramic porous pin junction diaphragm, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	Continuous Use: 0 to 80°C	Porous Pin	12 mm (D) x 200 mm (L)	<b>PHC20101</b> <b>PHC20103</b>	Electrode Only (1 m cable) Electrode Only (3 m cable)

*Recommended Kits*  
**8507560** HQ411d Benchtop Meter Package with PHC201 Standard pH Probe (See page 32 for complete information on kit contents.)  
**8507530** HQ11d Portable Meter Package with PHC201 Standard pH Probe (See page 37 for complete information on kit contents.)

See page 67 for pH Buffers, Cleaning and Storage Solutions.



*PHC201 is designed for low-maintenance use in general purpose water quality applications.*

## pH IntelliCAL PHC301 – General Purpose Junction pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard digital combination refillable pH electrode with Zeonor™ (plastic) body, double junction Ag/AgCl reference, ceramic porous pin junction diaphragm, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	Continuous Use: 0 to 50°C	Porous Pin	12 mm (D) x 200 mm (L)	<b>PHC30101</b> <b>PHC30103</b>	Electrode Only (1 m cable) Electrode Only (3 m cable)

*Replacement Items / Accessories*  
**2841700** 3M KCl Saturated with AgCl Fill Solution for IntelliCAL PHC301 (30 mL)

*Recommended Kits*  
**8510100** HQ440d Benchtop Meter Package with PHC301 Standard pH Probe and LBOD101 Optical BOD Probe

See page 67 for pH Buffers, Cleaning and Storage Solutions.



*PHC301 is designed for use in general purpose water quality applications.*

# HQd IntelliCAL PROBES

## pH IntelliCAL PHC281 pH Electrode for LIS Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Standard digital combination refillable pH electrode with Zeonor™ (plastic) body, double junction Ag/AgCl reference, viscous gel electrolyte, high-flow open junction diaphragm, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	Continuous Use: 0 to 50°C	Open	12 mm (D) x 200 mm (L)

Prod. No.	Description
<b>PHC28101</b>	Electrode Only (1 m cable)
<b>PHC28103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*  
**2965026** 2.44M KCl Fill Solution for IntelliCAL PHC281 (59 mL)

*Recommended Kits*  
**8508600** HQ440d Benchtop Meter Package with PHC281 Standard pH Probe (See page 32 for complete information on kit contents.)

See page 67 for pH Buffers, Cleaning and Storage Solutions.



*PHC281 is designed for fast response in difficult samples, including drinking water and samples with low ionic strength (LIS).*

## pH IntelliCAL PHC101 – Low-Maintenance pH Electrode for “Dirty” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Standard digital combination non-refillable, gel-filled pH electrode with epoxy body, double junction Ag/AgCl reference, open junction diaphragm, built-in temperature sensor and standard size glass bulb.	2 to 14 pH	Continuous Use: 0 to 50°C	Open	12 mm (D) x 200 mm (L)

Prod. No.	Description
<b>PHC10101</b>	Electrode Only (1 m cable)
<b>PHC10103</b>	Electrode Only (3 m cable)

*Recommended Kits*  
**8507200** HQ40D Portable Meter Package with PHC101 Standard pH Probe and MTC101 Standard ORP Probe

See page 67 for pH Buffers, Cleaning and Storage Solutions.



*PHC101 is designed for low-maintenance use in “dirty” or challenging samples, including wastewater.*

## pH IntelliCAL PHC805 – General Purpose Laboratory pH Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with glass body, refillable Ag/AgCl reference, porous pin junction, integrated temperature sensor.	0 to 14 pH	Continuous Use: 0 to 80°C	Porous Pin	12 mm (D) x 200 mm (L)

Prod. No.	Description
<b>PHC80501</b>	Electrode Only (1 m cable)

*Replacement Items / Accessories*  
**2756559** 3M KCl Electrolyte Refill Solution, 50 mL  
**2756549** Electrode Storage Solution, 500 mL

*Recommended Kits*  
**8505350** HQ440d Benchtop Meter Package with PHC805 Standard pH Probe (See page 34 for complete information on kit contents.)

See page 67 for pH Buffers, Cleaning and Storage Solutions.

**NEW!**



*PHC805 is recommended for general purpose laboratory measurements.*



## NEW! IntelliCAL High-Performance Red Rod Electrodes

- **Fast, accurate and reproducible**—Symmetry between internal and external Red Rod reference elements ensures that the iso pH is the same as the zero pH, providing highly reproducible results and a fast, accurate response, even in samples with fluctuating temperatures. Red Rod technology also provides a stable signal by protecting the reference elements from light interference, and the saturated KCl salt-bridge aids in creating a stable liquid junction potential.
- **Reliable, even in challenging samples**—Red Rod encapsulation of reference elements means no silver ions and less risk of clogged junctions.
- **Wide temperature range**—Red Rod reference systems enables accurate measurements over a broader temperature range than standard electrodes.

### pH IntelliCAL PHC705 – High-Performance (Red Rod) General Purpose Laboratory pH Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Digital combination pH electrode with glass body, refillable Red Rod reference, porous pin junction and integrated temperature sensor.	0 to 14 pH	Continuous Use: -10 to 100°C	Porous Pin	12 mm (D) x 200 mm (L)	<b>PHC70501</b>	Electrode Only (1 m cable)

**NEW!**



#### Replacement Items / Accessories

<b>25118026</b>	Saturated KCl Electrolyte Refill Solution, 59 mL
<b>S21M001</b>	KCl Crystals for Red-Rod pH Probes, 15 grams
<b>25118049</b>	Electrode Storage Solution, 500 mL

#### Recommended Kits

<b>8506050</b>	HQ440d Benchtop Meter Package with PHC705 Standard pH Probe (See page 34 for complete information on kit contents.)
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See page 67 for pH Buffers, Cleaning and Storage Solutions.

PHC705 is recommended for general purpose laboratory measurements where high-performance is required.

### pH IntelliCAL PHC725 – High-Performance (Red Rod) General Purpose and LIS Laboratory pH Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Digital combination pH electrode with glass body, refillable Red Rod reference, annular ring junction and integrated temperature sensor.	0 to 14 pH	Continuous Use: -10 to 100°C	Annular Ring	12 mm (D) x 200 mm (L)	<b>PHC72501</b>	Electrode Only (1 m cable)

**NEW!**



#### Replacement Items / Accessories

<b>25118026</b>	Saturated KCl Electrolyte Refill Solution, 59 mL
<b>S21M001</b>	KCl Crystals for Red-Rod pH Probes, 15 grams
<b>25118049</b>	Electrode Storage Solution, 500 mL

#### Recommended Kits

<b>8505850</b>	HQ440d Benchtop Meter Package with PHC725 Standard pH Probe (See page 34 for complete information on kit contents.)
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See page 67 for pH Buffers, Cleaning and Storage Solutions.

PHC725 is recommended for general purpose laboratory measurements and low-ionic strength samples where high-performance is required.

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# HQd IntelliCAL PROBES

## pH IntelliCAL PHC735 – High-Performance (Red Rod) Lab pH Probe for “Dirty” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with glass body, refillable Red Rod reference, high-flow annular ring junction and integrated temperature sensor.	0 to 14 pH	Continuous Use: -10 to 100°C	High-flow Annular Ring	12 mm (D) x 200 mm (L)

**Prod. No.** **PHC73501** **Description** Electrode Only (1 m cable)

*Replacement Items / Accessories*  
**25118026** Saturated KCl Electrolyte Refill Solution, 59 mL  
**S21M001** KCl Crystals for Red-Rod pH Probes, 15 grams  
**25118049** Electrode Storage Solution, 500 mL

*Recommended Kits*  
**8505450** HQ440d Benchtop Meter Package with PHC735 Standard pH Probe (See page 34 for complete information on kit contents.)

**NEW!**



See page 67 for pH Buffers, Cleaning and Storage Solutions.

*PHC735 is recommended for high-performance measurement of “dirty” sample types (wastewater) and other challenging samples (LIS, pure water, etc.).*

## pH IntelliCAL PHC745 – High-Performance (Red Rod) Lab pH Probe for “Challenging” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with glass body, refillable Red Rod reference, sleeve junction and integrated temperature sensor.	0 to 14 pH	Continuous Use: -10 to 100°C	Sleeve	12 mm (D) x 200 mm (L)

**Prod. No.** **PHC74501** **Description** Electrode only (1 m cable)

*Replacement Items / Accessories*  
**25118026** Saturated KCl Electrolyte Refill Solution, 59 mL  
**S21M001** KCl Crystals for Red-Rod pH Probes, 15 grams  
**25118049** Electrode Storage Solution, 500 mL

*Recommended Kits*  
**8505250** HQ440d Benchtop Meter Package with PHC745 Standard pH Probe (See page 34 for complete information on kit contents.)

**NEW!**



See page 67 for pH Buffers, Cleaning and Storage Solutions.

*PHC745 is recommended for high-performance laboratory measurement in challenging sample types (emulsions, non-aqueous media, viscous liquids, etc.).*

## pH IntelliCAL PHC705A – High-Performance (Red Rod) Lab pH Probe for Alkaline Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with glass body, refillable Red Rod reference, porous pin junction and integrated temperature sensor, and glass sensor formulated for alkaline samples.	0 to 14 pH	Continuous Use: 0 to 100°C	Porous Pin	12 mm (D) x 200 mm (L)

**Prod. No.** **PHC705A01** **Description** Electrode Only (1 m cable)

*Replacement Items / Accessories*  
**25118026** Saturated KCl Electrolyte Refill Solution, 59 mL  
**S21M001** KCl Crystals for Red-Rod pH Probes, 15 grams  
**25118049** Electrode Storage Solution, 500 mL

*Recommended Kits*  
**8506450** HQ440d Benchtop Meter Package with PHC705A Standard pH Probe (See page 35 for complete information on kit contents.)

**NEW!**



See page 67 for pH Buffers, Cleaning and Storage Solutions.

*PHC705A is recommended for high-performance measurement in alkaline samples (pH > 12), where reduced alkaline (sodium)-error is required.*

## pH IntelliCAL PHC729 – High-Performance (Red Rod) Lab pH Probe for Surface Measurements

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with glass body, refillable Red Rod reference, annular ring junction, integrated temperature sensor, and flat sensor.	0 to 14 pH	Continuous Use: -10 to 100°C	Annular Ring	12 mm (D) x 200 mm (L)

Prod. No.	Description
<b>PHC72901</b>	Electrode Only (1 m cable)

### Replacement Items / Accessories

<b>25118026</b>	Saturated KCl Electrolyte Refill Solution, 59 mL
<b>S21M001</b>	KCl Crystals for Red-Rod pH Probes, 15 grams
<b>25118049</b>	Electrode Storage Solution, 500 mL

### Recommended Kits

<b>8507450</b>	HQ440d Benchtop Meter Package with PHC729 Standard pH Probe (See page 35 for complete information on kit contents.)
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See page 67 for pH Buffers, Cleaning and Storage Solutions.

**NEW!**



PHC729 is recommended for high-performance measurement on flat surfaces or where there is minimal sample depth for immersion.

## pH IntelliCAL PHC307 – Micro-diameter Laboratory pH Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with glass body, refillable Ag/AgCl reference, porous pin junction, integrated temperature sensor, and micro-diameter body.	0 to 14 pH	Continuous Use: 0 to 80°C	Porous Pin	5 mm (D) x 247 mm (L)

Prod. No.	Description
<b>PHC30701</b>	Electrode Only (1 m cable)

### Replacement Items / Accessories

<b>2841700</b>	3M KCl + Saturated AgCl Electrolyte Refill Solution, 30 mL
<b>2756549</b>	Electrode Storage Solution, 500 mL

### Recommended Kits

<b>8505750</b>	HQ440d Benchtop Meter Package with PHC307 Standard pH Probe (See page 35 for complete information on kit contents.)
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See page 67 for pH Buffers, Cleaning and Storage Solutions.

**NEW!**



PHC307 is recommended for laboratory pH measurement in micro-sample applications (test tubes, micro-sample volumes, etc.).

## pH IntelliCAL PHC108 – Puncture pH Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination pH electrode with stainless steel body, Ag/AgCl reference with non-refillable gel electrolyte, porous pin and open junctions, integrated temperature sensor, and spear-shaped sensor.	2 to 12 pH	Continuous Use: 0 to 60°C	Porous Pin + Open	6 mm (D) x 182 mm (L)

Prod. No.	Description
<b>PHC10801</b>	Electrode Only (1 m cable)

### Replacement Items / Accessories

<b>LZW9502.99</b>	Electrode Storage Solution, 250 mL
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### Recommended Kits

<b>8506250</b>	HQ40d Portable Meter Package with PHC108 Standard pH Probe (See page 35 for complete information on kit contents.)
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See page 67 for pH Buffers, Cleaning and Storage Solutions.

**NEW!**



PHC108 is recommended for portable pH measurements in penetration applications (semi-solid media, fruit, meat, etc.).

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# HQd IntelliCAL PROBES

## ORP/REDOX IntelliCAL MTC101 – Rugged Low-Maintenance ORP / Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Rugged digital combination ORP/Redox electrode with stainless steel outer body, non-refillable, gel-filled Ag/AgCl reference, platinum disc sensor and built-in temperature sensor.	±1200 mV	Continuous Use: 0 to 80°C	Open	12 mm (D) x 220 mm (L)

Prod. No.	Description
<b>MTC10105</b>	Electrode Only (5 m cable)
<b>MTC10110</b>	Electrode Only (10 m cable)
<b>MTC10115</b>	Electrode Only (15 m cable)
<b>MTC10130</b>	Electrode Only (30 m cable)



See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.

Rugged MTC101 is designed for low-maintenance ORP/Redox measurements in the field where extra protection and durability are required.

## ORP/REDOX IntelliCAL MTC101 – Standard Low-Maintenance ORP / Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Standard digital combination ORP/Redox electrode with Zeonor™ (plastic) body, non-refillable, gel-filled Ag/AgCl reference, platinum disc sensor and built-in temperature sensor.	±1200 mV	Continuous Use: 0 to 80°C	Open	12 mm (D) x 200 mm (L)

Prod. No.	Description
<b>MTC10101</b>	Electrode Only (1 m cable)
<b>MTC10103</b>	Electrode Only (3 m cable)

*Recommended Kits*  
**8506500** HQ11d Portable Meter Package with MTC101 Standard ORP Probe



See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.

## ORP/REDOX IntelliCAL MTC301 – Standard Refillable ORP / Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Standard digital combination ORP/Redox electrode with epoxy body, refillable, Ag/AgCl reference, platinum disc sensor and built-in temperature sensor.	±1200 mV	Continuous Use: 0 to 80°C	Porous Pin	12 mm (D) x 200 mm (L)

Prod. No.	Description
<b>MTC30101</b>	Electrode Only (1 m cable)
<b>MTC30103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*  
**2841700** 3M KCl saturated with AgCl fill solution for IntelliCAL MTC301 (30 mL)



See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.



## CONDUCTIVITY IntelliCAL CDC401 – Rugged 4-pole Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Rugged graphite 4-pole conductivity cell with stainless outer body and built-in temperature sensor.*	Conductivity:	Continuous Use: -10 to 110°C	N/A	45 mm (D) x 250 mm (L)	<b>CDC40105</b>	Electrode Only (5 m cable)
	0.01 $\mu$ S/cm to 200 mS/cm				<b>CDC40110</b>	Electrode Only (10 m cable)
	Resistivity:	<b>CDC40115</b>			Electrode Only (15 m cable)	
	2.5 $\Omega$ -cm to 49 M $\Omega$ -cm	<b>CDC40130</b>			Electrode Only (30 m cable)	
	Salinity:				<i>Recommended Kits</i>	
	0 to 42 g/kg (ppt)				<b>8507500</b>	HQ40D Portable Meter Package with CDC401 Rugged Conductivity Probe, PHC101 Rugged pH Probe and LDO101 Rugged Optical DO Probe (See page 36 for complete information on kit contents.)
	TDS:					
	0.0 to 50,000 mg/L					



\*Cell constant (k) = 0.40 cm<sup>-1</sup>

Rugged CDC401 is designed for conductivity measurements in the field where extra protection and durability are required.

See pages 67-68 for Conductivity Standard Solutions.

## CONDUCTIVITY IntelliCAL CDC401 – Standard 4-pole Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard graphite 4-pole conductivity cell with Noryl (plastic) body and built-in temperature sensor.*	Conductivity:	Continuous Use: -10 to 110°C	N/A	14 mm (D) x 200 mm (L)	<b>CDC40101</b>	Electrode Only (1 m cable)
	0.01 $\mu$ S/cm to 200 mS/cm				<b>CDC40103</b>	Electrode Only (3 m cable)
	Resistivity:					
	2.5 $\Omega$ -cm to 49 M $\Omega$ -cm					
	Salinity:				<i>Recommended Kits</i>	
	0 to 42 g/kg (ppt)				<b>8506100</b>	HQ14d Portable Meter Package with CDC401 Standard Conductivity Probe
	TDS:				<b>8509600</b>	HQ430d Benchtop Meter Package with CDC401 Standard Conductivity Probe
	0.0 to 50,000 mg/L					



\*Cell constant (k) = 0.40 cm<sup>-1</sup>

See pages 67-68 for Conductivity Standard Solutions.

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# HQd IntelliCAL ISE PROBES

## AMMONIA ISE IntelliCAL ISENH3181 – Combination Ammonia Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination gas-sensing ammonia ISE with epoxy body, refillable outer-body, double junction Ag/AgCl reference, built-in temperature sensor and replaceable NH <sub>3</sub> sensitive membrane module.	0.01 mg/L (5x10 <sup>-7</sup> M) to 14,000 mg/L (1 M) NH <sub>3</sub> -N	Continuous Use: 0 to 50°C	Annular Ring	12 mm (D) x 220 mm (L)



Prod. No.	Description
<b>ISENH318101</b>	Electrode Only (1 m cable)
<b>ISENH318103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*

<b>5812711</b>	Replacement Membrane (3 pack) for IntelliCAL ISENH3181 Ammonia ISE
<b>4447226</b>	0.1M NH <sub>4</sub> Cl Fill Solution for IntelliCAL ISENH3181 Ammonia ISE (50 mL)
<b>4447169</b>	Ammonia Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>ISENH3181AP</b>	IntelliCAL Ammonia ISE Analysis Package (contains electrode, standard solutions, ISA pillows and replacement membranes)
<b>5025300</b>	Air Gap Assembly for Ammonia ISE

*Recommended Kits*

<b>8507600</b>	HQ440d Benchtop Meter Package with ISENH3181 Ammonia ISE
<b>8508300</b>	HQ440d Benchtop Meter Package with ISENH3181 Ammonia ISE and PHC281 Standard pH Probe (See page 33 for complete information on kit contents.)

See page 69 for Ammonia Standard Solutions.

## AMMONIUM ISE IntelliCAL ISENH4181 – Combination Ammonium Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination ammonium ISE with epoxy body, non-refillable gel-filled, double junction Ag/AgCl reference, built-in temperature sensor and (non-replaceable) solid-state ammonium selective PVC membrane.	0.018 mg/L (10 <sup>-6</sup> M) to 9,000 mg/L (0.5 M) NH <sub>4</sub> <sup>+</sup>	Continuous Use: 0 to 50°C	Annular Ring	12 mm (D) x 220 mm (L)



Prod. No.	Description
<b>ISENH418101</b>	Electrode Only (1 m cable)
<b>ISENH418103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*

<b>2980699</b>	Ammonia Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>ISENH4181AP</b>	IntelliCAL Ammonium ISE Analysis Package (contains electrode, standard solutions and ISA pillows)

*Recommended Kits*

<b>8507800</b>	HQ440d Benchtop Meter Package with ISENH4181 Ammonium ISE (See page 33 for complete information on kit contents.)
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See page 69 for Ammonia Standard Solutions.

*ISENH4181's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).*

## CHLORIDE ISE IntelliCAL ISECL181 – Combination Chloride Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination chloride ISE with epoxy body, non-refillable, gel-filled, double junction Ag/AgCl reference, built-in temperature sensor and (non-replaceable) solid-state chloride selective crystalline membrane.	0.1 mg/L (3x10 <sup>-6</sup> M) to 35,500 mg/L (1 M) Cl <sup>-</sup>	Continuous Use: 0 to 50°C	Annular Ring	12 mm (D) x 220 mm (L)



Prod. No.	Description
<b>ISECL18101</b>	Electrode Only (1 m cable)
<b>ISECL18103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*

<b>2318069</b>	Chloride Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>ISECL181AP</b>	IntelliCAL Chloride ISE Analysis Package (contains electrode, standard solutions and ISA pillows)

*Recommended Kits*

<b>8507900</b>	HQ440d Benchtop Meter Package with ISECL181 Chloride ISE (See page 33 for complete information on kit contents.)
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See page 69 for Chloride Standard Solutions.

*ISECL181's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).*

## FLUORIDE ISE IntelliCAL ISEF121 – Combination Fluoride Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination fluoride ISE with epoxy body, non-refillable, gel-filled, Ag/AgCl reference, built-in temperature sensor and (non-replaceable) solid-state fluoride selective crystalline membrane.	0.01 mg/L (5x10 <sup>-7</sup> M) to 19,000 mg/L (1 M) F <sup>-</sup>	Continuous Use: 0 to 50°C	Annular Ring	12 mm (D) x 220 mm (L)



Prod. No.	Description
<b>ISEF12101</b>	Electrode Only (1 m cable)
<b>ISEF12103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*

<b>258999</b>	Fluoride Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>ISEF121AP</b>	IntelliCAL Fluoride ISE Analysis Package (contains electrode, standard solutions and ISA pillows)

*Recommended Kits*

<b>8508000</b>	HQ440d Benchtop Meter Package with ISEF121 Fluoride ISE (See page 33 for complete information on kit contents.)
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See page 69 for Fluoride Standard Solutions.

*ISEF121's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).*

## NITRATE ISE IntelliCAL ISENO3181 – Combination Nitrate Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination nitrate ISE with epoxy body, non-refillable, gel-filled, double junction Ag/AgCl reference, built-in temperature sensor and (non-replaceable) solid-state nitrate selective PVC membrane.	0.1 mg/L (7x10 <sup>-6</sup> M) to 14,000 mg/L (1 M) NO <sub>3</sub> <sup>-</sup> N	Continuous Use: 0 to 50°C	Annular Ring	12 mm (D) x 220 mm (L)



Prod. No.	Description
<b>ISENO318101</b>	Electrode Only (1 m cable)
<b>ISENO318103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*

<b>2984799</b>	Nitrate Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>ISENO3181AP</b>	IntelliCAL Nitrate ISE Analysis Package (contains electrode, standard solutions and ISA pillows)

*Recommended Kits*

<b>8508100</b>	HQ440d Benchtop Meter Package with ISENO3181 Nitrate ISE (See page 33 for complete information on kit contents.)
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See page 69 for Nitrate Standard Solutions.

*ISENO3181's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).*

## SODIUM ISE IntelliCAL ISENA381 – Combination Sodium Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions
Digital combination sodium ISE with Zeonor™ (plastic) body, refillable, double junction Ag/AgCl reference, built-in temperature sensor and sodium selective glass membrane.	0.023 mg/L (1x10 <sup>-6</sup> M) to 23,000 mg/L (1 M) Na <sup>+</sup>	Continuous Use: 0 to 50°C	Ceramic Pin	12 mm (D) x 220 mm (L)



Prod. No.	Description
<b>ISENA38101</b>	Electrode Only (1 m cable)
<b>ISENA38103</b>	Electrode Only (3 m cable)

*Replacement Items / Accessories*

<b>4451569</b>	Sodium Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>2965126</b>	0.2M NH <sub>4</sub> Cl Fill Solution for IntelliCAL ISENA381 Sodium ISE (59 mL)
<b>ISENA381AP</b>	IntelliCAL Sodium ISE Analysis Package (contains electrode, standard solutions, ISA pillows and fill solution)

*Recommended Kits*

<b>8507000</b>	HQ440d Benchtop Meter Package with ISENA381 Sodium ISE (See page 33 for complete information on kit contents.)
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See page 69 for Sodium Standard Solutions.

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# HQd & IntelliCAL BENCHTOP KITS



## Lab LDO/pH/Conductivity Kit

**Prod. No. Description**

**8508700 Lab LDO/pH/Conductivity Kit**

Includes: HQ440d benchtop meter, PHC281 LIS pH probe with 1-m cable, CDC401 conductivity probe with 1-m cable, LDO101 optical DO probe with 1-m cable, probe stand, 300-mL disposable BOD bottle, BOD bottle stoppers, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and NaCl conductivity standard (1000 S/cm, 100 mL).



## Lab pH/Conductivity Kit

**Prod. No. Description**

**8510200 Lab pH/Conductivity Kit**

Includes: HQ440d benchtop meter, PHC281 LIS pH electrode with 1-m cable, CDC401 conductivity probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and NaCl conductivity standard (1000 S/cm, 100 mL).



## Lab LIS (Low Ionic Strength) pH Kit

**Prod. No. Description**

**8508600 Lab LIS (Low Ionic Strength) pH Kit**

Includes: HQ440d benchtop meter, PHC281 LIS pH probe with 1 m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), and pH storage solution (500 mL).



## Lab pH Starter Kit

**Prod. No. Description**

**8507560 Lab pH Starter Kit**

Includes: HQ411d benchtop meter, PHC201 pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), and pH storage solution (500 mL).



## Lab Conductivity Kit

**Prod. No. Description**

**8509600 Lab Conductivity Kit**

Includes: HQ430d benchtop meter, CDC401 conductivity probe with 1-m cable, probe stand, and NaCl conductivity standard (1000 S/cm, 100 mL).



## Lab LBOD Kit

**Prod. No. Description**

**8508500 Lab LBOD Kit**

Includes: HQ440d benchtop meter, LBOD101 BOD probe, 100 disposable BOD bottles, bottle stoppers (qty 25), and snap-over bottle caps (qty 24).

Visit: [hach.com/metersselect](http://hach.com/metersselect) for more kits.



## Ammonia ISE Measurement Kit

**Prod. No. Description**

**8507600 Ammonia ISE Measurement Kit**

Includes: HQ440d benchtop meter, ISENH3181 ammonia electrode with 1-m cable, probe stand, ammonia nitrogen standard (1 mg/L, 500 mL) ammonia nitrogen standard (10 mg/L, 500 mL), ammonia nitrogen standard (100 mg/L, 500 mL), ammonia ionic strength adjustor powder pillows (qty 100), and ammonia electrode storage solution (500 mL).



## Ammonium ISE Measurement Kit

**Prod. No. Description**

**8507800 Ammonium ISE Measurement Kit**

Includes: HQ440d benchtop meter, ISENH4181 ammonium electrode with 1-m cable, probe stand, ammonia nitrogen standard (1 mg/L, 500 mL), ammonia nitrogen standard (10 mg/L, 500 mL), ammonia nitrogen standard (100 mg/L, 500 mL), and ionic strength adjustor powder pillows (qty 100).



## Chloride ISE Measurement Kit

**Prod. No. Description**

**8507900 Chloride ISE Measurement Kit**

Includes: HQ440d benchtop meter, ISECL181 chloride electrode with 1-m cable, probe stand, chloride standard (100 mg/L, 1 L), chloride standard (1000 mg/L, 500 mL), and ionic strength adjustor powder pillows (qty 100).



## Fluoride ISE Measurement Kit

**Prod. No. Description**

**8508000 Fluoride ISE Measurement Kit**

Includes: HQ440d benchtop meter, ISEF121 fluoride electrode with 1-m cable, probe stand, fluoride standard (0.5 mg/L, 500 mL), fluoride standard (1.0 mg/L, 500 mL), fluoride standard (10 mg/L, 500 mL), and ionic strength adjustor powder pillows (qty 100).



## Nitrate ISE Measurement Kit

**Prod. No. Description**

**8508100 Nitrate ISE Measurement Kit**

Includes: HQ440d benchtop meter, ISENO3181 nitrate electrode with 1-m cable, probe stand, nitrate nitrogen standard (10 mg/L, 500 mL), nitrate nitrogen standard (100 mg/L, 500 mL), nitrate nitrogen standard (1000 mg/L, 500 mL), and ionic strength adjustor powder pillows (qty 100).



## Sodium ISE Starter Kit

**Prod. No. Description**

**8507000 Sodium ISE Starter Kit**

Includes: HQ440d benchtop meter, ISENA381 sodium electrode with 1-m cable, probe stand, sodium standard solution (10 mg/L, 1 L), sodium standard solution (100 mg/L, 1 L), sodium standard solution (1000 mg/L, 500 mL), and ionic strength adjustor powder pillows (qty 100).



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# NEW! HQd & INTELLECAL LAB KITS



## Lab General Purpose pH Kit

**Prod. No. Description**  
**8505350 Lab General Purpose pH Kit**  
Includes: HQ440d benchtop meter, PHC805 pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab High-Performance General Purpose Kit

**Prod. No. Description**  
**8506050 Lab High-Performance General Purpose Kit**  
Includes: HQ440d benchtop meter, PHC705 Red Rod pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab High-Performance General Purpose and LIS Kit

**Prod. No. Description**  
**8505850 Lab High-Performance General Purpose and LIS Kit**  
Includes: HQ440d benchtop meter, PHC725 Red Rod pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab High-Performance Kit for "Dirty" Sample Types

**Prod. No. Description**  
**8505450 Lab High-Performance Kit for "Dirty" Sample Types**  
Includes: HQ440d benchtop meter, PHC735 Red Rod pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab High-Performance Kit for "Challenging" Sample Types

**Prod. No. Description**  
**8505250 Lab High-Performance Kit for "Challenging" Sample Types**  
Includes: HQ440d benchtop meter, PHC745 Red Rod sleeve-type pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).

## Lab High-Performance Kit for Alkaline Samples

**Prod. No. Description**

**8506450 Lab High-Performance Kit for Alkaline Samples**

Includes: HQ440d benchtop meter, PHC705A Red Rod pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab High-Performance Kit for Surface Measurement Applications

**Prod. No. Description**

**8507450 Lab High-Performance Kit for Surface Measurement Applications**

Includes: HQ440d benchtop meter, PHC729 Red Rod surface pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab Kit for Micro Samples

**Prod. No. Description**

**85075750 Lab Kit for Micro Samples**

Includes: HQ440d benchtop meter, PHC307 micro tip pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), pH storage solution (500 mL), and pH electrode cleaning solution (500 mL).



## Lab Kit for Samples Requiring Puncture Probe

**Prod. No. Description**

**8506250 Lab Kit for Samples Requiring Puncture Probe**

Includes: HQ440d benchtop meter, PHC108 puncture pH probe with 1-m cable, probe stand, pH 4.01 buffer (red, 500 mL), pH 7.00 buffer (yellow, 500 mL), pH 10.01 buffer (blue, 500 mL), and pH electrode cleaning solution (500 mL).



# HQd RUGGED FIELD KITS



## Rugged LDO/pH/Conductivity Field Kit

**Prod. No. Description**

**8505300 Rugged LDO/pH/Conductivity Field Kit**

Includes: HQ40d portable meter, LDO101 rugged dissolved oxygen probe with 5-m cable, PHC101 rugged pH probe with 5-m cable, CDC401 rugged conductivity probe with 5-m cable, rugged field case, protective meter glove, PMP erlenmeyer flask (250 mL), sample containers (qty 4, 120 mL), wash bottle (500 mL), disposable wipes (qty 280), pH 4.01 buffer solution (singlets, pk/20), pH 7.00 buffer solution (singlets, pk/20), pH 10.01 buffer solution (singlets, pk/20), pH storage solution (50 mL), and NaCl conductivity standard (1000 S/cm, 100 mL).



## Rugged LDO/pH Field Kit

**Prod. No. Description**

**8505400 Rugged LDO/pH Field Kit**

Includes: HQ40d portable meter, LDO101 rugged dissolved oxygen probe with 5-m cable, PHC101 rugged pH probe with 5-m cable, rugged field case, protective meter glove, PMP erlenmeyer flask (250 mL), sample containers (qty 4, 120 mL), wash bottle (500 mL), disposable wipes (qty 280), pH 4.01 buffer solution (singlets, pk/20), pH 7.00 buffer solution (singlets, pk/20), pH 10.01 buffer solution (singlets, pk/20), and pH storage solution (50 mL).



## Rugged Conductivity/LDO Field Kit

**Prod. No. Description**

**8507500 Rugged Conductivity/LDO Field Kit**

Includes: HQ40d portable meter, LDO101 rugged dissolved oxygen probe with 5-m cable, CDC401 rugged conductivity probe with 5-m cable, rugged field case, protective meter glove, PMP erlenmeyer flask (250 mL), sample containers (qty 4, 120 mL), wash bottle (500 mL), disposable wipes (qty 280), and NaCl conductivity standard (1000 S/cm, 100 mL).



## Rugged ORP/LDO Field Kit

**Prod. No. Description**

**8507400 Rugged ORP/LDO Field Kit**

Includes: HQ40d portable meter, LDO101 rugged dissolved oxygen probe with 5-m cable, MTC101 rugged ORP probe with 5-m cable, rugged field case, protective meter glove, PMP erlenmeyer flask (250 mL), sample containers (qty 4, 120 mL), wash bottle (500 mL), disposable wipes (qty 280), ORP standard solution (Zoebell's, 500 mL), pH storage solution (500 mL), ORP reducing solution (500 mL), and electrode cleaning solution (500 mL).



## Rugged LDO Field Kit (w/ HQ40d Meter)

**Prod. No. Description**

**8505200 Rugged LDO Field Kit (w/ HQ40d Meter)**

Includes: HQ40d portable meter, LDO101 rugged dissolved oxygen probe with 5-m cable, rugged field case, protective meter glove, PMP erlenmeyer flask (250 mL), sample containers (qty 4, 120 mL), wash bottle (500 mL), and disposable wipes (qty 280).



## Rugged LDO Field Kit (w/ HQ30d Meter)

**Prod. No. Description**

**8505100 Rugged LDO Field Kit (w/ HQ30d Meter)**

Includes: HQ30d portable meter, LDO101 rugged dissolved oxygen probe with 5-m cable, rugged field case, protective meter glove, PMP erlenmeyer flask (250 mL), sample containers (qty 4, 120 mL), wash bottle (500 mL), and disposable wipes (qty 280).

Visit: [hach.com/echemselect](http://hach.com/echemselect) for more kits.



## Portable LDO/pH/Conductivity Kit

**Prod. No. Description**

**8506000 Portable LDO/pH/Conductivity Kit**  
Includes: HQ40d portable meter, LDO101 optical dissolved oxygen probe with 1-m cable, PHC301 pH probe with 1-m cable, CDC401 conductivity probe with 1-m cable, probe stand, meter stand, disposable BOD bottle, BOD bottle stoppers, pH 4.01 buffer solution (red, 500 mL), pH 7.00 buffer solution (yellow, 500 mL), pH 10.01 buffer solution (blue, 500 mL), pH storage solution (500 mL), and NaCl conductivity standard (1000 S/cm, 100 mL).



## Portable pH/Conductivity Kit

**Prod. No. Description**

**8505800 Portable pH/Conductivity Kit**  
Includes: HQ40d portable meter, LDO101 optical dissolved oxygen probe with 1-m cable, PHC301 pH probe with 1-m cable, CDC401 conductivity probe with 1-m cable, probe stand, meter stand, disposable BOD bottle, BOD bottle stoppers, pH 4.01 buffer solution (red, 500 mL), pH 7.00 buffer solution (yellow, 500 mL), pH 10.01 buffer solution (blue, 500 mL), pH storage solution (500 mL), and NaCl conductivity standard (1000 S/cm, 100 mL).



## Portable pH Starter Kit

**Prod. No. Description**

**8507530 Portable pH Starter Kit**  
Includes: HQ11d portable meter, PHC201 pH probe with 1-m cable, probe stand, meter stand, pH 4.01 buffer solution (red, 500 mL), pH 7.00 buffer solution (yellow, 500 mL), pH 10.01 buffer solution (blue, 500 mL), and pH storage solution (500 mL).



## Portable Conductivity Starter Kit

**Prod. No. Description**

**8506100 Portable Conductivity Starter Kit**  
Includes: HQ14d portable meter, CDC401 conductivity probe with 1-m cable, probe stand, meter stand, and NaCl conductivity standard (1000 S/cm, 100 mL).



## Portable LBOD Kit

**Prod. No. Description**

**8505700 Portable LBOD Kit**  
Includes: HQ40d portable meter, LBOD101 optical BOD probe with 1-m cable, meter stand, disposable BOD bottle (qty 100), BOD bottle stoppers (qty 25), and BOD bottle caps (qty 24).



## Portable LDO Kit

**Prod. No. Description**

**8506300 Portable LDO Kit**  
Includes: HQ30d portable meter, LDO101 optical dissolved oxygen probe with 1-m cable, meter stand, disposable BOD bottle, and BOD bottle stoppers.



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# HQd METER & PROBE ACCESSORIES

## Meter Stand

Perfect for use in the laboratory or other applications where hands-free meter operation is desired. Black molded plastic is durable and easy to clean.

Prod. No.  
4754900



## Universal Probe Stand for Standard Electrode Sizes

Also supports Hach IntelliCAL and sensION+ probes.

Prod. No.  
8508850



## Protective Glove

Provides added impact protection that field use requires. Wrist and neck straps keep the meter secure. Two probe holders (not included in kit) can slide onto glove.

Prod. No.  
5828700



## HQd Field Meter Protective Caps

Further protect your HQd meter from harsh (corrosive) field environments. For use with HQd Meter Protective Glove kit (5828700).

Prod. No.  
9345200



## Probe Holder (Standard IntelliCAL Probes Only)

For use with the Protective Glove. Simply wrap 1- or 3-meter cables around the holder and slide probe into protective sheath. Protective Glove can hold one or two Probe Holders.

Prod. No.  
5829400



## Field Kit

Includes protective glove and (5) 120 mL sample cups. Carry your HQd system anywhere. Custom inserts organize and securely position your meter and probes.

Prod. No.  
5825800



*Probes and Meter not included.*

## Rugged Field Case for Two Probes with 5-m Cables

Includes: Empty case and insert for meter and probe storage; (4) Containers for sample collection; 500 mL Wash Bottle.

Prod. No.  
8505500



## Rugged Field Case for Three Probes with 5-m Cables

Includes same accessories as case 8505500.

Prod. No.  
8505501



## Color Coded Probe Clips

Clip a color-coded band to each end of your probe cable for identification. Ten clips of five different colors per package.

NOTE: One package of clips included with each probe.



Prod. No.  
5818400

## Replacement LDO Sensor Cap

Includes i-button™ and sensor cap.

Prod. No.  
5811200



## Replacement LBOD Sensor Cap

Prod. No.  
5838000



## Probe Cable Depth Markers

Taking reading at specific depths with rugged probes is a snap with these Depth Markers. Visually identify the depth of your probe by attaching Depth Marker securely on cable at points to meet your needs. Five Depth Markers per package.

NOTE: For use with rugged probes only.



Prod. No.  
5828610

## Replacement Membranes for IntelliCAL ISENH3181 Ammonia ISE

Pack of 3 replacement membrane modules designed for the IntelliCAL ISENH3181 Ammonia ISE.

Prod. No.  
5812711

## HQd Meter USB and AC Power Adapter Kit

Provides A/C power in the lab. The USB adapter can be used to transfer data from the meter to a PC, memory stick, or printer.

NOTE: Meter will remain water-proof after using the A/C power adapter. Included with HQ40d meter systems.



Prod. No.	Description
5826300	HQd Meter USB and AC Power Adapter Kit

## Replacement Stirrer Assembly for IntelliCAL LBOD Probe

Prod. No.  
5850800



## Printer



Prod. No.	Description
2960100	Citizen PD-24 Includes printer, universal power supply, 115V North American power cord, RS-232 cable and gender adapter, USB cable, battery pack, one roll of thermal paper, and instruction manual. Compatible with 2100Q Portable Turbidimeters (USB+Power Module required), HQd Series Water Quality Meters, DR Spectrophotometers with USB interface, and the BODTrak II Apparatus.
5836000	Printer Paper for PD-24, Thermal 5/pk

## Replacement Shroud Kit for Rugged Probes

Includes protective bell and locking ring. The rugged shroud absorbs the impact from rough wear and tear.



Prod. No.  
5825900

Shroud Kit  
(Probe not included.)

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# sensION+ pH PROBE SELECTION GUIDE

★ BEST    ✓ GOOD    □ NOT APPLICABLE

METERS & PROBES

	Portable sensION+ Electrodes		
Electrode Model	5050T	5051T	5052T
<b>SPECIFICATIONS</b>			
Reference system	Ag/AgCl		
Body material	polycarbonate	glass	glass
Electrolyte	gel	gel	gel
Junction Diaphragm	porous pin	open	annular ring (PTFE)
Glass bulb	standard	standard	standard
<b>APPLICATIONS</b>			
<b>General Purpose</b>			
General Use	★	✓	★
High performance			★
Field Measurements	✓	★	
High Temp (≥ 100 °C)			✓
Low Temp (< 0 °C)			★
<b>Waters</b>			
Drinking Water		✓	★
Wastewater	✓	★	✓
Seawater	✓	✓	★
Boiler / Cooler			✓
Pool / Spa	★		
<b>Food &amp; Beverage Applications</b>			
Beer			★
Bottled Water			★
Milk / Dairy			✓
Wine			✓
Penetration applications— cheese, meat, fruit			
Flat surface measurement— cheese, meat, agar			
<b>Challenging Applications</b>			
Alkaline samples (pH > 12)			
Emulsions— cosmetics, creams, paint, oil			
Low Ionic Strength (LIS)— DI water, deionized water, treated effluent			★
Non-aqueous / Semi-solid			
Pharma / Bio— TRIS buffer, proteins, enzymes			★
Viscous liquids, suspended solids, slurries		✓	✓
<b>Other Applications</b>			
Education	★		
Micro samples_ test tubes, small sample volume			
Surface measurements			
Soil (slurry in water)		✓	



# sensION+ pH PROBE SELECTION GUIDE

Benchtop sensION+ Electrodes			
5010T	5011T	5014T	5021T
Ag/AgCl			
polycarbonate gel porous pin standard	glass gel open standard	glass refillable two porous pins standard	glass refillable PTFE sleeve standard
★	✓	★	★
		★	
		✓	
			★
		★	★
	★	✓	✓
✓	✓	★	✓
★			★
		✓	
✓		★	✓
		✓	✓
			★
		★	
			★
			✓
		✓	✓
	✓		★
★		★	
★	✓	★	

# sensION+ PORTABLE METERS

METERS & PROBES



sensION+ FIELD KITS work as complete mobile measurement stations with everything you need to start testing.

Screw-on calibration tubes simplify on-site calibration and minimize consumption of standard solutions.

<b>Parameter</b>	<b>PH1 BASIC PORTABLE pH METER</b>	<b>EC5 PORTABLE CONDUCTIVITY METER</b>	<b>DO6 PORTABLE DISSOLVED OXYGEN METER</b>	<b>MM150 PORTABLE MULTI-METER</b>	<b>MM156 PORTABLE MULTI-METER</b>
Temperature	■	■	■	■	■
pH	■			■	■
Conductivity		■		■	■
Salinity		■			
TDS		■		■	
Dissolved Oxygen			■		■
ORP/Redox	■			■	

<b>Specifications</b>	<b>PH1 BASIC PORTABLE pH METER</b>	<b>EC5 PORTABLE CONDUCTIVITY METER</b>	<b>DO6 PORTABLE DISSOLVED OXYGEN METER</b>	<b>MM150 PORTABLE MULTI-METER</b>	<b>MM156 PORTABLE MULTI-METER</b>
IP Rating	IP67	IP67	IP67	IP67	IP67
Internal Data Storage	—	—	—	—	—
Resolution	0.01 pH 0.1 mV (±199.9 mV range)	EC: 0.01 µS/cm - 1 mS/cm TDS: 1mg/L - 1g/L depending on range Salinity: 0.1 mg/L - 0.1 g/L depending on range	0.01 mg/L	pH: 0.01 ORP: 1 mV EC: 0.01 µS/cm - 1 mS/cm depending on range 1 mg/L - 1 g/L depending on range	pH: 0.01 EC: 0.01 S/cm - 1 mS/cm depending on range DO: 0.01 mg/L - 0.1 mg/L, 0.1% - 1% depending on range
Inputs	MP-5	MP-5	MP-5	MP-8	MP-8
Outputs	—	—	—	—	—
Interface Languages	Icon based, no language needed	Icon based, no language needed	Icon based, no language needed	Icon based, no language needed	Icon based, no language needed
Warranty	2 years	2 years	2 years	2 years	2 years
Compliance	CE.WEEE	CE.WEEE	CE.WEEE	CE.WEEE	CE.WEEE
Measurement Method	Auto stabilization, manual	Auto stabilization, manual	Auto stabilization, manual	Auto stabilization, manual	Auto stabilization, manual
PC Data Transfer Software	—	—	—	—	—
Backlight	■	■	■	■	■
Battery Requirements	3, AA	3, AA	3, AA	3, AA	3, AA
Prod. No.	LPV2500.97.0002	LPV3500.97.0002	LPV4500.97.0002	LPV4000.97.0002	LPV4030.97.0002

See pages 54-55 for sensION+ Meter & Probe Kits. See page 56 for sensION+ Accessories.

# sensION+ PORTABLE DATA LOGGER METERS

Hach sensION+ Data Logger, an all-in-one system—now making testing AND DATA MANAGEMENT fast and simple.

Interval measurements, 500 data point memory and wireless data transfer to your PC. Data management as fast and simple as it can be.



METERS & PROBES

Parameter	pH1 DL PORTABLE DATA LOGGER pH METER	MM110 DL PORTABLE DATA LOGGER MULTI-METER	EC5 DL PORTABLE DATA LOGGER CONDUCTIVITY METER	DO6 DL PORTABLE DATA LOGGER DISSOLVED OXYGEN METER	MM150 DL PORTABLE DATA LOGGER MULTI-METER
Temperature	■	■	■	■	■
pH	■	■			■
Conductivity			■		■
Salinity			■		
TDS			■		■
Dissolved Oxygen				■	
ORP/Redox	■	■			■

Specifications	pH1 DL PORTABLE DATA LOGGER pH METER	MM110 DL PORTABLE DATA LOGGER MULTI-METER	EC5 DL PORTABLE DATA LOGGER CONDUCTIVITY METER	DO6 DL PORTABLE DATA LOGGER DISSOLVED OXYGEN METER	MM150 DL PORTABLE DATA LOGGER MULTI-METER
IP Rating	IP67	IP67	IP67	IP67	IP67
Internal Data Storage	500 results	500 results	500 results	500 results	500 results
Resolution	0.01 pH 0.1 mV (±199.9 mV range)	0.01 pH 1 mV	EC: 0.01 µS/cm - 1 mS/cm TDS: 1mg/L - 1g/L depending on range Salinity: 0.1 mg/L - 0.1 g/L depending on range	0.01 mg/L	pH: 0.01 ORP: 1 mV EC: 0.01 µS/cm - 1 mS/cm depending on range 1 mg/L - 1 g/L depending on range
Inputs	MP-5	MP-8	MP-5	MP-5	MP-8
Output	Wireless to USB	Wireless to USB	Wireless to USB	Wireless to USB	Wireless to USB
Interface Languages	Icon based, no language needed	Icon based, no language needed	Icon based, no language needed	Icon based, no language needed	Icon based, no language needed
Warranty	2 years	2 years	2 years	2 years	2 years
Compliance	CE; RTTE directive see NB opinion statement; FCC approval	CE; RTTE directive see NB opinion statement; FCC approval	CE; RTTE directive see NB opinion statement; FCC approval	CE; RTTE directive see NB opinion statement; FCC approval	CE; RTTE directive see NB opinion statement; FCC approval
Measurement Method	Interval, auto stabilization, manual	Interval, auto stabilization, manual	Interval, auto stabilization, manual	Interval, auto stabilization, manual	Interval, auto stabilization, manual
PC Data Transfer Software	Yes	Yes	Yes	Yes	Yes
Backlight	■	■	■	■	■
Battery Requirements	3, AA	3, AA	3, AA	3, AA	3, AA
Prod. No.	LPV2500DL.97.02	LPV2600DL.97.02	LPV3500DL.97.02	LPV4500DL.97.02	LPV4000DL.97.02

See pages 54-55 for sensION+ Meter & Probe Kits. See page 56 for sensION+ Accessories.

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# sensION+ BENCHTOP METERS

sensION+ benchtop meters are developed as work stations for integral work, delivered with integrated magnetic stirrer, probe holder and consumables.



Parameter	PH3 BASIC BENCHTOP pH METER	PH31 GLP BENCHTOP pH METER	EC7 BENCHTOP CONDUCTIVITY METER	EC71 GLP BENCHTOP CONDUCTIVITY METER	MM374 BENCHTOP MULTI-METER	MM378 BENCHTOP MULTI-METER
Temperature	■	■	■	■	■	■
pH	■	■			■	■
mV		■			■	■
Conductivity			■	■	■	■
Salinity			■	■	■	■
TDS				■	■	■
ORP/Redox	■	■			■	■
Ammonia					■	■
Nitrate					■	■
Fluoride					■	■
Sodium					■	■
Chloride					■	■
Ammonium					■	■

Specifications	PH3 BASIC BENCHTOP pH METER	PH31 GLP BENCHTOP pH METER	EC7 BENCHTOP CONDUCTIVITY METER	EC71 GLP BENCHTOP CONDUCTIVITY METER	MM374 BENCHTOP MULTI-METER	MM378 BENCHTOP MULTI-METER
Internal Data Storage	—	330	—	400	330	330 results
Resolution	pH: 0.01 ORP: 1 mV	pH: 0.001 ORP: 0.1 mV	EC: 0.01 $\mu$ S/cm - 1 mS/cm depending on range Salinity: depending on range	EC: 0.01 $\mu$ S/cm - 1 mS/cm depending on range TDS: 1 mg/L - 1 g/L Salinity: depending on range	pH: 0.001 pH ORP: 0.1 mV EC: 0.01 $\mu$ S/cm - 1 mS/cm depending on range TDS: 1 mg/L - 1 g/L Salinity: depending on range	pH: 0.001 pH ORP: 0.1 mV EC: 0.01 S/cm - 1 mS/cm depending on range TDS: 1 mg/L - 1 g/L DO: 0.01 mg/L - 0.1 mg/L, 0.1% - 1% depending on range
Inputs	BNC, ref, Pt1000	BNC, ref, Pt1000	E.C. cell, Pt1000	E.C. cell, Pt1000	2 BNC, 2 ref, 1 E.C.	2 BNC, 2 ref, 1 E.C., Pt1000
Outputs		RS232*(two-way), serial to USB adapter		RS232*(two-way), serial to USB adapter	RS232*(two-way), serial to USB adapter	RS232 (two-way), serial to USB adapter
Interface Languages	6**	6**	6**	6**	6**	6**
Warranty	3 years	3 years	3 years	3 years	2 years	2 years
Compliance	CE.WEEE	CE.WEEE	CE.WEEE	CE.WEEE	CE.WEEE	CE.WEEE
GLP Features	—	■	—	■	■	■
PC Data Transfer Software	—	Optional	—	Optional	Optional	Optional
Backlight	■	■	■	■	■	■
AC Operation	■	■	■	■	■	■
Prod. No.	LPV2000.97.0002	LPV2100.97.0002	LPV3010.97.0002	LPV3110.97.0002	LPV4110.97.0002	LPV4130.97.0002

\*USB compatibility with optional adapter. \*\*English, German, Spanish, French, Italian, and Portuguese

See pages 54-55 for sensION+ Meter & Probe Kits. See page 56 for sensION+ Accessories.



# sensION+ PROBES FOR PORTABLE METERS

## pH sensION+ 5050T – Portable Low-Maintenance, General Purpose pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable combination non-refillable, gel-fill pH electrode with polycarbonate (plastic) body, Ag/AgCl reference, ceramic pin junction, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	0 to 80°C	Porous Pin	12 mm (D) x 85 mm (L) without handle	<b>LZW5050T.97.002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV2550T.97.002</b>	sensION+ pH1 Portable pH Kit with 5050T pH electrode
					<b>LPV2550TDL.97.2</b>	sensION+ pH1 Portable Data Logger pH Kit with 5050T pH electrode



See page 67 for pH Buffers, Storage and Maintenance Solutions.

5050T is designed for portable, low-maintenance use in general purpose water quality applications.

## pH sensION+ 5051T – Portable Low-Maintenance pH Electrode for “Dirty” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable combination non-refillable, solid polymer-fill pH electrode with glass body, Ag/AgCl reference, open junction, built-in temperature sensor and sensor and standard size glass bulb. standard size glass bulb.	2 to 14 pH	0 to 80°C	Open	12 mm (D) x 85 mm (L) without handle	<b>LZW5051T.97.002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV2551T.97.002</b>	sensION+ pH1 Portable pH Kit with 5051T pH electrode
					<b>LPV2551TDL.97.2</b>	sensION+ pH1 Portable Data Logger pH Kit with 5051T pH electrode



See page 67 for pH Buffers, Storage and Maintenance Solutions.

5051T is designed for portable, low-maintenance use in “dirty” samples with high solids content (e.g. wastewater).

## pH sensION+ 5052T – Portable Low-Maintenance pH Electrode for “Difficult” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable combination non-refillable, gel-fill pH electrode with glass body, Ag/AgCl reference, annular porous ring junction, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	0 to 100°C	Annular Ring	12 mm (D) x 85 mm (L) without handle	<b>LZW5052T.97.002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV2552T.97.002</b>	sensION+ pH1 Portable pH Kit with 5052T pH electrode
					<b>LPV2552TDL.97.2</b>	sensION+ pH1 Portable Data Logger pH Kit with 5052T pH electrode



See page 67 for pH Buffers, Storage and Maintenance Solutions.

5052T is designed for portable, low-maintenance use in “difficult” samples (viscous solutions, high temperature, low ionic strength).

## ORP/REDOX sensION+ 5055 – Portable Low-Maintenance ORP/Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable combination non-refillable, gel-fill ORP/Redox electrode with polycarbonate (plastic) body, Ag/AgCl reference and annular platinum sensor.	± 2000 mV	0 to 80°C	Porous Pin	12 mm (D) x 85 mm (L) without handle	<b>LZW5055.97.0002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV2555.97.0002</b>	sensION+ pH1 Portable ORP Kit with 5055 ORP electrode
					<b>LPV2555DL.97.02</b>	sensION+ pH1 Portable Data Logger ORP Kit with 5055 ORP electrode



See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.

## DISSOLVED OXYGEN sensION+ 5130 – Portable Dissolved Oxygen Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable polarographic dissolved Oxygen Probe with ABS (plastic) body, refillable reference electrolyte, built-in temperature sensor and replaceable membrane module.	0.03 mg/L to saturation	0 to 50°C	N/A	12 mm (D) x 120 mm (L) without handle	<b>LZW5130.97.0002</b>	Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					<b>5197300</b>	Replacement Membrane Modules (pack of 2) for sensION+ 5130 DO Probe
					<b>2759126</b>	Electrolyte Solution for sensION+ 5120 DO Probe (50 mL)
<i>Recommended Kits</i>						
					<b>LPV4552.97.0002</b>	sensION+ DO6 Portable Dissolved Oxygen Oxygen Kit with 5130 DO Probe
					<b>LPV4552DL.97.02</b>	sensION+ DO6 Portable Dissolved Oxygen Data Logger Kit with 5130 DO Probe



# sensION+ PROBES FOR PORTABLE METERS

## CONDUCTIVITY sensION+ 5060 – Portable General Purpose Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable platinum 3-pole conductivity cell with polycarbonate (plastic) body and built-in temperature sensor.*	0.2 $\mu\text{S}/\text{cm}$ to 200 $\text{mS}/\text{cm}$	0 to 80°C	N/A	12 mm (D) x 85 mm (L) without handle	<b>LZW5060.97.0002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV3560.97.0002</b>	sensION+ EC5 Portable Conductivity Kit with 5060 Conductivity Cell
					<b>LPV3560DL.97.02</b>	sensION+ EC5 Portable Conductivity Data Logger Kit with 5060 Conductivity Cell

\*Cell constant (k) = 1.0  $\text{cm}^{-1}$

5060 is designed for portable conductivity measurements in general purpose water quality applications.

See pages 67-68 for Conductivity Standard Solutions.



## CONDUCTIVITY sensION+ 5062 – Portable Conductivity Probe for “Difficult” Applications

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable platinum 2-pole conductivity cell with titanium body and built-in temperature sensor.*	5 $\mu\text{S}/\text{cm}$ to 50 $\text{mS}/\text{cm}$	0 to 80°C	N/A	12 mm (D) x 85 mm (L) without handle	<b>LZW5062.97.0002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV3562.97.0002</b>	sensION+ EC5 Portable Conductivity Kit with 5062 Conductivity Cell
					<b>LPV3562DL.97.02</b>	sensION+ EC5 Portable Conductivity Data Logger Kit with 5062 Conductivity Cell

\*Cell constant (k) = 0.3  $\text{cm}^{-1}$

5062 is designed for portable conductivity measurements in “difficult” applications (e.g. dirty or viscous samples).

See pages 67-68 for Conductivity Standard Solutions.



## MULTI-SENSOR sensION+ 5048 – Portable pH/Conductivity/ORP Multi-sensor\*

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable multisensor for simultaneous pH, Conductivity and ORP/Redox measurements. Probe has plastic body, non-refillable gel Ag/AgCl reference with ceramic pin junction and built-in temperature sensor. Also platinum sensor (ORP) and standard pH glass bulb.*	pH: 0 to 14 pH Conductivity: 20 $\mu\text{S}/\text{cm}$ to 200 $\text{mS}/\text{cm}$ ORP/Redox: $\pm 2000$ mV	0 to 80°C	Porous Pin	12 mm (D) x 85 mm (L) without handle	<b>LZW5048.97.0002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV4048.97.0002</b>	sensION+ MM150 Portable pH/ORP/EC Kit with 5048 Multi-sensor
					<b>LPV4048DL.97.02</b>	sensION+ MM150 Portable pH/ORP/EC Data Logger Kit with 5048 Multi-sensor

\*Only for use with MM150 Meter. Conductivity cell constant (k) = 3.0  $\text{cm}^{-1}$

5048 allows simultaneous measurement of three parameters in a standard 12 mm diameter electrode design.

See pages 67-68 for Calibration Standards, Storage and Maintenance Solutions.



## MULTI-SENSOR sensION+ 5045 – Portable pH/ORP/Redox Multi-sensor\*

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable multisensor for simultaneous pH and ORP/Redox measurements. Probe has plastic body, non-refillable gel Ag/AgCl reference with ceramic pin junction and built-in temperature sensor. Also platinum sensor (ORP) and standard pH glass bulb.*	pH: 0 to 14 pH ORP/Redox: $\pm 2000$ mV	0 to 80°C	Porous Pin	12 mm (D) x 85 mm (L) without handle	<b>LZW5045.97.0002</b>	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					<b>LPV2645.97.0002</b>	sensION+ MM110 Portable pH/ORP Kit with 5045 Multi-sensor
					<b>LPV2645DL.97.02</b>	sensION+ MM110 Portable pH/ORP Data Logger Kit with 5045 Multi-sensor

\*Only for use on MM110 Meter.

5045 allows simultaneous measurement of two parameters in a standard 12 mm diameter electrode design.

See pages 67-68 for Calibration Standards, Storage and Maintenance Solutions.



## MULTI-SENSOR sensION+ 5049 - Portable pH/Conductivity/Dissolved Oxygen Multi-sensor\*

**NEW!**

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable multi-sensor for simultaneous pH, Conductivity and Dissolved Oxygen measurements. Probe has durable protective outer shroud and individually replaceable pH, EC, and DO sensors pH: non-refillable gel Ag/AgCl reference with porous pin junction EC: 2-pole platinum sensor (k = 1.0 $\text{cm}^{-1}$ ) with integrated temperature sensor DO: polarographic sensor with refillable reference electrolyte and replaceable membrane module.	pH: 0 to 14 pH EC: 5 to 30,000 $\mu\text{S}/\text{cm}$ DO: 0.03 mg/L oxygen to saturation	0 to 50°C	Porous Pin	40 mm (D) w/ 12 mm individual sensors x 170 mm (L)	<b>LZW5049.97.0002</b>	Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					<b>LZW9171.99</b>	Replacement pH Electrode
					<b>LZW9172.99</b>	Replacement Conductivity Cell
					<b>LZW9173.99</b>	Replacement DO Sensor
					<b>5197300</b>	Replacement Membrane Modules (pack of two) for DO Probe
					<b>2759126</b>	Electrolyte Solution (50 mL) for DO Probe

\*Only for use with MM150 Meter.

5049 multisensor provides portable simultaneous measurement of three critical water quality parameters with cost-effective individually replaceable sensors.

See pages 67-68 for pH Buffers, Cleaning and Storage Solutions.



# sensION+ PROBES FOR PORTABLE METERS

## MULTI-SENSOR sensION+ 5059 – Portable pH/Conductivity Multi-sensor\*

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Portable multi-sensor for simultaneous pH and Conductivity measurements. Probe has plastic body, non-refillable gel Ag/AgCl reference with ceramic pin junction and built-in temperature sensor. Also platinum sensor (Conductivity) and standard pH glass bulb.*	pH: 0 to 14 pH Conductivity: 20 to 200 mS/cm	0 to 80°C	Porous Pin	12 mm (D) x 85 mm (L) without handle	LZW5059.97.0002	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					LPV4059.97.0002	sensION+ MM150 Portable pH/EC Kit with 5059 Multi-sensor
					LPV4059DL.97.02	sensION+ MM150 Portable pH/EC Data Logger Kit with 5059 Multi-sensor



See pages 67-68 for Calibration Standards, Storage and Maintenance Solutions.

\*Only for use with MM150 Meter. Conductivity cell constant (k) = 3.0 cm<sup>-1</sup>  
5059 allows simultaneous measurement of two parameters in a standard 12 mm diameter electrode design.

# sensION+ PROBES FOR BENCHTOP METERS

## pH sensION+ 5010T – Standard Low-Maintenance, General Purpose pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard combination non-refillable, gel-fill pH electrode with polycarbonate (plastic) body, Ag/AgCl reference, ceramic pin junction, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	0 to 80°C	Porous Pin	12 mm (D) x 130 mm (L)	LZW5010T.97.002	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					LPV2010T.97.002	sensION+ pH3 Laboratory pH Kit with 5010T pH Electrode
					LPV2110T.97.002	sensION+ pH31 GLP Laboratory pH Kit with 5010T pH Electrode
					LPV2210T.97.002	sensION+ MM340 GLP Laboratory pH/ISE Kit with 5010T pH Electrode



See page 67 for pH Buffers, Storage and Maintenance Solutions.

5010T is designed for low-maintenance use in general purpose water quality applications.

## pH sensION+ 5011T – Standard Low-Maintenance pH Electrode for “Dirty” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard combination non-refillable, solid polymer-fill pH electrode with glass body, Ag/AgCl reference, open junction, built-in temperature sensor and standard size glass bulb.	2 to 14 pH	0 to 80°C	Open	12 mm (D) x 130 mm (L)	LZW5011T.97.002	Electrode only (1 m cable)
<i>Recommended Kits</i>						
					LPV2011T.97.002	sensION+ pH3 Laboratory pH Kit with 5011T pH Electrode
					LPV2111T.97.002	sensION+ pH31 GLP Laboratory pH Kit with 5011T pH Electrode
					LPV2211T.97.002	sensION+ MM340 GLP Laboratory pH/ISE Kit with 5011T pH Electrode



See page 67 for pH Buffers, Storage and Maintenance Solutions.

5011T is designed for low-maintenance use in "dirty" samples with high solids content (e.g. wastewater).

## pH sensION+ 5014T – Standard High-Performance, General Purpose pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard combination refillable pH electrode with glass body, encapsulated Ag/AgCl reference with silver ion barrier, two ceramic porous pin junctions, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	-10 to 100°C	Two Porous Pin Junctions	12 mm (D) x 130 mm (L)	LZW5014T.97.002	Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					LZW9509.99	3M KCl Fill Solution for sensION+ 5014T pH electrode (50 mL)
<i>Recommended Kits</i>						
					LPV2014T.97.002	sensION+ pH3 Laboratory pH Kit with 5014T pH Electrode
					LPV2114T.97.002	sensION+ pH31 GLP Laboratory pH Kit with 5014T pH Electrode
					LPV2214T.97.002	sensION+ MM340 GLP Laboratory pH/ISE Kit with 5014T pH Electrode



See page 67 for pH Buffers, Storage and Maintenance Solutions.

5014T is designed for high-performance pH measurements in general aqueous applications.

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# senSiON+ PROBES FOR BENCHTOP METERS

## pH **senSiON+ 5021T** – Standard High-Performance pH Electrode for “Difficult” Samples

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard combination refillable pH electrode with glass body, encapsulated Ag/AgCl reference with silver ion barrier, open reference junction with sleeve diaphragm, built-in temperature sensor and standard size glass bulb.	0 to 14 pH	0 to 60°C	Open With Sleeve	12 mm (D) x 130 mm (L)	<b>LZW5021T.97.002</b>	Electrode only (1 m cable)



*Replacement Items / Accessories*  
**LZW9509.99** 3M KCl Fill Solution for senSiON+ 5021T pH electrode (50 mL)

*Recommended Kits*  
**LPV2021T.97.002** senSiON+ pH3 Laboratory pH Kit with 5021T pH Electrode  
**LPV2121T.97.002** senSiON+ pH31 GLP Laboratory pH Kit with 5021T pH Electrode  
**LPV2221T.97.002** senSiON+ MM340 GLP Laboratory pH/ISE Kit with 5021T pH Electrode

See page 67 for pH Buffers, Storage and Maintenance Solutions.

*5021T is designed for pH measurements in "difficult" samples (eg. viscous solutions, LIS). The 5021T's sleeve reference junction is nearly impossible to clog, even in the most challenging applications.*

## CONDUCTIVITY **senSiON+ 5070** – Standard General Purpose Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard platinum 3-pole conductivity cell with polycarbonate (plastic) body and built-in temperature sensor.*	0.2 $\mu$ S/cm to 200 mS/cm	0 to 80°C	N/A	12 mm (D) x 130 mm (L)	<b>LZW5070.97.0002</b>	Electrode only (1 m cable)



*Recommended Kits*  
**LPV3070.97.0002** senSiON+ EC7 Laboratory Conductivity Kit with 5070 Conductivity Cell  
**LPV3170.97.0002** senSiON+ EC71 GLP Laboratory Conductivity Kit with 5070 Conductivity Cell  
**LPV4140.97.0002** senSiON+ MM374 GLP Laboratory pH/ISE/EC Kit with 5070 Conductivity Cell and 5014 pH Electrode

See pages 67-68 for Conductivity Standard Solutions.

\*Cell constant (k) = 0.7 cm<sup>-1</sup>

*5070 is designed for conductivity measurements in general purpose water quality applications.*

## ORP/REDOX **senSiON+ 5056** – Standard Low-Maintenance ORP/Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard combination non-refillable, gel-fill ORP/Redox electrode with glass body, encapsulated Ag/AgCl reference, ceramic porous pin junction and platinum sensor.	$\pm$ 2000 mV	0 to 80°C	Porous Pin	12 mm (D) x 130 mm (L)	<b>LZW5056.97.0002</b>	Electrode only (1 m cable)



See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.

## ORP/REDOX **senSiON+ 5057** – Standard Refillable ORP/Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Standard combination refillable, ORP/Redox electrode with glass body, Ag/AgCl reference, ceramic porous pin junction and platinum sensor.	$\pm$ 2000 mV	0 to 80°C	Porous Pin	12 mm (D) x 130 mm (L)	<b>LZW5057.97.0002</b>	Electrode only (1 m cable)



*Replacement Items / Accessories*  
**LZW9509.99** 3M KCl Fill Solution for senSiON+ 5057 ORP/Redox electrode (50 mL)

See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.



## AMMONIA ISE sensION+ 5192700 – Combination Ammonia Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination gas-sensing ammonia ISE with epoxy body, refillable outer-body, double junction Ag/AgCl reference and replaceable NH <sub>3</sub> sensitive membrane module.	0.06 to 17,000 mg/L NH <sub>3</sub>	0 to 50°C	Annular Ring	12 mm (D) x 149 mm (L)	5192700	Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					5192711	Replacement membrane modules (5 pack) for 5192700 Ammonia ISE
					4447226	0.1M NH <sub>4</sub> Cl Fill Solution for 5192700 Ammonia ISE (50 mL)
					4447169	Ammonia Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
					2348700	sensION+ Ammonia ISE Analysis Package (contains electrode, standard solutions, ISA pillows and replacement membranes)
					5025300	Air Gap Assembly for Ammonia ISE



See page 69 for Ammonia Standards, Maintenance and Storage Solutions.

## AMMONIUM ISE sensION+ 9663 / 9663C – Ammonium Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Ammonium ISE with an epoxy body solid-state ammonium selective PVC membrane. 9663 is a half-cell only.* 9663C is a combination ISE with a non-refillable, gel-filled, double junction Ag/AgCl reference.**	0.9 to 1,800 mg/L NH <sub>4</sub> <sup>+</sup>	5 to 40°C	Annular Ring	12 mm (D) x 120 mm (L)	LZW9663.97.0002* LZW9663C.97.002**	Electrode only (1 m cable) Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					2980699	Ammonium Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<i>Recommended Kits</i>						
					LZW9663AP.97.02	sensION+ Ammonium ISE Analysis Package (contains combination electrode, ISA powder pillows, and standard solutions)



\*This ISE is a half-cell (sensor only) and requires a separate reference electrode (sensION+ 5044 is recommended).  
\*\*For use with the sensION+ MM374 Multimeter.

See page 69 for Ammonium Standard Solutions.

9663 / 9663C's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).

## CHLORIDE ISE sensION+ 9652 / 9652C – Chloride Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Chloride ISE with an epoxy body and solid-state chloride selective crystalline membrane. 9652 is a half-cell only.* 9652C is a combination ISE with a non-refillable, gel-filled, double junction Ag/AgCl reference.**	1 to 35,000 mg/L Cl <sup>-</sup>	5 to 50°C	Annular Ring	12 mm (D) x 120 mm (L)	LZW9652.97.0002* LZW9652C.97.002**	Electrode only (1 m cable) Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					2318069	Chloride Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<i>Recommended Kits</i>						
					LZW9652AP.97.02	sensION+ Chloride ISE Analysis Package (contains combination electrode, ISA powder pillows, and standard solutions)



\*This ISE is a half-cell (sensor only) and requires a separate reference electrode (sensION+ 5044 is recommended).  
\*\*For use with the sensION+ MM374 Multimeter.

See page 69 for Chloride Standard Solutions.

9652 / 9652C's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).

## FLUORIDE ISE sensION+ 9655 / 9655C – Fluoride Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Fluoride ISE with an epoxy body and solid-state fluoride selective crystalline membrane. 9655 is a half-cell only.* 9655C is a combination ISE with a non-refillable, gel-filled, double junction Ag/AgCl reference.**	0.02 to 20,000 mg/L F <sup>-</sup>	5 to 40°C	Annular Ring	12 mm (D) x 120 mm (L)	LZW9655.97.0002* LZW9655C.97.002**	Electrode only (1 m cable) Electrode only (1 m cable)
<i>Replacement Items / Accessories</i>						
					258999	Fluoride Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<i>Recommended Kits</i>						
					LZW9655AP.97.02	sensION+ Fluoride ISE Analysis Package (contains combination electrode, ISA powder pillows, and standard solutions)



\*This ISE is a half-cell (sensor only) and requires a separate reference electrode (sensION+ 5044 is recommended).  
\*\*For use with the sensION+ MM374 Multimeter.

See page 69 for Fluoride Standard Solutions.

9655 / 9655C's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).

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# sensION+ ISE PROBES

## NITRATE ISE sensION+ 9662 / 9662C – Nitrate Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Nitrate ISE with an epoxy body and solid-state nitrate selective PVC membrane. 9662 is a half-cell only.* 9662C is a combination ISE with a non-refillable, gel-filled, double junction Ag/AgCl reference.**	0.4 to 62,000 mg/L NO <sub>3</sub> <sup>-</sup>	5 to 40°C	Annular Ring	12 mm (D) x 120 mm (L)	<b>LZW9662.97.0002*</b>	Electrode only (1 m cable)
					<b>LZW9662C.97.002**</b>	Electrode only (1 m cable)
					<i>Replacement Items / Accessories</i>	
					<b>2984799</b>	Nitrate Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
					<i>Recommended Kits</i>	
					<b>LZW9662AP.97.02</b>	sensION+ Nitrate ISE Analysis Package (contains combination electrode, ISA powder pillows, and standard solutions)



\*This ISE is a half-cell (sensor only) and requires a separate reference electrode (sensION+ 5044 is recommended).  
 \*\*For use with the sensION+ MM374 Multimeter.

See page 69 for Ammonium Standard Solutions.

9662 / 9662C's solid-state sensor design eliminates costly membrane replacement and requires virtually no maintenance (dry storage).

## SODIUM ISE sensION+ 9650 – Half-Cell Sodium Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Half-cell sodium ISE* with glass body and sodium selective glass membrane.**	0.05 to 23,000 mg/L Na <sup>+</sup>	0 to 60°C	N/A	12 mm (D) x 120 mm (L)	<b>LZW9650.97.0002*</b>	Electrode only (1 m cable)
					<b>4451569</b>	<i>Replacement Items / Accessories</i> Sodium Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)



\*This ISE is a half-cell (sensor only) and requires a separate reference electrode (sensION+ 5044 is recommended).  
 \*\*For use with the sensION+ MM374 Multimeter.

See page 69 for Sodium Standards, Maintenance and Storage Solutions.

## REFERENCE ISE sensION+ 5044 – Double Junction Reference Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Double junction reference electrode with a glass body, large ceramic junction, internal gel electrolyte and refillable 0.1M lithium acetate salt bridge. Recommended for use with sensION+ half-cell ISEs.*	N/A	0 to 60°C	Ceramic	12 mm (D) x 120 mm (L)	<b>LZW5044.97.0002</b>	Electrode only (1 m cable)
					<i>Replacement Items / Accessories</i>	
					<b>LZW9901.99</b>	0.1M lithium acetate fill solution for sensION+ 5044 Reference Electrode
					<b>LZW5243.99</b>	Replacement ceramic junction for sensION+ 5044 Reference Electrode



\*For use with the sensION+ MM374 Multimeter.

**Hach sensION Meters have been discontinued and replaced with sensION+ Meters. Hach will continue to offer sensION Electrodes and Probes to all customers with existing sensION Meters.**

*(sensION Electrodes and Probes availability subject to change without notice.)*

## pH sensION – General Purpose, Standard Combination Non-refillable pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Gel-fill with epoxy body, Ag/AgCl reference, ceramic porous pin junction, built-in temperature sensor and standard size glass pH bulb.	0 to 14 pH	Continuous Use: 0 to 45°C	Porous Pin	152.5 mm (L) x 12.1 mm (D)	5193500	Electrode only (sensION 5-pin connector)
					5193511	Electrode only (BNC & 3.5 mm phone connectors)
					5193522	Electrode only (BNC & DIN connectors)

## pH sensION – General Purpose, Standard Combination Refillable pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Epoxy body, refillable electrolyte, Ag/AgCl reference, porous ceramic pin junction, built-in temperature sensor and standard size glass pH bulb.	0 to 14 pH	Continuous Use: 0 to 45°C	Porous Pin	152.5 mm (L) x 12.1 mm (D)	5194000	Electrode only (sensION 5-pin connector)
					5194011	Electrode only (BNC & 3.5 mm phone connectors)
					5194022	Electrode only (BNC & DIN connectors)

## pH sensION – General Purpose, Standard Combination Platinum Series pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Epoxy body, replaceable gel electrolyte cartridge, Ag/AgCl reference, open junction, built-in temperature sensor and standard size glass pH bulb.	0 to 14 pH	Continuous Use: 0 to 45°C	Open	241 mm (L) x 12.7 mm (D)	5191000	Electrode only (sensION 5-pin connector)
					5191011	Electrode only (BNC & 3.5 mm phone connectors)
					5191022	Electrode only (BNC & DIN connectors)

## pH sensION – General Purpose, Standard Combination Platinum Series pH Electrode with Flat pH Sensor

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Epoxy body, replaceable gel electrolyte cartridge, Ag/AgCl reference, annular junction and flat pH sensor for surface measurements. (Does not have built-in temperature sensor.)	0 to 13 pH	Continuous Use: 0 to 45°C	Annular Ring	229 mm (L) x 12.7 mm (D)	5191500	Electrode only (BNC connector)

[pH Replacement Items / Accessories](#)

Prod. No.	Description
5194100	4M KCl saturated with AgCl fill solution for sensION 51941XX pH electrodes (65 mL)
2546902	Replacement KCl gel electrolyte cartridges (2 pack) for Platinum Series pH electrodes

See page 67 for pH Buffers, Storage and Maintenance Solutions.

## CONDUCTIVITY sensION – Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Graphite 4-pole conductivity cell with Noryl (plastic) body and built-in temperature sensor.*	0.1 µS/cm to 200 mS/cm	-10 to 110°C	N/A	120 mm (L) x 15 mm (D)	5197500	Electrode only (sensION 5-pin connector & 1 m cable)
					5197503	Electrode only (sensION 5-pin connector & 3 m cable)

\*Cell constant (k) = 0.45 cm<sup>-1</sup>

See pages 67-68 for Conductivity Standard Solutions.

*Continued on next page.*

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## DISSOLVED OXYGEN sensION – Polarographic Dissolved Oxygen Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Epoxy body, refillable reference electrolyte, built-in temperature sensor and replaceable membrane module.	0 to 20 mg/L 0 to 200% saturation	0 to 50°C	N/A	149 mm (L) x 12.1 mm (D)	<b>5197000</b>  <b>5197003</b>  <b>5197015</b>	Electrode only (sensION 5-pin connector & 1 m cable) Electrode only (sensION 5-pin connector & 3 m cable) Electrode only (sensION 5-pin connector & 15 m cable)

### Dissolved Oxygen Replacement Items / Accessories

Prod. No.	Description
<b>5197100</b>	BOD Accessories Kit (w/ funnel and spacer) for sensION 51970XX DO probes
<b>5196800</b>	DO Probe Service Kit (w/ two membranes and electrolyte fill solution) for sensION 51970XX DO probes
<b>5197300</b>	Replacement membranes (2 pack) for sensION 51970XX DO probes
<b>2759126</b>	Electrolyte Fill Solution (50 mL) for sensION 51970XX DO probes

## ORP/REDOX sensION – Platinum Series Combination ORP Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
TPX (plastic) body, replaceable gel electrolyte cartridge, Ag/AgCl reference, open junction, built-in temperature sensor and annular platinum sensor.	± 2000 mV	0 to 45°C	Open	241 mm (L) x 12.7 mm (D)	<b>5193700</b>	Electrode only (1 m fixed cable with sensION 5-pin connector)

## ORP/REDOX sensION – Combination Non-refillable, Gel-fill ORP/Redox Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Epoxy body, Ag/AgCl reference and annular Platinum sensor.	± 2000 mV	0 to 45°C	Porous Pin	241 mm (L) x 12.7 mm (D)	<b>5193900</b>	Electrode only (1 m fixed cable with sensION 5-pin connector)

### ORP/Redox Replacement Items / Accessories

Prod. No.	Description
<b>2546902</b>	Replacement KCl gel electrolyte cartridge (2 pack) for Platinum Series ORP electrode

See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.

## FLUORIDE ISE sensION – Platinum Series Fluoride Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
TPX (plastic) body, replaceable gel electrolyte cartridge, and non-replaceable crystalline membrane.	0.02 mg/L F- to saturation	0 to 80°C	Annular Ring	110 mm (L) x 12 mm (D)	<b>5192800</b>	Electrode only (1 m fixed cable with BNC connector)

### Fluoride Replacement Items / Accessories

Prod. No.	Description
<b>258999</b>	Fluoride Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
<b>5192810</b>	sensION Fluoride Analysis Package (includes electrode, reference cartridges, standard solutions and ISA)
<b>2546902</b>	Replacement KCl gel electrolyte cartridges (2 pack) for Platinum Series electrodes

See page 69 for Fluoride Standards and ISE Maintenance/Storage Solutions.



## NITRATE ISE sensION – Platinum Series Nitrate Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
TPX (plastic) body, replaceable gel electrolyte cartridge, and replaceable PVC membrane.	0.5 to 14,000 mg/L NO <sub>3</sub> <sup>-</sup> -N	10 to 30°C	Annular Ring	244 mm (L) x 12.7 mm (D)	5192000	Electrode only (1 m fixed cable with BNC connector)

### Nitrate Replacement Items / Accessories

Prod. No.	Description
4456369	Nitrate Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
2348800	sensION Nitrate Analysis Package (includes electrode, reference cartridges, fill solution, standard solutions and ISA)
2597102	Replacement Ammonium Sulfate gel electrolyte cartridges (2 pack) for Nitrate Platinum Series electrode
4456926	Nitrate ISE Internal Fill Solution (50 mL)
4613300	Replacement sensION Nitrate ISE Membrane Modules (6 pack)

See page 69 for Nitrate Standards and ISE Maintenance/Storage Solutions.

## SODIUM ISE sensION – Platinum Series Sodium Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
TPX (plastic) body, replaceable gel electrolyte cartridge, and non-replaceable glass membrane.	0.010 mg/L Na <sup>+</sup> to saturation	0 to 50°C	Porous Pin	240 mm (L) x 12 mm (D)	5192500	Electrode only (1 m fixed cable with BNC connector)

### Sodium Replacement Items / Accessories

Prod. No.	Description
4451569	Sodium Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
2348100	sensION Sodium Analysis Package (includes electrode, reference cartridges, standard solutions and ISA)
2595802	Replacement Ammonium Chloride gel electrolyte cartridges (2 pack) for Sodium Platinum Series electrode

See page 69 for Sodium Standards and ISE Maintenance/Storage Solutions.

## AMMONIA ISE sensION – Combination Gas-Sensing Ammonia Ion Selective Electrode (ISE)

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Epoxy body, refillable outer-body, double junction Ag/AgCl reference and replaceable NH <sub>3</sub> sensitive membrane module.	0.06 to 17,000 mg/L as NH <sub>3</sub>	0 to 50°C	Annular Ring	12 mm (D) x 149 mm (L)	5192700	Electrode only (1 m fixed cable with BNC connector)

### Ammonia Replacement Items / Accessories

Prod. No.	Description
5192711	Replacement membrane modules (5 pack) for 5192700 Ammonia ISE
4447226	0.1M NH <sub>4</sub> Cl Fill Solution for 5192700 Ammonia ISE (50 mL)
4447169	Ammonia Ionic Strength Adjustor (ISA) Powder Pillows (100 pack)
2348700	sensION+ Ammonia ISE Analysis Package (contains electrode, standard solutions, ISA pillows and replacement membranes)
5025300	Air Gap Assembly for Ammonia ISE

See page 69 Ammonia Standards, Maintenance and Storage Solutions.

## TEMPERATURE sensION – Temperature Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Stainless steel thermistor with 1 m cable.	N/A	0 to 80°C	N/A	120 mm (L) x 6 mm (D)	5198000	Probe only (sensION 5-pin connector)
					5198022	Probe only (3.5 mm phone connector)
					5198011	Probe only (DIN connector)

# sensION+ BENCHTOP METER & PROBE KITS

- **sensION+ Benchtop meters are available in popular packaged configurations**
- **Choose from basic kits or advanced kits for your lab testing needs**
- **Unique design developed as a complete workstation including integrated stirrer, probe stand, calibration flasks, and compartments for essential lab work**
- **All benchtop kits include: workstation with integrated stirrer, buffers, standards, storage solutions, calibration flasks, and accessories for quick start up**



Prod. No.	Description
LPV2010T.97.002	<b>Basic pH (general) Benchtop Kit</b> sensION+ PH3 meter with universal 5010T pH and temperature electrode. For general aqueous applications.
LPV2011T.97.002	<b>Advanced pH (dirty samples) Benchtop Kit</b> sensION+ PH3 meter with open junction 5011T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2014T.97.002	<b>Advanced pH (high performance) Benchtop Kit</b> sensION+ PH3 meter with dual junction 5014T pH and temperature electrode. For sulfurs, reducing sugars or media that reacts with Ag+ ions.
LPV2021T.97.002	<b>Advanced pH (difficult samples) Benchtop Kit</b> sensION+ PH3 meter with clog-free 5021T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV2110T.97.002	<b>Basic pH (general) Benchtop Kit</b> sensION+ PH31 GLP meter with universal 5010T pH and temperature electrode. For general aqueous applications.
LPV2111T.97.002	<b>Advanced pH (general) Benchtop Kit</b> sensION+ PH31 GLP meter with open junction 5011T pH and temperature electrode. For high solid content and/or viscous media samples
LPV2114T.97.002	<b>Advanced pH (high performance) Benchtop Kit</b> sensION+ PH31 GLP meter with dual junction 5014T pH and temperature electrode. For sulfurs, reducing sugars or media that reacts with Ag+ ions.
LPV2121T.97.002	<b>Advanced pH (difficult samples) Benchtop Kit</b> sensION+ PH31 GLP meter with clog-free 5021T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV2210T.97.002	<b>Basic pH (general) Benchtop Kit</b> sensION+ MM340 pH & ISE GLP meter with universal 5010T pH and temperature electrode. For general aqueous applications.
LPV2211T.97.002	<b>Advanced pH (dirty samples) Benchtop Kit</b> sensION+ MM340 pH & ISE meter with open junction 5011T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2214T.97.002	<b>Advanced pH (high performance) Benchtop Kit</b> sensION+ MM340 pH & ISE GLP meter with dual junction 5014T pH and temperature electrode. For sulfurs, reducing sugars or media that reacts with Ag+ ions.
LPV3070.97.0002	<b>Basic Conductivity Benchtop Kit</b> sensION+ EC7 meter with universal 5070 conductivity and temperature cell. For general aqueous applications.
LPV3170.97.0002	<b>Advanced Conductivity Benchtop Kit</b> sensION+ EC71 GLP meter with universal 5070 conductivity and temperature cell. For general aqueous applications.
LPV4140.97.0002	<b>Advanced pH (high performance) &amp; Conductivity Benchtop Kit</b> sensION+ MM374 pH, conductivity & ISE GLP meter with dual junction 5014 pH and universal 5070 conductivity with temperature cell. For sulfurs, reducing sugars or media that reacts with Ag+ ions.
LPV4160.97.0002	<b>Advanced pH, Conductivity &amp; Dissolved Oxygen Benchtop Kit</b> sensION+ MM378 pH, conductivity & DO GLP meter with dual junction 5014 pH electrode, 5070 conductivity with temperature cell and 5131 polarographic DO electrode.

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- sensION+ meters are available in popular packaged configurations
- Choose from basic, advanced, or multi-sensor kits for your field testing needs
- Specialized field carrying case acts as a portable laboratory
- All field kits include: meter, sensor, field carrying case, buffers, standards, storage solutions, calibration tubes with screw caps, and accessories for quick start up
- Data Logger field kits complete with USB dongle and PortCom Software are also available upon request. Contact Hach or visit [www.hach.com](http://www.hach.com) for details.

Prod. No.	Description
LPV2550T.97.002	<b>Basic pH (general) Field Kit</b> sensION+ PH1 meter with universal 5050T pH and temperature electrode. For general aqueous applications.
LPV2551T.97.002	<b>Advanced pH (dirty samples) Field Kit</b> sensION+ PH1 meter with open junction 5051T pH and temperature electrode. For high solid content and/or viscous media samples.
LPV2552T.97.002	<b>Advanced pH (difficult samples) Field Kit</b> sensION+ PH1 meter with high contact 5052T pH and temperature electrode. For low ionic strength, colloidal, emulsions and cream samples.
LPV3560.97.0002	<b>Basic Conductivity Field Kit</b> sensION+ EC5 meter with universal 5060 conductivity and temperature cell. For general aqueous applications.
LPV3562.97.0002	<b>Advanced Conductivity Field Kit</b> sensION+ EC5 meter with robust, Titanium 5062 conductivity and temperature cell. For difficult media applications.
LPV4551.97.0002	<b>Basic Dissolved Oxygen Field Kit</b> sensION+ DO6 meter with robust, polarographic 5130 DO and temperature probe. For general aqueous applications.
LPV2645.97.0002	<b>Advanced pH &amp; ORP Multi-sensor Field Kit</b> sensION+ MM110 meter with 5045 pH, ORP and temperature multi-sensor. For general aqueous applications.
LPV4059.97.0002	<b>Advanced pH and Conductivity Multi-sensor Field Kit</b> sensION+ MM150 meter with 5059PT pH, conductivity and temperature multi-sensor. For agriculture and general aqueous applications.
LPV4048.97.0002	<b>Advanced pH, Conductivity &amp; ORP Multi-sensor Field Kit</b> sensION+ MM150 meter with 5048 pH, conductivity, ORP and temperature multi-sensor. For wastewater treatment and general aqueous applications.
LPV4049.97.0002	<b>Advanced pH, Conductivity &amp; Dissolved Oxygen Multi-sensor Field Kit</b> sensION+ MM156 meter with 5049 pH, conductivity, DO and temperature multi-sensor. Unique multi handle sensor with exchangeable sensor tips - saving time and money.



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# sensION+ ACCESSORIES & STANDARDS

Prod. No.	Description
<b>Accessories for sensION+ Portable Instruments and Electrodes</b>	
LZW9137.97	3x10 mL printed tubes for portable pH calibration
LZW9138.99	3x10mL printed tubes for portable conductivity calibration
LZW9161.99	Electrode Storage Protector, Polypropylene
LZW9162.99	Electrode Measurement Protector, Polypropylene
LZW5123.99	Protector-calibration flask for DO probe LZW5130
5196800	Service Kit for 5130 DO Probe (contains 2 Membrane Modules and DO Filling Solution)
LZW2598.99.0002	PortCom Kit for sensION+ Data Logger (USB dongle and CD-ROM with PortCom software)

**Accessories for sensION+ Benchtop Instruments and Electrodes**

LZW8204.99	KyoMouse RS - Thermal printer for sensION+
LZW8206.99	Thermal Paper for KyoMouse RS printer, 5 rolls
LZW8997.99	LabCom Easy PC Software for sensION+ GLP instruments
LZW8999.99	LabCom PC Software for sensION+ GLP instruments
LZW9008.99	Power Supply for sensION+ Benchtop instruments, 230-115VAC
LZW9110.97	3x50 mL printed flasks for pH calibration, Benchtop instruments

Prod. No.	Description
LZW9111.99	3x50 mL printed flasks for benchtop conductivity calibration
LZW9118.99	Pyrex glass chamber, continuous flow measurements
LZW9321.99	Three-probe holder for sensION+ Benchtop instruments
LZW9325.99	Radiometer probe holder for sensION+ Benchtop instruments
LZW9325.99.T014	Radiometer probe holder kit for sensION+, with screw cap sockets (X31T014)
LZW9325.99.T031	Radiometer probe holder kit for sensION+, with 12 mm sockets (X31T031)
LZW9319.99	Second Magnetic stirrer with probe holder for sensION+ Multi Meters

**Standards**

LZW9463.99	pH buffer solution 4.01, 250 mL
LZW9464.97	pH buffer solution 7.00, 250 mL
LZW9471.99	pH buffer solution 10.00, 250 mL
LZW9700.99	Conductivity Standard 147 $\mu$ S/cm, 250 mL
LZW9710.99	Conductivity Standard 1413 $\mu$ S/cm, 250 mL
LZW9720.99	Conductivity Standard 12.88 mS/cm, 250 mL
LZW9509.99	Electrolytic Solution, KCl 3M, 50 mL



*KyoMouse RS - Thermal Printer for sensION+*



*Hach LabCom Easy Software, sensION+, GLP*

# H-SERIES PORTABLE METERS

Dual-technology meters take readings from non-glass pH and traditional probes across multiple parameters. Available with optional data management, Bluetooth®, and ISE capabilities.



METERS & PROBES



Parameter	H160 WATERPROOF PORTABLE METER	H160G WATERPROOF PORTABLE METER	H170 WATERPROOF PORTABLE METER	H170G WATERPROOF PORTABLE METER
Temperature	■	■	■	■
Dual pH technology				
Glass	■	■	■	■
Non-glass (ISFET)	■	■	■	■
mV	■	■	■	■
Conductivity			■	■
TDS			■	■
Salinity			■	■
Resistivity				
Dissolved Oxygen (Galvanic)				
ORP/Redox	■	■	■	■
Ammonia		■		■
Nitrate		■		■
Fluoride		■		■
Sodium		■		■

Feature	H160 WATERPROOF PORTABLE METER	H160G WATERPROOF PORTABLE METER	H170 WATERPROOF PORTABLE METER	H170G WATERPROOF PORTABLE METER
IP Rating	IP67	IP67	IP67	IP67
Internal data storage	—	999	—	999
Inputs	BNC (1), 3.5 mm phone (1), 8-pin Waterproof ISFET pH (1)	BNC (1), 3.5 mm phone (1), 8-pin Waterproof ISFET pH (1)	BNC (1), 3.5 mm phone (1), 8-pin Waterproof ISFET pH (1), 12-pin Waterproof conductivity (1)	BNC (1), 3.5 mm phone (1), 8-pin Waterproof ISFET pH (1), 12-pin Waterproof conductivity (1)
Outputs	—	Bluetooth	—	Bluetooth
Interface languages	English	English	English	English
Warranty	3 years	3 years	3 years	3 years
Compliance	CE.WEEE	CE.WEEE.IC.FCC	CE.WEEE	CE.WEEE.IC.FCC
GLP features	—	■	—	■
PC Data Transfer Software	—	Included	—	Included
Backlight	■	■	■	■
Battery Operation	■	■	■	■
AC and USB operation	—	—	—	—
Prod. No.	H160NP	H160GNP	H170NP	H170GNP

See page 61 for H-Series Bundles & Accessories.

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# H-SERIES BENCHTOP METERS



Benchtop models include GLP-related features and optional Bluetooth® communication.



Parameter	H260G BENCHTOP METER	H260GB BENCHTOP METER	H270G BENCHTOP METER	H270GB BENCHTOP METER	H280G BENCHTOP METER	H280GB BENCHTOP METER
Temperature	■	■	■	■	■	■
Dual pH technology						
Glass	■	■	■	■	■	■
Non-glass (ISFET)	■	■	■	■	■	■
mV	■	■	■	■	■	■
Conductivity			■	■	■	■
TDS			■	■	■	■
Salinity			■	■	■	■
Resistivity						
Dissolved Oxygen (Galvanic)					■	■
ORP/Redox	■	■	■	■	■	■
Ammonia	■	■	■	■	■	■
Nitrate	■	■	■	■	■	■
Fluoride	■	■	■	■	■	■
Sodium	■	■	■	■	■	■

Feature	H260G BENCHTOP METER	H260GB BENCHTOP METER	H270G BENCHTOP METER	H270GB BENCHTOP METER	H280G BENCHTOP METER	H280GB BENCHTOP METER
IP Rating	IP42	IP42	IP42	IP42	IP42	IP42
Internal data storage	999	999	999	999	999	999
Inputs	BNC (1), 3.5 mm phone (1), 4 mm reference (1), 8-pin RJ-45 ISFET pH (1)	BNC (1), 3.5 mm phone (1), 4 mm reference (1), 8-pin RJ-45 ISFET pH (1)	BNC (1), 3.5 mm phone (1), 4 mm reference (1), 8-pin RJ-45 ISFET pH (1), 12-pin waterproof Conductivity (1)	BNC (1), 3.5 mm phone (1), 4 mm reference (1), 8-pin RJ-45 ISFET pH (1), 12-pin Waterproof Conductivity (1)	BNC (1), 3.5 mm phone (1), 4 mm reference (1), 8-pin RJ-45 ISFET pH (1), 12-pin Waterproof Conductivity (1)	BNC (1), 3.5 mm phone (1), 4 mm reference (1), 8-pin RJ-45 ISFET pH (1), 12-pin Waterproof Conductivity (1)
Outputs	USB to PC	USB to PC Bluetooth	USB to PC	USB to PC Bluetooth	USB to PC	USB to PC Bluetooth
Interface languages	English	English	English	English	English	English
Warranty	3 years	3 years	3 years	3 years	3 years	3 years
Compliance	CE.WEEE	CE.WEEE.IC.FCC	CE.WEEE	CE.WEEE.IC.FCC	CE.WEEE	CE.WEEE.IC.FCC
GLP features	■	■	■	■	■	■
PC Data Transfer Software	Included	Included	Included	Included	Included	Included
Backlight	■	■	■	■	■	■
Battery Operation	■	■	■	■	■	■
AC and USB operation	Included	Included	Included	Included	Included	Included
Prod. No.	H260GNP	H260GBNP	H270GNP	H270GBNP	H280GNP	H280GBNP

See page 61 for H-Series Bundles & Accessories.

## pH H-Series PH77 – General Purpose ISFET pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination non-refillable, gel-fill pH electrode with stainless steel body, fiber junction, built-in temperature sensor and non-glass round tip ISFET pH sensor.	0 to 14 pH	0 to 60°C	Fiber	140 mm (L) x 8.3 mm (D)	<b>PH77-SS</b> <b>PHW77-SS*</b>	Electrode only (1 m cable) Electrode with waterproof connector



See page 67 for pH Buffers, Storage and Maintenance Solutions.

*\*Waterproof Version. Waterproof probes are for use with the H160, H160G, H170 and H170G handheld meters.*

*PH77 ISFET pH electrode is ideal for general purpose applications where ultra rugged or non-glass sensors are required.*

## pH H-Series PH17 – Micro ISFET pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination non-refillable, gel-fill pH electrode with stainless steel body, fiber junction, built-in temperature sensor and non-glass micro-diameter ISFET pH sensor.	0 to 14 pH	0 to 60°C	Fiber	<i>Lower Body:</i> 130 mm (L) x 4.8 mm (D) <i>Upper Body:</i> 80 mm (L) x 8.3 mm (D)	<b>PH17-SS</b> <b>PHW17-SS*</b>	Electrode only (1 m cable) Electrode with waterproof connector



See page 67 for pH Buffers, Storage and Maintenance Solutions.

*\*Waterproof Version. Waterproof probes are for use with the H160, H160G, H170 and H170G handheld meters.*

*PH17 ISFET pH electrode is ideal for microsample or test tube applications where ultra rugged or non-glass sensors are required.*

## pH H-Series PH37 – Piercing Tip Micro ISFET pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination non-refillable, gel-fill pH electrode with stainless steel body, fiber junction, built-in temperature sensor and non-glass piercing-tip micro-diameter ISFET pH sensor.	0 to 14 pH	0 to 60°C	Fiber	<i>Lower Body:</i> 90 mm (L) x 4.8 mm (D) <i>Upper Body:</i> 80 mm (L) x 8.3 mm (D)	<b>PH37-SS</b> <b>PHW37-SS*</b>	Electrode only (1 m cable) Electrode with waterproof connector



See page 67 for pH Buffers, Storage and Maintenance Solutions.

*\*Waterproof Version. Waterproof probes are for use with the H160, H160G, H170 and H170G handheld meters.*

*PH37 ISFET pH electrode is ideal for penetration applications where small diameter, ultra rugged or non-glass sensors are required.*

## pH H-Series PH47 – NMR Tube Micro ISFET pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination non-refillable, gel-fill pH electrode with stainless steel body, fiber junction, built-in temperature sensor and non-glass long-length micro-diameter ISFET pH sensor.	0 to 14 pH	Continuous Use: 0 to 60°C	Fiber	<i>Lower Body:</i> 220 mm (L) x 3.8 mm (D) <i>Upper Body:</i> 80 mm (L) x 8.3 mm (D)	<b>PH47-SS</b> <b>PHW47-SS*</b>	Electrode only (1 m cable) Electrode with waterproof connector



See page 67 for pH Buffers, Storage and Maintenance Solutions.

*\*Waterproof Version. Waterproof probes are for use with the H160, H160G, H170 and H170G handheld meters.*

*PH47 ISFET pH electrode is ideal for measurement in NMR tubes or long-reach applications where ultra rugged or non-glass sensors are required.*

## pH H-Series PH57 – Heavy Duty Piercing ISFET pH Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination non-refillable, gel-fill pH electrode with stainless steel body, fiber junction, built-in temperature sensor and non-glass long-length micro-diameter ISFET pH sensor.	0 to 14 pH	Continuous Use: 0 to 60°C	Fiber	90 mm (L) x 4.8 mm (D) w/ heavy-duty handle	<b>PH57-SS</b> <b>PHW57-SS*</b>	Electrode only (1 m cable) Electrode with waterproof connector



See page 67 for pH Buffers, Storage and Maintenance Solutions.

*\*Waterproof Version. Waterproof probes are for use with the H160, H160G, H170 and H170G handheld meters.*

*PH57 ISFET pH electrode is ideal for heavy-duty piercing applications where ultra rugged or non-glass sensors are required.*

*Continued on next page.*

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# H-SERIES PROBES

## Conductivity H-Series KP5 – “Bull’s-Eye” General Purpose Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Graphite 4-pole conductivity cell with epoxy body and built-in temperature sensor.*	5 $\mu$ S/cm to 1 mS/cm	Continuous Use: -10 to 110°C	N/A	110 mm (L) x 16 mm (D)	CDW97-KP5	Electrode only (3 ft cable)

See pages 67-68 for Conductivity Standard Solutions.

\*Cell constant (k) = 0.5 cm<sup>-1</sup>



H-Series KP5 "Bull's-Eye" probe is designed for conductivity measurements in general purpose water quality applications.

## Conductivity H-Series – K1 Drinking Water Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Platinum 4-pole conductivity cell with glass body and built-in temperature sensor.*	10 $\mu$ S/cm to 2 mS/cm	Continuous Use: -10 to 110°C	N/A	110 mm (L) x 12 mm (D)	CDW97-K1	Electrode only (3 ft cable)

See pages 67-68 for Conductivity Standard Solutions.

\*Cell constant (k) = 1.0 cm<sup>-1</sup>



H-Series K1 probe is designed for conductivity measurements in drinking water or low-level conductivity applications.

## Conductivity H-Series – K10 High Salinity/Brackish Water Conductivity Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Platinum 4-pole conductivity cell with epoxy body and built-in temperature sensor.*	1 mS/cm to 200 mS/cm	Continuous Use: -10 to 110°C	N/A	110 mm (L) x 12 mm (D)	CDW97-K10	Electrode only (3 ft cable)

See pages 67-68 for Conductivity Standard Solutions.

\*Cell constant (k) = 10 cm<sup>-1</sup>



H-Series K10 probe is designed for conductivity measurements in saline/brackish waters or high conductivity applications.

## Dissolved Oxygen H-Series – DO50-GS Standard Galvanic Dissolved Oxygen Electrode

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Galvanic Dissolved Oxygen Probe with PC/Abs (plastic) body, refillable reference electrolyte, built-in temperature sensor and replaceable membrane module.	Dissolved Oxygen: 0 to 19.99 mg/L % Saturation: 0 to 199.9%	Continuous Use: 0 to 50°C	N/A	110 mm (L) x 12 mm (D)	DO50-GS	Electrode only (3 ft cable)

Replacement Items / Accessories  
**DO50-KIT** Kit includes replacement membrane module and bottle of electrolyte (65 mL) for DO50-GS probe.  
**DO50-CAP** Replacement membrane module for DO50-GS probe.



H-Series DO50-GS probe is designed for dissolved oxygen measurements in general purpose water quality applications.

## ORP / Redox H-Series – ORP110-GS Standard ORP / Redox Probe

Probe Type	Measurement Range	Temperature Range	Junction	Dimensions	Prod. No.	Description
Combination non-refillable, gel-fill ORP/Redox electrode with epoxy body, Ag/AgCl reference and annular platinum sensor.	$\pm$ 1999 mV	Continuous Use: -10 to 110°C	Porous Pin	110 mm (L) x 12 mm (D)	ORP110-GS	Electrode only (3 ft cable)

See page 68 for ORP Standards, Maintenance, Storage and Reducing Solutions.



H-Series ORP110-GS probe is designed for ORP/Redox measurements in general purpose water quality applications.

# H-SERIES BUNDLES



Prod. No.	Description
<b>H260G-BNDL</b>	H260G meter with PH77-SS ISFET pH Probe, USB Cord, AC Adapter, and SmartLogger II Software, PLUS consumables.
<b>H260GB-BNDL</b>	H260G Bluetooth meter with PH77-SS ISFET pH Probe, Calibrating Buffer Kit, USB Cord, AC Adapter, and SmartLogger II Software, PLUS consumables.
<b>H270G-BNDL</b>	H270G meter with PH77-SS ISFET pH Probe, CDW97-KP5 Conductivity Probe, USB Cord, AC Adapter, and SmartLogger II Software, PLUS consumables.
<b>H270GB-BNDL</b>	H270G Bluetooth meter with PH77-SS ISFET pH Probe, CDW97-KP5 Conductivity Probe, Calibrating Buffer Kit, USB Cord, AC Adapter, and SmartLogger II Software, PLUS consumables.

Prod. No.	Description
<b>H280G-BNDL</b>	H280G meter with PH77-SS ISFET pH Probe, CDW97-KP5 Conductivity Probe, DO50-GS Dissolved Oxygen Probe, USB Cord, AC Adapter, and SmartLogger II Software, PLUS consumables.
<b>H280GB-BNDL</b>	H280G Bluetooth meter with PH77-SS ISFET pH Probe, CDW97-KP5 Conductivity Probe, DO50-GS Dissolved Oxygen, USB Cord, AC Adapter, SmartLogger II Software, PLUS consumables.
<b>H160-BNDL</b>	H160-77 meter & PHW77-SS pH Probe; Field Case & Calibration Kit; Rubber Holste, PLUS consumables.
<b>H160G-BNDL</b>	H160G Bluetooth Meter, PHW77-SS ISFET Probe, Field Carrying Case & Calibration Kit, Rubber Holster, and SmartLogger II Software, PLUS consumables.
<b>H170-BNDL</b>	H170 Meter, PHW77-SS pH Probe & CDW97-KP5 Conductivity Probe; Field Case & Calibration/Standards Kit, and Rubber Holster, PLUS consumables.
<b>H170G-BNDL</b>	H170G Bluetooth Meter, PHW77-SS pH Probe, CDW97-KP5 Conductivity, Field Case & Calibration/Standards Kit, Rubber Holster, and SmartLogger II Software, PLUS consumables.

Visit: [www.hach.com/chemselect](http://www.hach.com/chemselect) for more bundles.

# H-SERIES ACCESSORIES



Universal Probe Stand

Prod. No.	Description
<b>00130Q</b>	Black Carrying Case Hand Held
<b>DO50-CAP</b>	Easy-to-thread-on cap with a pre-installed membrane
<b>DO50-KIT</b>	Includes the DO50-CAP plus a small bottle of electrolyte and a syringe to add the electrolyte to the sensor. There is enough electrolyte to refill 3 caps.
<b>DOC082.98.80062</b>	SmartLogger II Software CD
<b>8508850</b>	Universal Probe Stand for Standard Electrode Sizes Also supports Hach IntelliCAL and sensION+ probes.
<b>9316900</b>	Replacement Reference Electrode for the H130, H135 & H138
<b>RF01-01</b>	Replacement Reference Electrode for miniLab Models

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# MP METERS



Multi-parameter probeless meters allow rapid spot checks of clean water applications and tap sampling.



<b>Parameter</b>	<b>MP-4 PORTABLE METER WITH INTERNAL SENSORS</b>	<b>MP-6p PORTABLE METER WITH INTERNAL SENSORS</b>	<b>MP-6 PORTABLE METER WITH INTERNAL SENSORS</b>
Temperature	■	■	■
pH		■	■
mV			
Conductivity	■	■	■
TDS	■	■	■
Salinity			
Resistivity	■		■
Mineral/Salt		■	
Dissolved Oxygen			
ORP/Redox		■	■
Ammonia			
Nitrate			
Fluoride			
Sodium			

<b>Specifications</b>	<b>MP-4 PORTABLE METER WITH INTERNAL SENSORS</b>	<b>MP-6p PORTABLE METER WITH INTERNAL SENSORS</b>	<b>MP-6 PORTABLE METER WITH INTERNAL SENSORS</b>
<b>Special Feature</b>			
<b>Ranges</b>	pH: — ORP: — Cond.: 0.01 µS/cm to 200 mS/cm Resist.: 10 kΩ cm to 30 MΩ cm TDS: 0.01 ppm to 200 ppt Mineral/Salt: —	pH: 0 to 14 pH ORP: ±999 mV Cond.: 0.01 µS/cm to 200 mS/cm Resist.: — TDS: 0.01 ppm to 200 ppt Mineral/Salt: 0.01 ppm to 200 ppt	pH: 0 to 14 pH ORP: ±999 mV Cond.: 0.01 µS/cm to 200 mS/cm Resist.: 10 kΩ cm to 30 MΩ cm TDS: 0.01 ppm to 200 ppt Mineral/Salt: —
<b>Temperature Range</b>	0 to 71 °C (32 to 160°F)	0 to 71 °C (32 to 160°F)	0 to 71 °C (32 to 160°F)
<b>Dimensions (H x W x D)</b>	2.5 in x 2.7 in x 7.7 in (64 mm x 69 mm x 196 mm)	2.5 in x 2.7 in x 7.7 in (64 mm x 69 mm x 196 mm)	2.5 in x 2.7 in x 7.7 in (64 mm x 69 mm x 196 mm)
<b>Sensor Type</b>	pH: — ORP: — Cond.: 4-cell (316 Stainless Steel)	pH: Glass ORP: Pt Cond.: 4-cell (316 Stainless Steel)	pH: Glass ORP: Pt Cond.: 4-cell (316 Stainless Steel)
<b>Material</b>	Housing: VALOX*	Housing: VALOX*	Housing: VALOX*
<b>Prod. No.</b>	<b>HMP4</b>	<b>HMP6P</b>	<b>HMP6</b>

\*Trademark of SABIC Innovative Plastics IP BV

See next page for MP Meter Packages & Accessories.



# MP METERS PACKAGES

Prod. No.	Description
<b>HMP6EP</b>	<b>MP-6 Essentials Package</b> MP-6 portable meter with hardsided case and 50 mL NaCl, KCl, 442™*, and pH buffer standard solutions.
<b>HMP6EPD</b>	<b>MP-6 Essentials Package with MP-Dock</b> MP-6 portable meter with MP-Dock computer interface, hardsided case and 50 mL NaCl, KCl, 442, and pH buffer standard solutions.
<b>HMP4EP</b>	<b>MP-4 Essentials Package</b> MP-4 portable meter with hardsided case and 50 mL NaCl, KCl, and 442 standard solutions.
<b>HMP4EPD</b>	<b>MP-4 Essentials Package with MP-Dock</b> MP-4 portable meter with MP-Dock computer interface, hardsided case and 50 mL NaCl, KCl, and 442 standard solutions.
<b>HMP6PEP</b>	<b>MP-6p Essentials Package</b> MP-6p portable meter with hardsided case and 50 mL NaCl, KCl, 442, and pH buffer standard solutions.
<b>HMP6PEPD</b>	<b>MP-6p Essentials Package with MP-Dock</b> MP-6p portable meter with MP-Dock computer interface, hardsided case and 50 mL NaCl, KCl, 442, and pH buffer standard solutions.



Visit: [hach.com/echemselect](http://hach.com/echemselect) for more packages.

\*Trademark of Myron L. Company

# MP METERS ACCESSORIES

Prod. No.	Description
<b>HMPCASE</b>	Hardsided Instrument Case
<b>DO50-KIT</b>	Hardsided case with insert for MP meter, six 50 mL standard solutions, and MP-Dock.
<b>HMPDOCK</b>	<b>MP-Dock Computer Interface</b> For use with all MP meters. This USB powered device allows data transfer from the meter to a computer. Includes MP DataLink software application.
<b>HMPSENS</b>	<b>Replacement pH/ORP Sensor</b> Replacement pH/ORP sensor for MP-6 and MP-6p meters



*MP-Dock  
Computer Interface  
Prod. No. HMPDOCK  
(meter not included)*

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# miniLAB® POCKET PH METERS



When you don't want the hassle of a probe but still need a non-glass pH meter.



Specifications	H130 miniLAB POCKET pH METER	H135 miniLAB POCKET pH METER	H138 miniLAB POCKET pH METER
Temperature	■ (ATC)	■ (ATC)	■ (ATC)
Sensor	ISFET silicon chip pH sensor		
Calibration	1-Point	1-, 2-, or 3-point	
Buffer Recognition	pH 7.00 pH 6.86	pH 4.01, 7.00, and 10.01 pH 4.01, 6.86, and 9.18	
Reference	Replaceable KCl gel filled (9316900)		
pH Range	Suggested range: 5.0 to 9.0 pH 2.0 to 12.0 pH	2.0 to 12.0 pH	
Resolution	0.1 pH		0.01 pH
Input Accuracy	≤0.1 pH		≤0.01 pH
Repeatability	± 0.1 pH		± 0.03 pH
Display	LCD		LCD with Temperature
Operation Temp. Range	Range: 5 to 40°C; Automatic		
Battery Operation	Two 3V lithium batteries (CR2032) included		
Battery Life	Up to 200 hours continuous warning with 10 hour advance low battery and automatic power off		
Dimensions	155 x 33 x 20 mm (6 1/8" L x 1 1/4" W x 3/4" H)		
Weight	77 g (0.17 lbs.) -meter only		

Feature	H130 miniLAB POCKET pH METER	H135 miniLAB POCKET pH METER	H138 miniLAB POCKET pH METER
IP Rating	IP67	IP67	IP67
Internal data storage	—	—	—
Inputs	—	—	—
Outputs	—	—	—
Interface languages	English	English	English
Warranty	1 year	1 year	1 year
Compliance	CE.WEEE	CE.WEEE	CE.WEEE
GLP features	—	—	—
PC Data Transfer Software	—	—	—
Backlight	—	—	—
Battery Operation	2, 3V (CR2032)	2, 3V (CR2032)	2, 3V (CR2032)
AC and USB operation	—	—	—
Prod. No.	H130	H135	H138

# NEW!

Take the guesswork out of your measurements. The large LCD display, intuitive user interface, and standard AAA batteries make Pocket Pro the easiest to use tester for your application. Pocket Pro's superior probe and calibration diagnostics for pH deliver confidence in your results.



<b>Specifications</b>	<b>Pocket Pro pH</b>	<b>Pocket Pro ORP</b>	<b>Pocket Pro TDS<sub>LR</sub></b>	<b>Pocket Pro TDS<sub>HR</sub></b>
Parameter	pH, Temp	ORP	TDS, Temp	TDS, Temp
Operating Temperature Range	0 to 50 °C	0 to 50 °C	0 to 50 °C	0 to 50 °C
Range	0.0 to 14.0 pH	-999 to +999 mV	0 to 1999 ppm	0 to 10.00 ppt
Accuracy	0.1 pH	± 2 mV	1% FS	2% FS
Resolution	0.1 pH	1 mV	1 ppm	0.01 ppt
TDS Factor	—	—	Adjustable; 0.71 default	Adjustable; 0.71 default
Battery Requirements	4, AAA	4, AAA	4, AAA	4, AAA
IP Rating	IP67	IP67	IP67	IP67
Backlight	—	—	—	—
<b>Prod. No.</b>	<b>9531000</b>	<b>9531100</b>	<b>9531200</b>	<b>9531300</b>

<b>Specifications</b>	<b>Pocket Pro Conductivity<sub>LR</sub></b>	<b>Pocket Pro Conductivity<sub>HR</sub></b>	<b>Pocket Pro Salt</b>	<b>Pocket Pro Temperature</b>
Parameter	Conductivity, Temp	Conductivity, Temp	Salinity, Temp	Temperature
Operating Temperature Range	0 to 50 °C	0 to 50 °C	0 to 50 °C	0 to 50 °C
Range	0 to 1990 µS/cm	0.0 to 19.99 mS/cm	0 to 10.00 ppt	-15 to 170°C
Accuracy	1% FS	2% FS	1% FS	1°C
Resolution	1 µS/cm	0.01 mS/cm	0.01 ppt	0.1°C
TDS Factor	—	—	—	—
Battery Requirements	4, AAA	4, AAA	4, AAA	4, AAA
IP Rating	IP67	IP67	IP67	IP67
Backlight	—	—	—	—
<b>Prod. No.</b>	<b>9531400</b>	<b>9531500</b>	<b>9531600</b>	<b>9531700</b>
Replacement Sensors				9531701 is replacement sensor for Pocket Pro Temp

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# POCKET PRO+ TESTERS

**NEW!**



The Pocket Pro+ series offers all the benefits of the Pocket Pro standard testers, plus convenient backlight and replaceable sensors. Have confidence in your results with calibration options and pH diagnostics.

METERS & PROBES

Specifications	Pocket Pro+ pH	Pocket Pro+ ORP	Pocket Pro+ Multi 1	Pocket Pro+ Multi 2
Parameter	pH, Temp	ORP	Conductivity, TDS, Salinity, Temp	pH, Conductivity, TDS, Salinity, Temp
Operating Temperature	0 to 50 °C	0 to 50 °C	0 to 50 °C	0 to 50 °C
Range	0.00 to 14.00 pH	-999 to +999 mV	Cond: Auto-ranging (0.0 to 199.9 µS/cm; 200 to 1999 µS/cm; 2.00 to 19.99 mS/cm) TDS: Auto-ranging (0.0 to 99.9 ppm; 100 to 999 ppm; 1.00 to 10.00 ppt) Sal: Auto-ranging (0.00 to 10.00 ppt; 0.00 to 1.00%) Temp: 0.0 to 50°C	pH: 0.00 to 14.00 Cond: Auto-ranging (0.0 to 199.9 µS/cm; 200 to 1999 µS/cm; 2.00 to 19.99 mS/cm) TDS: Auto-ranging (0.0 to 99.9 ppm; 100 to 999 ppm; 1.00 to 10.00 ppt) Sal: Auto-ranging (0.00 to 10.00 ppt; 0.00 to 1.00%) Temp: 0.0 to 50°C
Accuracy	± 0.02 pH	2 mV	Cond: ± 1% TDS: ± 1% Sal: ± 1% Temp: ± 0.5°C	pH: ±0.02 pH Cond: ±1% TDS: ±1% Sal: ±1% Temp: ±0.5 °C
Resolution	0.01 pH	1 mV	Cond: 0.1 µS/cm from 0.0 to 199.9 µS/cm; 1 µS/cm from 200 to 1999 µS/cm; 0.01 mS/cm from 2.00 to 19.99 mS/cm TDS: 0.1 ppm from 0.0 to 99.9 ppm; 1 ppm from 100 to 999 ppm; 0.01 ppt from 0.00 to 10.00 ppt Sal: 0.01 ppt from 0.00 to 10.00 ppt; 0.01% from 0.00 to 1% Temp: 0.1°C	Cond: 0.1 µS/cm from 0.0 to 199.9 µS/cm; 1 µS/cm from 200 to 1999 µS/cm; 0.01 mS/cm from 2.00 to 19.99 mS/cm TDS: 0.1 ppm from 0.0 to 99.9 ppm; 1 ppm from 100 to 999 ppm; 0.01 ppt from 0.00 to 10.00 ppt Sal: 0.01 ppt from 0.00 to 10.00 ppt; 0.01% from 0.00 to 1% Temp: 0.1°C
TDS Factor	—	—	adjustable; 0.71 default	adjustable; 0.71 default
Battery Requirements	4, AAA	4, AAA	4, AAA	4, AAA
IP Rating	IP67	IP67	IP67	IP67
Backlight	Yes	Yes	Yes	Yes
Prod. No.	9532000	9532100	9532700	9532800
Replacement Sensors	9532001 is replacement sensor for Pocket Pro+ pH Tester	9532101 is replacement sensor for Pocket Pro+ ORP Tester	9532701 is replacement sensor for Pocket Pro+ Multi 1 Tester	9532801 is replacement sensor for Pocket Pro+ Multi 2 Tester

## pH Calibration Buffers

Hach standard calibration buffers are available in convenient, unit-dose powder pillows or color-coded liquids. Powder pillows assure freshness and eliminate the possibility of contamination. Recommended for automatic calibration. Simply open the pillow and add the contents to 50 mL of deionized or demineralized water. Both liquid and powder buffers assure accuracy ( $\pm 0.02$  pH units) and are NIST traceable.

### pH Buffer Pillows

Buffers with pH values of 4.01, 7.00, and 10.01 are color-coded for added convenience. pH is  $\pm 0.02$  at 25°C.

Description	Quantity	Prod. No.
<b>Color-Coded</b>		
4.01 (Red)	15	2226995
	50	2226966
	250	2226964
7.00 (Yellow)	15	2227095
	50	2227066
	250	2227064
10.01 (Blue)	15	2227195
	50	2227166
	250	2227164
4.01 (Red) 7.00 (Yellow)	10 of each	2299264
<b>Colorless</b>		
6.00	50	1405566
6.86	15	1409895
8.00	15	1407995
9.00	50	1410766
pH Storage Solution Pillows	20	2657364

### pH Buffer Solutions

pH is  $\pm 0.02$  at 25°C.

Item	Unit	Prod. No.
<b>pH 4.01 Color-Coded Red (NIST)</b>		
	15 mL	2283436
	50 mL	2283426
	500 mL	2283449
	4 L	2283456
	20 L	2283461
<b>pH 7.00 Color-Coded Yellow (NIST)</b>		
	15 mL	2283536
	50 mL	2283526
	500 mL	2283549
	4 L	2283556
	20 L	2283561
<b>pH 10.01 Color-Coded Blue (NIST)</b>		
	15 mL	2283636
	50 mL	2283626
	500 mL	2283649
	4 L	2283656
	20 L	2283661
<b>pH 4.01 Colorless (NIST)</b>		
	15 mL	1222336
	500 mL	1222349
	4 L	1222356
<b>pH 7.00 Colorless (NIST)</b>		
	500 mL	1222249
	4 L	1222256
<b>pH 10.01 Colorless (NIST)</b>		
	500 mL	1222149
	4 L	1222156

## Save when you purchase pH buffer 3-packs!

Prod. No.	Description
<b>20 L SIZE 3-PACK</b>	
2507300	<b>Includes:</b>
2283661	10.01 (blue) NIST
2283561	7.00 (yellow) NIST
2283461	4.01 (red) NIST

Prod. No.	Description
<b>4 L SIZE 3-PACK</b>	
2507200	<b>Includes:</b>
2283656	10.01 (blue) NIST
2283556	7.00 (yellow) NIST
2283456	4.01 (red) NIST

Prod. No.	Description
<b>500 mL SIZE 3-PACK</b>	
2947600	<b>Includes:</b>
2283649	10.01 (blue) NIST
2283549	7.00 (yellow) NIST
2283449	4.01 (red) NIST

## Singlet™ Solution Packs

Singlet single-use standard solutions are ideal for on-site analysis, eliminating the need to prepare standardized buffer solutions for pH and conductivity buffers or standard solutions without having to purchase and carry deionized or demineralized water. The convenient foil-pouch packaging maintains freshness, and keeps the solutions contaminant-free and ready to travel with you anywhere. pH is  $\pm 0.02$  at 25°C

Description	Quantity	Prod. No.
pH 7.00 and pH 10.01 Buffer Solution	pk/10 of ea.	2769820
pH 4.01 and pH 7.00 Buffer Solution	pk/10 of ea.	2769920
pH 4.01 Buffer Solution	pk/20	2770020
pH 7.00 Buffer Solution	pk/20	2770120
pH 10.01 Buffer Solution	pk/20	2770220
Conductivity 147 $\mu$ S/cm	pk/20	2771320
Conductivity 1413 $\mu$ S/cm	pk/20	2771420
Conductivity 12.88 mS/cm	pk/20	2771520



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# STANDARD SOLUTIONS & REAGENTS

## Prod. No. Description

### pH Storage and Cleaning Solutions

- 2756559** pH Storage Solution (3M Potassium Chloride), 50 mL
- 2756549** pH Storage Solution (3M Potassium Chloride), 500 mL
- 2965249** Electrode Cleaning Solution, 500 mL
- 2964349** ISFET Probe Cleaning Solution for proteins, 500 mL
- 2756526** pH Electrode Storage Solution, 50 mL Pour-Top
- 2964449** pH Electrode Rinse Solution, Non-ionic Surfactant, 500 mL
- 2975126** Acid Electrode Cleaning Solution, 50 mL
- 2975149** Acid Electrode Cleaning Solution, 500 mL

### BOD Nutrients and Seed Inoculum

- 1416066** BOD Nutrient Buffer Pillows, prepares 300 mL, 50/pk
- 1486166** BOD Nutrient Buffer Pillows, prepares 3 L, 50/pk
- 1486266** BOD Nutrient Buffer Pillows, prepares 6 L, 50/pk
- 1486398** BOD Nutrient Buffer Pillows, prepares 19 L, 25/pk
- 253335** Formula 2533™ Nitrification Inhibitor, 35 g
- 253334** Formula 2533™ Nitrification Inhibitor, 500 g
- 2918700** Polyseed BOD Seed Inoculum

### KCl Conductivity Standards

#### 50 mL

- 2974226** 74.55 mg/L (0.001M) KCl (146.9 S/cm), 50 mL pour-top
- 2974326** 745.5 mg/L (0.01M) KCl (1412 S/cm), 50 mL pour-top
- 2974426** 7455 mg/L (0.1M) KCl (12,890 S/cm), 50 mL pour-top

#### 500 mL

- 2974249** 74.55 mg/L (0.001M) KCl (146.9 S/cm), 500 mL
- 2974349** 745.5 mg/L (0.01M) KCl (1412 S/cm), 500 mL
- 2974449** 7455 mg/L (0.1M) KCl (12,890 S/cm), 500 mL
- 2714349** 35 g/L KCl, (53 mS/cm), 500 mL

### NaCl Conductivity Standards

#### 50 mL

- 2971826** 49 mg/L NaCl (100 S/cm), 50 mL pour-top
- 1440026** 491 mg/L NaCl (1000 S/cm), 50 mL pour-top
- 2972226** 5.37 g/L NaCl (10,000 S/cm), 50 mL pour-top
- 2307426** 10,246 mg/L NaCl (18,000 S/cm), 50 mL pour-top

#### 100 mL

- 2971842** 49 mg/L NaCl, (100 S/cm), 100 mL
- 2307542** Conductivity Standard, 180 µS/cm; (85.47 mg/L NaCl), 100 mL

- 1440042** 491 mg/L NaCl, (1000 S/cm), 100 mL
- 2972242** 5.37 g/L NaCl, (10,000 S/cm), 100 mL
- 2307442** 10,246 mg/L NaCl, (18,000 S/cm), 100 mL

#### 500 mL

- 2971849** 49 mg/L NaCl, (100 S/cm), 500 mL
- 1440049** 491 mg/L NaCl, (1000 S/cm), 500 mL
- 2972249** 5366 mg/L NaCl, (10,000 S/cm), 500 mL

## Prod. No. Description

### Natural Water Conductivity Solutions

#### 50 mL

- 2974526** 442-30 Natural Water Standard Solution, 30 ppm TDS (46.7 S/cm), 50 mL pour-top
- 2974626** 442-300 Natural Water Standard Solution, 300 ppm TDS (445 S/cm), 50 mL pour-top
- 2974726** 442-1000 Natural Water Standard Solution, 1000 ppm TDS (3960 S/cm), 50 mL pour-top
- 2974826** 442-3000 Natural Water Standard Solution, 3000 ppm TDS (3960 S/cm), 50 mL pour-top

#### 500 mL

- 2974549** 442-30 Natural Water Standard Solution, 30 ppm TDS (46.7 µS/cm), 500 mL
- 2974649** 442-300 Natural Water Standard Solution, 300 ppm TDS (445 µS/cm), 500 mL
- 2974749** 442-1000 Natural Water Standard Solution, 1000 ppm TDS (1417 µS/cm), 500 mL
- 2974849** 442-3000 Natural Water Standard Solution, 3000 ppm TDS (3960 µS/cm), 500 mL

### ORP Standards and Solutions

- 2316949** ZoBell's Standard Solution, 500 mL
- 2612520** Light's Standard Solution in sealed ampules, 20/pk
- 2965349** Reducing Solution for ORP Electrodes  
For use with reducing (negative mV) sample matrices

### Ionic Strength Adjusters

- 258901** Fluoride Powder, 454 g
- 258999** Fluoride Powder Pillows, 100/pk
- 2829017** Fluoride Solution, 3.78 L
- 4447169** Ammonia ISA Powder Pillows, 100/pk
- 4456369** Nitrate ISA Powder Pillows, 100/pk
- 4451569** Sodium ISA Powder Pillows, 100/pk

### Electrode Filling Solutions and Cartridges

- 25118049** Red Rod Filling Solution, Sat. KCl, 500 mL
- 25118026** Red Rod Filling Solution, Sat. KCl, 59 mL
- 2546902** KCl Reference Electrolyte Gel, cartridges, 2/pk
- 2965026** PHC281 filling solution, 2.44 M Viscous KCl
- 2965126** ISENA381 filling solution, 0.02 M NH<sub>4</sub>Cl
- 2841700** MTC301 and PHC301 filling solution, 3.0 M KCl w/sat Ag/Cl
- 2597102** Ammonium Sulfate Reference Cartridges, 2/pk
- 4456926** Nitrate internal filling solution, 50 mL

### Calcium Standard Solutions as Ca

- 2305442** 10 mg/L, 100 mL
- 4457649** 100 mg/L, 500 mL
- 2240349** 1000 mg/L, 500 mL

# STANDARD SOLUTIONS & REAGENTS

## Prod. No. Description

### Chloride Standard Solutions as Cl

<b>2370853</b>	100 mg/L, 1 L
<b>18349</b>	1,000 mg/L, 500 mL

### Fluoride Standard Solutions as F<sup>-</sup> (NIST)

<b>40505</b>	0.5 mg/L, 500 mL
<b>29149</b>	1.0 mg/L, 500 mL
<b>29153</b>	1.0 mg/L, 1 L
<b>40520</b>	2.0 mg/L, 500 mL
<b>2797149</b>	5.0 mg/L 500 mL
<b>35949</b>	10 mg/L, 500 mL
<b>23249</b>	100 mg/L, 500 mL

### Nitrogen-Ammonia Standard Solutions as NH<sub>3</sub>-N

<b>189149</b>	1 mg/L, 500 mL
<b>15349</b>	10 mg/L, 500 mL
<b>1479120</b>	50 mg/L, 2-mL PourRite Ampule, 20/pk
<b>1479110</b>	50 mg/L, 10-mL Voluette Ampule, 16/pk
<b>2406549</b>	100 mg/L 500 mL
<b>2109110</b>	160 mg/L, 10-mL Voluette Ampule, 16/pk

## Prod. No. Description

### Nitrogen-Nitrate Standard Solutions as NO<sub>3</sub><sup>-</sup>-N (NIST)

<b>204649</b>	1 mg/L as NO <sub>3</sub> <sup>-</sup> -N, 4.43 mg/L as NO <sub>3</sub> <sup>-</sup> (NIST)
<b>2557810</b>	5 mg/L, 10-mL Voluette Ampule, 16/pk
<b>30749</b>	10 mg/L NO <sub>3</sub> <sup>-</sup> -N, 44.3 mg/L as NO <sub>3</sub> <sup>-</sup> , 500 mL
<b>2415132</b>	15 mg/L, 100 mL
<b>194749</b>	100 mg/L as NO <sub>3</sub> <sup>-</sup> -N, 443 mg/L as NO <sub>3</sub> <sup>-</sup> , 500 mL
<b>1426010</b>	500 mg/L, 10-mL Voluette Ampule, 16/pk
<b>1279249</b>	1,000 mg/L as NO <sub>3</sub> <sup>-</sup> -N; 4430 mg/L as NO <sub>3</sub> <sup>-</sup> , 500 mL

### Potassium Standard Solutions as K

<b>2351749</b>	100 mg/L, 500 mL
----------------	------------------

### Sodium Electrode Storage Solution

<b>4451659</b>	50 mL
----------------	-------

### Sodium Standard Solution as Na

<b>2835153</b>	Sodium Standard, 10 ppm, 1 L
<b>2318153</b>	100 mg/L, 1 L (NIST)
<b>1474949</b>	1000 mg/L, 500 mL (NIST)

# RADIOMETER ANALYTICAL SOLUTIONS



## Radiometer Analytical certified pH and conductivity standards give you:

- Total control of the traceability chain and calculated uncertainties
- Direct traceability to primary standards and the reference method
- The competence and integrity of a laboratory internationally recognized to be accredited for the measurement of pH and conductivity reference materials

## Accredited calibration laboratory

The use of standards manufactured by an accredited laboratory gives you complete confidence in the traceability chain and calculated uncertainties. Radiometer Analytical is part of the Hach Lange group and their Calibration Laboratory, located in Berlin, is accredited for the calibration of certified pH and conductivity standards by DAkkS, the German national accreditation authority. This accreditation (No. D-K-15184-01-00) is recognized in more than 35 countries. All standards are formulated in compliance with NIST, IUPAC and DIN19266 specifications<sup>1</sup>.

### IUPAC Series Certified pH Standards

IUPAC Series certified pH standards are fully traceable to the Standard Hydrogen Electrode through Certified Reference Material produced by the Primary Laboratory of either NIST or DFM<sup>2</sup> or PTB<sup>3</sup>.

### Radiometer Analytical Certified Conductivity Standards

Radiometer Analytical certified conductivity standards are fully traceable to SI units via Certified Reference Materials manufactured by DFM<sup>2</sup>. They are prepared and calibrated according to the internationally recognized demal scale laid down by the International Organisation of Legal Metrology (OIML – Recommendation No. 56).

<sup>1</sup> Except pH7.000 formulated by us according to NIST, IUPAC and DIN19266 specifications of pH6.865 and pH7.413.

<sup>2</sup> Dansk Fundamental Metrologi A/S is accredited for pH measurements by the Danish Accreditation and Metrology Fund (DANAK)(no. 511).

<sup>3</sup> Physikalisch-Technische Bundesanstalt, Braunschweig, Germany



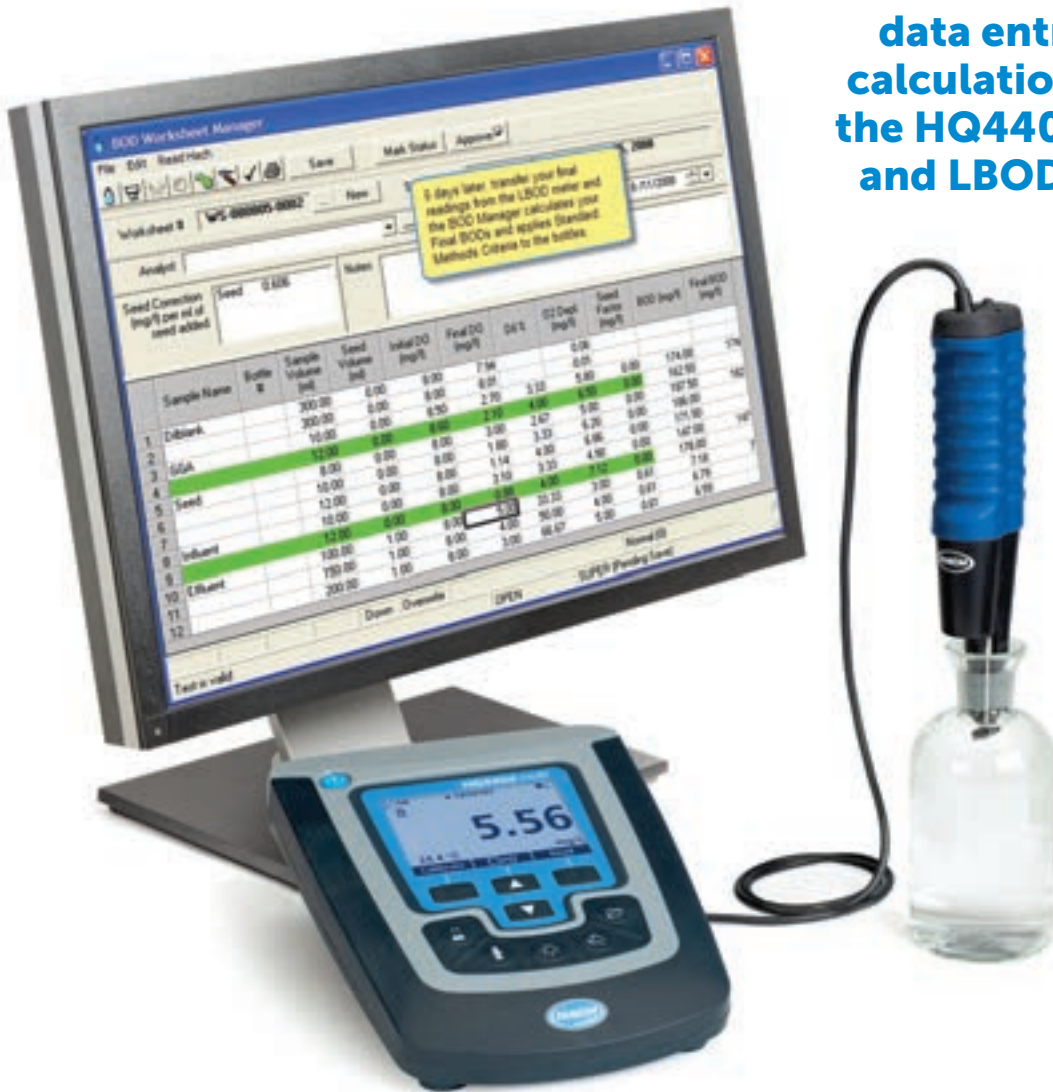
A Hach Company Brand

Type	Value and Tolerance	Qty	Product No.
<b>IUPAC Series Certified pH Standards</b>			
pH1.679	pH 1.679 ±0.010 at 25°C	500 mL	<b>S11M001</b>
pH4.005	pH 4.005 ±0.010 at 25°C	500 mL	<b>S11M002</b>
pH6.865	pH 6.865 ±0.010 at 25°C	500 mL	<b>S11M003</b>
pH7.000	pH 7.000 ±0.010 at 25°C	500 mL	<b>S11M004</b>
pH7.413	pH 7.413 ±0.010 at 25°C	500 mL	<b>S11M005</b>
pH9.180	pH 9.180 ±0.010 at 25°C	500 mL	<b>S11M006</b>
pH10.012	pH 10.012 ±0.010 at 25°C	500 mL	<b>S11M007</b>
pH12.45	pH 12.45 ±0.05 at 25°C	500 mL	<b>S11M008</b>
<b>Certified Conductivity Standards</b>			
KCl 1 D	111.3 mS/cm ±0.5% at 25°C	500 mL	<b>S51M001</b>
KCl 0.1D	12.85 mS/cm ±0.35% at 25°C	500 mL	<b>S51M002</b>
KCl 0.01D	1408 µS/cm ±0.5% at 25°C	500 mL	<b>S51M003</b>
NaCl 0.05%	1015 µS/cm ±0.5% at 25°C	500 mL	<b>S51M004</b>
NaCl 25*	25.0 µS/cm ±5% at 25°C	250 mL	<b>S51M013</b>

\*Supplied in a glass bottle.

Each standard is delivered in an airtight can and is supplied with a Certificate of Conformity and Traceability as well as a DAkkS Calibration Certificate specifying the exact measured value and calculated expanded uncertainty (k=2) for each batch of pH and conductivity solution.

**Hach BOD Manager software automates data entry and calculations from the HQ440d Meter and LBOD probe**



Be Right™

# HACH LBOD IntelliCAL™ PROBE

## A Breakthrough in BOD Measurement! Hach LBOD IntelliCAL™ probe uses patented LDO® technology to deliver superior confidence in results!

All the same great benefits of the Hach LDO probe, with the built-in features to measure BOD!

- No membranes to replace.
- Calibration in less than one minute.
- Reliable performance and accurate readings time after time.
- Have confidence in your results!

### Complete System available—Includes:

- HQ440d Digital Meter.
- LBOD Probe (Prod. No. LBOD10101).
- Power and communication cables.
- Laboratory meter stand.



**EPA Recommends  
Hach LDO® Method 10360  
for use in compliance  
monitoring.\***

## DO MORE WITH YOUR DATA! With the BOD Manager

See next page for more info.

\*Hach's LDO technology has been approved in numerous states for measuring and reporting Dissolved Oxygen (DO) and BOD. Visit [www.hach.com/hqdguide](http://www.hach.com/hqdguide) or speak with a Hach representative to learn if your state is approved.

### Probe Only

Have confidence in your results! Perfect for use in EPA-based BOD testing in 300 mL BOD bottles in approved States.

Product No.	Cable Length
LBOD10101	1.8 meter cable

### Complete Probe and Meter Systems

Prod. No.	Description
HQDBODMGR	Includes HQ440d Benchtop Meter, LBOD1010 Probe, and BOD Manager Software (See software description on next page.)

## Hach's BOD Solution

### Disposable BOD Bottle

- Fresh bottle, ready for use
- No cleaning required
- Unbreakable and recyclable
- Oxygen will not diffuse in or out of sample
- EPA compliant

Stopper sold separately.



Prod. No.	Description	Unit
2943100	Disposable 300 mL BOD Bottle	117/case
2943900	Unbreakable Acrylic Stopper for 300 mL BOD Bottle	25/pack
190901	Glass Stopper for 300 mL BOD Bottle	each
241906	Plastic Cap for BOD Bottles	6/pack

### BOD Reagents

- Complete line of products for BOD preparation
- Prepackaged nutrient buffer
- Convenient, easy to use, pre-measured products

Prod. No.	Description
253335	Nitrification inhibitor - 35 g, 200 tests
253334	Nitrification Inhibitor - 500 g, 2500 tests
2918700	BOD Seed Inoculum, 50 capsules, PolySeed®
2514420	ezGGA pre-measured Glucose plus Glutamic Acid 2mL/20 ezGGA Ampules; Equivalent to 198 ppm GGA for the BOD5 test
2484600	Ampule Breaker
1416066	Nutrient Buffer Pillows, 0.5-mL size for 300 mL, 50/pk
1486166	Nutrient Buffer Pillows, 3-mL size for 3 liters, 50/pk
2436466	Nutrient Buffer Pillows, 4-mL size for 4 liters, 50/pk
1486266	Nutrient Buffer Pillows, 6-mL size for 6 liters, 50/pk
1486398	Nutrient Buffer Pillows, 19-mL size for 19 liters, 25/pk

For more BOD Reagents and BOD Standards, see page 158 of the Parameters Section.



## What is Hach BOD Manager?

Hach BOD Manager software automates data entry and calculations from the HQ40d Meter and LBOD probe, resulting in improved productivity and data integrity for Biochemical Oxygen Demand testing.

The Hach BOD Manager compares each test to Standard Methods criteria for acceptability to identify invalid tests. An expanded set of data points, such as initial and final temperature, initial pH and initial DO, further support compliance with Standard Methods and are included in the audit trail.

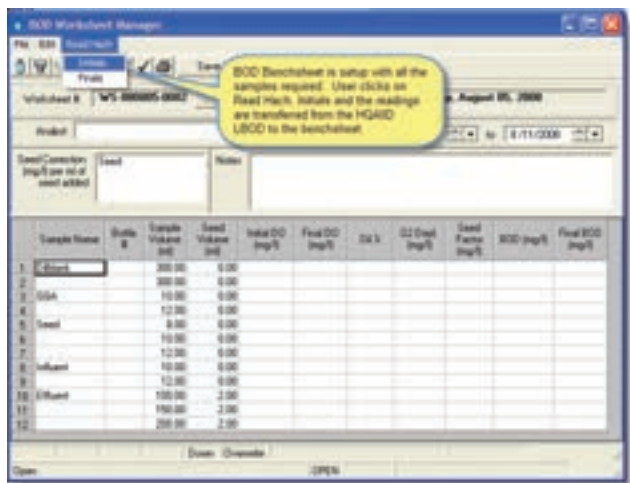
Electronic data capture, built-in calculations and error-checking save valuable time and minimize common mistakes when transcribing and analyzing data.



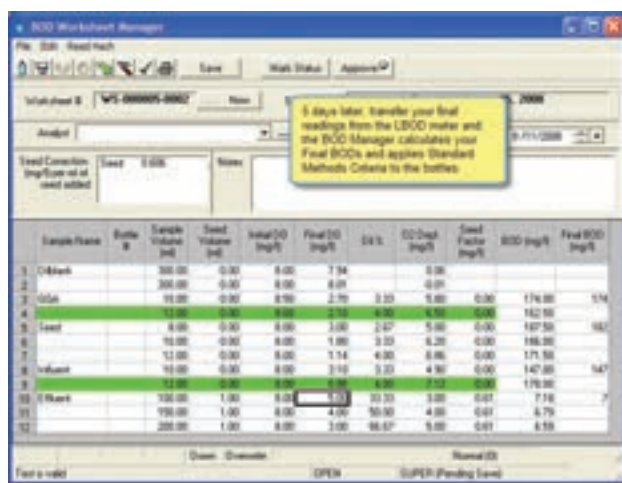
## When used with the Hach BOD System (see previous page), you will benefit from:

- Improved Productivity and Time Savings**  
*BOD Manager automates your BOD testing and trending, saving valuable time from your day-to-day testing.*
- Assured Data Integrity**  
*No transcription errors to worry about.*
- Easy Access to Data**  
*Data is stored in a secure database with simple file structures and drop down menus.*

*Hach BOD Manager can be used as a stand-alone solution or integrated with the Hach Water Information Management Solution™ (Hach WIMS™) software product and database.*



*Automatically capture the first set of data from the HQ40d instrument.*



*Automatically capture the second set of data and the Hach BOD Manager makes the appropriate calculations, comparisons and reports.*

**Prod. No.**      **Description**  
**WM-BOD\_MGR**      Hach BOD Manager software

*For more information, call to request LIT2646.*

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*U.S. customers only.*



# BODTrak II APPARATUS



## Simplified BOD analysis.

Simplify BOD analysis with this updated version of the BODTrak™ Apparatus. Results comparable to the dilution method can be achieved in only two to three days. Use these results for process control or as a complement to the dilution method\*.

### Improvements of the BODTrak II Apparatus

The BODTrak II Apparatus is a re-engineered version of Hach's BODTrak Apparatus. Improvements to the old system include:

- Greaseless bottle seals
- Larger graphic display screen
- Improved stirring
- Smaller footprint
- Improved procedures with expanded options
- Bottle fences to prevent tipping of bottles and provide tubing management during storage
- Auto-switching power supply
- Improved temperature control

\*The BODTrak II method is not approved by the USEPA for NPDES reporting purposes.

### Decrease Total Test Time

The Hach BODTrak II Apparatus is easy to set up and allows for quick sample preparation for BOD (Biochemical Oxygen Demand) analysis. Simply pour a measured sample of wastewater and nutrient buffer into each of six BODTrak II bottles. Connect the bottles to the instrument's pressure sensors, select a measurement range, and incubate. User calibration of the instrument is not necessary.

### Faster than Dilution Method

Constant stirring in the bottles supplies additional oxygen to the sample and provides bacteria with greater exposure to food. This results in more rapid respiration and consumption of oxygen.

### BOD Results that are Easy to Monitor

The BODTrak II Apparatus has a large graphic display that continuously updates results. View the results at any time during the test. The instrument plots a curve of BOD over time. To review the data in detail, simply move a cursor along the curve to display results for any stored data point.

### Specifications\*

<b>Range</b> Selectable: 0 to 35, 0 to 70, 0 to 350, or 0 to 700 mg/L BOD (Biochemical Oxygen Demand)	<b>Interface</b> RS232
<b>Capacity</b> Six 492-mL bottles	<b>External Power Supply</b> Input: 110 to 240 V, 50/60 Hz Output: 24 V, UL CSA, and TUV approved
<b>Precision</b> For a standard containing 150 mg/L each of glucose and glutamic acid, testing 44 samples obtained a mean of 235 mg/L BOD with a 95% confidence limit of distribution of 11 mg/L (or a range of 224 to 246 mg/L BOD)	<b>Operating Temperature</b> 20°C (68°F)
<b>Drift</b> < 3 mg/L BOD in 5 days	<b>Storage Temperature</b> 0 to 40°C (104°F)
<b>Resolution</b> 1 mg/L BOD	<b>Dimensions</b> 28.9 x 26 x 9.8 cm (11.4 x 10.3 x 3.9 in.)
	<b>Weight</b> 4 kg (8.8 lbs.)

\*Subject to change without notice.

### Standalone Operation

The apparatus automatically ends the test and stores the results after the chosen test length of five, seven, or ten days. This eliminates the need to be present when the test is complete.

### DO Probes and Titrations are Eliminated

The BODTrak II Apparatus measures BOD using the respirometric method. Each sample bottle is connected to a pressure sensor in a closed system. As bacteria consume oxygen in the sample, the pressure in the bottle headspace drops. This pressure change correlates directly to BOD. By measuring pressure changes instead of dissolved oxygen levels, the need for probes and titrations is eliminated.

### Prod. No. Description

**2952400** BODTrak II Apparatus, 115/230 Vac; includes North American and continental European power cords, auto-switching power supply, six bottles, six magnetic stir bars, six seal cups, spatula scoop, BOD Nutrient Buffer Pillows, and potassium hydroxide pellets

### Reagents

**1486610** BOD Standard Solution; for manometric method, glucose and glutamic acid, 3000 mg/L, 10 mL Voluette Ampoules, 16/pk

### Optional Accessories

**2960100** Citizen PD-24 Printer Package includes printer, universal power supply, 115V North American power cord, RS-232 cable, gender adapter, USB cable, battery pack, and one roll of thermal paper.

**2616300** Incubator, BOD, 110 Vac

**2616302** Incubator, BOD, 220/240 Vac

**2270800** *Standard Methods for the Examination of Water and Wastewater*

For more information, call to request LIT2619.

# LABORATORY & FIELD INSTRUMENTS

**NEW!**

The DR 6000 Spectrophotometer, has the most pre-programmed testing methods, including high-speed wavelength scanning across the UV and Visible Spectrum.



SPECTROPHOTOMETERS



**NEW!**

DR 900 Colorimeter, the fastest and simplest water testing for the most demanding field environments.

**MORE!**

**TNTplus® Chemistries:**  
Total Alkalinity • Chlorine  
Mercury-Free COD • Copper  
Iron • HR Nitrate  
Simplified TKN Nitrogen  
Sulfate • Volatile Acids



Be Right™

# CHOOSING YOUR SPECTROPHOTOMETER

Hach spectrophotometers, chemistries, and methods are designed, developed, and manufactured to optimize your results.

Only Hach has a truly integrated system.



## NEW! DR 6000

Top-of-the-line benchtop for advanced analysis, including UV.



## DR 3900

All-purpose benchtop with expanded feature set.



### FEATURES

UV spectrum analysis	✓	
Visible spectrum analysis	✓	✓
High-speed wavelength scanning for quality control and method development	✓	✓
RFID* TNT+ Calibration Factor Update	✓	✓
RFID* based sample tracking system	✓	✓
Optional Sipper Sampler Module for high throughput analysis	✓	✓
On-screen Help Guide	✓	✓
Easy-to-use, color touch screen	✓	✓
Keyboard		
Automatic sample measurement and graphing at user-specified time intervals	✓	✓
Compatible with TNTplus chemistry	✓	✓
Pre-programmed methods	over 250	240
Programmable custom methods	200	100
Data logging capacity	5000	2000
Optional Pour-Thru Cell for highly precise trace analysis	✓	✓
Data connectivity options	USB, LAN, WLAN**	USB, LAN, WLAN**
DR intersystem method transfer	✓	✓
Portable for field use		
IP67 Rating (submerge 1m for 30 min)		
Weight	24.25 lbs. (11 kg)	9.26 lbs. (4.2 kg)

### KEY SPECIFICATIONS

Wavelength accuracy	±1.0 nm	±1.5 nm
Bandwidth	2 nm	5 nm
To order, see:	page 83	page 85

\*US, Canada, Australia, New Zealand, Puerto Rico, and Colombia. \*\*With external USB WLAN adapter (not included). \*\*\*With optional Module LZV949





# CHOOSING YOUR SPECTROPHOTOMETER

**NEW!**

**DR 1900**

*Carry more water methods with you  
wherever you need them most.*



SPECTROPHOTOMETERS

✓

Waterproof Rubber Keys

✓

✓

220

50

500

✓

USB\*\*\*

✓

✓

3.3 lbs. (1.5 kg)



±2 nm

5 nm

page 89

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*U.S. customers only.*





# CHOOSING YOUR COLORIMETER

**Hach colorimeters are designed for the rigors of field use and provide consistently accurate measurements of over 100 different parameters.**

## Pocket Colorimeter™ II

- Measure one or two parameters quickly and easily



## DR 900 Handheld Colorimeter

- Your favorites, at your fingertips
- Field ready in every way possible
- An improved user interface allows for quick selections and ease of testing



### FEATURES

Number of Parameters	1 or 2 depending on model	90+
Factory Calibrated	Yes	Yes
Storage of User Calibration Curves	Yes (most models)	Yes
Wavelength Selection	Fixed wavelength	Auto-Select
Datalogging	most recent 10 points	up to 500 points
Readout Modes	Concentration, absorbance	Concentration, absorbance, %T
IP67 Rating (submersible 1 m for 30 mins)	Yes*	Yes
PC Interface Available	No	Yes
LCD Display	Backlit	Backlit
Battery Requirements (alkaline or rechargeable)	4 AAA	4 AA
Nominal Battery Life	2000 tests	6 months of average usage
LED Source Lamp	Yes	Yes
Dimensions	15.5 x 6.1 x 3.5 cm (6.2 x 2.5 x 1.4 in)	231 x 96 x 48 mm (9.1 x 3.8 x 1.9 in)
Weight	0.23 kg (0.5 lb)	0.6 kg (1.32 lbs.)
Full List of Parameters and Tests	See pages 79-82	See pages 79-82
Accessories <small>*Battery compartment excluded.</small>	Belt Holster/Case	Hard or soft-sided carrying cases; USB cable

### KEY SPECIFICATIONS

Wavelengths	Single wavelength model-specific	4 Fixed wavelengths 420, 520, 560, 610 nm
Wavelength Accuracy	±2 nm (typical)	±1 nm
Spectral Bandwidth	15 nm (typical)	10 nm nominal
Operating Temperature Range	0 to 50°C (32 to 122°F)	10 to 40°C (50 to 104°F)
Storage Temperature Range	-40 to 60°C (-40 to 140°F)	-30 to 60°C (-30 to 140°F)
To order, see:	pages 91-92	page 90

# QUICK REFERENCE GUIDE

The tables on the following 4 pages list test ranges, methods of analysis, and corresponding reagent set Product Numbers. The complete procedures are available on [www.hach.com](http://www.hach.com). The ranges given are for the pre-calibrated instrument readout; higher ranges can be analyzed by sample dilution. Parameters marked "EPA" are EPA-approved, accepted, or equivalent for reporting purposes; sample pretreatment may be required on some procedures. If no reagent set is listed for a parameter, order needed reagents and supplies separately.

Test	EPA Method	Number	Range	DR 8000	DR 3900	DR 1900	PC II Colorimeter	Prod. No.
Alachlor in Water	Immunoassay	10202	0.1 - 0.5 ppb, threshold	•	•	•	•	2813000
Alkalinity, Total (TNTplus)	Colorimetric	10239	25 - 400 mg/L	•	•	•	•	TNT870
Aluminum	Aluminon	8012	0.008 - 0.800 mg/L	•	•	•	•	2242000
Aluminum	Eriochrome Cyanine R	8326	0.002 - 0.250 mg/L	•	•	•	•	2603700
Aluminum (TNTplus)	Chromazurol S	10215	0.02 - 0.50 mg/L	•	•	•	•	TNT848
Ammonia, Nitrogen	Salicylate	8155	0.01 - 0.50 mg/L	•	•	•	•	2668000
Ammonia, Nitrogen (TNTplus), ULR	• Salicylate	10205	0.015 - 2.000 mg/L	•	•	•	•	TNT830
Ammonia, Nitrogen	• Nessler	8038	0.02 - 2.50 mg/L	•	•	•	•	2458200
Ammonia, Nitrogen (Test 'N Tube), LR	Salicylate	10023	0.02 - 2.50 mg/L	•	•	•	•	2604545
Ammonia, Nitrogen (TNTplus), LR	• Salicylate	10205	1 - 12 mg/L	•	•	•	•	TNT831
Ammonia, Nitrogen (Test 'N Tube), HR	Salicylate	10031	0.4 - 50.0 mg/L	•	•	•	•	2606945
Ammonia, Nitrogen (TNTplus), HR	• Salicylate	10205	2 - 47 mg/L	•	•	•	•	TNT832
Ammonia, Free, Nitrogen	Indophenol	10200	0.01 - 0.50 mg/L	•	•	•	•	2879700
Arsenic	• Silver Diethyldithiocarbamate	8013	0.020 - 0.200 mg/L	•	•	•	•	—
Atrazine	Immunoassay	10050	0.5 - 3.0 ppb, threshold	•	•	•	•	2762700
Barium	Turbidimetric	8014	2 - 100 mg/L	•	•	•	•	1206499
Benzotriazole	UV Photolysis	8079	1.0 - 16.0 mg/L	•	•	•	•	2141299
Boron	Carmine	8015	0.2 - 14.0 mg/L	•	•	•	•	—
Bromine	DPD	8016	0.05 - 4.50 mg/L	•	•	•	•	2105669
Bromine (AccuVac)	DPD	8016	0.05 - 4.50 mg/L	•	•	•	•	2503025
Cadmium	Dithizone	8017	0.7 - 80.0 µg/L	•	•	•	•	2242200
Cadmium (TNTplus) <sup>1</sup>	Cadion	10217	0.02 - 0.30 mg/L	•	•	•	•	TNT852
Carbohydrazide	Iron Reduction	8140	5 - 600 µg/L	•	•	•	•	2446600
Chloramine, Mono, LR	Indophenol	10171	0.04 - 4.50 mg/L	•	•	•	•	2802246
Chloramine, Mono (Test 'N Tube), HR	Indophenol	10172	0.1 - 10.0 mg/L	•	•	•	•	2805145
Chloride	Mercuric Thiocyanate	8113	0.1 - 25.0 mg/L	•	•	•	•	2319800
Chlorine, Free	Indophenol	10241	0.04 - 4.50 mg/L	•	•	•	•	—
Chlorine, Free	• DPD	8021	0.02 - 2.00 mg/L	•	•	•	•	2105569
Chlorine, Free (AccuVac)	• DPD	8021	0.02 - 2.00 mg/L	•	•	•	•	2502025
Chlorine, Free (Pour-Thru Cell)	DPD Rapid Liquid	10059	0.02 - 2.00 mg/L	•	•	•	•	2556900
Chlorine, Free (TNTplus)	• DPD	10231	0.05 - 2.00 mg/L	•	•	•	•	TNT866
Chlorine, Free (Test 'N Tube)	DPD	10102	0.09 - 5.00 mg/L	•	•	•	•	2105545
Chlorine, Free, MR	• DPD	10245	0.05 - 4.00 mg/L	•	•	•	•	1407099
Chlorine, Free, HR	• DPD	10069	0.1 - 10.0 mg/L	•	•	•	•	1407099
Chlorine, Free & Total (TNTplus)	• DPD	10232	0.05 - 2.00 mg/L	•	•	•	•	TNT866T
Chlorine, Total (Pour-Thru Cell), ULR	• DPD	8370	2 - 500 µg/L	•	•	•	•	2563000
Chlorine, Total	• DPD	10014						
Chlorine, Total	• DPD	8167	0.02 - 2.00 mg/L	•	•	•	•	2105669
Chlorine, Total (AccuVac)	• DPD	8167	0.02 - 2.00 mg/L	•	•	•	•	2503025
Chlorine, Total (Pour-Thru Cell)	DPD Rapid Liquid	10060	0.02 - 2.00 mg/L	•	•	•	•	2557000
Chlorine, Total (Test 'N Tube)	DPD	10101	0.09 - 5.00 mg/L	•	•	•	•	2105645
Chlorine, Total, MR	• DPD	10250	0.05 - 4.00 mg/L	•	•	•	•	1406499
Chlorine, Total, HR	• DPD	10070	0.1 - 10.0 mg/L	•	•	•	•	1406499
Chlorine Demand/Requirement	• DPD	10223	Multiple Ranges	•	•	•	•	—
Chlorine Dioxide, DPD	• DPD/Glycine	10126	0.04 - 5.00 mg/L	•	•	•	•	2770900
Chlorine Dioxide, DPD (AccuVac)	• DPD/Glycine	10126	0.04 - 5.00 mg/L	•	•	•	•	2771000
Chlorine Dioxide (Europe Only)	Amaranth		20 - 500 µg/L	•	•	•	•	—
Chlorine Dioxide, LR	Chlorophenol Red	8065	0.01 - 1.00 mg/L	•	•	•	•	2242300
Chlorine Dioxide, MR	Direct Reading	8345	1 - 50 mg/L	•	•	•	•	—
Chlorine Dioxide, HR	Direct Reading	8138	5 - 1000 mg/L	•	•	•	•	—

<sup>1</sup>As listed, test determines soluble metal. Order Metals Prep Set TNT890 to determine total metal.

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# QUICK REFERENCE GUIDE

Test	EPA	Method	Number	Range	DR 6000 DR 3900 DR 1900 DR 900 PC II Colorimeter					Prod. No.
Chromium, Hexavalent	•	1,5 Diphenylcarbohydrazide	8023	0.010 - 0.700 mg/L	•	•	•	•	•	1271099
Chromium, Hexavalent (AccuVac)	•	1,5 Diphenylcarbohydrazide	8023	0.010 - 0.700 mg/L	•	•	•	•	•	2505025
Chromium, Hexavalent and Total (TNTplus)	• <sup>1</sup>	1,5 Diphenylcarbohydrazide	10218 10219	0.03 - 1.00 mg/L	•	•	•	•	•	TNT854
Chromium, Total		Alkaline Hypobromite Oxidation	8024	0.01 - 0.70 mg/L	•	•	•	•	•	2242500
Cobalt		PAN	8078	0.01 - 2.00 mg/L	•	•	•	•	•	2651600
COD, ULR		Dichromate	8000	0.7 - 40.0 mg/L	•	•	•	•	•	2415825
COD, LR	•	Dichromate	8000	3 - 150 mg/L	•	•	•	•	•	2125825
COD, HR	•	Dichromate	8000	20 - 1,500 mg/L	•	•	•	•	•	2125925
COD, HR+		Dichromate	8000	200 - 15,000 mg/L	•	•	•	•	•	2415925
COD		Manganese III	10067	30 - 1000 mg/L	•	•	•	•	•	2623425
COD, Mercury-Free (TNTplus), HR		Dichromate	10236	25 - 100 mg/L	•	•	•	•	•	TNT825
COD (TNTplus), ULR		Dichromate	10211	1 - 60 mg/L	•	•	•	•	•	TNT820
COD (TNTplus), LR	•	Dichromate	8000	3 - 150 mg/L	•	•	•	•	•	TNT821
COD (TNTplus), HR	•	Dichromate	8000	20 - 1500 mg/L	•	•	•	•	•	TNT822
COD (TNTplus), UHR		Dichromate	10212	250 - 15,000 mg/L	•	•	•	•	•	TNT823
Color		ADMI Weighted Ordinate	10048	3 - 250 units	•	•	•	•	•	—
Color, True and Apparent		Platinum-Cobalt	8025	15 - 500 units	•	•	•	•	•	—
Color, True and Apparent, LR		Platinum-Cobalt	8025	3 - 200 units	•	•	•	•	•	—
Copper, LR		Porphyrin	8143	1 - 210 µg/L	•	•	•	•	•	2603300
Copper	•	Bicinchoninate	8506	0.04 - 5.00 mg/L	•	•	•	•	•	2105869
Copper (AccuVac)		Bicinchoninate	8026	0.04 - 5.00 mg/L	•	•	•	•	•	2504025
Copper (TNTplus) <sup>2</sup>		Bathocuproine	10238	0.1 - 8.0 mg/L	•	•	•	•	•	TNT860
Cyanide		Pyridine-Pyrazalone	8027	0.002 - 0.240 mg/L	•	•	•	•	•	2430200
Cyanuric Acid		Turbidimetric	8139	5 - 50 mg/L	•	•	•	•	•	246066
DEHA (Diethylhydroxylamine)		Iron Reduction	8140	3 - 450 µg/L	•	•	•	•	•	2446600
Detergents (Surfactants)		Crystal Violet	8028	0.002 - 0.275 mg/L	•	•	•	•	•	2446800
Dissolved Oxygen (AccuVac), LR		Indigo Carmine	8316	6 - 800 µg/L	•	•	•	•	•	2501025
Dissolved Oxygen (AccuVac), HR		HRDO	8166	0.3 - 15.0 mg/L	•	•	•	•	•	2515025
Dissolved Oxygen (AccuVac), UHR		Ultra High Range	8333	1.0 - 40.0 mg/L	•	•	•	•	•	2515025
Erythorbic Acid (Isoascorbic Acid)		Iron Reduction	8140	13 - 1500 µg/L	•	•	•	•	•	2446600
Fluoride, Arsenic Free	• <sup>3,4</sup>	SPADNS 2	10225	0.02 - 2.00 mg/L	•	•	•	•	•	2947549
Fluoride, Arsenic Free (AccuVac)	• <sup>3,4</sup>	SPADNS 2	10225	0.02 - 2.00 mg/L	•	•	•	•	•	2527025
Fluoride	• <sup>4</sup>	SPADNS	8029	0.02 - 2.00 mg/L	•	•	•	•	•	44449
Fluoride (AccuVac)	• <sup>4</sup>	SPADNS	8029	0.02 - 2.00 mg/L	•	•	•	•	•	2506025
Formaldehyde		MBTH	8110	3 - 500 µg/L	•	•	•	•	•	2257700
Hardness, Total, ULR		Chlorophosphonazo Colorimetric	8374	8 - 1000 µg/L	•	•	•	•	•	2603100
Hardness, Total, ULR (Pour-Thru Cell)		Chlorophosphonazo Rapid Liquid	8374	4 - 1000 µg/L	•	•	•	•	•	—
Hardness, Ca & Mg		Calmagite Colorimetric	8030	0.05 - 4.00 mg/L	•	•	•	•	•	2319900
Hydrazine		p-Dimethylaminobenzaldehyde	8141	4 - 600 µg/L	•	•	•	•	•	179032
Hydrazine (AccuVac)		p-Dimethylaminobenzaldehyde	8141	4 - 600 µg/L	•	•	•	•	•	2524025
Hydroquinone		Iron Reduction	8140	9 - 1000 µg/L	•	•	•	•	•	2446600
Iodine DPD		DPD	8031	0.07 - 7.00 mg/L	•	•	•	•	•	2105669
Iodine DPD (AccuVac)		DPD	8031	0.07 - 7.00 mg/L	•	•	•	•	•	2503025
Iron (TNTplus) <sup>2</sup>	•	Phenanthroline	10229	0.2 - 6.0 mg/L	•	•	•	•	•	TNT858
Iron		FerroZine	8147	0.009 - 1.400 mg/L	•	•	•	•	•	230166
Iron (Pour-Thru Cell)		FerroZine Rapid Liquid	8147	0.009 - 1.400 mg/L	•	•	•	•	•	230149
Iron, Ferrous		1, 10 Phenanthroline	8146	0.02 - 3.00 mg/L	•	•	•	•	•	103769
Iron, Ferrous (AccuVac)		1, 10 Phenanthroline	8146	0.02 - 3.00 mg/L	•	•	•	•	•	2514025
Iron, Total		FerroMo	8365	0.01 - 1.80 mg/L	•	•	•	•	•	2544800
Iron, Total		TPTZ	8112	0.012 - 1.800 mg/L	•	•	•	•	•	2608799
Iron, Total (AccuVac)		TPTZ	8112	0.012 - 1.800 mg/L	•	•	•	•	•	2510025
Iron, Total	•	FerroVer	8008	0.02 - 3.00 mg/L	•	•	•	•	•	2105769

<sup>1</sup>EPA approved for Cr<sup>6+</sup> only. <sup>2</sup>As listed, test determines soluble metal. Order Metals Prep Set TNT890 to determine total metal.

<sup>3</sup>Per 40 CFR 136.6 Method Modification and Flexibility. <sup>4</sup>Not EPA accepted for drinking water using the DR 900 colorimeter.

# QUICK REFERENCE GUIDE

Test	EPA Method	Number	Range	DR 6000 DR 3900 DR 1900 DR 900 PC II Colorimeter					Prod. No.
				•	•	•	•	•	
Iron, Total (AccuVac)	• FerroVer	8008	0.02 - 3.00 mg/L	•	•	•	•	•	2507025
Isoascorbic Acid (Erythorbic Acid) (ISA)	Iron Reduction	8140	13 - 1500 µg/L	•	•	•	•	•	2446600
Lead	LeadTrak Fast Column Extraction 8317	8317	5 - 150 µg/L	•	•	•	•	•	2375000
Lead	• Dithizone	8033	3 - 300 µg/L	•	•	•	•	•	2243100
Lead (TNTplus)*	PAR	10216	0.1 - 2.0 mg/L	•	•	•	•	•	TNT850
Manganese, LR	PAN	8149	0.006 - 0.700 mg/L	•	•	•	•	•	2651700
Manganese, HR	Periodate Oxidation	8034	0.1 - 20.0 mg/L	•	•	•	•	•	2430000
Mercury	Cold Vapor Mercury Concentration	10065	0.1 - 2.5 µg/L	•	•	•	•	•	2658300
Methylethylketoxime (MEKO)	Iron Reduction	8140	15 - 1000 µg/L	•	•	•	•	•	2446600
Molybdenum, Molybdate, LR	Ternary Complex	8169	0.02 - 3.00 mg/L	•	•	•	•	•	2449400
Molybdenum, Molybdate, HR	Mercaptoacetic Acid	8036	0.2 - 40.0 mg/L	•	•	•	•	•	2604100
Molybdenum, Molybdate (AccuVac), HR	Mercaptoacetic Acid	8036	0.2 - 40.0 mg/L	•	•	•	•	•	—
Nickel	PAN	8150	0.006 - 1.000 mg/L	•	•	•	•	3	2651600
Nickel	• Heptoxime	8037	0.02 - 1.80 mg/L	•	•	•	•	•	2243500
Nickel (TNTplus) <sup>1</sup>	Dimethylglyoxime	10220	0.1 - 6.0 mg/L	•	•	•	•	•	TNT856
Nitrate, Nitrogen, LR	Cadmium Reduction	8192	0.01 - 0.50 mg/L	•	•	•	•	•	2429800
Nitrate, Nitrogen (TNTplus), LR	• Dimethylphenol	10206	0.23 - 13.5 mg/L	•	•	•	•	•	TNT835
Nitrate, Nitrogen, MR	Cadmium Reduction	8171	0.1 - 10.0 mg/L	•	•	•	•	•	2106169
Nitrate, Nitrogen (AccuVac), MR	Cadmium Reduction	8171	0.1 - 10.0 mg/L	•	•	•	•	•	2511025
Nitrate, Nitrogen	UV Screening	10049	0.1 - 10.0 mg/L	•	•	•	•	•	—
Nitrate, Nitrogen (Test 'N Tube), HR	Chromotropic Acid	10020	0.2 - 30.0 mg/L	•	•	•	•	•	2605345
Nitrate, Nitrogen, HR	Cadmium Reduction	8039	0.3 - 30.0 mg/L	•	•	•	•	•	2106169
Nitrate, Nitrogen (AccuVac), HR	Cadmium Reduction	8039	0.3 - 30.0 mg/L	•	•	•	•	•	2511025
Nitrate, Nitrogen (TNTplus), HR	• Dimethylphenol	10206	5 - 35 mg/L	•	•	•	•	•	TNT836
Nitrite, Nitrogen, LR	• Diazotization	8507	0.002 - 0.300 mg/L	•	•	•	•	•	2107169
Nitrite, Nitrogen (AccuVac), LR	• Diazotization	8507	0.002 - 0.300 mg/L	•	•	•	•	•	2512025
Nitrite, Nitrogen (Test 'N Tube), LR	Diazotization	10019	0.003 - 0.500 mg/L	•	•	•	•	•	2608345
Nitrite, Nitrogen (TNTplus), LR	• Diazotization	10207	0.015 - 0.600 mg/L	•	•	•	•	•	TNT839
Nitrite, Nitrogen (TNTplus), HR	Diazotization	10237	0.6 - 6.0 mg/L	•	•	•	•	•	TNT840
Nitrite, Nitrogen, HR	Ferrous Sulfate	8153	2 - 250 mg/L	•	•	•	•	•	2107569
Nitrogen, Ammonia (see Ammonia, Nitrogen)									
Nitrogen, Total (Test 'N Tube), LR	Persulfate Digestion	10071	0.5 - 25.0 mg/L	•	•	•	•	•	2672245
Nitrogen, Total (TNTplus), LR	Persulfate Digestion	10208	1 - 16 mg/L	•	•	•	•	•	TNT826
Nitrogen, Total (TNTplus), HR	Persulfate Digestion	10208	5 - 40 mg/L	•	•	•	•	•	TNT827
Nitrogen, Total (Test 'N Tube), HR	Persulfate Digestion	10072	2 - 150 mg/L	•	•	•	•	•	2714100
Nitrogen, Total (TNTplus), UHR	Persulfate Digestion	10208	20 - 100 mg/L	•	•	•	•	•	TNT828
Nitrogen, Total Inorganic (TIN) (Test 'N Tube)	Titanium Trichloride Reduction	10021	0.2 - 25.0 mg/L	•	•	•	•	•	2604945
Nitrogen, Simplified TKN (TNTplus)	s-TKN	10242	0 - 16 mg/L	•	•	•	•	•	TNT880
Nitrogen, Total Kjeldahl (TKN)	Nessler	8075	1 - 150 mg/L	•	•	•	•	•	2495300
Organic Carbon, Total (See TOC)									—
Organic Constituents, UV-Absorbing (UV-254)	Direct Reading	10054	Varies-Units Abs/cm	•	•	•	•	•	—
Oxygen Demand, Chemical (See COD)									—
Oxygen, Dissolved (See Dissolved Oxygen)									—
Oxygen Scavengers (See specific compounds)									—
Ozone (AccuVac), LR	Indigo	8311	0.01 - 0.25 mg/L	•	•	•	•	•	2516025
Ozone (AccuVac), MR	Indigo	8311	0.01 - 0.75 mg/L	•	•	•	•	•	2517025
Ozone (AccuVac), HR	Indigo	8311	0.01 - 1.50 mg/L	•	•	•	•	•	2518025
PCB (Polychlorinated Biphenyls) in Soil <sup>2</sup>	Immunoassay	10050	1 - 50 ppm, threshold	•	•	•	•	•	2773500
pH	Colorimetric Phenol Red	10076	6.5 - 8.5 units					•	2657512
Phenols	• 4-Aminoantipyrine	8047	0.002 - 0.200 mg/L	•	•	•	•	•	2243900

<sup>1</sup>As listed, test determines soluble metal. Order Metals Prep Set TNT890 to determine total metal. <sup>2</sup>Requires Soil Extraction Kit. Please order Prod. No. 2775100. (Included with Pocket Colorimeter II). <sup>3</sup>Nickel PAN method reagent set for DR 900 is Prod. No. 2242600

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Test	EPA Method	Number	Range	DR 6000 DR 3900 DR 1900 DR 900 PC II Colorimeter					Prod. No.
				•	•	•	•	•	
Phosphonates	Persulfate UV Oxidation	8007	0.02 - 125.0 mg/L	•	•	•	•	•	2429700
Phosphorus, Reactive	• PhosVer 3	8048	0.02 - 2.50 mg/L	•	•	•	•	•	2106069
Phosphorus, Reactive (AccuVac)	• PhosVer 3	8048	0.02 - 2.50 mg/L	•	•	•	•	•	2508025
Phosphorus, Reactive (Test 'N Tube)	• PhosVer 3	8048	0.06 - 5.00 mg/L	•	•	•	•	•	2742545
Phosphorus, Reactive	Amino Acid	8178	0.23 - 30.00 mg/L	•	•	•	•	•	2244100
Phosphorus, Reactive	Molybdovanadate	8114	0.3 - 45.0 mg/L	•	•	•	•	•	2076032
Phosphorus, Reactive (AccuVac)	Molybdovanadate	8114	0.3 - 45.0 mg/L	•	•	•	•	•	2525025
Phosphorus, Reactive (Test 'N Tube), HR	Molybdovanadate	8114	1.0 - 100.0 mg/L	•	•	•	•	•	2767345
Phosphorus, Reactive (Pour-Thru Cell), HR	Molybdovanadate Rapid Liquid	8114	0.3 - 45.0 mg/L	•	•	•	•	•	2076049
Phosphorus, Reactive (Pour-Thru Cell), LR	• Ascorbic Acid Rapid Liquid	10055	19 - 3000 µg/L	•	•	•	•	•	2678600
Phosphorus, Reactive (TNTplus)	Molybdovanadate	10214	5.0 - 90.0 mg/L	•	•	•	•	•	TNT846
Phosphorus, Acid Hydrolyzable (Test 'N Tube)	PhosVer 3 with Acid Hydrolysis	8180	0.06 - 3.50 mg/L	•	•	•	•	•	2742645
Phosphorus, Total (Test 'N Tube)	• PhosVer 3 with Acid Persulfate Digestion	8190	0.06 - 3.50 mg/L	•	•	•	•	•	2742645
Phosphorus, Total (Test 'N Tube), HR	Molybdovanadate with Acid Persulfate Digestion	10127	1.0 - 100.0 mg/L	•	•	•	•	•	2767245
Phosphorus, Reactive and Total (TNTplus), LR	• Ascorbic Acid	10209 10210	0.15 - 4.50 mg/L	•	•	•	•	•	TNT843
Phosphorus, Reactive and Total (TNTplus), HR	• Ascorbic Acid	10209 10210	1.5 - 15.0 mg/L	•	•	•	•	•	TNT844
Phosphorus, Reactive and Total (TNTplus), UHR	• Ascorbic Acid	10209 10210	6 - 60 mg/L	•	•	•	•	•	TNT845
Potassium	Tetraphenylborate	8049	0.1 - 7.0 mg/L	•	•	•	•	•	2459100
Quaternary Ammonium Compounds	Direct Binary Complex	8337	0.2 - 5.0 mg/L	•	•	•	•	•	2459200
Selenium	Diaminobenzidine	8194	0.01 - 1.00 mg/L	•	•	•	•	•	2244200
Silica (Pour-Thru Cell), ULR	Heteropoly Blue	8282	3 - 1000 µg/L	•	•	•	•	•	2553500
Silica (Pour-Thru Cell), ULR	Heteropoly Blue Rapid Liquid	8282	3 - 1000 µg/L	•	•	•	•	•	2678500
Silica, LR	Heteropoly Blue	8186	0.010 - 1.600 mg/L	•	•	•	•	•	2459300
Silica, HR	Silicomolybdate	8185	1 - 100 mg/L	•	•	•	•	•	2429600
Silver	Colorimetric	8120	0.02 - 0.70 mg/L	•	•	•	•	•	2296600
Sulfate	• SulfaVer 4	8051	2 - 70 mg/L	•	•	•	•	•	2106769
Sulfate (AccuVac)	• SulfaVer 4	8051	2 - 70 mg/L	•	•	•	•	•	2509025
Sulfate (TNTplus), LR	Turbidimetric	10227	40 - 150 mg/L	•	•	•	•	•	TNT864
Sulfate (TNTplus), HR	Turbidimetric	10227	150 - 900 mg/L	•	•	•	•	•	TNT865
Sulfide	• Methylene Blue	8131	5 - 800 µg/L	•	•	•	•	•	2244500
Sulfite (Europe only)	Colorimetric		0.10 - 5.00 mg/L	•	•	•	•	•	—
Surfactants (See Detergents)				•	•	•	•	•	—
Suspended Solids	Photometric	8006	5 - 750 mg/L	•	•	•	•	•	—
Tannin & Lignin	Tyrosine	8193	0.1 - 9.0 mg/L	•	•	•	•	•	2244600
TKN (See Nitrogen, Simplified TKN and Nitrogen, Total Kjeldahl)				•	•	•	•	•	
TOC (Total Organic Carbon), LR	Direct Method	10129	0.3 - 20.0 mg/L	•	•	•	•	•	2760345
TOC (Total Organic Carbon), MR	Direct Method	10173	15 - 150 mg/L	•	•	•	•	•	2815945
TOC (Total Organic Carbon), HR	Direct Method	10128	100 - 700 mg/L	•	•	•	•	•	2760445
Tolytriazole	UV Photolysis	8079	1.0 - 20.0 mg/L	•	•	•	•	•	2141299
Toxicity	ToxTrak	10017	0 - 100 % inhibition	•	•	•	•	•	2597200
TPH in Soil <sup>1</sup>	Immunoassay	10050	2 - 20 ppm, threshold	•	•	•	•	•	2774300
TPH in Water	Immunoassay	10050	2 - 20 ppm, threshold	•	•	•	•	•	2774300
Trihalomethanes (THM)	THM Plus	10132	10 - 600 µg/L	•	•	•	•	•	2790800
Trihalomethane Formation Potential (THMFP)	THM Plus	10224	10 - 600 µg/L	•	•	•	•	•	2790800
Volatile Acids	Esterification	8196	27 - 2800 mg/L	•	•	•	•	•	2244700
Volatile Acids (TNTplus)	Esterification	10240	50 - 2500 mg/L	•	•	•	•	•	TNT872
Zinc	• Zincon	8009	0.01 - 3.00 mg/L	•	•	•	•	•	2429300

<sup>1</sup>Requires Soil Extraction Kit. Please order Prod. No. 2775100. (Included with Pocket Colorimeter II).



# DR 6000 UV-VIS SPECTROPHOTOMETER

## The industry's most advanced lab spectrophotometer.

- The Most Pre-Programmed Testing Methods Available
- Accessories for High Volume and High Accuracy Testing Needs
- Advanced Quality Assurance at Your Fingertips
- Guided Procedures and Elimination of False Readings
- Automatically Avoids Errors

# NEW!



SPECTROPHOTOMETERS

*With high speed wavelength scanning across the UV and Visible Spectrum, and over 250 pre-programmed testing methods, the DR 6000 is the industry's most advanced lab spectrophotometer. Add in guided step-by-step procedures and integrated quality assurance software, and it makes sure you are ready to handle your comprehensive water testing needs.*

Prod. No.	Description
LPV441.99.00012	DR 6000 UV VIS Spectrophotometer with RFID <sup>†</sup> Technology
LPV441.99.00002	DR 6000 UV VIS Spectrophotometer without RFID
	Includes: printed instrument manual, power cords (115V and 230V), universal holder, dust cover, 1-in. square matched glass sample cells, and a universal-adaptor
WRTUPGDR6000	DR 6000 Spectrophotometer WarrantyPlus™ Instrument Protection and Service

<sup>†</sup>Available only in US, Canada, Australia, New Zealand, Puerto Rico, Colombia, Bolivia, Chile, Panama, and Guatemala.



*Hach's TNTplus chemistries and spectrophotometers are made to work seamlessly with each other.*

**See next page for DR 6000 Accessories.**

### Specifications\*

<b>Operating Mode</b> Transmittance (%), absorbance and concentration (wavelength, time)	<b>Photometric Accuracy</b> 5 mAbs at 0.0-0.5 Abs <1% at 0.5-2.0 Abs at 546 nm	<b>Dimensions (H x W x D)</b> 8.5 in x 19.7 in x 18.1 in (215 mm x 500 mm x 460 mm)
<b>Source Lamp</b> Tungsten (visible range), deuterium (UV range)	<b>Photometric Linearity</b> 0.5 % - 2 Abs ≤ 1 % at > 2 Abs with neutral glass at 546 nm	<b>Weight</b> 24.25 lbs. (11 kg)
<b>Wavelength Range</b> 190 - 1100 nm	<b>Stray Light</b> KI-solution at 220 nm < 3.3 Abs/ < 0.05%	<b>Operating Conditions</b> 10 to 40 °C, max. 80% relative humidity (non-condensing)
<b>Wavelength Accuracy</b> ± 1 nm	<b>Display</b> TFT 7 inch WVGA color touch	<b>Storage Conditions</b> -25 to 60 °C max. 80% relative humidity (non-condensing)
<b>Wavelength Reproducibility</b> < 0.1 nm	<b>Data Logger</b> 5000 data points (result, date, time, sample-ID, user-ID)	<b>Enclosure Waterproof Rating</b> IP20 with closed lid
<b>Wavelength Resolution</b> 0.1 nm	<b>Preprogrammed Methods</b> > 250	<b>Interfaces</b> USB type A (2), USB type B, Ethernet, RFID module
<b>Wavelength Selection</b> Automatic, based on method selection	<b>User Programs</b> 200	<b>Warranty</b> 1 year
<b>Spectral Bandwidth</b> 2 nm	<b>Sample Cell Compatibility</b> Rectangular: 10, 20, 30, 50 mm, 1 inch; round: 13 mm, 16 mm, 1 inch Optional 100 mm rectangular cell with additional adapter	<i>*Subject to change without notice.</i>
<b>Photometric Measuring Range</b> ± 3 Abs		
<b>Scanning Speed</b> 900 nm/min (in 1 nm steps)		

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# DR 6000 UV-VIS SPECTROPHOTOMETER

Prod. No.	Description
<b>LQV157.99.20002</b>	DR 6000 SIP 10, sipper set for Pour-Thru methods, 1 inch vial  The External Sipper Module uses a peristaltic pump to aspirate samples into a flow cell (1 inch plastic cell included) for readings. After the reading is taken, the sample is either returned to the user or dumped to waste. The Sipper Module provides improved measurement precision and eliminates errors resulting from optical differences. The Sipper Module is used for Hach Rapid Liquid Methods.
<b>LQV157.99.30002</b>	DR 6000 SIP 10, sipper set for Pour-Thru methods, 1 cm quartz vial Same as LQV157.99.20002, but with 1 cm Pour-Thru Cell, quartz.
<b>LQV156.99.10002</b>	LOC 100: Kit for Radio Frequency ID (RFID) based sample tracking  Samples must be traceable in order to produce reliable, recognized results in the field of water analysis. This traceability can be guaranteed by consistently logging and documenting each link in the analysis chain, which is where RFID* (Radio Frequency Identification) comes into play. RFID is a key technology used to facilitate the identification of system modules. Each sample is assigned its unique RFID identifier and the relevant data at the time it is taken. The entire process is fully documented, which means it is permanently traceable. <small>*RFID technology only available US, Canada, Australia, New Zealand, Puerto Rico, and Colombia. Instrument requires DR 3900 w/ RFID</small>
<b>LZV902.99.00002</b>	Carousel Holder 7x1 cm The rotating Carousel Holder allows the user to load up to seven 1-cm cells into the instrument at one time.
<b>LZV902.99.00012</b>	Carousel Holder 5x1 inch The rotating Carousel Holder allows the user to load up to five 1-in. cells into the instrument at one time. It can be used to evaluate Hach Powder Pillow Tests.
<b>LZV887</b>	10 cm Cell Adapter
<b>LZV943</b>	Application Software Enzymatic Food Analysis  The additional software LZV943 is a compilation of enzymology tests manufactured by R-Biopharm AG, Darmstadt that can be performed with spectrophotometer DR 6000 and carousel insert LZV902.99.00002. The methods can be modified for individual settings.

Prod. No.	Description
<b>LZV942</b>	Application Software Brewery Analysis Software contains 12 brewery assays that conveniently upload to a DR 6000 via USB. Assays are based on published and observed brewing methods and include procedures for: Anthocyanogens, Iron, Steam volatile phenols, Bitter units, Photometric iodine, Thiobarbituric acid number (TAN), Free amino nitrogen, Reductones, Vicinal diketones.
<b>2960100</b>	Thermo Printer Includes printer, universal power supply, 115V North American power cord, RS-232 cable and gender adapter, USB cable, battery pack, one roll of thermal paper, and instruction manual. Compatible with 2100Q Portable Turbidimeters (USB+Power Module required), HQd Series Water Quality Meters, DR Spectrophotometers with USB interface, and the BODTrak II Apparatus.
<b>LZV582</b>	USB Keyboard
<b>LZV566</b>	USB Barcode Scanner
<b>LZV938</b>	Remote Operating Software Photometer
<b>LZV873</b>	Ethernet cable
<b>LZV537</b>	Test Filter Set
<b>LZV874</b>	Protective film for display
<b>LZV902.99.00020</b>	Multi-Cell Holder Multi-Cell Holder that can accommodate the following cuvette types: 10/20/30/50 mm rectangular cells, 1-in. Round cell/AccuVac Ampule, 1-in. square cell.
<b>A23778</b>	Tungsten (VIS) Lamp
<b>A23792</b>	Deuterium (UV) Lamp
<b>LZV915</b>	Filter Pad
<b>LZV886</b>	Dust Cover
<b>1801000</b>	Power Cord, UL listed
<b>A23772</b>	Replacement Fuse



SIP 10 Sipper Set for Pour-Thru Methods

# DR 3900 SPECTROPHOTOMETER

## Prevent measurement errors...simply.

- Guided Procedure
- Elimination of False Readings
- Hands Free Updates
- Flexible Connectivity
- Sample Tracking



SPECTROPHOTOMETERS

Prod. No.	Description
LPV440.99.00012	DR 3900 Spectrophotometer with RFID† Technology, 110 - 240V
LPV440.99.00002	DR 3900 Spectrophotometer without RFID Technology, 110 - 240V
	Instruments include: Adapter A for 1 in. round and 1 cm square cells, matched pair of 1 in. square glass sample cells, light shield, dust cover, printed basic user manual, and benchtop power supply with 115 and 230V power cords.
WRTUPGDR3900	DR 3900 Spectrophotometer WarrantyPlus™ Instrument Protection and Service

*The proven technology you have come to expect from Hach just got better. Built with the future of water analysis in mind, the DR 3900 will give consistently accurate results in a simpler testing format.*



*Hach's TNTplus chemistries and spectrophotometers are made to work seamlessly with each other.*

†Available only in US, Canada, Australia, New Zealand, Puerto Rico, Colombia, Bolivia, Chile, Panama, and Guatemala

**See next page for DR 3900 Accessories.**

### Specifications\*

<b>Optical System</b> Reference beam, spectral	<b>Photometric Linearity</b> < 0.5 % to 2 Abs ≤ 1 % at > 2 Abs with neutral glass at 546 nm	<b>Power Requirements</b> Desk power supply, 110 - 240 V; 50/60 Hz
<b>Operating Mode</b> Transmittance (%), Absorbance and Concentration, Scanning (wavelength, time)	<b>Stray Light</b> < 0.1 % T at 340 nm with NaNO <sub>2</sub>	<b>Interfaces</b> USB type A (2), USB type B, Ethernet, RFID module
<b>Source Lamp</b> Gas-filled Tungsten (visible)	<b>User Programs</b> 100	<b>Meter Enclosure Rating</b> IP30
<b>Wavelength Range</b> 320 to 1100 nm	<b>Data Storage</b> 2000 measured values (Result, Date, Time, Sample ID, User ID)	<b>Dimensions (H x W x D)</b> 151 mm x 350 mm x 255 mm 5.94 in x 13.78 in x 10.04 in
<b>Wavelength Accuracy</b> ± 1.5 nm (wavelength range 340 to 900 nm)	<b>Sample Cell Compatibility</b> 13 mm round, 16 mm round, 1 cm & 5 cm rectangular, 1" round, 1" rectangular	<b>Weight</b> 4200 g 9.26 lbs
<b>Wavelength Resolution</b> 1 nm	<b>Operating Conditions</b> 10 to 40 °C	
<b>Wavelength Selection</b> Automatic	<b>Storage Conditions</b> -30 to 60 °C Max 80 % humidity (non-condensing)	
<b>Wavelength Calibration</b> Automatic, based on method selection	<b>User Interface Languages</b> Bulgarian, Chinese, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Polish, Portuguese - Brazilian, Portuguese, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish	
<b>Scanning Speed</b> ≥ 8 nm/S (in steps of 1 nm)		
<b>Spectral Bandwidth</b> 5 nm		
<b>Photometric Measuring Range</b> ± 3.0 Abs (wavelength range 340 to 900 nm)		
<b>Photometric Accuracy</b> 5 mAbs at 0.0 to 0.5 Abs 1 % at 0.50 to 2.0 Abs		

*\*Subject to change without notice.*

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# DR 3900 SPECTROPHOTOMETER

Prod. No.	Description
<b>LQV156.99.10002</b>	<p>Kit for Radio Frequency ID (RFID*) based sample tracking</p> <p>Samples must be traceable in order to produce reliable, recognized results in the field of water analysis. This traceability can be guaranteed by consistently logging and documenting each link in the analysis chain, which is where RFID (Radio Frequency Identification) comes into play. RFID is a key technology used to facilitate the identification of system modules. Each sample is assigned its unique RFID identifier and the relevant data at the time it is taken. The entire process is fully documented, which means it is permanently traceable.</p> <p><small>*RFID technology only available US, Canada, Australia, New Zealand, Puerto Rico, and Colombia. Instrument requires DR 3900 w/ RFID</small></p>
<b>2960100</b>	<p>Printer</p> <p>Includes printer, universal power supply, 115V North American power cord, RS-232 cable and gender adapter, USB cable, battery pack, one roll of thermal paper, and instruction manual. Compatible with 2100Q Portable Turbidimeters (USB+Power Module required), HQd Series Water Quality Meters, DR Spectrophotometers with USB interface, and the BODTrak II Apparatus.</p>
<b>LZV537</b>	<p>Test Filter Set</p> <p>Consists of filters for checking absorbance accuracy, stray light, and wavelength accuracy. Designed for use with the standard 10 mm cell holder. The set is supplied in a sturdy wooden case. For identification purposes, the filter name, set number and part number are printed on each filter mount. The absorbance values and/or peak position wavelengths of each filter are quoted in the accompanying calibration certificate.</p>



*Kit for Radio Frequency ID (RFID) based sample tracking*

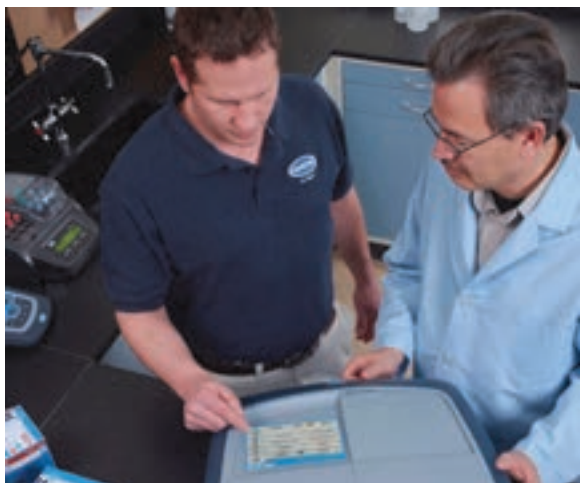
Prod. No.	Description
<b>LQV157.99.10002</b>	SIP 10 Sipper Kit for DR 3900 Spectrophotometer
<b>LZV566</b>	USB Barcode Scanner For fast entry of sample IDs
<b>LZV567</b>	USB Extension Cable Allows easy access to the USB port.
<b>2946900</b>	256 MB USB Flash Drive
<b>LZV582</b>	USB Keyboard
<b>DR-USB</b>	USB Software Update USB stick includes current software for DR 2700, DR 2800, DR 3800, DR 3900 and DR 5000 Spectrophotometers.
<b>LZV873</b>	Ethernet cable
<b>LZV874</b>	Protective film for display
<b>LZV565</b>	Replacement Tungsten Lamp
<b>LZV846</b>	Cell Adapter A for 1 cm square and 1 inch round cells
<b>LZV849</b>	Light Shield, required for use with TNT and TNTplus vials.
<b>LZV848</b>	Replacement cell compartment
<b>LZV844</b>	Replacement Power Supply for DR 3900 Spectrophotometer without cord.
<b>1801000</b>	Power Cord, UL listed
<b>LZV845</b>	Dust Cover



*SIP 10 Sipper Kit with tubing and dual-path length cell*



## Benefits of TNTplus



Easy and safe Dosi-Cap Zip—freeze-dried reagent integrated into sealed cap

Narrow neck minimizes chance for reagent spills

Optically superior glassware

Vials are color-coded by parameter and range for easy recognition and error elimination

Barcode makes testing hands-free and fast—instrument automatically detects and runs the correct method

Flat bottom—improves handling, vial stands on its own



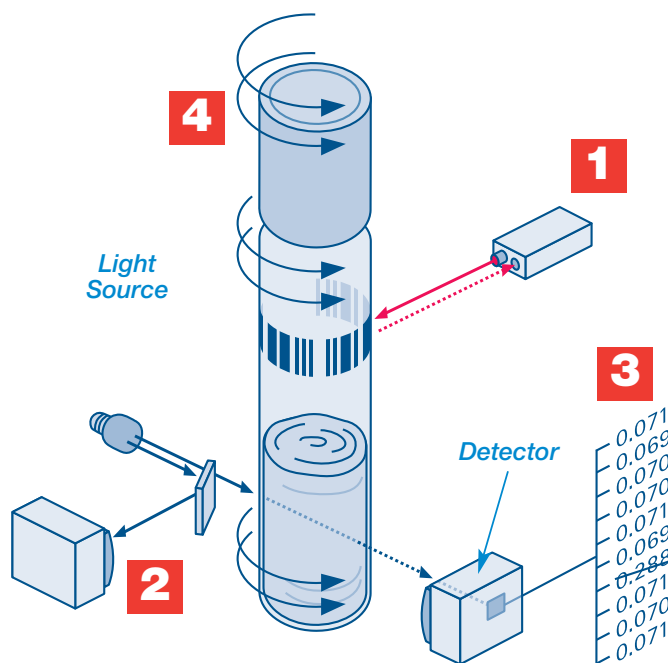
TNTplus vials work exclusively with the DR 6000, DR 3900, and DR 1900 Spectrophotometers.

See our TNTplus video at: [hach.com/tntplus](http://hach.com/tntplus)

## How TNTplus Works

- 1 Barcode Recognition**  
Simply drop in the vial and get results immediately with automatic method detection. Barcode includes lot number and shelf life information for improved traceability.
- 2 Reference Detector**  
Monitors and compensates for optical fluctuations.
- 3 10X Measurement and Outlier Elimination**  
Dirty, scratched, or flawed glassware, including fingerprints, is no longer an issue—instrument averages 10 readings and rejects outliers.
- 4 Self-Contained Packaging—Reagents Inside Sealed Cap**  
Reduces exposure to chemicals—no need to open pillows or clean glassware.
- 5 RFID Tags**  
Each TNTplus box contains an RFID tag with an embedded Certificate of Analysis, which can be read using the DR 6000 or DR 3900 instrument.

See next page for ordering information.



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U.S. customers only.



## Bar-coded vials provide automatic method detection.

- Bar-coded vials - instrument automatically identifies test parameter, range and method
- New Vial Design with optically superior glassware, color-coded caps and flat bottom
- Dosi-cap Zip reagent delivery provides ease of use and eliminates chemical handling
- Color coded packaging, pictograms, and detailed instructions simplify testing

- No blank necessary
- Many tests are EPA compliant - see table below

When used with the DR 6000 or DR 3900 spectrophotometers, users will receive a notification if the shelf life of a TNTplus chemistry has expired. RFID tags on each TNTplus box contains the lot specific Certificate of Analysis which can be read with the DR 6000 or DR 3900 instrument.

Description	Ranges	Instrument	EPA Compliant <sup>1</sup>	Digestion Required	# Tests	Prod. No.
Alkalinity, Total TNTplus	25 to 400 mg/L CaCO <sub>3</sub>	DR 6000, 3900, 1900			25	TNT870
Aluminum TNTplus	0.02 to 0.50 mg/L Al	DR 6000, 3900, 1900			24	TNT848
Ammonia TNTplus, ULR	0.015 to 2.00 mg/L NH <sub>3</sub> -N	DR 6000, 3900, 1900	WW		25	TNT830
Ammonia TNTplus, LR	1 to 12 mg/L NH <sub>3</sub> -N	DR 6000, 3900, 1900	WW		25	TNT831
Ammonia TNTplus, HR	2 to 47 mg/L NH <sub>3</sub> -N	DR 6000, 3900, 1900	WW		25	TNT832
Cadmium TNTplus**	0.02 to 0.30 mg/L Cd	DR 6000, 3900, 1900			25	TNT852
Chlorine, Free TNTplus	0.05 to 2.00 mg/L Cl <sub>2</sub>	DR 6000, 3900, 1900			24	TNT866
Chlorine, Free & Total TNTplus	0.05 to 2.00 mg/L Cl <sub>2</sub>	DR 6000, 3900, 1900	WW		39	TNT866T
Chromium, Hexavalent and Total TNTplus	0.03 to 1.00 mg/L Cr	DR 6000, 3900, 1900	WW <sup>‡</sup>	Yes for Total***	25	TNT854
COD TNTplus, ULR	1 to 60 mg/L COD	DR 6000, 3900, 1900		Yes	24	TNT820
COD TNTplus, LR	3 to 150 mg/L COD	DR 6000, 3900, 1900	WW	Yes	25	TNT821
COD TNTplus, LR	3 to 150 mg/L COD	DR 6000, 3900, 1900	WW	Yes	150	TNT82106
COD TNTplus, HR	20 to 1500 mg/L COD	DR 6000, 3900, 1900	WW	Yes	25	TNT822
COD TNTplus, HR	20 to 1500 mg/L COD	DR 6000, 3900, 1900	WW	Yes	150	TNT82206
COD TNTplus, UHR	250 to 15000 mg/L COD	DR 6000, 3900, 1900		Yes	25	TNT823
COD, Mercury-Free, TNTplus, HR	25 to 1000 mg/L COD	DR 6000, 3900, 1900		Yes	25	TNT825
Copper TNTplus*	0.1 to 8.0 mg/L Cu	DR 6000, 3900, 1900			25	TNT860
Iron TNTplus*	0.2 to 6.0 mg/L Fe	DR 6000, 3900, 1900	WW		25	TNT858
Lead TNTplus*	0.1 to 2.0 mg/L Pb	DR 6000, 3900, 1900			25	TNT850
Nickel TNTplus*	0.1 to 6.0 mg/L Ni	DR 6000, 3900, 1900			25	TNT856
Nitrate, Nitrogen TNTplus, LR	0.23 to 13.50 mg/L NO <sub>3</sub> -N	DR 6000, 3900, 1900	DW		25	TNT835
Nitrate, Nitrogen TNTplus, HR	5 to 35 mg/L NO <sub>3</sub> -N	DR 6000, 3900, 1900	DW		25	TNT836
Nitrite TNTplus, LR	0.015 to 0.600 mg/L NO <sub>2</sub> <sup>-</sup> -N	DR 6000, 3900, 1900	WW		25	TNT839
Nitrite TNTplus, HR	0.6 to 6.0 mg/L NO <sub>2</sub> <sup>-</sup> -N	DR 6000, 3900, 1900			25	TNT840
Nitrogen, Total TNTplus, LR	1 to 16 mg/L N	DR 6000, 3900, 1900		Yes**	25	TNT826
Nitrogen, Total TNTplus, HR	5 to 40 mg/L N	DR 6000, 3900, 1900		Yes**	25	TNT827
Nitrogen, Total TNTplus, UHR	20 to 100 mg/L N	DR 6000, 3900, 1900		Yes**	25	TNT828
Nitrogen, Simplified TKN (s-TKN™) TNTplus	0 to 16 mg/L N	DR 6000, 3900, 1900		Yes**	25	TNT880
Phosphorus, Reactive TNTplus	1.6 to 30 mg/L P (5 - 90 mg/L PO <sub>4</sub> )	DR 6000, 3900, 1900			25	TNT846
Phosphorus, Reactive and Total TNTplus, LR	0.05 to 1.5 mg/L P (0.15 - 4.5 mg/L PO <sub>4</sub> )	DR 6000, 3900, 1900	WW	Yes for Total***	25	TNT843
Phosphorus, Reactive and Total TNTplus, HR	0.5 to 5.0 mg/L P (1.5 - 15.0 mg/L PO <sub>4</sub> )	DR 6000, 3900, 1900	WW	Yes for Total***	25	TNT844
Phosphorus, Reactive and Total TNTplus, UHR	2 to 20 mg/L P (6 - 60 mg/L PO <sub>4</sub> )	DR 6000, 3900, 1900	WW	Yes for Total***	25	TNT845
Sulfate, TNTplus, LR	40 to 50 mg/L SO <sub>4</sub>	DR 6000, 3900, 1900			25	TNT864
Sulfate TNTplus, HR	150 to 900 mg/L SO <sub>4</sub>	DR 6000, 3900, 1900			25	TNT865
Total Organic Carbon (TOC) Reagent Set, LR TNTplus	1.5 - 30.0 mg/L C	DR 6000, 3900, 1900		Yes	25	TNT810
Total Organic Carbon (TOC) Reagent Set, HR TNTplus	30 - 300 mg/L C	DR 6000, 3900, 1900		Yes	25	TNT811
Volatile Acids, TNTplus	50 to 2,500 mg/L Acetic Acid	DR 6000, 3900, 1900		Yes***	25	TNT872
Nutrients Basic Reagent Set, TNTplus-includes 25 tests of each of the following: • Nitrogen, Total, LR • Phosphorus, Total and Reactive (ortho), LR		DR 6000, 3900, 1900				2925000
Nutrients Advanced Reagent Set, TNTplus-includes 25 test of each of the following: • Nitrogen, Total, LR • Nitrogen, Ammonia, LR • Nitrogen, Nitrate, LR • Nitrogen, Nitrite, LR • Phosphorus, Total and Reactive (ortho), LR		DR 6000, 3900, 1900				2925100

\*As listed, test determines soluble metal. Order Metals Prep Set TNT890 to determine total metal.

<sup>†</sup>Optional sample preparation: TNT 892 calcium preparation set for calcium removal.

<sup>‡</sup>EPA compliant for C<sub>6</sub><sup>6+</sup> only.

\*\*DRB200 Reactor with 20 mm wells required.

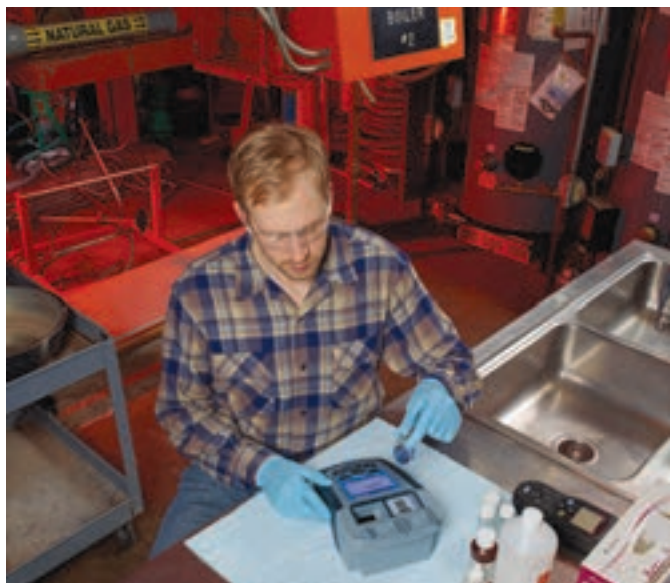
\*\*\*Requires Digestion. Use DRB200 Reactor with 13 mm vial wells or use TNTplus Adaptor Sleeves 16 mm to 13 mm (Prod. No. 2895805) to convert from a 16 mm reactor vial well to 13 mm vial well.

\*\*\*\*Requires TOC-X5 Shaker (LQV148.99.00002), for removal of inorganic carbon.

# DR 1900 PORTABLE SPECTROPHOTOMETER

Carry more water methods with you wherever you need them most.

- Carry Anywhere
- Test What You Need
- Ensure Accuracy In The Field
- Make Testing Easier
- Take Into Field Environments



*The DR 1900 is the lightest and most compact portable spectrophotometer. Even in dusty or wet conditions, testing is easy with the highest number of preprogrammed methods and an easy-to-use interface.*

**NEW!**



SPECTROPHOTOMETERS

*The DR 1900 combines the ruggedness and portability of a field instrument with more than 220 of the most commonly tested water methods.*

Prod. No.	Description
DR1900-01H	DR 1900 Portable Spectrophotometer Includes: basic printed instrument manual, dust cover, 1-in. square matched glass sample cells, AA alkaline batteries 4/pk, and a four-type adapter set.

## Specifications\*

### Operating Mode

Transmittance (%), Absorbance and Concentration

### Source Lamp

Xenon Flash

### Wavelength Range

340 to 800 nm

### Wavelength Accuracy

± 2 nm (range 340 - 800nm)

### Wavelength Selection

Automatic

### Reproducibility

± 0.005 Abs (0 - 1 A)

### Spectral bandwidth

5 nm

### Photometric Measuring Range

0 to 3 Abs (wavelength range 340 - 800 nm)

### Photometric Accuracy

± 0.003 Abs @ 0.0 - 0.5 Abs

### Photometric Linearity

< 0.5 % (0.5 - 2.0 Abs)

### Stray Light

< 0.1 %T at 340 nm with NaNO<sub>2</sub>

### Display

Graphical display 240 x 160 pixel (LCD, b/w, backlight)

### Data Logger

500 measured values (Result, Date, Time, Sample ID, User ID acc. to GLP)

### User Programs

50

### Sample Cell Compatibility

Rectangular: 1 inch; 10mm  
Round: 1 inch; 13mm; 16mm

### Dimensions (H x W x D)

3.9 in x 7 in x 10.5 in  
(98 mm x 178 mm x 267 mm)

### Weight

3.31 lbs. (1.5 kg)

### Operating Conditions

10 to 40 °C (50 - 104 °F), max. 80 % relative humidity (non-condensing)

### Storage Conditions

-30 to 60 °C (-30 - 140 °F), max. 80 % relative humidity (non-condensing)

### Enclosure Rating

IP67 (submerge 1m for 30 min)

*\*Subject to change without notice.*

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# DR 900 COLORIMETER

SPECTROPHOTOMETERS



# NEW!

## Fastest and simplest water testing for the most demanding field environments.

### Your Favorites, at Your Fingertips

Save time by storing your most standard methods for quick access in less than 4 clicks.



### Field Ready in Every Way Possible

Handheld rugged colorimeter that is waterproof and dustproof. Drop tested and shock resistant for greater quality assurance.

### Intuitive User Interface

An improved user interface allows for quick selections and ease of testing.

### Simple Data Communication

Stores data for up to 500 tests, and comes with a USB port for easy downloading or transferring of information.

### Satisfies Your Core Testing Needs

A single handheld instrument for 90 of the most common parameters.



Prod. No.	Description
9385100	DR 900 Handheld Colorimeter

### Specifications\*

<b>Wavelengths</b>	4 Fixed wavelengths 420, 520, 560, 610 nm
<b>Wavelength Accuracy</b>	±1 nm
<b>Spectral Bandwidth</b>	10 nm nominal
<b>Operating Temperature Range</b>	10 to 40°C (50 to 104°F) (requires sample sequencing kit)

*\*Subject to change without notice.*



## Portable, rugged, waterproof analysis.

- Measures one or two parameters
- Waterproof, IP67 rated
- Logs last 10 data points with measurement time
- Rugged
- Backlit display
- Easier than ever to use



*Rugged, portable, and convenient!*

**See next page for ordering information.**



*Each model comes as a test kit (shown above) with required sample cells, reagents, batteries and manual.*

### Specifications\*

**Wavelength Accuracy**  
Fixed wavelength,  $\pm 2$  nm (varies with model)

**Lamp Type**  
Light Emitting Diode (LED)

**Filter Bandwidth**  
15 nm

**Absorbance**  
0 to 2.5 Abs

**Operating Conditions**  
0 to 50 °C ; 0 to 90 % relative humidity

**Sample Cell Pathlength**  
1 cm and 25 mm

**Sample Cell Compatibility**  
Round: 1 inch; 10mm

**Display**  
LCD, backlit

**Enclosure Rating (IP)**  
IP 67 (submerge 1m for 30 min, excluding battery compartment)

**Power supply (batteries)**  
4 AAA batteries, approximate life of 2000 tests (use of backlight reduces this number)

**Compliance**  
European CE mark

**Warranty**  
2 years

**Dimensions (H x W X D)**  
3.5 cm x 6.1 cm x 15.5 cm  
1.4 in x 2.5 in x 6.2 in

**Weight**  
0.23 kg  
0.5 lbs

*\*Subject to change without notice.*

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*U.S. customers only.*



# POCKET COLORIMETER™ II

## How To Order Pocket Colorimeter™ II Standard Models

Each model comes as a test kit with required sample cells, reagents, batteries and manual.  
(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

COLORIMETERS

Description	Method	Range	# of Tests	Prod. No.
<b>Alachlor</b>	Immunoassay	0.1, 0.5 ppb thresholds	18	<b>2812900</b>
<b>Aluminum</b>	Aluminon	0.02-0.80 mg/L Al	100	<b>5870025</b>
<b>Ammonia</b>	Salicylate	0.01-0.80 mg/L NH <sub>3</sub> -N	100	<b>5870040</b>
<b>Ammonia, Free</b> (also tests for Monochloramine)	Indophenol	0.02-0.50 mg/L NH <sub>3</sub> -N/ 0.04-4.50 mg/L Cl <sub>2</sub>	50-100	<b>5870026</b>
<b>Atrazine</b>	Immunoassay	0.1, 0.5, 3.0 ppb thresholds	18	<b>2763500</b>
<b>Bromine</b>	DPD	0.05-4.50/0.2-10.0 mg/L Br <sub>2</sub>	50-100	<b>5870001</b>
<b>Chloramine, Mono</b> (also tests for Free Ammonia)	Indophenol	0.02-0.50 mg/L NH <sub>3</sub> -N/ 0.04-4.50 mg/L Cl <sub>2</sub>	50-100	<b>5870026</b>
<b>Chlorine, F* &amp; T* **</b>	DPD	0.02-2.00/0.1-8.0 mg/L Cl <sub>2</sub>	50-100	<b>5870000</b>
<b>Chlorine, F* &amp; T* **, MR/HR</b>	DPD	0.05-4.00/0.1-10.0 mg/L Cl <sub>2</sub>	200†	<b>5870062</b>
<b>Chlorine, F &amp; T &amp; pH</b>	DPD/Phenol Red	0.1-10.0 mg/L Cl <sub>2</sub> /6.0-8.5 pH†	100	<b>5870012</b>
<b>Chlorine, SwifTest Dispenser</b> <b>Free Chlorine*</b>	DPD	0.02-2.00/0.1-8.0 mg/L Cl <sub>2</sub>	125-250	<b>5870023</b>
<b>Chlorine, SwifTest Dispenser</b> <b>Total Chlorine**</b>	DPD	0.02-2.00/0.1-8.0 mg/L Cl <sub>2</sub>	125-250	<b>5870024</b>
<b>Chlorine Dioxide*</b>	DPD/Glycine	0.05-5.00 mg/L Cl <sub>2</sub>	100	<b>5870051</b>
<b>Chromium, Hexavalent**</b>	1,5 Diphenylcarbohydrazide	0.01-0.70 mg/L Cr <sup>6+</sup>	100	<b>5870017</b>
<b>Copper**</b>	Bicinchoninate	0.04-5.00 mg/L Cu	100	<b>5870019</b>
<b>Dissolved Oxygen</b>	HRDO	0.2-10.0 mg/L O <sub>2</sub>	25	<b>5870003</b>
	SPADNS	0.1-2.0 mg/L†† F-	25-50	<b>5870005</b>
<b>Fluoride* **</b>	SPADNS2 (Arsenic-Free)	0.1-2.0 mg/L†† F-	25-50	<b>2513100</b>
<b>Iron, FerroVer®*</b>	FerroVer®	0.02-5.00 mg/L Fe	100	<b>5870022</b>
<b>Iron, TPTZ</b>	TPTZ	0.01-1.70 mg/L Fe	100	<b>5870016</b>
<b>Lead</b>	LeadTrak™ Fast Column Extraction	5-150 µg/L Pb	20	<b>5870021</b>
<b>Manganese, HR**</b>	Periodate Oxidation	0.2-20.0 mg/L Mn	100	<b>5870015</b>
<b>Manganese, LR</b>	PAN	0.01 - 0.70 mg/L Mn	50	<b>5870018</b>
<b>Molybdate</b>	Ternary Complex	0.02-3.00/0.1-12.0 mg/L Mo <sup>6+</sup>	100	<b>5870010</b>
<b>Cobalt and Nickel</b>	PAN	0.01-1.00 mg/L Ni/ 0.02-2.00 mg/L Co	100	<b>5870020</b>
<b>Nitrate</b>	Cadmium Reduction	0.4-30.0 mg/L NO <sub>3</sub> -N	100	<b>5870002</b>
<b>Ozone</b>	Indigo Trisulfonate	0.01-0.25/0.01-0.75 mg/L O <sub>3</sub>	25-50	<b>5870004</b>
<b>PCB in Soil</b>	Immunoassay	1, 5, 10, 50 ppm thresholds	18	<b>2773400</b>
<b>Phosphate* **</b>	PhosVer® 3	0.02-3.00 mg/L PO <sub>4</sub>	100	<b>5870006</b>
<b>Phosphonate</b>	Persulfate UV Oxidation	0.1-2.5/1-125 mg/L PO <sub>4</sub>	100	<b>5870007</b>
<b>Silica</b>	Silicomolybdate	1-100 mg/L SiO <sub>2</sub>	100	<b>5870034</b>
<b>Sulfate**</b>	Turbidimetric	2-70 mg/L SO <sub>4</sub>	100	<b>5870029</b>
<b>TPH in Soil</b>	Immunoassay	20, 50, 100, 200 ppm thresholds	18	<b>2775000</b>
<b>TPH in Water</b>	Immunoassay	2, 5, 10, 20 ppm thresholds	18	<b>2774200</b>
<b>Zinc**</b>	Zincon	0.02-3.00 mg/L Zn	100	<b>5870009</b>

\*Method is EPA compliant for drinking water (additional sample preparation steps may be required).

\*\*Method is EPA compliant for wastewater (additional sample preparation steps may be required).

† Colorimetric pH is not approved for regulatory reporting.

†† Greater sensitivity (0.01 mg/L) is achieved by substituting bottled SPADNS reagent solution for the AccuVac® ampules provided in the kit.

‡ Equal number of tests each of Total and Free Chlorine.

## How To Order Pocket Colorimeter™ II Generic Versions

Single-wavelength (generic) Pocket Colorimeter™ II Instruments measure absorbance at fixed wavelength. Create and store one or two calibrations for use in your application.

Prod. No.	Description
<b>5870042</b>	Light Wavelength 420 nm
<b>5870045</b>	Light Wavelength 450 nm
<b>5870050</b>	Light Wavelength 500 nm
<b>5870052</b>	Light Wavelength 528 nm
<b>5870055</b>	Light Wavelength 550 nm
<b>5870058</b>	Light Wavelength 580 nm
<b>5870060</b>	Light Wavelength 600 nm
<b>5870065</b>	Light Wavelength 655 nm

### Accessories

**5953100** Pocket Colorimeter™ II Soft-Sided Case/Holster

### Prod. No. Description

#### SPEC✓ Secondary Standards

<b>2507500</b>	SpecCheck Secondary Gel Standards Set, Monochloramine & Free Ammonia.
<b>2635300</b>	Spec✓ Secondary Gel Standards Set, DPD Chlorine - LR
<b>2893300</b>	Spec✓ Secondary Gel Standards Set, DPD Chlorine - HR
<b>2708000</b>	Spec✓ Gel Secondary Standard Set, Ozone, MR
<b>2712500</b>	Spec✓ Gel Secondary Standard Set, Fluoride







**2100Q Portable  
Turbidimeter...  
unsurpassed  
ease of use and  
accuracy!**



*Be Right™*

# 2100 SERIES LABORATORY TURBIDIMETER



**Enhanced performance for the demanding user.**

**EPA  
COMPLIANT**

**Color Measurement (2100AN only)**

Interchangeable color filters allow APHA Platinum Cobalt color measurement.

**Easy Calibration**

Display prompts the analyst for each standard and automatically adjusts the curve as needed.

**Ratio and Non-Ratio Measurement Modes**

Ratio measurement (1) corrects for color interference, (2) enhances long-term calibration stability, and (3) allows the measurement of turbidity at levels greater than 1,000 NTU. With ratio toggled off, turbidity is measured using only the single 90-degree detector.



	<b>2100AN Turbidimeter</b>	<b>2100N Turbidimeter</b>
<b>Applications</b>	Monitoring and regulatory reporting of turbidity in drinking water, wastewater, and process water. Monitoring and quality control of chemicals and pharmaceuticals, highly colored samples and samples with high turbidity. Flow Cell accessories allow automatic or semiautomatic operation.	Monitoring and regulatory reporting of turbidity in drinking water, wastewater, and process water. Flow Cell accessories allow automatic or semiautomatic operation.
<b>Principle of Operation</b>	Nephelometric Ratio Selectable on or off	
<b>Measurement Modes</b>	Select NTU, EBC, Nephelo, ABS, %T, or CU	Select NTU, EBC or Nephelo
<b>Ranges</b>		
NTU Mode	RATIO ON: Manual 0-0.999, 0-9.99, 0-99.9, 0-10,000; Auto 0-10,000 auto decimal RATIO OFF: 0-40.0	RATIO ON: Manual 0-0.999, 0-9.99, 0-99.9, 0-4000; Auto 0-4000 auto decimal RATIO OFF: 0-40.0
Absorbance	Manual: 0 to 0.999 ABS, 0 to 2.00 ABS; Auto: 0 to 2.00 ABS	—
Transmittance	Range: 1.0 to 100 %T; Resolution: 0.1 %T	—
Color (at 455 nm)	Range: 0 to 500 CU; Resolution: 1 CU	—
<b>Accuracy*</b>		
Turbidity	± 2% of reading plus 0.01 NTU from 0 to 1000 NTU ± 5% of reading from 1000 to 4000 NTU ± 10% of reading from 4000 to 10,000 NTU	± 2% of reading plus 0.01 NTU from 0 to 1000 NTU ± 5% of reading from 1000 to 4000 NTU
Color Measurements†	± 2 CU from 0-30 (calibrated at 15 CU) ± 5 CU from 0-500 (calibrated at 500 CU)	—
ABS (Photometric Linearity)†	± 0.005 ABS from 0-1 ABS at 455 nm	—
%T (Photometric Linearity)†	± 0.12%T from 10 to 100 %T at 455 nm	—
<b>Resolution</b>	0.001 on lowest range	
<b>Light Source</b>	2100N and 2100AN: Tungsten lamp 2100N IS and 2100AN IS: Infrared light emitting diode (LED) 860 ±30nm	
<b>Sample Cells</b>	Six, 95-mm x 25-mm (3.74" x 1")	
<b>Built-in Printer</b>	Built-in 28 column thermal printer	—
<b>Serial Input/Output</b>	RS232 serial interface (bidirectional)	
<b>Warranty</b>	2 Years	

\* Reference conditions: 23 ±2°C, 50% Relative Humidity ±10% Relative Humidity Noncondensing, 115/230 Vac, 50/60 Hz.

† Flow cell required to achieve cited specifications.

# 2100 SERIES LABORATORY TURBIDIMETER

## 2100 Series Laboratory Turbidimeters

Each instrument is supplied with six sample cells, a complete set of StablCal® Primary Calibration Standards in sealed vials, silicone oil and oiling cloth, dust cover, instrument and operations manuals, and a power cord. Model 2100AN also includes a 455 nm filter for Pt-Co color measurement. Models 2100AN and AN IS also include printer paper.

*IMPORTANT: for EPA reporting purposes, order 2100N or 2100AN models only. The IS versions are not EPA compliant.*

### Prod. No. Description

#### EPA-Compliant

- 4700000** 2100N Laboratory Turbidimeter  
110/220 Vac, with a North American power cord and a fuse.
- 4700100** 2100AN Laboratory Turbidimeter  
110/220 Vac, with a North American power cord and a fuse.

#### ISO-Compliant

- 4790000** 2100N IS Laboratory Turbidimeter  
with a North American power cord.
- 4790100** 2100AN IS Laboratory Turbidimeter  
with a North American power cord.

#### Accessories

- 4744900** Kit, Manual Flow Cell
- 4745000** Kit, Automated Flow Cell, 115 Vac
- 4745002** Kit, Automated Flow Cell, 230 Vac
- 4397500** Kit, Sample Degassing
- 4397510** Kit, Sample Filtration & Degassing
- 2489500** Branson Ultrasonic Bath for cleaning cells
- 3036300** Color Filter Module for 410 nm wavelength
- 1999800** Color Filter Module for 455 nm wavelength (included with 2100AN)
- 3031200** Color Filter Module for EPA compliance (included with 2100N and 2100AN)
- 3036700** Color Filter Module for 500 nm wavelength
- 3037100** Color Filter Module for 560 nm wavelength
- 3037300** Color Filter Module for 610 nm wavelength
- 3037600** Color Filter Module for 810 nm wavelength
- 1999900** Color Filter Module for 860 nm wavelength
- 3033400** Cell Adapter for 12 and 13 mm vials
- 2662105** StablCal Set for 2100N/N IS
- 2659505** StablCal Set for 2100AN/AN IS
- 2589000** Gelex Secondary Standard Set for 2100N/N IS
- 2589200** Gelex Secondary Standard Set for 2100AN/AN IS
- 2084900** Sample Cells, 1" round glass, 30 mL with cap, qty/6
- 4707600** Polishing Cloth
- 126936** Silicone Oil
- 4708900** Lamp Replacement Kit for 2100N and 2100AN

*For calibration and verification standards, see page 98.  
For sample cells, see page 104.*



*Hach Flow Cells eliminate the time-consuming task of matching sample cells. Additional Color Filter Modules for the 2100AN Turbidimeter provide a variety of color measurement methods for specialized applications. Sample preparation tools include a sample degassing kit and a sample filtration and degassing kit.*

#### Hach WarrantyPlus Instrument Protection Service

- | Prod. No.           | Description   |
|---------------------|---|
| <b>WRTUPG2100AN</b> | 2100AN Lab Turbidimeter WarrantyPlus™ Instrument Protection and Support |
| <b>WRTUPG2100N</b>  | 2100N Lab Turbidimeter WarrantyPlus™ Instrument Protection and Support  |

*For more information, call to request LIT2498.*

**Find it here... Buy it today on hach.com**

*U.S. customers only.*



# 2100Q PORTABLE TURBIDIMETER

**EPA  
COMPLIANT**



## Easiest calibration & verification with accurate results every time!

### Easy On-Screen Assisted Calibration and Verification

Save time and get accurate results with an easy-to-follow interface that eliminates the need for complicated manuals to perform routine calibrations. Single-standard RapidCal™ calibration offers a simplified solution for low-level measurement, while ensuring you meet reporting requirements.

### Simple Data Transfer

Customizable power and connectivity modules enable smooth data transfer and flexibility. Optional USB+Power Module allows data download to any computer via USB port.

### Accuracy for Rapidly Settling Samples

The innovative Rapidly Settling Turbidity™ mode provides accurate measurements for difficult-to-measure, rapidly settling samples. An exclusive algorithm that calculates turbidity based on a series of automatic readings eliminates redundant measurements and estimating.

### Convenient Data Logging

Up to 500 measurements are automatically stored for easy access and backup, including: date and time, operator ID, reading mode, sample ID, sample number, units, calibration time, calibration status, error messages, and the result.

The 2100Q Portable Turbidimeter offers a unique combination of advanced features, such as easy calibration and simplified data transfer, and measurement innovation for rapidly settling samples, giving you confidence you're getting accurate results every time.

Features	Previous 2100P Turbidimeter	2100Q Turbidimeter
On-screen, assisted operation		✓
Single Step Calibration Function		✓
RapidCal™ Single Standard Calibration		✓
Rapidly Settling Turbidity™ Feature for improved accuracy and precision with rapidly settling samples		✓
Data log		✓
Data Transfer without special software		✓
Two-detector Optical System	✓	✓
Range: 0-1000 NTU	✓	✓
Resolution: 0.01 on lowest range	✓	✓

## Customize Power and Connectivity with Flexible Modules

### Power Module (LZV804)

- Allows the 2100Q and 2100Qis to operate on line power (includes universal power adapter).

### USB+Power Module (LZV813)

- Allows linepower: 110-230 Vac, 50/60 Hz
- Charges NiMH batteries
- Transfers data to Citizen PD-24 printer
- Transfers data to computer without additional software (stored in module in XML format)
- Enables firmware updates
- Allows simple entry of Sample and User IDs with optional barcode scanner



For more information, visit: [hach.com/2100Q](http://hach.com/2100Q)



# 2100Q PORTABLE TURBIDIMETER

## Specifications\*

### Measurement Method

Ratio turbidimetric determination using a primary nephelometric light scatter signal (90°) and transmitted light scatter signal.

### Regulatory

2100Q: Meets EPA Method 180.1  
2100Qis: Meets ISO 7027

### Range

0 - 1000 NTU (FNU)

### Light Source

2100Q: Tungsten filament lamp  
2100Qis: LED at 860 nm

### Accuracy

± 2 % of reading plus stray light

### Repeatability

± 1 % of reading, or 0.01 NTU (FNU), whichever is greater

### Signal Averaging

Selectable on/off

### Resolution

0.01 NTU (FNU) on lowest range

### Stray Light

< 0.02 NTU (FNU)

### Reading Mode (User-Selectable)

Normal (Push to Read)

Signal Averaging

Rapidly Setting Turbidity

### Calibration Options

Single-standard RapidCal™ for 0 - 40 NTU (FNU)

Full-range calibration from 0-1000 NTU (FNU)

Calibration to degrees of turbidity

Custom

### Calibration Logger

Records the last 25 successful calibrations

### Verification Logger

Logs the last 250 successful verifications

### Data Logger

500 records

### Enclosure Rating (IP)

IP67 (closed lid, battery and module compartments excluded)

### Sample Requirements

15 mL (0.5 oz.)

### Power Options

AC 100-240V, 50/60 Hz

(with Power Module or USB+Power Module)

4 AA alkaline batteries

4 AA NiMH batteries (rechargeable with USB+Power Module)

### Certifications

CE certified

### Interface

Optional USB

### Dimensions (H x W x D)

7.7 cm x 10.7 cm x 22.9 cm

3.0 in x 4.2 in x 9.0 in

### Weight

530 g (1.17 lbs) without batteries

620 g (1.37 lbs) with 4 AA alkaline batteries

\*Subject to change without notice.



Portable turbidimeters are supplied with four AA alkaline batteries, a carrying case with insert, primary calibration standards in 1 sealed vials (20, 100, 800 NTU), 10 NTU primary verification standard, 6 sample cells with screw-tops, instrument manual (printed and CD-ROM), quick start guide, silicone oil and oiling cloth.

Prod. No.	Description
2100Q01	2100Q Portable Turbidimeter (meets EPA Method 180.1)
2100QIS01	2100Qis Portable Turbidimeter (meets ISO 7027)

### Optional Accessories

LZV813	USB+Power Module Includes module, universal power supply, standard USB cable, special USB cable adapter, and manual
LZV804	Power Module Includes module, universal power supply, and manual

Prod. No.	Description
2960100	Thermo Printer Includes printer, universal power supply, 115V North American power cord, RS-232 cable and gender adapter, USB cable, battery pack, one roll of thermal paper, and instruction manual.
LZV566	USB Barcode Scanner For fast entry of sample IDs
2464105	Gelex Secondary Standard Set
2971304	NiMH Batteries, AA, pk/4 Rechargeable with optional USB+Power Module
4397500	Degassing Kit
4397510	Sample Filtration and Degassing Kit
WRTUPG2100Q	2100Q Portable Turbidimeter WarrantyPlus™ Instrument Protection and Support

For more information, request LIT2655.

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U.S. customers only.

# TURBIDITY STANDARDS

## StabCal® Stabilized Formazin Primary Standards

- No preparation of formazin stock
- No dilutions
- Minimal handling
- No special glassware or difficult lab techniques
- StabCal can be used to calibrate a turbidimeter made by any manufacturer

### Individual Values for All Turbidimeters

#### Prod. No. Description

##### <0.1 NTU Value

- 2659742 StabCal® Turbidity Standard, < 0.1 NTU, 100 mL  
2659749 StabCal® Turbidity Standard, < 0.1 NTU, 500 mL  
2659753 StabCal® Turbidity Standard, < 0.1 NTU, 1000 mL

##### 0.06 NTU Value

- 2805342 StabCal® Turbidity Standard, 0.06 NTU, 100 mL

##### 0.1 NTU Value

- 2723342 StabCal® Turbidity Standard, 0.10 NTU, 100 mL  
2723353 StabCal® Turbidity Standard, 0.10 NTU, 1000 mL  
2723356 StabCal® Turbidity Standard, 0.10 NTU, 1 gallon (3.78L) bottle

##### 0.3 NTU Value

- 2697942 StabCal® Turbidity Standard, 0.30 NTU, 100 mL  
2697953 StabCal® Turbidity Standard, 0.30 NTU, 1000 mL

##### 0.5 NTU Value

- 2698042 StabCal® Turbidity Standard, 0.50 NTU, 100 mL  
2698053 StabCal® Turbidity Standard, 0.50 NTU, 1000 mL

##### 1 NTU Value

- 2659842 StabCal® Turbidity Standard, 1.0 NTU, 100 mL  
2659849 StabCal® Turbidity Standard, 1.0 NTU, 500 mL  
2659853 StabCal® Turbidity Standard, 1.0 NTU, 1000 mL

##### 10 NTU Value

- 2659942 StabCal® Turbidity Standard, 10 NTU, 100 mL  
2659949 StabCal® Turbidity Standard, 10 NTU, 500 mL

##### 20 NTU Value

- 2660142 StabCal® Turbidity Standard, 20 NTU, 100 mL  
2660149 StabCal® Turbidity Standard, 20 NTU, 500 mL  
2660153 StabCal® Turbidity Standard, 20 NTU, 1000 mL

##### 40 NTU Value

- 2746353 StabCal® Turbidity Standard, 40 NTU, 1000 mL  
2746356 StabCal® Turbidity Standard, 40 NTU, 1 gallon (3.78 L) bottle

##### 100 NTU Value

- 2660242 StabCal® Turbidity Standard, 100 NTU, 100 mL  
2660249 StabCal® Turbidity Standard, 100 NTU, 500 mL

##### 200 NTU Value

- 2660442 StabCal® Turbidity Standard, 200 NTU, 100 mL  
2660449 StabCal® Turbidity Standard, 200 NTU, 500 mL

##### 800 NTU Value

- 2660542 StabCal® Turbidity Standard, 800 NTU, 100 mL  
2660549 StabCal® Turbidity Standard, 800 NTU, 500 mL

##### 1000 NTU Value

- 2660642 StabCal® Turbidity Standard, 1000 NTU, 100 mL  
2660649 StabCal® Turbidity Standard, 1000 NTU, 500 mL

##### 4000 NTU Value

- 246142 Formazin Turbidity Standard, 4000 NTU, 100 mL  
246149 Formazin Turbidity Standard, 4000 NTU, 500 mL

##### 7500 NTU Value

- 2584202 StabCal® Turbidity Standard, 7500 NTU, Sealed Vial Standard

StabCal Stabilized Formazin Standards are true formazin dilutions developed for use in any turbidimeter. With proprietary manufacturing technology, Hach prepares StabCal standards in precise concentrations for conventional turbidimeters. Monitor high-quality treated drinking water, wastewater effluent, or an industrial process stream with complete confidence in the results with Hach StabCal Stabilized Formazin Standards.

StabCal standards are equivalent in performance to formazin primary standards, but require no special preparation, saving precious time in the laboratory. Calibration of turbidimeters with StabCal can be done quickly and accurately.

### StabCal® Calibration Kits

#### Prod. No. Description

##### For the 2100Q - 20, 100, 800, 10 (for verification) NTU

- 2971205 Set of StabCal Sealed Vial Standards  
2971210 100 mL bottles  
2971200 500 mL bottles

##### For the 2100P - <0.1, 20, 100, 800 NTU

- 2659405 StabCal® Turbidity Standards Calibration Kit, 2100P Portable Turbidimeter, Sealed Vials  
2659410 StabCal® Turbidity Standards Calibration Kit, 2100P Portable Turbidimeter, 100 mL bottles  
2659400 StabCal® Turbidity Standards Calibration Kit, 2100P Portable Turbidimeter, 500 mL bottles

##### For the 2100N/N IS - <0.1, 20, 200, 1000, 4000 NTU

- 2662105 StabCal Set for 2100N/N IS  
2662110 StabCal® Turbidity Standards Calibration Kit, 2100N / N IS Turbidimeter, 100 mL bottles  
2662100 StabCal® Turbidity Standards Calibration Kit, 2100N / N IS Turbidimeter, 500 mL bottles

##### For the 2100AN/AN IS - <0.1, 20, 200, 1000, 4000, 7500 NTU

- 2659505 StabCal Set for 2100AN/AN IS  
2659510 StabCal® Turbidity Standards Calibration Kit, 2100AN / AN IS Turbidimeter, 100 mL bottles  
2659500 StabCal® Turbidity Standards Calibration Kit, 2100AN / AN IS Turbidimeter, 500 mL bottles

##### 2100A - 1.0, 10, 100, 1000 NTU

- 2659105 StabCal® Turbidity Standards Calibration Kit, 2100A Turbidimeter, Sealed Vials  
2659110 StabCal® Turbidity Standards Calibration Kit, 2100A Turbidimeter, 100 mL bottles

##### ULR Verification Set\* - 0.1, 0.3, 0.5, 1.0 NTU

- 2714600 StabCal® ULR Verification Kit, 100 mL

### Gelex Secondary Standards

#### Prod. No. Description

- 2464105 Gelex Secondary Standard set  
2589000 Gelex Secondary Standard Set for 2100N/N IS  
2589200 Gelex Secondary Standard Set for 2100AN/AN IS

\*For verification only. Not for calibration.



StabCal® Stabilized Formazin Turbidity Standards are available in 100 mL, 500 mL, 1L, and 1 gallon bottles, or in convenient sealed vials. Sets are available that include the specific range of NTU values needed to calibrate any turbidimeter.



# QUICK REFERENCE GUIDE

This **Quick Reference Guide** is designed to help select which sample cell you will need to measure a specific parameter with your instrument. For detailed images and footprints of the sample cells, see pages 102-104.

	Pocket Colorimeter	Pocket Colorimeter II	DR/800 Series DR 900	DR/2010	DR/2400	DR/2500	DR 1900 DR 2700 DR 2800 DR 3800 DR 3900	DR/4000	DR 5000 DR 6000
Aluminum (Aluminon)	2427606	2427606	2401906	2095000	2401906	2401906	2495402	2665902	2495402
Aluminum (ECR)				2495402	2427606	2427606	2495402	2665902	2495402
Arsenic				2095000	2401906	2401906	2612602	2665902	2612602
Barium				2095000	2401906	2401906	2495402	2665902	2495402
Benzotriazole			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Boron (Carmine)				2095000	2401906	2401906	2495402	2665902	2495402
Bromine	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Bromine, HR	4165802	4864302							
Cadmium (Dithizone)				2095000			2612602	2612602	2495402
Chloramine (Mono), LR	4165802	4864302	4864302	4864302	5940506	5940506	5940506†	4864302	4864302
Chloride				2095000	2427606	2427606	2495402	2665902	2495402
Chlorine Dioxide (Amaranth) <i>Reagents available only in Europe.</i>					2427606	2427606	2495402	2612602	2495402
Chlorine Dioxide (DPD)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Chlorine Dioxide, LR (Chlorophenol Red)				2095000	2401906	2401906	2495402	2665902	2495402
Chlorine Dioxide, MR (Direct Reading) <i>Not available with DR 2700.</i>			2401906				2495402	2612602	2495402
Chlorine Dioxide, HR (Direct Reading)				2095000	2427606	2427606	2495402	2612602	2495402
Chlorine, Free (Indophenol)		4864302	4864302		5940506	5940506	5940506†		4864302
Chlorine, Free & Total	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Chlorine, Free & Total, HR	4165802	4864302	4864302	4864302	5940506	5940506	5940506	4864302	4864302
Chlorine, Free & Total (DPD RL)				4521500	5940400	5912200	5940400		*
Chlorine, Total, ULR				4521500	5940400	5912200	5940400	4807004	*
Chromium, Hexavalent	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Chromium, Total			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Cobalt				2495402	2427606	2427606	2495402	2612602	2495402
Color (ADMI)								2665902	2629250 2095100 2495402
Color, Gardner								2095100	
Color, Tristimulus								2095100	
Color, True & Apparent, LR							2629250		2629250
Color, True & Apparent			2401906	2095000	2427606	2427606	2495402	2665902	2495402
Color, Yellowness Index								2095100	
Copper (Bichinchoninate)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Copper, LR (Porphyrin)			2401906	2495402	2427606	2427606	2495402	2665902	2495402
Cyanide			2401906	2495402	2427606	2427606	2495402	2665902	2495402
Cyanuric Acid			2401906	2095000	2401906	2401906	2495402		2495402
Fluoride (SPADNS)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Formaldehyde				2095000	2427606	2427606	2495402	2665902	2495402
Hardness, Calcium & Magnesium (Calmagite) <i>3 cells required.</i>			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Hardness, Total, Calcium & Magnesium, ULR (Chlorophosphonazo)				2410212	5940506		2410212	2410212	2495402
Hardness, Total, ULR (Chlorophosphonazo RL)				4521500	5940400	5912200	5940400		*
Hydrazine			2401906	2495402	2427606	2427606	2495402	2665902	2495402
Iodine				2495402	2427606	2427606	2495402	2665902	2495402
Iron (FerroZine)			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Iron (FerroZine RL)				4521500	5940400	5912200	5940400		*
Iron, Ferrous			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Iron, Total (FerroVer)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Iron, Total (FerroMo)			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Iron, Total (TPTZ)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Iron, Total, HR (FerroVer)	4165802								

\*Prod. No. LQV157.99.2002  
†4864302 for DR 3900





# QUICK REFERENCE GUIDE

	Pocket Colorimeter	Pocket Colorimeter II	DR/800 Series DR 900	DR/2010	DR/2400	DR/2500	DR 1900 DR 2700 DR 2800 DR 3800 DR 3900	DR/4000	DR 5000 DR 6000
Lead (Dithizone)				2095000			2612602	2612602	2612602
Lead (LeadTrak)	2122800	2427606		2122800	2401906	2401906	2495402	2612602	2495402
Manganese, LR (PAN)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Manganese, HR (Periodate Oxidation)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Mercury				2495402	2427606	2427606	2495402	2665902	2495402
Molybdenum, LR (Ternary Complex)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Molybdenum, HR (Ternary Complex)	2427606	2427606							
Molybdenum, HR (Mercaptoacetic Acid)			2401906	2495402	2427606	2427606	2495402	2665902	2495402
Nickel (Heptoxime)				2095000	2401906	2401906	2612602	2612602	2495402
Nickel (PAN)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2612602	2495402
Nitrate (Direct Read UV)								2624410	4822800
Nitrate, N, LR (Cadmium Reduction)			2401906	2095000	2427606	2427606	2495402	2612602	2495402
Nitrate, N, MR (Cadmium Reduction)			2401906	2095000	2427606	2427606	2495402	2612602	2495402
Nitrate, N, HR (Cadmium Reduction)	2427606	2427606	2401906	2095000	2427606	2427606	2495402	2612602	2495402
Nitrite, N, LR (Diazotization)			2401906	2495402	2427606	2427606	2495402	2612602	2495402
Nitrite, N, HR (Ferrous Sulfate)			2401906	2495402	2427606	2427606	2495402	2612602	2495402
Nitrogen, Free Ammonia		4864302	4864302	4864302	5940506	5940506	5940506†	4864302	4864302
Nitrogen, Ammonia (Nessler)				2095000	2427606	2427606	2495402	2665902	2495402
Nitrogen, Ammonia (Salicylate)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2612602	2495402
Nitrogen, Total Kjeldahl with Nessler finish			2401906	2095000	2427606	2427606	2495402	2665902	2495402
Organic Constituents (UV-254)								2624410	2624410
Oxygen Scavengers			2401906	2095000	2401906	2401906	2495402	2665902	2495402
pH	2427606	2427606	2401906						
Phenols				2095000	2401906	2401906	2612602	2612602	2612602
Phosphonates	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Phosphorus, Reactive (Amino Acid)			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Phosphorus, Reactive, LR (Ascorbic Acid RL)				4521500	5940400	5912200	5940400	4807004	*
Phosphorus, Reactive (Molybdovanadate)			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Phosphorus, Reactive, HR (Molybdovanadate RL)				4521500	5940400	5912200	5940400	4807004	*
Phosphorus, Reactive (PhosVer 3)	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Potassium				2095000	2401906	2401906	2495402	2665902	2495402
Quaternary Ammonium Compounds				2095000	2401906	2401906	2495402	2665902	2495402
Selenium				2095000	2427606	2427606	2612602	2612602	2612602
Silica, ULR (Heteropoly Blue, Heteropoly Blue RL)				4521500	5940400	5912200	5940400	4807004	*
Silica, LR			2401906	2495402	2427606	2427606	2495402	2665902	2495402
Silica, HR	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402
Silica, UHR									
Silver				2095000	2401906	2401906	2495402	2665902	2495402
Sodium Chromate				2095000					
Sulfate	2427606	2427606	2401906	2095000	2427606	2427606	2495402	2665902	2495402
Sulfide			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Sulfite (Colorimetric) <i>Reagents available only in Europe.</i>					2427606	2427606	2495402	2612602	2495402
Surfactants			2401906	2095000	2401906	2401906	2612602	2612602	2612602
Suspended Solids			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Tannin & Lignin			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Tolyltriazole			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Trihalomethanes (THM Plus)				2427606	2427606		2495402	2427606	2495402 2427606
Turbidity			2401906	2095000					
Volatile Acids			2401906	2095000	2401906	2401906	2495402	2665902	2495402
Zinc	2427606	2427606	2401906	2495402	2427606	2427606	2495402	2665902	2495402

SAMPLE CELLS

\*Prod. No. LQV157.99.2002  
†4864302 for DR 3900

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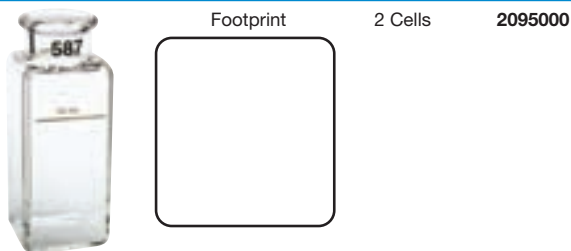
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# FOR SPECTROPHOTOMETERS & COLORIMETERS

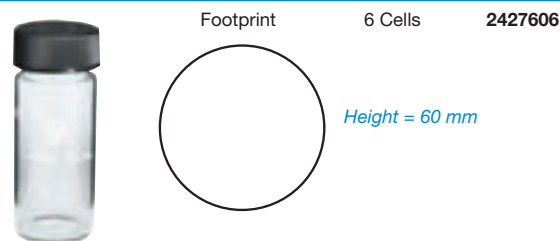
The following pages explain our sample cells, with *actual size footprints* of each cell. Refer to the **Quick Reference Guide** on pages 100-101 to help select which sample cell you will need to measure a specific parameter with your instrument.

## 1" Square Glass, 25 mL, matched pair



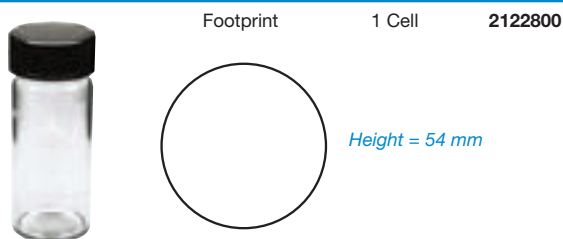
Size 1 Neoprene Stoppers (optional) 12/pack 1480801

## 1" Round Tall Glass, 10 mL, cell w/cap

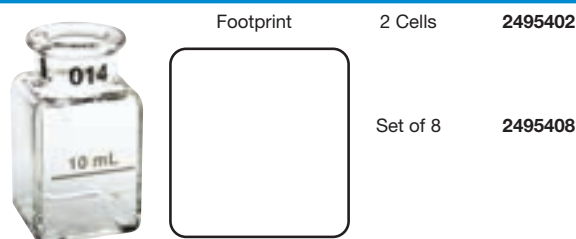


1 pair of cells is included with purchase of most Pocket Colorimeter II instruments. See Quick Reference Guide for details.

## 1" Round Short Glass, 10 mL, cell w/cap



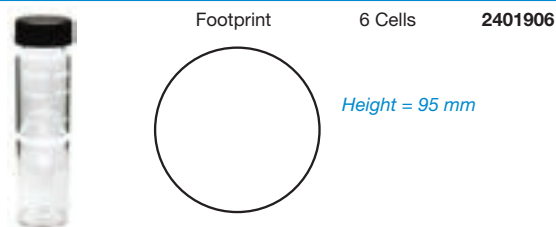
## 1" Square Glass, 10 mL, matched sets



Size 1 Neoprene Stoppers (optional) 12/pack 1480801

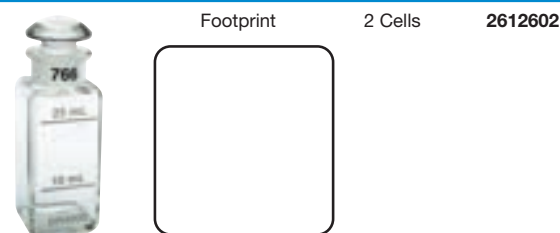
1 pair of cells is included with purchase of DR 6000, DR 5000 UV-Vis, DR 3900, DR 2800, DR 2700, or DR 1900 Spectrophotometers.

## 1" Round Glass (10, 20, 25) mL w/cap

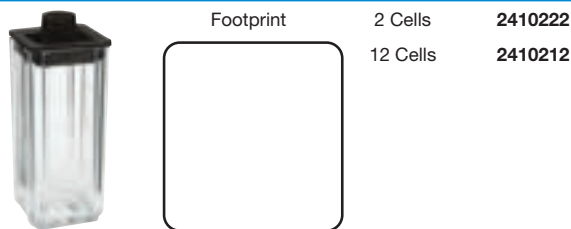


1 pair of cells is included with purchase of DR 900 Colorimeter .

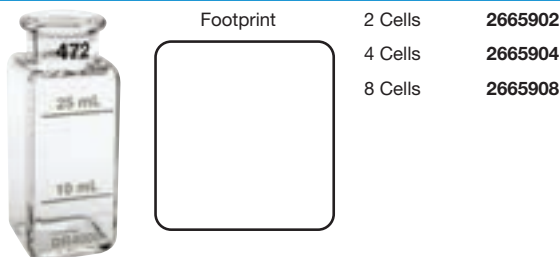
## 1" Square Glass (10 & 25) mL, matched pair w/glass stopper



## 1" Square Polystyrene 25 mL w/caps



## 1" Square Glass (10 & 25) mL, matched sets

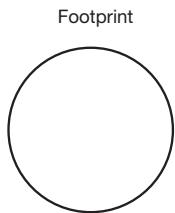


Size 1 Neoprene Stoppers (optional) 12/pack 1480801

# FOR SPECTROPHOTOMETERS & COLORIMETERS

SAMPLE CELLS

## 1" Round Plastic (5 & 10) mL, 1 cm pathlength w/cap



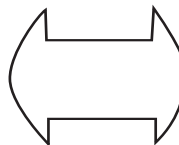
Footprint

2 Cells

4165802

For use with the original (blue) Pocket Colorimeter.

## 1" Round Plastic (5 & 10) mL, 1 cm pathlength w/cap



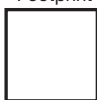
Footprint

2 Cells

4864302

1 pair of cells is included with purchase of DR 900 Colorimeter and select Pocket Colorimeter II instruments.

## 1 cm Square Quartz, 10 mm pathlength



Footprint

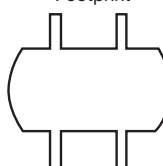
2 Cells

4822800

1 Cell

2624410

## 1" Round Plastic (5, 10, 25) mL, 1 cm & 1" dual pathlength w/cap



Footprint

6 Cells

5940506

## 1 cm Square Glass, 10 mm pathlength cell, matched pair

Footprint



2 Cells

2095100



## 10 cm Rectangular Quartz, 100 mm pathlength cell

Footprint



1 Cell

2624401



## 5 cm Rectangular Quartz, 50 mm pathlength cell

Footprint



1 Cell

2624450



## 10 cm Rectangular Glass, 100 mm pathlength cell

Footprint



1 Cell

2629201



Continued on next page.

# FOR SPECTROPHOTOMETERS & COLORIMETERS



## 5 cm Rectangular Glass, 50 mm pathlength cell

Footprint

1 Cell 2629250



## 1 cm Rectangular Polystyrene 1.5 mL, 10 mm pathlength cell

Footprint

100 Cells 2629500



## 1 cm Square Polystyrene 4.5 mL, 10 mm pathlength cell

Footprint

100 Cells 2743400



# FOR TURBIDIMETERS

Use these cells to assure proper performance of your Hach turbidimeter.

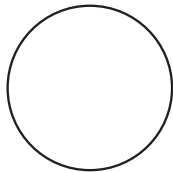
## 1" Round Glass, 30 mL, w/cap



Footprint

6 Cells

2084900



Height = 95 mm

For use with Hach Ratio 18900, 2100N and 2100AN Laboratory Turbidimeters.

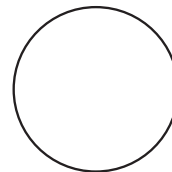
## 1" Round Glass, 30 mL cell



Footprint

6 Cells

2100300



Height = 95 mm

For use with Hach 2100A Turbidimeters.

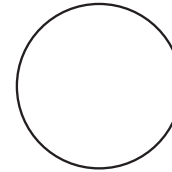
## 1" Round Glass, 10 mL, cell w/cap



Footprint

6 Cells

2434706



Height = 60 mm

For use with Hach 2100 Series Portable Turbidimeters.



# POUR-THRU™ SAMPLE CELLS



**SIP 10 Sipper Set  
for DR 6000**

Prod. No. LQV157.99.20002



**Pour-Thru™ Cell Kit**

Prod. No. LZV899



**SIP 10 Sipper Set  
for DR 3900**

Prod. No. LQV157.99.10002

Prod. No.	Description
<b>Pour-Thru Cell Kits</b>	
LQV157.99.20002	DR 6000 SIP 10, sipper set for Pour-Thru methods, 1 inch vial
LQV157.99.30002	DR 6000 SIP 10, sipper set for Pour-Thru methods, 1 cm quartz vial
LQV157.99.10002	DR 3900 SIP 10, sipper set for Pour-Thru methods, 1 inch vial
LZV479	Pour-Thru Module Kit (1 in.) for DR 5000
4807004	Flow Cell Module Kit, 1-in. quartz sample cell for DR/4000
5912200	Pour-Thru Cell Kit, 1-in. cell, for DR/2500
5940400	Pour-Thru Cell Kit (1 in.) for DR 3800, DR 2800, DR 2700, & DR/2400
4521500	Pour-Thru Cell Kit (1 in.) for DR/2010
LZV899	Pour-Thru Cell Kit for DR 3900 photometer

Prod. No.	Description
<b>Individual Pour-Thru Cells</b>	
4521400	Pour-Thru Cell (1 in.) for DR/2000 & DR/2010
5941000	Pour-Thru Cell (Multi-pathlength-1 in. or 1 cm) for DR 3800, DR 2800, DR 2700, & DR/2400
5913700	Pour-Thru Cell (1 in.) for DR/2500 & DR 5000
4951400	Pour-Thru Cell with adapter (1 in.) for DR/4000
4953900	Pour-Thru Cell with adapter (1 cm) for DR/4000
A24209	Pour-Thru Cell (1 cm, 160 L quartz) for DR 5000
LZV510	Pour-Thru Cell (1 cm, 450 L quartz) for DR 5000

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# HACH SERVICE PROGRAM



## What is the plus in Hach ServicePlus?

- Comprehensive coverage—reduces costs and improves performance for the life of the instrument by providing flexible, end-to-end support options to meet your needs and budget.
- Fast local response—over 250 nationwide Hach representatives guarantee maximum uptime by providing a local presence and rapid response whenever and wherever you need it.
- Unrivaled experience—connects you to Hach's total organizational expertise, giving you complete access to the most experienced fields and factory service representatives in the industry.

**[hach.com/service](http://hach.com/service) | 800-227-4224, ext. 6178**



**SAC850 & SAC950  
Sample Changers,  
effortless sample  
handling through  
total automation!**



**NEW!**  
**TitraLab™ Automatic  
Titrator is perfectly  
tailored to your  
application,  
providing fast and  
accurate results!**



**Be Right™**

# CHOOSING YOUR TitraLab™ TITRATION WORKSTATION

## THE automated alternative to manual titration.

- Get ready for immediate analysis by combining a TitraLab workstation and application package of your choice
- Workstation comes complete with pre-programmed applications
- Application package includes documentation, electrodes, buffer and maintenance solutions; all you need to supply are the samples and titrant reagents



**Basic Titrator—perfect for QC labs that always run the same samples**



**Volumetric Karl Fischer for quick moisture content determination between 0.1% & 100%**

Features and Specifications	TitraLab 840	TitraLab 845	TitraLab 580	TitraLab 585
End point titration	1 to 2 EP		1 EP - Karl Fischer End Point	
Inflection point titration (Continuous & Incremental addition modes)	1 to 4 IP		—	
Direct pH/mV measurement	Yes		—	
pH/mV/°C Stat titration	—		—	
Conductivity measurement	—		—	
ISE measurement (Direct/Standard Additions)	—		—	
Volumetric Karl Fischer titration	—		Yes	
Number of titrating burettes	1	2	1	2
Burette stands	1, 5, 10, 25 & 50 mL (Meets ISO8655-3 Specifications)			
Electrode inputs	1 pH/mV + 1 Pt-Pt		1 Pt-Pt	
Result archiving	1 to 60 sample results		1 to 200 sample results	
Calibration archiving (electrode/reagent)	Last calibration		Last 100 electrode & last 100 reagent calibrations	
User programmable	10 methods + pre-programmed		50 methods + pre-programmed	
Method sequencing (in different beakers)	1 to 3 in series		—	
Method coupling (in the same beaker)	2		—	
Sample stack capacity	1 to 23 sample IDs per batch		1 to 126 sample IDs per batch	
Methods in library	1 to 10		1 to 50	
QC features	—		Yes	
Method/curve reprocessing	—		—	
Burette/electrode extension ABU52	—		—	
Peripherals - Extensions	Sample Changer (SAC850)/Printer/Balance/Peristaltic pump PC keyboard/Bar code reader/PC software (TitraMaster 85)		Sample Changer (SAC850/950)/Printer/Balance/Peristaltic pump PC keyboard/Bar code reader/PC software (TitraMaster 85)	
Dimensions (HxWxD) - Net weight	381 x 230 x 450 mm - 5 Kg			
USEPA (approved methods)				
pH	Yes			
Conductivity				
Alkalinity	Yes			
Acidity	Yes			
Hardness	Yes			
Chloride	Yes			
Ammonia (ISE)				
Fluoride (ISE)				
Nitrate (ISE)				

To configure your system please contact Hach at: **1-800-227-4224**



# CHOOSING YOUR TitraLab™ TITRATION WORKSTATION



*Extended Titrator—  
for more demanding  
applications in QC lab*

*High performance  
pH/mV Stat*

*Versatile QC/Research Titrator—  
multi-parameter features, enhanced  
for environmental water analysis*

**TitraLab 865**

**TitraLab 854**

**TitraLab 856**

**TitraLab 870**

1 to 4 EP		
1 to 8 IP	—	
Yes		
Yes		
—		
—		
—		
—		
2	1	2
1, 5, 10, 25 & 50 mL (Meets ISO8655-3 Specifications)		
2 pH/mV + 1 Pt-Pt		
1 to 200 sample results		
Last 100 electrode & last 100 reagent calibrations		
50 methods + pre-programmed		
1 to 10 in series		
6	8	
1 to 126 sample IDs per batch		
1 to 50		
Yes		
Yes		
Yes - Add up to 4 burettes & 4 Electrodes with 2x ABU52		
Sample Changer (SAC850/950)/Printer/Balance/Peristaltic pump PC keyboard/Bar code reader/PC software (TitraMaster 85)		
381 x 230 x 450 mm - 5 Kg		
Yes	Yes	
Yes		
Yes	Yes	
Yes	Yes	
Yes	Yes	
Yes	Yes	
Yes		
Yes		
Yes		

**To configure your system please contact Hach at: 1-800-227-4224**

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# TitraLab™ AUTOMATIC TITRATOR

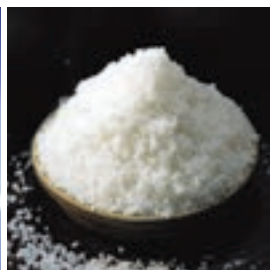
The TitraLab automatic analyzer is specifically designed for drinking water and various food & beverage applications, providing the perfect solution to routine analysis measurements.

- Extremely Fast Results
- Ultimate Analytical Performance Accuracy
- Push-button Operation
- Minimal Training Required
- Simple and Economical Maintenance

The TitraLab automatic analyzer is specifically designed for drinking water and various food & beverage applications, providing the perfect solution to routine analysis measurements.

	Prod. No.	Description
	LLV2300.97.1202	TitraLab SO <sub>2</sub> Free & Total SO <sub>2</sub> in Wine
	LLV2302.97.1002	TitraLab pH/TA pH & Total Acidity in Milk
	LLV2304.97.1002	TitraLab pH/TA pH & Total Acidity in Tomato Sauce (canned food)
	LLV2306.97.1002	TitraLab pH/TA pH & Total Acidity in Brine
	LLV2301.97.1002	TitraLab pH/TA pH & Total Acidity in Wine
 <b>NEW!</b>	LLV2309.97.1002	TitraLab pH/Alkalinity pH and Alkalinity in Water

# TitraLab™ AUTOMATIC TITRATOR



TITRATION PRODUCTS

	Prod. No.	Description
	LLV2303.97.1102	TitraLab Salt Salt in Dairy Products
	LLV2305.97.1102	TitraLab Salt Salt in Tomato Sauce
	LLV2307.97.1102	TitraLab Salt Salt in Brine
	LLV2308.97.1102	TitraLab Salt Salt in Water
	LLV8671.97.1202	TitraLab KF 1S2B Moisture (H <sub>2</sub> O) content by Karl Fischer
 <b>NEW!</b>	LLV2310.97.1102	TitraLab Hardness Total Hardness in Water

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U.S. customers only.



# SAC850 AND SAC950 SAMPLE CHANGERS



SAC950 Sample Changer

## Effortless sample handling through total automation.

- *Compact and Adaptable* - the SAC850 and SAC950 are compatible with a wide selection of removable sample trays, making them remarkably space-efficient
- *Flexible and Programmable* - sample preparation sequences can be programmed from TitraMaster 85 Titration PC Software with specific macro commands to fit you requirements
- *Quick and Efficient* - simultaneous movements of the turntable and electrode arm for efficient operation. Dynamic Spray and/or immersion rinse for thorough rinsing using a high flow rate pumps ensure thorough and efficient cleaning with no risk of cross contamination (between samples) helping you achieve greater accuracy and reproducibility, irrespective of the number of samples per cycle
- *Safe and Clean* - our unique bayonet concept keeps electrodes and delivery tips securely in place
- *Reliable High Torque Stirrer* - for even the most viscous samples

### The Obvious Choice for Your Laboratory

Radiometer Analytical sample changers are capable of handling multiple combinations of titrations, direct pH, pX and conductivity measurements fast and efficiently. Connect to a TitraLab® titration workstation or a direct measurement meter with or without PC software selected from our complete laboratory product range and your laboratory will virtually run itself!

### SAC950: Extended Model for Increased Sample Capacity

- Multi-Radius sample trays for up to 70 samples
- External parking position
- External Dip rinsing and electrode conditioning on 1 or 2 positions
- Beaker cover module for sample protection prior to analysis

### SAC850: Basic Model for Sample Automation of Batches of 23 Samples or Less

- Single-radius sample trays for up to 23 samples
- Parking position on sample tray
- Dip rinsing/electrode conditioning performed on 1 or 2 dedicated positions on sample tray

### SAC850/950 Options

- Dynamic rinsing combined with waste disposal performed inside the current sample beaker
- Reagent addition peristaltic pump module

### Common Tray Configurations

Product No.	SAC850 Sample Trays†
X91T080	Kit 25-positions turntable, SAC850, 22-45 mL & 8-25 mL PP, 50 mL LF glass beakers
X91T084	Kit 20-positions turntable, SAC850, 40-100 mL PP beakers
SAC950 Sample trays†	
X91T081	Kit 70-positions turntable, SAC9xx, 22-45 mL & 8-25 mL PP beakers, 50 mL LF glass beakers
X91T085	Kit 36-positions turntable, SAC9xx, 40-100 mL PP beakers

†Other trays available for different beaker sizes up to 400 mL, please contact us.

The SAC850, Ba or SAC950, Ba Sample Changers are delivered with a full set of connecting cables and setup accessories but no sample tray. SACx50, Ba versions operate with a selection of xx-position sample tray kits complete with accessories and delivery tubing to be ordered separately.

### Prod. No. Description

- |         |   |
|---------|---|
| R41T043 | SAC850, Ba Sample Changer, Standard version with cables |
| R41T044 | SAC950, Ba Sample Changer, Extended Version with cables |

To configure your system please contact Hach at: 1-800-227-4224

## Monitoring of digesters in biogas plants.

Determination of organic acids (FOS) and total inorganic carbon (TAC) is a simple, efficient and reliable way to monitor the fermentation process in biogas reactors. Acid concentration is an indicator for the production of the digester gas (Biogas). Acids must be compensated by the buffer capacity of the sample to prevent acidification in the reactor. Determination of FOS/TAC value is performed as a two-step endpoint titration using sulfuric acid. The content of FOS (volatile fatty acids) is calculated empirically according to Nordmann.

### Reliable Biogas Production

Process accompanying analysis of biogas fermenters is crucial in order to detect any disruption in the digestion process in good time. With the Biogas Titration Manager from Hach, you can be sure of achieving reliable and efficient biogas production.

### Complete Solution

The Biogas Titration Manager comes complete with a dedicated FOS-TAC (volatile organic acid and buffer capacity ratio) application package which includes preprogrammed biogas methods in the method library so you are ready to get started straight away. All you need to supply is the sample!

### Get It Right the First Time

High-resolution burette and unique addition technique ensure accurate results. Titrant addition modes based on PID algorithms ensure fast titration and detection is both reliable and reproducible.

### Save Time and Energy

Your Biogas Titration Manager is delivered with preprogrammed pH and FOS/TAC methods so you can get your analyses started in no time. Unique bayonet concept secures the pH electrode in place for effortless setup.

### Intuitive Interface Guides You at Every Step

The Biogas Titration Manager prompts you with clear-text messages in a choice of languages, making it so much easier when you're doing routine work.



Prod. No.	Description
R41T114	TIM Biogas Titrator (FOS/TAC method) complete with 25 mL Burette Stand
X41T015	Bottle Holder
X91T100	TIM Biogas Starter Kit

### Replacement Components

X51T027	25 mL Glass Burette Stand, complete
904-490	Titration Vessel (Pack of 50 pcs)
X31T115	Tubing Maintenance Kit



### Specifications\*

#### Preset Methods

FOS/TAC ratio according Nordmann method:

- Total Inorganic Carbon TAC
- Volatile Organic Acids FOS

Combined pH & FOS/TAC

Titration calibration

pH electrode calibration up to 5 points with automatic buffer recognition.

Direct pH/mV measurements

#### Measuring Ranges - Resolution

- 9 to 23 pH; 0.001 pH
- ±2000 mV; 0.1 mV
- 10°C to +100°C; 0.1°C

#### Results

Alphanumeric sample identification.

Automatic calculation of:

- Equivalent volumes at End Point
- TAC in mg/L CaCO<sub>3</sub> (Lime reserve)
- FOS in mg/L CH<sub>3</sub>COOH (Acetic Acid)
- FOS/TAC ratio

Automatic GLP compliant result printouts with optional printer connected.

#### Storage Capacity

Up to 10 user-programmable methods including preprogrammed methods.

Password protected method programming.

Non-volatile memory for storage of the last 60 results & last reagent/electrode calibration.

Embedded operating procedures for burette daily maintenance and reagent exchange operations.

#### Electrode Stand - Stirring

Magnetic stirrer (0 to 1100 rpm).

Accept beaker volume from 5 to 400 mL.

Optional propeller stirrer available.

#### Burette

Complies with ISO/FDIS 8655-3 standard.

1x 25 mL embedded burette stand included. Other volumes available on request.

Burette motor resolution 18,000 steps.

#### Inputs/Outputs

Electrode & Temperature inputs.

Serial connections Printer/PC, balance, sample changer and additional titrator for use with TitraMaster 85 PC Software. PS/2 port for optional PC keyboard and/or barcode reader.

#### General Specifications

Fully splashproof chemical resistant Lathene® casing.

Graphic 128x128 dot LCD protected from spillages with TPX® window.

Soft-touch alphanumeric keypad (silicone).

#### Languages

English, German, Danish, French, Italian, Spanish, Swedish

#### Dimensions (H x W x D)

380 x 230 x 450 mm (excl. tubing)

#### Weight

5 kg (excluding reagent bottles)

#### Power Requirements

115 Vac (±10%) or 230 Vac (±10%) 50...60 Hz - 45 VA

#### On/Off Power Switch

Complies with EMC directive 89/336/EEC and LV directive 73/23/EEC.

cETLus certification issued by ITS/SEMKO.

#### Environmental Operating Conditions

5 to 40°C, max. 80 % relative humidity (without water condensation)

\*Subject to change without notice.



# AUTOCAT™ 9000 TITRATOR

## Revolutionary instrument for automatic amperometric titrations.

TITRATION PRODUCTS

**EPA  
COMPLIANT**



- Automatic calculation of analyte concentration
- Automatic "hands-free" operation
- Easy-to-use interface
- Real-time graphics and graphic print output
- Automatic archiving of results
- Titrant calibration
- Electrode cleaning
- Greater accuracy and precision than manual titrations

### Built-In Titrant standardization Procedures

Users are guided through the standardization of the titrant with methods built into the instrument. Titrant concentration is automatically updated after standardization and can also be entered from the Certificate of Analysis (downloadable from [www.hach.com](http://www.hach.com)), for the specific lot of titrant used.

### Automated EPA Approved Methods

The AutoCAT automates the USEPA approved amperometric titration procedures for chlorine, chlorine dioxide, and chlorite determinations as described in "Standard Methods for the Examination of Water and Wastewater." Sample preparation is presented to the user in easy to understand screen displays. When the titration begins, the titration is entirely "hands-off."

### The AutoCAT 9000 has the following USEPA approved methods:

- Forward titration for Free Chlorine, 0.1 to 5 mg/L (Standard Method 4500-Cl D. 4b)
- Forward titration for Total Chlorine, 1.2 µg/L to 5 mg/L (Standard Method 4500-Cl D. 4d)
- Back titration for Total Chlorine, 5.1 µg/L to 5 mg/L (Standard Method 4500-Cl C.)
- Chlorine Dioxide with Chlorite, 0.1 to 5 mg/L (Standard Method 4500-ClO<sub>2</sub> E.)
- Sulfite (as SO<sub>2</sub>, Sodium Bisulfite)



For information on Hach's non-automated Amperometric Titrator call 1-800-227-4224.

The AutoCAT ships complete with all accessories necessary for free and total chlorine titrations, including burette, dual platinum electrode, temperature sensor, stir bar, plus all tubing and reagents. Please see below for required reagents for chlorine dioxide/chlorite, or for back total chlorine methods, and accessories.

Prod. No.	Description
5008100	AutoCAT 9000

### Additional Required Chlorine Dioxide/Chlorite Method Reagents

141832	Hydrochloric Acid Standard Solution, 2.5 N, 100 mL MDB
16726H	Potassium Iodide, ACS, 100 g

### Additional Required Total Chlorine Back Titration Method

2333353	Iodine Standard Solution, 0.0282 N, 1 L
---------	---

### Optional Accessories

A70P021	Kyoline brand thermal printer with cable
A70P025	Thermal Paper for Kyoline, pkg. of 10-rolls
WRTUPGAUTOCAT	

### Specifications\*

**Electrode**  
Dual platinum

**Display**  
Real-time graphics, menu driven, LCD

**Power Requirements**  
90/264 Vac, 47/63 Hz, 115 VA

**Dimensions (H x W x D)**  
38 cm x 23 cm x 45 cm (H x W x D)  
(15 x 9 x 17.7")

**Output**  
RS-232 Serial output to printer/PC

**Languages**  
English, French, and Spanish

**Enclosure**  
Splashproof, with alphanumeric keypad

\*Subject to change without notice.

For more information, call to request LIT2533.





## Accurate, convenient titrations without the bulk, fragility, or waste of a conventional buret.

- Faster than a buret
- Rugged design
- 20 parameters
- Interchangeable cartridges



### Digital Titrator: Fast, Precise, Economical

#### Precise, less technique-sensitive

Digital Titrator automatically calculates precise volume of titrant dispensed.

#### End-point easier to determine

The number used for calculation of sample concentration is recorded directly from the Digital Titrator's digital counter. For many methods, the displayed value is the concentration.

#### Saves time

Titration cartridges can be changed in seconds and eliminate glassware clean up before and after titration.

#### No cross contamination

Cartridges are always fresh and sealed against outside contamination.

#### Economical

Cartridges contain strong, concentrated reagents, so low volumes are used—waste is minimal.

#### Portable

With the Digital Titrator, titrations can be performed in the lab, the manufacturing plant, or the field.

### Problems with Buret Technique

Buret technique is dependent on operator skill.

Operator must examine level of buret to determine volume dispensed, a technique subject to visual interpretation.

Titration solutions must be prepared and measured, and all glassware must be acid-washed, rinsed with DI water, and dried.

Improper handling of reagent solutions and even slightly soiled glassware can compromise results.

Buret reagents are formulated with chemicals of low concentration and subsequently require higher volumes. Ratio of standard titrant to Digital Titrator cartridge is approximately 80:1.

Buret glassware cannot be safely transported to the plant or field.

Buret titrations require glass buret, buret stand, buret clamp, and funnel for filling.

### Prod. No. Description

<b>1690001</b>	Digital Titrator Includes hard-sided carrying case, a manual, and five straight delivery tubes
<b>4157800</b>	Delivery tubes, 90° with J-hook, 5/pk
<b>1720500</b>	Delivery Tubes for Digital Titrator
<b>1449501</b>	Digital Titrator Cartridge Assembly, Empty
<b>Kit</b>	
<b>2270900</b>	Test Kit, Universal Digital Titrator Includes Digital Titrator, manual, 10-mL graduated cylinder, 125 - and 250-mL Erlenmeyer flasks, demineralizer bottle, clippers and a carrying case.

See next page for Accessories.

### Specifications\*

#### DIGITAL TITRATOR

##### Delivery

800 digits/mL or 0.00125 mL/digit

##### Accuracy

± 1 % (Uncertainty of readings is 1 digit. Most samples require more than 100 digits)

##### Weight

90/264 Vac, 47/63 Hz, 115 VA

#### CARTRIDGES

##### Volume

13 mL

##### Number of Tests

Most reagents are formulated to provide 100 typical titrations, but number may vary depending on sample concentration.

##### Weight

56.75 g (2 oz)

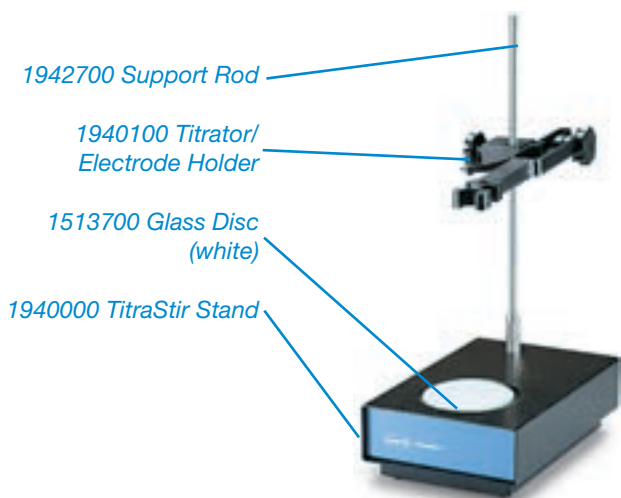
\*Subject to change without notice.

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U.S. customers only.



# DIGITAL TITRATOR ACCESSORIES



Over 40 ready-to-use  
titrant solutions  
available.

## TitraStir® Continuous Mixer/Stand

The Digital Titrator can be hand-held, or you can attach it to this convenient laboratory stand. The TitraStir Titration Stand is a single-speed, magnetic stirring plate with a built-in support rod and custom holder for the Digital Titrator. Titration flasks rest on a white disc, so color changes are easy to see, and the support rod can be used to attach clamps, rings and other hardware.

### Prod. No. Description

#### Accessories

- 1940000** TitraStir™ Stand, 115 Vac  
Includes power cord, support rod and mounting hardware, holder for Digital Titrator assembly (or other apparatus), glass disc, and stir bar. Digital Titrator not included.
- 1940010** TitraStir Stand, 230 Vac  
Includes same as above.

#### Replacement Parts for TitraStir Stand

- 1942700** Support Rod
- 1940100** Titrator/Electrode Holder
- 1513700** Glass Disc (white)
- 410316** Stir Bar (2 x 0.5")

### Specifications\*

**Dimensions (H x W x D)**  
6.4 x 15.2 x 22.9 cm (2.5 x 6 x 9")

**Weight**  
132 g (4.7 oz)

**Power Requirements**  
115 or 230 vac, 50/60 Hz, 20 VA

*\*Subject to change without notice.*

### EPA Equivalent Cartridges

	Method	Range	Titrant	Prod. No.
Acidity <sup>1</sup>	Methyl Orange	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 NaOH	1437701
Acidity <sup>1</sup>	Phenolphthalein	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 NaOH	1437701
Acidity <sup>1</sup>	Methyl Orange	1 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N NaOH	1437901
Acidity <sup>1</sup>	Phenolphthalein	1 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N NaOH	1437901
Alkalinity <sup>2</sup>	Phenolphthalein	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 N H <sub>2</sub> SO <sub>4</sub>	1438801
Alkalinity <sup>2</sup>	Phenolphthalein	100 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N H <sub>2</sub> SO <sub>4</sub>	1438901
Alkalinity, Total <sup>2</sup>	Bromocresol/Methyl Red	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 N H <sub>2</sub> SO <sub>4</sub>	1438801
Alkalinity, Total <sup>2</sup>	Bromocresol/Methyl Red	1 - 10 meq/L Base	1.600 N H <sub>2</sub> SO <sub>4</sub>	1438901
Aqua Ammonia	Colorimetric pH End Point	5 - 35 % as NH <sub>3</sub>	8.00 N H <sub>2</sub> SO <sub>4</sub>	1439101
Chloride <sup>3</sup>	Mercuric Nitrate	10 - 160 mg/L Cl <sup>-</sup>	0.2256 N Hg(NO <sub>3</sub> ) <sub>2</sub>	1439301
Chloride <sup>3</sup>	Mercuric Nitrate	100 - 8,000 mg/L Cl <sup>-</sup>	0.256 N Hg(NO <sub>3</sub> ) <sub>2</sub>	92101
Hardness, Calcium <sup>4</sup>	EDTA (ManVer® 2)	10 - 160 mg/L CaCO <sub>3</sub>	0.0800 M EDTA	1436401
Hardness, Calcium <sup>4</sup>	EDTA (CalVer® 2)	100 - 4,000 mg/L CaCO <sub>3</sub>	0.800 M EDTA	1439901
Hardness, Total <sup>5</sup>	EDTA (ManVer® 2)	10 - 160 mg/L CaCO <sub>3</sub>	0.0800 M EDTA	1436401
Hardness, Total <sup>5</sup>	EDTA (CalVer® 2)	100 - 4,000 mg/L CaCO <sub>3</sub>	0.800 M EDTA	1439901
Sulfite <sup>6</sup>	Iodate-Iodide	0 - 800 mg/L SO <sub>3</sub> <sup>2-</sup>	0.3998 N KIO <sub>3</sub> -KI	1496101

<sup>1</sup> Equivalent to Standard Method 2310 B (4a), 18th, 19th, 20th, and online edition.

<sup>2</sup> Equivalent to Standard Methods 2320 B, 18th, 19th, 20th, and online edition.

<sup>3</sup> Equivalent to Standard Methods 4500-Cl C, 18th, 19th, 20th, and online edition.

<sup>4</sup> Equivalent to Standard Methods 3500-Ca D, 18th, 19th, 20th, and online edition.

<sup>5</sup> Equivalent to Standard Methods 2340 B or C, 18th, 19th, 20th, and online edition.

<sup>6</sup> Equivalent to Standard methods 4500-SO<sub>3</sub> B, 18th, 19th, 20th, and online edition.

\* Not for delivery to Connecticut. For complete list of state restrictions, contact Hach.

# DIGITAL TITRATOR CARTRIDGES & REAGENT SETS

Parameter	Method	Range	Titrant	Cart. Prod. No.	Set Prod. No.
Acid-Base	Phenolphthalein End Point	10 - 4,000 meq/L Acid	8 N NaOH	1438101	—
Acid-Base	Phenolphthalein End Point	1 - 10 meq/L Base	1.600 N H <sub>2</sub> SO <sub>4</sub>	1438901	—
Acid-Base	Phenolphthalein End Point	10 - 4,000 meq/L Base	8.00 N H <sub>2</sub> SO <sub>4</sub>	1439101	—
Acid-Base	Phenolphthalein End Point	10 - 4,000 meq/L Base	8.00 N HCl	1439001	—
Acidity	Phenolphthalein End Point	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 NaOH	1437701†	2272800
Acidity	Methyl Orange	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 NaOH	1437701†	2272800
Acidity	Phenolphthalein	1 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N NaOH	1437901†	2272800
Acidity	Methyl Orange	1 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N NaOH	1437901†	2272800
Alkalinity	Phenolphthalein	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 N H <sub>2</sub> SO <sub>4</sub>	1438801†	2271900
Alkalinity	Phenolphthalein	100 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N H <sub>2</sub> SO <sub>4</sub>	1438901†	2272800
Alkalinity, Total	Phenolphthalein	10 - 160 mg/L CaCO <sub>3</sub>	0.1600 N H <sub>2</sub> SO <sub>4</sub>	1438801†	2271900
Alkalinity, Total	Bromcresol/Methyl Red	100 - 4,000 mg/L CaCO <sub>3</sub>	1.600 N H <sub>2</sub> SO <sub>4</sub>	1438901†	2271900
Aqua Ammonia	Bromcresol/Methyl Red	5 - 35 % as NH <sub>3</sub>	8.00 N H <sub>2</sub> SO <sub>4</sub>	1439101†	2930500
Carbon Dioxide	Colorimetric pH End Point	10 - 100 mg/L CO <sub>2</sub>	0.3636 N NaOH	1437801	2272700
Carbon Dioxide	Phenolphthalein	100 - 1,000 mg/L CO <sub>2</sub>	3.636 N NaOH	1438001	2272700
Chelant, Free	Phenolphthalein	0 - 20.0 mg/L CaCO <sub>3</sub>	0.0800 M MgCl <sub>2</sub>	2062501	—
Chelant, Total	Magnesium Chloride	0 - 40 mg/L Na <sub>4</sub> EDTA	0.0200M Bi(NO <sub>3</sub> ) <sub>3</sub>	2434501	—
Chloride	Bismuth Nitrate	10 - 160 mg/L Cl <sup>-</sup>	0.2256 N Hg(NO <sub>3</sub> ) <sub>2</sub>	1439301†	2272600
Chloride	Mercuric Nitrate	10 - 160 mg/L Cl <sup>-</sup>	0.2256 N AgNO <sub>3</sub>	1439601	2288000
Chloride	Silver Nitrate	100 - 10,000 mg/L Cl <sup>-</sup>	1.128 N AgNO <sub>3</sub>	1439701	2288000
Chloride	Silver Nitrate	100 - 8,000 mg/L Cl <sup>-</sup>	0.256 N Hg(NO <sub>3</sub> ) <sub>2</sub>	92101†	2272600
Chlorine, Free	Mercuric Nitrate	0 - 1,000 µg/L Cl <sub>2</sub>	0.00564 N PAO	199901	—
Chlorine, Free	Amperometric, Forward	0 - 3.00 mg/L Cl <sub>2</sub>	0.00564 N FEAS	2292301	2445300
Chlorine, Total	DPD-FEAS	6 µg/L - 1,000 Cl <sub>2</sub>	0.028 N Iodine	2333301	—
Chlorine, Total	Amperometric, Black	0 - 1,000 µg/L Cl <sub>2</sub>	0.00564 N PAO	199901	—
Chlorine, Total	Amperometric, Forward	0 - 3.00 mg/L Cl <sub>2</sub>	0.00564 N FEAS	2292301	2445300
Chlorine, Total	DPD-FEAS	1 - 400 mg/L Cl <sub>2</sub>	0.02256 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2409101	—
Chlorine, Total	Iodometric	20 - 2,000 mg/L	0.113 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2267301	2272500
Chlorine, Total	Iodometric	2,000 - 70,000 mg/L Cl <sub>2</sub>	2.00 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	1440101	2444800
Chromate	Iodometric	20 - 400 mg/L CrO <sub>4</sub>	0.2068 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2267601	2272400
Hardness, Calcium	Iodometric	1 - 16 G.d.h.	0.1428 M EDTA	1496001	—
Hardness, Calcium	EDTA (CalVer® 2)	10 - 200 G.d.h.	0.714 M EDTA	1495901	—
Hardness, Calcium	EDTA (CalVer® 2)	10 - 160 mg/L CaCO <sub>3</sub>	0.0800 M EDTA	1436401†	2447200
Hardness, Calcium	EDTA (CalVer® 2)	100 - 4,000 mg/L CaCO <sub>3</sub>	0.800 M EDTA	1439901†	2447500
Hardness, Total	EDTA (CalVer® 2)	1 - 16 G.d.h.	0.1428 M EDTA	1496001	—
Hardness, Total	EDTA (ManVer® 2)	10 - 200 G.d.h.	0.714 M EDTA	1495901	—
Hardness, Total	EDTA (ManVer® 2)	10 - 160 mg/L CaCO <sub>3</sub>	0.0800 M EDTA	1436401	2448000
Hardness, Total	EDTA (ManVer® 2)	100 - 4,000 mg/L CaCO <sub>3</sub>	0.800 M EDTA	1439901	2448100
Hardness, Total, Sequential	EDTA (ManVer® 2)	1 - 16 G.d.h.	0.1428 M EDTA	1496001	—
Hardness, Total, Sequential	EDTA (CalVer® 2 & ManVer® 2)	10 - 200 G.d.h.	0.714 M EDTA	1495901	—
Hardness, Total, Sequential	EDTA (CalVer® 2 & ManVer® 2)	10 - 160 mg/L CaCO <sub>3</sub>	0.0800 M EDTA	1436401	2448000
Hardness, Total, Sequential	EDTA (CalVer® 2 & ManVer® 2)	100 - 4,000 mg/L CaCO <sub>3</sub>	0.800 M EDTA	1439901	—
Hypochlorite	EDTA (CalVer® 2 & ManVer® 2)	50 - 150 g/L Cl <sub>2</sub>	2.26 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2686901	2687000
Iron	Iodometric Method	10 - 100 mg/L Fe	0.0716 M EDTA	2081701	2449200
Iron	EDTA	100 - 1,000 mg/L Fe	0.716 M EDTA	2081801	2449300
Nitrite	EDTA	100 - 2,500 mg/L NaNO <sub>2</sub>	0.5 N Ceric Ion	2270701	—
Oxygen, Dissolved	Ceric Ion Titration	1 - 10 mg/L O <sub>2</sub>	0.200 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2267501	2272200
Oxygen, Dissolved	Azide mod. of Winkler Method	10 - 100 mg/L DO	2.00 N Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	1440101	—
Salinity	Azide mod. of Winkler Method	0 - 100 ppt salinity	2.570 N Hg(NO <sub>3</sub> ) <sub>2</sub>	2393701	—
Sulfite	Mercuric Nitrate	0 - 800 mg/L SO <sub>3</sub> <sup>2-</sup>	0.3998 N KIO <sub>3</sub> -KI	1496101	2272300
Volatile Acids	Iodate-Iodide	100 - 2,400 mg/L CH <sub>3</sub> COOH	0.9274 N NaOH	1484201	2460200

†Not for delivery to Connecticut. For complete list of state restrictions, contact Hach.

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**NEW!**  
**Hach's BW680  
Handheld  
Fluorometer  
determines the  
efficacy of ballast  
water treatment  
systems.**



*Be Right™*



# BW680 HANDHELD FLUOROMETER FOR BALLAST WATER

# NEW!

BALLAST WATER



Simple, hand-held, pocket-sized fluorometer tests for photosynthetically active chlorophyll, like that found in living phytoplankton, in less than 1 minute.

The BW680 provides a simple, rapid method for determining the efficacy of ballast water treatment systems.

- *Ship Operator*– The Hach BW680 can help ship owners and operators avoid costly delays in port and penalties that may result from gross non-compliance to IMO D-2 standards.
- *Port State Control*– PSC officers will want to quickly and easily check that ballast water is not at risk for gross non-compliance to the IMO D-2 standard. The Hach BW680 can help the PSC from unduly delaying a vessel in port.
- *Flag State Agents*– May validate the compliance of their flagged vessels with the Hach BW680 as they arrive in port, and prior to inspection by PSC.

### Simple for Users of All Skill Sets

The Hach BW680 Handheld Fluorometer requires no training prior to use—simply place the sample in the cuvette, press “Read,” and view the risk of discharge (Fail, High, Low).

### Complete Solution for Regulatory Compliance

The BW680 has been combined with the Pocket II Colorimeter and a Refractometer into the BW700 Ballast Water Validation Kit to provide a full range of validation tools.



BW700 Validation Kit provides a full range of tools to rapidly assess risk of IMO ballast water non-compliance.

### Prod. No. Description

2037700 BW680 Handheld Fluorometer

### Validation Kit

25127000 Hach Rapid Ballast Water Validation Test Kit  
Includes: Backpack, fluorometer, wipes, refractometer, chlorine spec color standards for low and high range, 1cm sample cuvettes (100pk), droppers (20pk), PCII for chlorine, and a packing guide.

### Individual Instruments

5870000 Pocket Colorimeter II

25128000 Refractometer

For more information, request LIT2622.



**Hach Backpacks...  
Convenient, Customizable,  
and Ergonomic.**



*Be Right™*



## The Hach backpack revolutionizes equipment storage by providing a fully customizable and easily portable alternative to the Hach hard-sided case.

- *Convenient* – The answer to hands-free portability of analytical testing equipment, these backpacks combine contemporary styling with innovative design.
- *Customizable* – The adjustable divider system allows you to create customized compartments to organize equipment just the way you like it.
- *Ergonomic* – Lightweight, thick padding material gives superior protection during transportation. A stitched foam back panel makes the backpack well suited for either short or long testing adventures. The sternum buckle system adds support when carrying heavier equipment. The large backpack can be used as a wheeled bag or a backpack. The in-line wheel comfort pad provides additional comfort when used as a backpack.



### Additional Features:

- Waterproof containment case for wet chemistry storage
- Compartmental case to organize routine testing consumables
- Universal laptop sleeve (stores most 15.4" laptops)
- Organizer compartment for stationary items
- Dry storage zipper pouch for documentation or liquid-filled equipment
- Side stretch woven pockets for storage bottle transportation
- Skate style wheels with telescoping handle (Large backpack only)

### Portable Storage for:

HQd Meters, DR 900 Colorimeters, H-Series Meter, 2100Q Turbimeter, Hach MP Meter, Digital Titrators, Pocket Colorimeter II and Powder Pillows and much more...

#### Prod. No. Description

#### Backpacks with waterproof containment and compartment cases:

- 2990800** Large Backpack with Cases, Telescoping Handle and In-line wheels, for portable equipment
- 2990700** Small Backpack with Cases, for portable equipment

See next page for additional reagent sets.



#### Prod. No. Description

#### Backpack starter kits perfect for Drinking Water and Industrial Applications

- 2990900** Drinking Water Starter Kit with Small Backpack  
Includes: Pocket Colorimeter II, Chlorine MR/HR System, 2100Q Portable Turbidimeter kit, MP-6 Portable Meter (pH, ORP, Conductivity, TDS & Resistivity) Essentials Package and a Small Backpack with Cases
- 2991000** Drinking Water Starter Kit with Large Backpack  
Includes: Pocket Colorimeter II, Chlorine MR/HR System, 2100Q Portable Turbidimeter kit, MP-6 Portable Meter (pH, ORP, Conductivity, TDS & Resistivity) Essentials Package and a Large Backpack with Cases
- 2991200** Industrial Starter Kit with Small Backpack  
Includes: DR 900 Portable Colorimeter, MP-6 Portable Meter (pH, ORP, Conductivity, TDS & Resistivity) Essentials Package, Digital Titrator Universal Kit, Small Backpack with Cases and Reagent Sets for Total Chlorine, Free Chlorine, Nitrite, Iron, Phosphate, Hardness, Alkalinity, Sulfite.
- 2991100** Industrial Starter Kit with Large Backpack  
Includes: DR 900 Portable Colorimeter, MP-6 Portable Meter (pH, ORP, Conductivity, TDS & Resistivity) Essentials Package, Digital Titrator Universal Kit, Large Backpack with Cases and Reagent Sets for Total Chlorine, Free Chlorine, Nitrite, Iron, Phosphate, Hardness, Alkalinity, Sulfite.

# CHOOSE ADDITIONAL REAGENT SETS BY APPLICATION

Description	Range	Method	Drinking			Prod. No.
			DR 900	Water	Industrial	
Acidity (for Methyl Orange and Phenolphthalein)	10 - 160 mg/L	8201/8202			•	2272800
Alkalinity	10 - 4000 mg/L CaCO <sub>3</sub>	8203		•	•	2271900
Aluminum	0.008 - 0.800 mg/L Al	8012	•	•		2242000
Ammonia	0.01 - 0.50 mg/L NH <sub>3</sub> -N	8155	•	•	•	2668000
Ammonia, Free (as N)	0.02 - 0.50mg/L	10200	•	•		2879704
Chloramine, mono (as Cl <sub>2</sub> )	0.04 - 4.50 mg/L	10171	•	•		2802246
Chloride	10 - 10000 mg/L Cl <sup>-</sup>	8207			•	2288000
Chlorine Dioxide	7 - 50 mg/L	8345	•	•		—
Chlorine, Free	0.02 - 2.00 mg/L Cl <sub>2</sub>	8021	•	•		2105569
Chlorine, Free, HR	0.1 - 10.0 mg/L	10069	•	•	•	1407099
Chlorine, Total	0.02 - 2.00 mg/L	8167	•	•	•	2105569
Chlorine, Total, HR	0.1 - 10.0 mg/L	10070	•	•	•	1406499
Color	25 - 500 units	8025	•	•		—
Copper	0.04 - 5.00 mg/L Cu	8143	•	•	•	2439200
Fluoride (SPADNS 2)	0.02 - 2.00 mg/L F <sup>-</sup>	10225	•	•		2947549
Glycol	0- greater than 150 mg/L				•	2186400
Hardness	10 - 160 mg/L CaCO <sub>3</sub>	8213		•	•	2448000
Hardness (as CaCO <sub>3</sub> )	10 - 4,000 mg/L	8213		•	•	2448100
Iron, Total	0.02 - 3.00 mg/L	8008	•	•	•	2105769
Manganese, LR	0.006 - 0.700 ppm	8149	•	•	•	2651700
Molybdenum, Molybdate, LR	0.2 - 40.0 mg/L Mo	8036	•		•	2604100
Molybdenum, Molybdate, HR	0.02 - 3.00 mg/L Mo	8169	•		•	2449400
Nitrate, HR (as N)	0.3 - 30.0 mg/L	8039	•	•	•	2106169
Nitrate, MR (as N)	0.1 - 10.0 mg/L	8171	•	•	•	2106169
Nitrate, LR (as N)	0 - 0.50 mg/L	8192	•	•	•	2429800
Nitrite, Nitrogen, LR	0.002 - 0.350 mg/L	8507	•	•	•	2107169
Oxygen Scavengers (DEHA)	3 - 450 ppb	8140	•		•	2446600
Phosphorus, Reactive	0 - 2.50 mg/L	8048	•	•	•	2106069
Phosphonate	0 - 125 mg/L	8007	•		•	2429700
Silica, HR	1 - 100 mg/L	8186	•		•	2429600
Silica, LR	0.01 - 1.6 mg/L	8186	•		•	2459300
Sulfate	2 - 70 mg/L	8051	•	•	•	2106769
Sulfide	5 - 800 µg/L	8131	•	•	•	2244500
Sulfite	4 - 800 mg/L SO <sub>3</sub>	8216			•	2272300
Triazole	1 - 20 mg/L (Tolytriazole)	8079	•		•	2141299
Zinc	0.01 - 3.00 mg/L	8009	•	•	•	2429300

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# SIRR Reagent Delivery Program

Never run out of reagents again, take advantage of the Hach SIRR Program.



## Hach Reagent Delivery Program Facts

**Never run out of factory fresh chemicals and reagents, scheduled to meet your usage needs.**

For customers who can forecast their reagent supply requirements, Hach offers a Scheduled Inventory Reagent Replacement (SIRR) Plan. This program applies to purchases of all Hach chemicals—analyzer reagents, COD vials, AccuVac<sup>®</sup> Ampules, buffers and standards, liquids and powders—and offers the following benefits:

- **Convenience of reduced paperwork**  
Submit one purchase order—Hach ships the amounts you dictate on a schedule you set.
- **Lower inventory costs and fresh supplies**  
Arrange for reagents to arrive on your schedule with monthly, bimonthly, or quarterly shipments. Minimize storage expense while ensuring a predictable supply of fresh chemicals.
- **Automatic shipments**  
Enjoy peace of mind—chemicals will be there when you need them. Hach shipments arrive on the schedule that best meets your needs.

### Here's how it works.

1. Determine Hach product part numbers for the chemicals that you would like to include in your program.
2. Forecast your usage requirements for a one-year period, determining quantities and delivery dates for each item. These can vary based on seasonal usage for items such as chlorine, for example.
3. Determine the date of first delivery—when your program will begin.
4. To place your order visit [www.hach.com](http://www.hach.com) or call 800-227-4224.

## Terms and Conditions

- To qualify for the Hach Reagent Delivery Program, orders must contain at least four shipments during a 12-month period, beginning at the time of the first delivery. Only reagents and chemicals that ship at least four times will apply to the program. Freight charges may vary with each shipment, and will be billed after each shipment is sent.
- No items may be added during the contract period. Additional items require a separate order. However, occasional customer requests for changes in purchase quantities or delivery schedules may be granted. Any delivery changes require advance notice of at least 30 days—and 60 days for specialty chemicals or items.
- Hach reserves the right to refuse changes in contractual terms. Customers electing to terminate the Program agreement prior to expiration and delivery in full may be assessed a cancellation fee amounting to any discount that may have been applied on the shipped product.
- All other terms stated in Hach catalogs, quotations and invoices will apply. Eligibility for the Hach Reagent Delivery Program is limited to USA customers for products to be shipped and used in the USA.





**At last, an easy,  
EPA-approved  
method for  
oil and grease!**



*Be Right™*

# DRB 200 DRY THERMOSTAT REACTOR

## The simple solution for standard and special digestions.

SAMPLE PREPARATION



- Easy-to-use and fast
- Safe to operate
- Accommodates a variety of test vials
- Optional dual block for simultaneous digestions

The Hach DRB 200 Dry Thermostat Reactor provides unique one-key operation. Programs for Hach procedures with digestion are preprogrammed into the instrument. And it's fast—the block heats from ambient to 150°C in less than 10 minutes. Safe to operate. The fully insulated heater block of the DRB 200 reactor prevents skin contact with the heater block. Temperature safeguards are provided to prevent overheating. The reactor will emit an audible signal and automatically shutdown at the end of the run. Optional dual block for simultaneous digestions is available. Two heater blocks in the DRB 200 reactor give the operator independent control of two temperatures and durations. Use this option to run two programs at the same time.

### Digital Reactors

Most versatile models support either 13mm\* or 16mm Hach chemistry vials.

Prod. No.	Description
LTV082.53.30001	9 vials x 16mm + 2 vials x 20mm (single block) 115 Vac
LTV082.53.40001	15 vials x 16mm (single block) 115 Vac
LTV082.53.42001	21 vials x 16mm + 4 vials x 20mm (dual block) 115 Vac
LTV082.53.44001	15 vials x 16mm + 15 vials x 16mm (dual block) 115 Vac
LTV082.52.44001	15 vials x 16mm + 15 vials x 16mm (dual block) 230 Vac
LTV082.52.30001	9 vials x 16mm + 2 vials x 20mm (single block) 230 Vac
LTV082.52.42001	21 vials x 16mm + 4 vials x 20mm (dual block) 230 Vac
LTV082.52.40001	15 vials x 16mm (single block) 230 Vac

\*Use reactor adapters to adapt 16mm vial wells to the 13mm TNTplus vials.

These DRB 200 reactors support only the 13mm diameter TNTplus vials.

<b>DRB200-01</b>	9 vials x 13mm + 2 vials x 20mm (single block) 115 Vac
<b>DRB200-02</b>	21 vials x 13mm + 4 vials x 20mm (dual block) 115 Vac
<b>DRB200-03</b>	15 vials x 13mm + 15 vials x 13mm (dual block) 115 Vac
<b>DRB200-04</b>	12 vials x 13mm + 8 vials x 20mm (dual block) 115 Vac
<b>DRB200-05</b>	9 vials x 13mm + 2 vials x 20mm (single block) 230 Vac
<b>DRB200-06</b>	21 vials x 13mm + 4 vials x 20mm (dual block) 230 Vac
<b>DRB200-07</b>	15 vials x 13mm + 15 vials x 13mm (dual block) 230 Vac
<b>DRB200-08</b>	12 vials x 13mm + 8 vials x 20mm (dual block) 230 Vac

### Reactor Adapters

These aluminum tubes are inserted into the 16mm vial wells of existing reactors, to adapt them to the 13mm TNTplus vials. The adapters can be removed (once the heater block has cooled) if the customer needs to use 16mm vial chemistries.

<b>2895805</b>	Reactor Adapter, 16mm to 13mm, 5/pk
<b>HHA155</b>	Reducing Adapter for DRB200, 20 > 16 mm

### Applications

	Temperature (°C)	Time (minutes)
COD	150	120
TOC	105	120
Metals, suspended and/or complexed (lead, cadmium, copper, iron, nickel, zinc)	100	60
Total Chromium	100	60
Total Nitrogen	100/105*	60/30
Total Phosphate	100/105*	60/30
User-specific programs	37 to 165	1 to 480

\*Digestion temperature and time depend on test method and reagents selected.

### Specifications\*

<b>Programmable Temperature Range</b> 37 to 165°C (99 to 329°F)	<b>Power Requirements</b> 100 to 240 Vac, 50/60 Hz, 600 VA
<b>Operating Temperature</b> 10 to 45 °C (50 to 113°F)	<b>Compliance</b> CE, GS, cTUVus
<b>Programmable Timer Range</b> 0 to 480 minutes	<b>Dimensions</b> 25.0 x 14.5 x 31.0 cm (9.8 x 5.7 x 12.2 in.)
<b>Heating Rate</b> 20 to 150°C in 10 minutes	<b>Weight</b> Single block: 2 kg (4.4 lbs.) Dual block: 2.8 kg (6.2 lbs.)
<b>Temperature Stability</b> ±2°C	<b>Warranty</b> Two-year
<b>Stored Programs</b>	
COD 150°C 120 minutes	
TOC 105°C 120 minutes	
Fixed 100, 105, 30, 60, 150, 165°C 120 minutes	

\*Subject to change without notice.

## Cut digestion time to 10 minutes!

- Accurate, reliable, fast results\*
- Eliminates metal catalysts
- Very low reagent use
- No fume hood required

Cut digestion time to 10 minutes with the patented Digesdahl Digestion Apparatus. Use the Digesdahl to determine Kjeldahl nitrogen (crude protein), phosphorus, calcium, potassium, iron, copper, silver, aluminum, nickel, cobalt, magnesium, manganese, lead, zinc, cadmium, and chromium in a variety of solid and liquid samples.

The system uses sulfuric acid and hydrogen peroxide to rapidly digest organic materials. Quantitative dilution directly in the digestion flask allows fast preparation for analyses by photometric or other methods.

A water aspirator purges reaction products, so digestions can be safely completed behind the optional safety shield without the need for a fume hood.

*\*Digesdahl digestion methods are not approved for EPA reporting purposes.*



Each Digesdahl unit includes two digestion flasks, a fractionating column and capillary funnel, an aspirator, finger cots, safety glasses, and assembly instructions.

Prod. No.	Description
2313020	Digesdahl Digestion Apparatus 115 Vac, 50/60 Hz
2313021	Digesdahl Digestion Apparatus 230 Vac, 50/60 Hz
5004000	Safety Shield
2220038	Hydrogen Peroxide Pour-out Dispenser, with flask, dispenses 10 mL

### Standards

2277924	Ammonium p-Toluenesulfonate, 7.402% N, 25 g.
2278024	Glycine p-Toluenesulfonate, 5.665% N, 25 g.
2278124	Nicotinic Acid p-Toluenesulfonate, 4.743% N, 25 g.
2277800	Nitrogen Primary Standard Set, for checking accuracy of crude protein test (TKN), contains one bottle of each of the above standards and an instruction booklet.

### Reagents

97949	Sulfuric Acid, ACS, 500 mL
2119649	Hydrogen Peroxide, 50%, 490 mL
2495300	Reagent Set for Colorimetric TKN Determination

### Specifications\*

#### Power Requirements

115 or 230 Vac, 50/60 Hz, 250 watts

#### Control

Variable from 25-250 watts

#### Construction

Corrosion-resistant, epoxy-painted metal with composition heater base

#### Dimensions

14 x 16.5 x 33.6 cm (5.5 x 6.5 x 13.25") Requires total height clearance of approximately 50 cm (20") when assembled

#### Net Weight

3.85 kg (8.5 lb)

#### Shipping Weight

4.8 kg (10.6 lb)

*\*Subject to change without notice.*

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# DISTILLATION APPARATUS

## Fast set-up for sample pretreatment.

SAMPLE PREPARATION

### General Purpose Assembly



- Distillation sets include everything you need to satisfy EPA distillation requirements
- Easy to set up because you only receive the parts you need
- Illustrated, step-by-step procedures simplify distillation

### General Purpose Distillation Apparatus Set

Adapts to a variety of test needs including all wastewater and water methods requiring sample pretreatment by distillation. Applications include fluoride, ammonia-nitrogen, phenols, selenium, volatile acids, and albuminoid nitrogen. Heating apparatus, sold separately, is needed for distillation.

### Arsenic Distillation Apparatus Set

Used together with the General Purpose Distillation Set (Prod. No. 2265300) when arsenic is to be determined. Heating apparatus (not included) is also required.

### Cyanide Distillation Apparatus Set

Used together with the General Purpose Distillation Set (Prod. No. 2265300) when cyanide is to be determined. Heating apparatus (not included) is also required.

### Heater and Support Apparatus

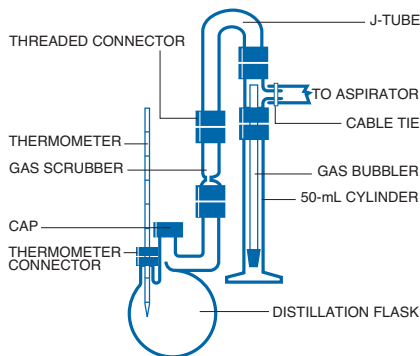
For use with Hach Distillation Glassware Sets. Includes Rotamantle Heater, clamps, clamp holders, and support rod.

### Laboratory Platform Jack

Loading platform, 15 x 15 cm (6 x 6"). Lifts 15 kg (33 lb) to a 28 cm (11") height maximum.

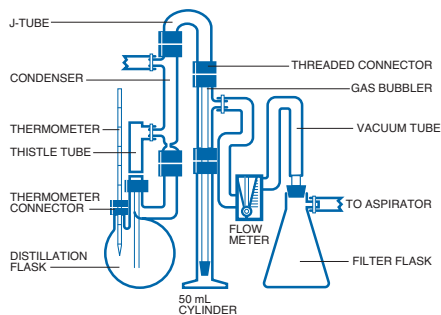
### Arsenic Assembly, Complete

(shown with required General Purpose Set)



### Cyanide Assembly, Complete

(shown with required General Purpose Set)



Prod. No.	Description	Unit
2265300	General Purpose Distillation Apparatus Set (Heater and support apparatus also required)	1 each
2265400	Arsenic Set (Heater and support apparatus also required)	1 each
2265800	Cyanide Set (Heater and support apparatus also required)	1 each

### Accessories

Prod. No.	Description	Unit
2264806	Connector (20-400 to 20-400), J-tube, 6/pk	6 /pk
2274000	Connector (13-425), Thermometer	1 each
2274106	Connector (24-400 to 24-400), Cylinder, 6/pk	1 each
2265308	Distillation Procedures Manual	1 each
2274400	Heater and Support Apparatus, 115 Vac, 60 Hz	1 each
2274402	Heater and Support Apparatus, 230 Vac, 50 Hz	1 each
2274300	Laboratory Platform Jack	1 each
2635700	Thermometer, -10 to 225°C, 1 Divisions (°C), 405 mm (16)	1 each

See page 287 for individual replacement parts.

## A revolution in distillation technology.

With the MICRO DIST system from Lachat Instruments, you can now distill up to 21 samples for cyanides, sulfide and ammonia in 30 minutes; and phenolics and tritium in 90 minutes. MICRO DIST eliminates the need for bulky, expensive, clumsy and time-consuming glassware-based distillation units while accommodating liquid and solid samples.

Contact Hach for ordering information.



SAMPLE PREPARATION

### Specifications\*

**Dimensions (W x D x H)**  
72 x 17 x 33 cm (28 x 7 x 13 in.)

**Electrical**  
110–120 Vac, 11A; 220–240 Vac, 5A

*\*Subject to change without notice.*

### For Saving Time, Money, and Reducing Complexity, MICRO DIST Outshines Other Techniques

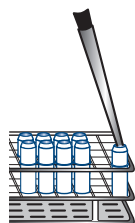
#### Time Comparisons

	MICRO DIST	MIDI	MACRO
Setup Time (min.)	15 (21 samples)	80 (10 samples)	240 (10 samples)
Warm-up Time (min.)	15	15	60
Distillation Time (min.)	30 (21 samples)	60 (10 samples)	60 (10 samples)
Cool-down Time (min.)	0	15	30
Clean-up & tear-down time (min.)	5	60	60
Total (min.)	65	230	450

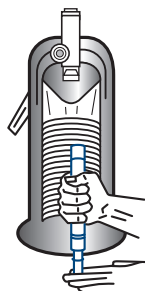
#### Other Benefits

	MICRO DIST	MIDI	MACRO
Fume hood required	No	Yes	Yes
Bench area needed (sq. in.)	24 (21 samples)	120 (10 samples)	144 (5 samples)
Breakable ground-glassware	No	Yes	Yes
Sample volume required (mL)	6	50	500
Sample waste volume after distillation (mL)	4	~48	~480
Purge cylinder gas required	No	Yes	Yes
Running cooling water required	No	Yes	Yes

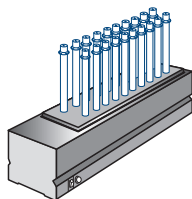
### MICRO DIST Makes Distillation Easy!



1. Place 6 mL of sample into the Sample Tube.



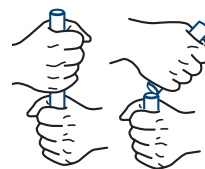
2. Attach the Sample Tube to the Collector Tube.



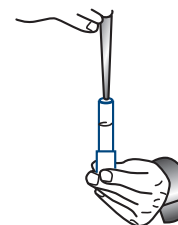
3. Place the tube assembly into the heating block and heat the samples for 30 minutes.



4. Remove each tube from the block and disconnect the Sample Tube from the Collector Tube.



5. Snap the Collector Tube in half.



6. Bring the Distillate in the Collector Tube up to volume with DI water.

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# XENOSEP® OIL AND GREASE SYSTEMS

## At last, an easy, EPA-approved method for oil and grease!

SAMPLE PREPARATION



Lab Stand and Clamp sold separately.

Xenosep Solid-Phase Extraction (SPE) Systems offer the easiest and most cost effective way to test for Oil and Grease using EPA Method 1664A. Fast, in-house results enable you to maintain control over your plant discharges in real time without the complications of the hexane LLE procedure. Xenosep SPE filters feature a unique triple layer that prevents premature clogging and flows 10 times faster than typical SPE filters.

It is now possible to easily achieve reliable, consistent Oil and Grease results and decrease your sample turnaround time. A free training video on CD is included with each Starter Kit to show your lab how to perform EPA Method 1664A by SPE. For more information on Xenosep SPE Systems, visit our website at [www.hach.com/xenosep](http://www.hach.com/xenosep).

Xenosep SPE Systems are available in convenient kits which include the components for 24 tests and all the glassware required to process them, one at a time. Replacement components are also available.

Prod. No.	Description
2943231	Xenosep SPE Starter Kit without Solvent Recovery

### Select Replacement Components (others available upon request)

2943800	Xenomax™ SPE Consumables Kit (includes 24 SPE Filters, Pipets, and Sodium Sulfate Columns)
2943300	SPE Filters, 1664A, 47 mm, 48/pk
2943400	Pipets, Transfer, Polyethylene, 15 mL, 48/pk
2943500	Inline Column with Sodium Sulfate, 10g, 48/pk
2943600	Glass Wool Fibers 50 g
2943701	EPA 1664A Standard, 1x30 mL, 4mg/mL
2943702	EPA 1664A Standard, 1x10 mL, 4mg/mL
2943226	Aluminum Pans, 105 mm, 100/pk
2943227	Hi-Loft GFM Prefilters, 42 mm, 48/pk

## Need multiple sample processing capability or to recover the solvent?



Manifold sold separately.

Xenosep Manifold Kits are available for a three position manifold and include components necessary to process three samples at a time.

Prod. No.	Description
2943232	3 Place Manifold Kit, Glassware
2946707	3 Place Manifold, Stainless Steel



Lab Stand and Clamp sold separately.

Xenosep Starter Kit with solvent recovery is the same as above except it includes a distillation assembly and a total of 7 flat-sided boiling flasks.

Prod. No.	Description
2943200	Starter Kit with Solvent Recovery



**The Right Sampler for Your Application**



*Be Right™*

# AUTOMATIC SAMPLERS

Reliable results begin with sampling!



## Automatic samplers offer...

- Convenience
- Consistency
- Repeatability

...for more representative samples than manual sampling!

## Primary applications for samplers are:

- Monitoring Influent and Effluent waters (Wastewater Treatment Facilities and/or Industrial Dischargers)
- Compliance monitoring (Private Testing Labs, State Enforcement Agencies)
- Environmental/Stormwater run-off monitoring

## Hach offers a full line of equipment to meet your automatic sampling needs:

- **SD900 Controller**  
*Easy set-up and reduced maintenance*
- **900MAX Controller**  
*Advanced measurement capabilities*
- **Portable Bases**  
*Compact and standard sizes*
- **Indoor Refrigerated Bases**  
*Vinyl and stainless steel finishes*
- **All Weather Refrigerated Base**  
*Maximum protection from the elements*
- **Dipper**  
*2" inlet accommodates large particulates*
- **Accessories**  
*From bottles to solar panels, and everything in between*

Select from our most popular sampling kits or customize your own.

## Hach Sampler Rental Programs

Hach offers select samplers for long- or short-term rentals. Call 800-227-4224 for details on Hach's rental offerings, as well as our Rent-to-Own program!

# CHOOSING THE SAMPLER FOR YOU

Select base options from portable compact, portable standard, indoor refrigerated (with vinyl or stainless steel cabinet) or all-weather refrigerated, as well as single or multi-bottle sets.



SAMPLERS

	PORTABLE				REFRIGERATED			ALL-WEATHER	
	SD900 Compact	SD900 Std	900MAX Compact	900MAX Std	SD900	900MAX	Dipper	SD900	900MAX
<b>APPLICATIONS</b>									
Waste Water Treatment Plants	■	■	■	■	■	■	■	■	■
Drinking Water					■	■		■	■
Industrial Water	■	■	■	■	■	■		■	■
Environmental	■	■	■	■					
Collection Systems	■	■	■	■	■	■	■	■	■
Food and Beverage	■	■	■	■	■	■		■	■
Pulp and Paper	■	■	■	■	■	■	■	■	■
<b>FEATURES</b>									
SDI-12 functionality (Compatible with Hydrolab sondes)	■	■			■			■	
Automatic Sampling	■	■	■	■	■	■	■	■	■
Portable	■	■	■	■					
Stationary Site					■	■	■	■	■
AC Power	■	■	■	■	■	■	■	■	■
Battery Power	■	■	■	■					
All Weather								■	■
Remote Pump			■	■		■			■
Solenoid Valve Control for Pressurized Pipe Sampling			■	■		■			■
Interchangeable Composite and Discrete Sampling	■	■	■	■	■	■		■	■
Pump Tubing Life > 20,000 Cycles	■	■			■			■	
Integral Flow Monitoring			■	■		■			■
pH/Temp ORP	■*	■*	■	■	■*	■		■*	■
Rain Gauge			■	■		■			■
4-20 mA Outputs			■	■		■			■
4-20 mA Inputs	■**	■**	■	■	■**	■	■**	■**	■
Alarm Relays			■	■		■			■
Flow Proportional Sampling Input	■	■	■	■	■	■		■	■
Analog Inputs			■	■		■		■	■
Solar Power System (Option)	■	■	■	■					

\*When using SDI-12 and Data Sonde. \*\*For flow pacing only.

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# BUILD YOUR OWN SAMPLER SETUP

## Customization Options for Portable Base



### 1. CONTROLLER

#### SD900

- 8925SD SD900 controller, center, lid
- 8975 compact base
- 8976 standard base

#### 900MAX

- 8930 900MAX controller, center, lid
- 8975 compact base
- 8976 standard base

### 2. POWER

#### SD900

- 8754400 Battery
- 8753500US Battery Charger 115v US plug
- 8754500US Power Supply 100-120v, 3 pin connection
- 8757400 A/C Power Back up, 16" cable, 3 pin connection
- 5698200 A/C Power Back up, 28" cable, 3 pin connection

#### 900MAX

- 1414 Battery (Gel Electrolyte, 12 Vdc, 6 amp hour) Use charger 913US
- 913US Battery Charger 90-250 Vac, US plug
- 4455100 Power Supply 100-120v, 2 pin connection
- 3670 A/C Power Back Up 2 pin connection

### 3. BOTTLE KITS

Include container, retainer, full bottle shut off and/or distributor arm.

#### Compact Base

- PC010025 (1) 10 L (2.5 gal) glass bottle
- PC010030 (1) 10 L (2.5 gal) poly bottle
- PC240575 (24) 575 mL poly bottles

#### Standard Base

- PS010025 (1) 10 L (2.5 gal) glass bottle
- PS010030 (1) 10 L (2.5 gal) poly bottle
- PS010040 (1) 15 L (4.0 gal) poly bottle
- PS240350 (24) 350 mL glass bottles
- PS241000 (24) 1 L poly bottles

### 4. TUBING

- 921 Tubing, Teflon Lined PE, 10 ft. 3/8 in.\*
- 922 Tubing, Teflon Lined PE, 25 ft. 3/8 in.\*
- 925 Tubing, Teflon Lined PE, 100 ft. 3/8 in.\*  
*\*Requires teflon connection kit, Prod. No. 2186*
- 920 Tubing, Vinyl, 25 ft. intake 3/8 in.
- 923 Tubing, Vinyl, 100 ft. intake 3/8 in.
- 924 Tubing, Vinyl, 500 ft. intake 3/8 in.
- 6633500 Tubing, Black, Reinforced PVC, 25.5', 10mm ID, 15mm OD
- 6627200 Tubing, Black, Reinforced PVC, cut to order, 10mm ID, 15mm OD

### 5. STRAINERS

- 926 Strainer, Teflon/Stainless Steel
- 4652 Strainer, High Velocity/ Shallow Depth
- 2071 Strainer, .406 in. Dia., 316 SS
- 2070 Strainer, 1 in. Dia., 316 SS
- 903 Strainer, Teflon/Stainless Steel, 11 in.

## Customization Options for Indoor Refrigerated Base (115 Vac)



### 1. CONTROLLER & CABINET

#### SD900

- 8927SD SD900 controller, vinyl base, 115 Vac
- 98927SD SD900 controller, stainless steel base, 115 Vac

#### 900MAX

- 8933 900MAX controller, vinyl base, 115 Vac
- 98933 900MAX controller, stainless steel base, 115 Vac

### 2. AC POWER BACKUP

#### SD900

- 8757400 A/C Power Back up, 16" cable, 3 pin connection (Factory-installed option.)

#### 900MAX

- 8988 A/C Power Back up, 2 pin connection (Factory-installed option.)

### 3. BOTTLE KITS

Include container, retainer, full bottle shut off and/or distributor arm.

- RF010025 Kit, 10 L (2.5 gal), Glass
- RF010030 Kit, 10 L (2.5 gal), Poly
- RF010060 Kit, 21 L (5.5 gal), Poly
- RF040030 Kit, 4 Bottles, 10 L (2.5 gal), Poly
- RF240350 Kit, 24 Bottles, 350 mL, Glass
- RF241000 Kit, 24 Bottles, 1 L, Poly

### 4. TUBING

- 921 Tubing, Teflon Lined PE, 10 ft. 3/8 in.\*
- 922 Tubing, Teflon Lined PE, 25 ft. 3/8 in.\*
- 925 Tubing, Teflon Lined PE, 100 ft. 3/8 in.\*  
*\*Requires teflon connection kit, Prod. No. 2186*
- 920 Tubing, Vinyl, 25 ft. intake 3/8 in.
- 923 Tubing, Vinyl, 100 ft. intake 3/8 in.
- 924 Tubing, Vinyl, 500 ft. intake 3/8 in.
- 6633500 Tubing, Black, Reinforced PVC, 25.5', 10mm ID, 15mm OD
- 6627200 Tubing, Black, Reinforced PVC, cut to order, 10mm ID, 15mm OD

### 5. STRAINERS

- 926 Strainer, Teflon/Stainless Steel
- 4652 Strainer, High Velocity/ Shallow Depth
- 2071 Strainer, .406 in. Dia., 316 SS
- 2070 Strainer, 1 in. Dia., 316 SS
- 903 Strainer, Teflon/Stainless Steel, 11 in.

## Customization Options for All-Weather Refrigerated Base (115 Vac)



### 1. CONTROLLER & CABINET

#### SD900

- 3540SDR SD900 controller, 115 Vac
- 3540SDRH SD900 controller, 115 Vac with controller compartment heater (Factory-installed option.)

#### 900MAX

- 3543R 900MAX controller, 115 Vac
- 3543RH 900MAX controller, 115 Vac, with controller compartment heater (Factory-installed option.)

### 2. AC POWER BACKUP

#### SD900 / 900MAX

- 5698200 A/C Power Back up, 28" cable, 3 pin connection

### 3. BOTTLE KITS

Include container, retainer, full bottle shut off and/or distributor arm.

- AW010060 Kit, 21 L (5.5 gal), Poly
- AW040030 Kit, 4 Bottles, 10 L (2.5 gal), Poly
- AW240350 Kit, 24 Bottles, 350 mL, Glass
- AW241000 Kit, 24 Bottles, 1 L, Poly

### 4. TUBING

- 921 Tubing, Teflon Lined PE, 10 ft. 3/8 in.\*
- 922 Tubing, Teflon Lined PE, 25 ft. 3/8 in.\*
- 925 Tubing, Teflon Lined PE, 100 ft. 3/8 in.\*  
*\*Requires teflon connection kit, Prod. No. 2186*
- 920 Tubing, Vinyl, 25 ft. intake 3/8 in.
- 923 Tubing, Vinyl, 100 ft. intake 3/8 in.
- 924 Tubing, Vinyl, 500 ft. intake 3/8 in.
- 6633500 Tubing, Black, Reinforced PVC, 25.5', 10mm ID, 15mm OD
- 6627200 Tubing, Black, Reinforced PVC, cut to order, 10mm ID, 15mm OD

### 5. STRAINERS

- 926 Strainer, Teflon/Stainless Steel
- 4652 Strainer, High Velocity/ Shallow Depth
- 2071 Strainer, .406 in. Dia., 316 SS
- 2070 Strainer, 1 in. Dia., 316 SS
- 903 Strainer, Teflon/Stainless Steel, 11 in.

**Controller + Base + Power  
+ Bottle Kit + Tubing + Strainer  
+ Accessories**



## Your sampling solution for ease of use, reliability, and low maintenance costs.

- Obtain and preserve a repeatable sample volume at a timed interval or after a predetermined volume of flow
- Available in portable, refrigerated or all-weather refrigerated configurations to meet your sampling needs
- Large universal icon keys make set up simple, reducing program errors
- Improved pump means fewer clogs and exceptional performance, even at heights up to 25 feet
- Spring loaded rollers reduce wear and tear on the pump and tubing
- Easy access to dessicant from the side of the controller –no need to remove sampler from base
- 20x longer pump tubing life than other samplers means less down time and lower maintenance costs
- SDI-12 functionality allows for communication with sondes (order Prod. No. 87390SD)



### Data management at your fingertips.

Use Hach's SampleView™ software to view and download sample history to a computer, save templates, upgrade firmware in the field, and download event logs. Reduce time required for manual recordkeeping.

Prod. No.	Description
<b>Portables</b>	
<b>8925SD</b>	Sigma SD900 Controller with Center Section and Cover (Select either a compact or standard insulated base)
<b>8975</b>	Portable Compact Insulated Base
<b>8976</b>	Portable Standard Insulated Base
<b>Indoor Refrigerated</b>	
<b>8927SD</b>	Sigma SD900 Controller with Refrigerated (Vinyl) Base Cabinet, 115v
<b>98927SD</b>	Sigma SD900 Controller with Refrigerated (Stainless Steel) Base Cabinet, 115v
<b>All Weather Refrigerated</b>	
<b>3540SDR</b>	Sigma SD900 Controller with All Weather Refrigerated Base Cabinet, 115v
<b>WRTUPG900STD</b>	900 Controller WarrantyPlus™ Instrument Protection and Service

For a complete sampler set up, you will need to select a controller and base, bottle option, intake tubing, strainer, and power supply. See page 134 for product numbers.

For more information, call to request LIT2569, LIT2590, LIT2591.

### Specifications\*

<p><b>Controller Housing</b> High impact injection-molded, ABS/PC plastic Submersible, watertight, dust-tight, corrosion- and ice-resistant NEMA 4X, 6, IP67</p> <p><b>Certification</b> Controller: CE, RoHS</p> <p><b>Graphics Display</b> 128 x 64 dot matrix backlit LCD, visible in direct sunlight</p> <p><b>User Interface</b> Self prompting/menu driven program 13-key embossed keypad including power key, 4 function keys, 8 navigation keys, and LED indication</p> <p><b>Data Logging</b> Store up to 510 entries in Sample History log including sample time stamp, bottle number, and status of sample (success, bottle full, rinse error, user abort, distributor error, pump fault, purge fail, sample timeout, power fail and low main battery)</p> <p><b>Event Log</b> Includes power on, power fail, firmware updated, pump fault, distributor arm error, low memory battery, low main battery, user on, user off, program started, program resumed, program halted, program completed, grab sample, pump tube change required</p>	<p><b>Sampling Pacing Modes</b> Composite and discrete, multiple bottle time, multiple bottle flow, single bottle time, single bottle flow, flow with time over ride, variable interval, user start/stop, and stormwater, timed bottle sets and set point sampling on a combination of external trigger and/or up to four SDI-12 parameters.</p> <p><b>Overload Protection</b> Internal software-protected 7 amp fuse</p> <p><b>Diagnostics</b> Tests pump, distributor, keypad, LCD, and liquid detect calibration</p> <p><b>Program Language</b> English, Spanish, French, Italian, German, Portuguese, Czech, Turkish, Chinese, Polish, and Hungarian</p> <p><b>Program Lock</b> Access code protection prevents tampering of program and system settings</p> <p><b>Program Delay</b> Programmable sampler start time/date or programmable number of counts to expire before program can start</p>
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\*Subject to change without notice.

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# 900MAX CONTROLLER

SAMPLERS



## Manages and monitors level, flow, velocity, rainfall, pH or ORP.

- Patented\* Constant Time/Variable feature varies sample size in proportion to flow rate, capturing flow-weighted samples on the first try
- The sample volume increases and decreases with the flow, ensuring that proportional samples are taken at even intervals throughout the sampling period
- Large 8 line x 40 character screen, combined with 12 data-logging channels maximizes your flexibility for advanced sampling

\*Patent No. 5587926

### Specifications\*

#### Controller Housing

High-Impact, injection-molded ABS; submersible, watertight, dust-tight, corrosion, and ice resistant; NEMA 4X, 6

#### Certification

CE

#### Graphics Display

8 line x 40 character alphanumeric, back-lit liquid-crystal graphics display.

Self prompting/menu driven program.

#### User Interface

21 key membrane switch keypad with 4 multiple function soft keys

#### Data Logging

Records program start time and date, sample volume collected, sample volume remaining, stores up to 400 sample collection times/dates, all program entries, operational status including number of minutes or pulses to next sample, bottle number, number of samplers collected, number remaining, sample volume collected, volume remaining, sample identification, and all logged data. Up to 200 events logged, including alarm conditions, program run/stop events, etc.

#### Set Point Sample Trigger

When equipped with integral flow meter and/or pH/temperature/ORP monitoring options, sampling can be triggered upon an upset condition when field selectable limits are exceeded

#### Sampling Modes

Multiple bottle time, multiple bottle flow, composite time, composite flow, composite multiple bottle time, composite multiple bottle flow, flow with time override, variable interval, start/stop, and level actuation

#### Overload Protection

5 amp dc line fuse for pump; 5 amp dc line fuse for ac power converter

#### Diagnostics

Tests keypad, RAM, ROM, pump, distributor, liquid sensor, and velocity signal

#### Program Languages

Czech, Danish, English, French, German, Swedish

#### Program Lock

Access code protection prevents tampering

\*Subject to change without notice.

Note: Constant Time/Variable Volume option requires purchase of factory installed integral flow meter option. See hach.com for details.

Build your own 900MAX sampling system using these bases:

Prod. No.	Description
<b>Portables</b>	
<b>8930</b>	Sigma 900MAX Controller with Center Section and Cover (Select either a compact or standard insulated base)
<b>8975</b>	Portable Compact Insulated Base
<b>8976</b>	Portable Standard Insulated Base
<b>Indoor Refrigerated</b>	
<b>8933</b>	Sigma 900MAX Controller with Refrigerated (Vinyl) Base Cabinet, 115V
<b>98933</b>	Sigma 900MAX Controller with Refrigerated (Stainless Steel) Base Cabinet, 115v
<b>All Weather Refrigerated</b>	
<b>3543R</b>	Sigma 900MAX Controller with All Weather Refrigerated Base Cabinet, 115V
<b>WRTUPG900MAX</b>	

For a complete sampler set up, you will need to select a controller and base, bottle option, intake tubing, strainer, and power supply. See page 134 for product numbers.

For more information, call to request LIT2565, LIT2567, LIT2571.



## Perfectly suited for remote locations and confined spaces.

- Durable, Heavy-duty Construction
- Molded ABS exterior withstands harsh environments
- Double-walled insulated base keeps samples cool
- Select from either standard sized or compact sized base
- Either can be quickly converted between composite and discrete sampling right in the field
- Compact base model is specifically designed for use in 18 in. manholes
- Efficient design and flip-up handles make carrying easy



SAMPLERS

Photo above shows SD900 controller option. Use Portable Bases with either SD900 or 900MAX controllers.

Bundled systems below include controller, base, 6 amp-hour 12 Vdc battery, 115 Vac power converter, battery charger, sample bottle(s), bottle retainer, 25' of vinyl intake tubing, and Teflon®/Stainless Steel strainer.

Prod. No.	Description
<b>With SD900 Controller</b>	
900SDPC1	Compact Portable Sampler w/ SD900 controller and 10 L (2.5 gal.) bottle
900SDPC24	Compact Portable Sampler w/ SD900 controller & 24 575 mL bottles
900SDPS1	Standard Portable Sampler w/ SD900 controller & 10 L (2.5 gal.) bottle
900SDPS24	Standard Portable Sampler w/ SD900 controller & 24 1 L bottles
<b>With 900MAX Controller</b>	
900MAXPC1	Compact Portable Sampler w/ 900MAX Controller & 10 L (2.5 gal.) bottle
900MAXPC24	Compact Portable Sampler w/900MAX controller & 24 575 mL bottles
900MAXPS1	Standard Portable Sampler w/ 900MAX controller & 10 L (2.5 gal.) bottle
900MAXPS24	Standard Portable Sampler w/ 900MAX controller & 24 1 L bottles

To customize your sampling set up see accessories on pages 140-142.

For more information, call to request LIT2565, LIT2591.

### Specifications\*

#### Dimensions

With Compact Base and 10 L (2.5 gal.) poly. container:  
Diameter 44.1 cm (17-3/8"),  
Height 61 cm (24"),  
Weight 12.9 kg (28.3 lbs.).

With Standard Base and 10 L (2.5 gal.) poly. container:  
Diameter 50.5 cm (19-7/8"),  
Height 69.4 cm (27-3/16"),  
Weight (14.8 kg (32.6 lbs.).

#### Power Requirements

12 Vdc (supplied by 12 Vdc battery or AC adapter)

#### Sample Cooling

Icing Capacity  
Compact Base:  
3.9 kg (8-1/2 lbs.) with (24) 575 mL bottles  
Standard Base:  
14.5 kg (32 lbs.) with (24) 350 mL glass bottles

#### Temperature Range

Storage: -30 to 60°C (-22 to 140°F)  
Operating: 0 to 50°C (32 to 122°F)

\*Subject to change without notice.

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# INDOOR REFRIGERATED BASES

SAMPLERS



Photo above shows SD900 Controller option.  
Use Refrigerated Bases with either SD900 or 900MAX controllers.

## Ideal for monitoring influent and effluent waters.

- Endures humid and corrosive environments
- Available in either vinyl or stainless steel finishes
- Custom-designed airsensing thermostat controls refrigeration temperature
- A high efficiency compressor/condenser assembly, wraparound evaporator, and rigid foam insulation ensure optimum 39°F (4°C) sample temperature
- Forced air blower and front ventilation provide the flexibility to position the sampler either against a wall or inside a sampler enclosure



Complete  
Sampler Kits  
include  
everything you  
need to start  
sampling!

### Specifications\*

#### Power Requirements

115 Vac, 60 Hz (230 Vac optional)  
Compressor Current:  
1.5-2.0 A. running. Locked rotor current 12 Amps  
Overload Protection:  
5 amp DC line fuse for Pump, 1 amp DC line fuse  
(AC power converter)  
Compressor:  
Thermal overload relay opens at 110°C (230°F)

#### Optional AC Power Backup

Pump/Controller Only: Rechargeable 6 Amp-hour gel lead acid battery takes over automatically with AC line power failure. Integral trickle charger maintains battery at full charge (factory installed option).

#### Sample Cooling

Refrigeration: 1/10 HP, 75 Watt, 400 BTU/hr. compressor, 120 CFM condenser fan; 3 sided wraparound plate type evaporator; rigid foam insulation; air sensing thermostat capable of maintaining sample liquid at 4°C (39°F) in ambient temperatures up to 49°C (120°F); accurate to ±0.8°C (1.5°F); magnetic door seal; refrigerator body is 22 gauge steel with vinyl laminate overcoating; refrigeration components and copper plumbing are corrosion protected with conformal coating.

#### Temperature Range

Storage: -30 to 60°C (-22 to 140°F)  
Operating: 0 to 50°C (32 to 122°F)

\*Subject to change without notice.

Bundled systems below include controller, vinyl refrigerator, sample bottle(s), bottle retainer, 25' of vinyl intake tubing, and Teflon®/Stainless Steel strainer.

#### Prod. No. Description

##### With SD900 Controller

<b>900SDR1</b>	Refrigerated Sampler w/ SD900 controller 115 Vac w/ 21 L (5.5 gal.) bottle
<b>900SDR13</b>	Refrigerated Sampler w/ SD900 controller 115 Vac w/ 10 L (2.5 gal.) bottle
<b>900SDR24</b>	Refrigerated Sampler w/ SD900 controller 115 Vac w/ 24 1 L bottles

##### With 900MAX Controller

<b>900MAXR1</b>	Refrigerated Sampler w/ 900MAX controller 115 Vac w/ 21 L (5.5 gal.) bottle
<b>900MAXR13</b>	Refrigerated Sampler w/ 900MAX controller 115 Vac w/ 10 L (2.5 gal.) bottle
<b>900MAXR24</b>	Refrigerated Sampler w/ 900MAX controller 115 Vac w/ 24 1 L bottles

To customize your sampling set up see accessories on pages 140-142.



# ALL-WEATHER REFRIGERATED BASES

## Stands up to environmental extremes.

### Built Better from the Top Down!

- Durable construction provides superior corrosion and UV resistance
- Top mounted compressor is away from standing water, rodents and heavy corrosive gases found at floor level; heat from the compressor is dissipated in to the air, not in to the sample compartment
- Accurate temperatures are assured with microprocessor thermal control system, not simply a “warmer” “colder” dial
- Lockable controller compartment prevents program tampering
- Mechanical door latch with compressible gasket ensures positive seal, even with wide temperature fluctuations
- Lip overhangs door seal, preventing precipitation from entering sample containers

### The Name “All Weather” is No Exaggeration

- Designed to operate anywhere—indoors or out—without a secondary enclosure
- Leveling feet accommodate uneven surfaces
- Factory installed controller compartment heater option for operation in temperatures from -40 to 120°F
- Lockable lid protects pump tubing
- Sidewall ventilation system allows positioning against a wall

**Take a video tour of this sampler.  
Just visit the Hach Company channel  
on YouTube.**

Bundled systems below include controller, All-Weather Refrigerated cabinet, sample bottle(s), bottle retainer, 25' of vinyl intake tubing, and Teflon®/Stainless Steel strainer.

#### Prod. No. Description

##### With SD900 Controller

- 900SDRAWRS1** All-Weather Sampler w/ SD900 controller 115 Vac w/ 21 L (5.5 gal.) bottle
- 900SDRAWRS13** All-Weather Sampler w/ SD900 controller, 115 Vac w/ 10 L (2.5 gal.) bottle
- 900SDRAWRS24** All-Weather Sampler w/ SD900 controller, 115 Vac w/ 24 1 L bottles

##### With 900MAX Controller

- 900MAXAWRS1** All-Weather Sampler w/ 900MAX controller 115 Vac w/ 21 L (5.5 gal.) bottle
- 900MAXAWRS13** All-Weather Sampler w/ 900MAX controller, 115 Vac w/ 10 L (2.5 gal.) bottle
- 900MAXAWRS24** All-Weather Sampler w/ 900MAX controller, 115 Vac w/ 24 1 L bottles

To customize your sampling set up see accessories on pages 140-142.

For more information, call to request LIT2571, LIT2569.

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U.S. customers only.



**Complete Sampler Kits include everything you need to start sampling!**

Photo above shows SD900 controller option.  
Use All Weather Bases with either SD900 or 900MAX controllers.

### Specifications\*

#### Environmentally Safe Refrigerant

The All Weather Refrigerated Sampler is provided with environmentally safe non-CFC refrigerant.

#### Dimensions (H x D x W)

142 x 81 x 76 cm (56 x 32 x 30 in.)

#### Weight

118 kg (260 lbs)

#### Power Requirements

115 Vac, 60 Hz (230 Vac optional). Compressor Running Amperage 1.5-2.0 A. Locked rotor current 12 Amps. Overload Protection: 5 amp DC line fuse for Pump, 1 amp DC line fuse (AC power converter); Compressor: Thermal overload relay opens at 110°C (230°F).

#### Optional AC Power Backup

Pump/Controller Only: Rechargeable 6 Amp-hour gel lead acid battery takes over automatically with AC line power failure. Integral trickle charger maintains battery at full charge (factory installed option).

#### Sample Cooling

Refrigeration: Top mounted compressor and fan-forced air cooled condenser; 3-sided wrap-around evaporator plate; 2" rigid foam insulation; microprocessor controlled thermostat maintains sample liquid at 4°C (±1°C); frost free; non-CFC R134A refrigerant; compression gasket door seal; refrigeration components and plumbing are corrosion protected with conformal coating.

Recovery Time with door open: 1 min. in 24°C (75°F) ambient and 4°C sample temperature, 5 minutes.

Pull Down Time: From 24°C (75°F) to 4°C (39°F), 15 minutes.

#### Temperature Range

Operating Temperature: 0 to 50°C (32 to 122°F)

Storage: -30 to 60°C (-22 to 140°F)

With optional controller compartment heater: -40 to 50°C (-40 to 122°F)

\*Subject to change without notice.



# SAMPLING ACCESSORIES

## Prod. No. Description

### All-Weather Refrigerated Samplers

**6613100** All Weather Sampler Cabinet Anchor Mounting Kit

### Refrigerated Samplers

**2143S** Lockable hasp for Refrigerated cabinet  
**8963** Cover for Refrigerated cabinet with 900MAX  
**6692000** Cover for Refrigerated cabinet with SD900

### Portable Samplers

**1355** Portable Sampler Suspension Harness  
**9542** Manhole Spanner bar, 18-28, for Portable Sampler  
**9557** Manhole Spanner bar, 28-48, for Portable Sampler  
**5713000** Manhole Support Bracket, 18-27, for Portable Sampler

### Bottle Kits

**AW010060** All Weather Sampler Bottle Kit, with (1) 5.5 gal poly bottle with cap, full bottle shut off and tube support  
**AW040030** All Weather Sampler Bottle Kit, with (4) 2.5 gal poly bottles with caps, and distributor arm  
**AW240350** All Weather Sampler Bottle Kit, with (24) 350mL glass bottles with caps, retainer, tray and distributor arm  
**AW241000** All Weather Sampler Bottle Kit, with (24) 1 L poly bottles with caps, retainer, tray and distributor arm  
**PC010025** Compact Portable Bottle Kit, with (1) 2.5 gal glass bottle with cap and full bottle shut off  
**PC010030** Compact Portable Bottle Kit, with (1) 2.5 gal poly bottle with cap and full bottle shut off  
**PC240575** Compact Portable Bottle Kit, with (24) 575 mL poly bottles with caps and full bottle shut off  
**PS010025** Standard Portable Bottle Kit, with (1) 2.5 gal glass bottle with cap, and full bottle shut off  
**PS010030** Standard Portable Bottle Kit, with (1) 2.5 gal poly bottle with cap, and full bottle shut off  
**PS010040** Standard Portable Bottle Kit, with (1) 4 gal poly bottle with cap and full bottle shut off  
**PS240350** Standard Portable Bottle Kit, with (24) 350 mL glass bottles with caps, retainer and full bottle shut off  
**PS241000** Standard Portable Bottle Kit, with (24) 1 L poly bottles with caps, retainer and full bottle shut off  
**RF010025** Refrigerated Bottle Kit, with (1) 2.5 gal glass bottle with cap, and full bottle shut off  
**RF010030** Refrigerated Bottle Kit, with (1) 2.5 gal poly bottle with cap, and full bottle shut off  
**RF010060** Refrigerated Bottle Kit, with (1) 5.5 gal poly bottle with cap, full bottle shut off and tube support  
**RF040030** Refrigerated Bottle Kit, with (4) 2.5 gal poly bottles with caps, and distributor arm  
**RF240350** Refrigerated Bottle Kit, with (24) 350 mL glass bottles with caps, retainer and full bottle shut off  
**RF241000** Refrigerated Bottle Kit, with (24) 1 L poly bottles with caps, retainer and full bottle shut off

## Prod. No. Description

### Bottles

**6498** 5.5 gal poly container with cap  
**1367** 4.0 gal poly container with cap  
**6559** 2.5 gal glass container with cap  
**2348** Set of (8) 950 mL glass containers with caps  
**6494** 5.5 gal poly container with cap  
**1918** 2.5 gal poly container with cap  
**2318** Set of (2) 2.5 gal glass containers with caps  
**2316** Set of (2) 2.5 gal poly containers with caps  
**2317** Set of (4) 2.5 gal glass containers with caps  
**2315** Set of (4) 2.5 gal poly containers with caps  
**2216** Set of (4) 1 gal glass containers with caps  
**657** Set of (8) 2.3 L poly containers with caps  
**1118** Set of (8) 1.9 L glass containers with caps  
**1369** Set of (24) 575 mL poly containers with caps  
**732** Set of (24) 350 mL glass containers with caps  
**737** Set of (24) 1 L poly containers with caps

### Retainers

**1502** Container support for standard base with 2.5 gal glass or poly bottles for composite sampling  
**2038** Bottle positioner for 2 and 4 bottle sampling; use with refrigerated base  
**2190** Positioner and Retainer for (8) 950 mL bottle sampling, use with compact portable base  
**1322** Retainer for (24) 1 L and 8 bottle sampling, use with Refrigerated and All Weather Refrigerated Bases  
**2189** Retainer for (24) 350 mL bottles, use with standard portable base  
**1422** Retainer for (24) 1 L and 8 bottle sampling, use with standard portable base  
**1056** Retainer for (24) 350 mL glass bottles, use with Refrigerated and All Weather Refrigerated bases  
**1511** Bottle tray for 8 and 24 bottle sampling, use with Refrigerated and All Weather Refrigerated bases

### Tube Support

**8986** Composite sampling tube support with tube, use with Refrigerated base  
**8838** Composite sampling tube support with tube, use with All Weather Refrigerated base  
**3527** Extension tube for composite sampling, use with Refrigerated base

### Full Bottle Shut Off

**8996** Full container shut off for portable bases  
**8847** Full container shut off for Refrigerated and All Weather Samplers

**Prod. No. Description**

**Distributor Arms**

- 8562** Distributor arm for 24 bottle sampling in Refrigerated base
- 8568** Distributor arm for 2 and 4 bottle sampling in Refrigerated base
- 8565** Distributor arm for 8 bottle sampling in Refrigerated base
- 8580** Distributor arm for 24 bottle sampling with compact portable base
- 8580** Distributor arm for 24 bottle sampling with compact portable base
- 8582** Distributor arm for 24 bottle sampling with standard portable base
- 8584** Distributor arm for 2, 4 or 8 bottle sampling with compact portable base
- 8841** Distributor arm for 24 bottle sampling with All Weather sampler
- 8842** Distributor arm for 8 bottle sampling with All Weather sampler
- 8843** Distributor arm for 2 or 4 bottle sampling with All Weather sampler

**SD900 Cables**

- 2198** External battery cable, 10ft. For use with 12v deep cycle marine batter. 2 pin Power connector on one end and 2 alligator clips on the other. If connecting to SD900 controller, you will need the 2 to 3 pin power adaptor, Prod. No. 8739400.
- 8754500US** Power Supply for SD900, 3 pin connector, US plug
- 8753500US** Battery Charger for SD900 battery (Prod. No. 8754400), 3 pin connector, US plug
- 8758200** DB9 Cable for SD900, 7 pin, 10ft. Allows sampler to connect to computer.
- 8758100** Half cable for SD900, 7 pin, 10ft. 7 Pin connector one end, open leads on the other end. Connects SD900 to a Sigma 980 flow meter
- 8758000** 6 to 7 pin Auxiliary cable adaptor, allows use of 6 pin aux cable and 7 pin SD900 controller
- 8757500** DB9 Cable and SampleView software CD for SD900
- 8760600** 4-20mA interface. Converts analog signal from flow meter to pulses, (compatible with SD900 sampler)
- 8757400** AC power back up, 16 cable. For use with Refrigerated and Portable samplers, 3 pin
- 5698200** AC power back up, 28 cable. For use with All Weather and Portable samplers, 3 pin
- 8757300** Cascade sampling cable for SD900, 7 pin.
- 8757200** Half cable for SD900, 25ft. 7 Pin connector one end, open leads on the other end. Connects SD900 to a Sigma 980 flow meter
- 8757100** Full cable for SD900, 10ft. 7 Pin connector one end, 6 pin connector on he other end. Connects SD900 to a Sigma 920/930/940/950 flow meter
- 8757000** Full cable for SD900, 25ft. 7 Pin connector one end, 6 pin connector on he other end. Connects SD900 to a Sigma 920/930/940/950 flow meter

**Prod. No. Description**

- 8756900** Multi-purpose half cable, 10ft; 7 Pin Auxiliary connector on one end, open leads on the other end. Connects an SD900 sampler to a non-Sigma flow meter.
- 8756800** Multi-purpose half cable, 25ft; 7 Pin Auxiliary connector on one end, open leads on the other end. Connects an SD900 sampler to a non-Sigma flow meter.
- 8754400** 12 v lead acid battery with 3 pin connector for SD900. Use with charger Prod. No. 8753500.
- 8739400** 2 to 3 Pin Power adaptor, allows use of Prod. No. 1414 batteries with new 3 pin SD900 controller

**SD900 Dessicant**

- 8755500** Desiccant (bulk) for SD900 Sampler, 1.5 lb
- 8755600** Desiccant assembly for SD900 Sampler, includes grease packet

**SD900 Pump Tubing**

- 8753900** Pre-cut pump tubing for SD900 All Weather Sampler, 24.25
- 8753800** Pre-cut pump tubing for SD900 Portable and Refrigerated Sampler, 23.25

**SDI - 12 Options For SD900**

- 87390SD** SDI-12 Factory installed option
- 8762400** Cable to connect sampler to Hydrolab sonde using SDI-12, 50 ft (15 m)
- 8762500** Cable to connect sampler to Hydrolab sonde using SDI-12, 100 ft (30 m)

**900MAX Cables**

- 2198** External battery cable, 10ft. For use with 12v deep cycle marine batter. 2 pin Power connector on one end and 2 alligator clips on the other. If connecting to SD900 controller, you will need the 2 to 3 pin power adaptor, Prod. No. 8739400.
- 540** Full cable for 900MAX, 25ft. 6 pin connectors on both ends. Connects 900MAX to a Sigma 920/930/940/950 flow meter
- 541** Multi-purpose half cable, 25ft; 6 Pin Auxiliary connector on one end, open leads on the other end. Connects a 900MAX sampler to a non-Sigma flow meter
- 940** Full cable for 900MAX, 10ft. 6 Pin connector on both ends. Connects 900MAX to a Sigma 920/930/940/950 flow meter
- 941** Multi-purpose half cable, 10ft; 6 Pin Auxiliary connector on one end, open leads on the other end. Connects a 900MAX sampler to a non-Sigma flow meter.
- 1727-10** DB9 Cable for 900MAX, 6 pin, 10ft. Allows sampler to connect to computer.
- 2021** 4-20mA interface. Converts analog signal from flow meter to pulses, compatible with 900MAX sampler.

# SAMPLING ACCESSORIES

## Prod. No. Description

### 900MAX Desiccant

- 3624** Desiccant (bulk) for 900MAX Sampler, 1.5 lb
- 8849** Desiccant bag for 900MAX controller

### 900MAX Options

- 8800** Rain Gauge Receptacle. (Requires Prod. No. 2149 Rain Gauge.) This is a factory installed option.
- 2149** Rain Gauge with 25 ft. Cable and Mounting Base Plate. (For use with Rain Gauge Prod. No. 8800).
- 8793** Integral pH-Temperature/ORP Receptacle Includes pre-amp interface. Requires pH-Temperature probe or ORP probe. pH and ORP cannot be used simultaneously. Standard cable length cannot exceed 50 ft. This is a factory installed option.
- 3328** pH-Temperature Probe (grounded), with 25 ft. Cable (for use with 8793 receptacle)
- 5172** pH-Temperature Probe (grounded), with 50 ft. cable (for use with 8793 receptacle)
- 2080** ORP Probe, with 25 ft. Cable (for use with 8793 receptacle)
- 5174** ORP Probe, with 50 ft. Cable (for use with 8793 receptacle)
- 5177** Three-way solenoid valve option (valve must be purchased separately)
- 5176** Two-way/Three-way solenoid valve option (valve must be purchased separately)
- 2471** Flow Through module with flanged ends
- 2246** Remote pump. Recommended for vertical lift distances between 23-35 ft. Includes 35 ft. 12v cable and 35ft. suspension cable. Requires connection kit 2248 or 3152
- 2248** Connection Kit for remote pump with 3/8 ID vinyl tubing
- 3152** Connection Kit for remote pump with 3/8 ID teflon lined polyethylene tubing

### 900MAX Batteries

- 1416** 12v 4 amp hour NiCd battery for 900MAX controller, 2 pin
- 1414** 12v 6 amp hour gel electrolyte battery for 900MAX controller, 2 pin
- 914US** Battery charger for NiCd battery, 2 pin, 115v, US plug
- 913US** Universal battery charger for gel electrolyte battery, 2 pin, 90-250v, US plug

### 900MAX AC Power

- 8964** Pre-cut pump tubing for 900MAX Portable Sampler
- 8957** Pre-cut pump tubing for 900MAX Refrigerated Sampler
- 8888** Pre-cut pump tubing for 900MAX All Weather Sampler
- 6607400** Pre-cut pump tubing for 900MAX All Weather Sampler

## Prod. No. Description

### Solar Modules

- 8713600** Solar Module with 50 W panel with 15 ft. cable, mounting bracket and regulator
- 8713400** Solar Module with 30 W panel with 15 ft. cable, mounting bracket and regulator
- 8713500** Solar Module with 40 W panel with 15 ft. cable, mounting bracket and regulator
- 8713300** Solar Module with 20 W panel with 15 ft. cable, mounting bracket and regulator
- 8713200** Solar Module with 10 W panel with 15 ft. cable, mounting bracket and regulator.

### Strainers

- 926** Teflon/stainless steel strainer, 5.5 long x .875 OD
- 4652** Strainer for high velocity and shallow depths, 3.9 long x .406 OD
- 2071** Stainless steel strainer for shallow depths, 6 long x .406 OD
- 2070** Stainless steel strainer, 8 long x 1.0 OD
- 903** Teflon/stainless steel strainer, 11 long .875 OD

### Tubing

- 4600-15** Silicone pump tubing for 900 Series Samplers, 15 ft.
- 4600-50** Silicone pump tubing for 900 Series Samplers, 50 ft.
- 2186** Connection kit for teflon-lined polyethylene intake tubing
- 921** 3/8 diameter Teflon-lined polyethylene intake tubing, 10 ft.
- 922** 3/8 diameter Teflon-lined polyethylene intake tubing, 25 ft.
- 925** 3/8 diameter Teflon-lined polyethylene intake tubing, 100 ft.
- 920** 3/8 diameter Vinyl intake tubing, 25 ft.
- 923** 3/8 diameter Vinyl intake tubing, 100 ft.
- 924** 3/8 diameter Vinyl intake tubing, 500 ft.

### Weatherguards

- 6994** All Weather Sampler Outdoor Enclosure
- 6693** All Weather Sampler Outdoor Enclosure
- 6992** All Weather Sampler Outdoor Enclosure
- 6987** All Weather Sampler Outdoor Enclosure
- 6989** All Weather Sampler Outdoor Enclosure

### Splitter

- 939** 3-way Splitter

## “Dipper” Automatic Liquid Sampler provides superior solids handling.

- Dipping action of the Sigma 1600 simulates grab sample collection
- Good mixing prevents solids from settling and assures representative and repeatable samples
- 2-inch sample inlet can accommodate larger particulates without plugging



The 1600 can be conveniently located where pumps or gravity can deliver a wastewater stream from each stage of the treatment process.

### Specifications\*

#### Sampler/Refrigerator Cabinet

Fiberglass reinforced plastic

#### 24-Bottle/Composite Modes

Sampler may operate as composite or 24-bottle unit when equipped with the 24-bottle discrete kit (Prod. No. 16003).

#### Chassis Solid State

All circuit boards and components are treated with 3 mil thickness polyurethane coating.

#### Timer/Controller

Quartz crystal time base clock; adjustable from 1-60 sample cycles per hour. Instrument panel removable; all electrical components plug-in type.

#### Interval Between Samples

*Time Mode:* sample interval adjustable from 1-9999 minutes; interval set on four-digit thumbwheel switch; adjustable from 1-60 samples per hour.

*Flow Proportional Mode:* external mode for flow proportional sample initiate from flow-meter; 1-9999 contact closures (5 Vdc, 10 mA) or optional 4-20 mA; interval set on four-digit thumbwheel switch.

#### Sample Program Delay

1-9999 minutes when sampling in the time mode.

#### LED Display

Indicates minutes remaining to next sample.

#### Dipper

PVC construction, 25 mL per dip cycle, motor drive, cam operated.

#### Manual Test Pushbutton

Initiates sample cycle without interrupting preset program

#### Sample Volume

Number of 25 mL dip cycles (1 to 99) adjustable using two-digit thumbwheel switch; sample liquid delivered to container through sealed transfer tube.

#### Automatic Shut-off (multiplex)

Sampler operation terminated after preset number of samples (24 to 288) have been delivered to the composite container or with 24 advances of distributor tube.

#### Sample Containers

- Composite 10L (2.5 gal) polyethylene container with lid.
- Composite 10L (2.5 gal) glass container with lid.
- Discrete 24 475-mL polyethylene containers with lids.

#### Sample Chamber

5 to 30 gpm capacity with adjustable and removable weir, clear lift-off cover retains fumes and provides viewing of flow through chamber.

#### Pipe Connections

Inlet: 2-inch sch-80 PVC, socket coupling  
Outlet: 3-inch sch-80 PVC, socket coupling

#### Refrigerator

- 1/6-hp compressor with fan cooled epoxy coated condenser and silver brazed tubing
- Refrigerator insulation 1-inch thick rigid polyurethane foam.
- Thermostatically controlled
- Range 34 to 42°F (1 to 6°C).
- Compressor assembly is field replaceable
- Refrigerator door equipped with key lock

#### Power

120 Vac, 60 Hz, 4.8 Amps.

#### Dimensions

132.7 x 48.3 x 52.1 cm  
(52.25 x 19 x 20.5 in.)

#### Weight

52.2 kg (115 lbs.)

\*Subject to change without notice.

Prod. No.	Description
16001	Dipper Refrigerated Sampler, 115v
<b>Composite Bottle Sampling</b>	
1918	2.5 gal poly container with cap
6559	2.5 gal glass container with cap
1999	Adapter (For glass container)
<b>Multiple Bottle Sampling</b>	
16003	24 Bottle Kit Includes 1958 Distributor arm assembly, 6105 475 mL Polyethylene Bottles with Caps, 1956 bottle Tray
WRTUPG1600	

For more information, call to request LIT3402.

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U.S. customers only.



# WEATHERGUARD™ ENCLOSURES

Optimize your equipment's life by protecting it from the elements.

SAMPLERS



Model 6993 shown. Call for available options such as floor, heater, window, light, and fan.

- Tough, locking Weatherguard Enclosures are ideal for housing samplers, pumps, switch gear, and transformers
- One-piece molded, fiberglass-reinforced plastic
- Insulated and gasketed
- Designed to withstand winds of 130 mph

Prod. No.	Description
6992	This enclosure is suitable for one portable sampler and one portable flow meter. Outside Dimensions: 36"W x 26"D x 54"H
6994	This enclosure is suitable for one refrigerated sampler. Outside Dimensions: 43.75"W x 43.75"D x 50"H
6989	This full size, walk-in enclosure is suitable for one refrigerated sampler and wall-mounted instruments. Rear access door (#6865) optional Outside Dimensions: 51"W x 51"D x 74"H
6993	This full size, walk-in enclosure is suitable for two refrigerated samplers and wall-mounted instruments. Rear access door (#6865) optional Outside Dimensions: 68"W x 68"D x 84"H
6987	This enclosure is suitable for one portable sampler. Outside Dimensions: 35"W x 35"D x 35"H



## Ask about Hach's Service Partnership Programs, which offer you:

- Optimal Performance
- Maximum Uptime
- Quality Data

Consult our service selection guide on pages 12-13 to choose the program best for you, or call 800-227-4224, ext. 6178 for a quote.

## Have a short term sampling need? Ask about Hach's rental program.

Hach offers select samplers for long- or short-term rentals. Call 800-227-4224 for details on Hach's rental offerings, as well as our Rent-to-Own program!



**Chlorine  
Pocket Colorimeter™ II  
0.05-4.00 mg/L**



PARAMETERS



**NEW!**  
**Total Organic Carbon  
(TOC) TNTplus™  
Reagent Set**



*Be Right™*

# REAGENT PLATFORMS



**PermaChem™ Powder Pillows**  
Our most cost-conscious reagent platform.

**SwifTest™ Reagent Dispenser**  
No need to open containers.



**TNT (Test 'N Tube™) Vial (16 mm)**  
The right blend of simplicity and economy.



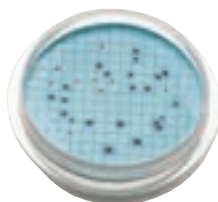
**AccuVac® Ampule**  
Quick, easy and economical.



**TNTplus® Chemistries**  
No reagent blank necessary—saves time and money.



**Prepared Microbiological Media**



**Single and Multi-Parameter Standards**



**SpecV™ Gel Standards**



**PourRite® (2 mL) Ampules**

## Hach Prepared Reagents

### **PermaChem™ Powder Pillows**

Prepackaged unit dose reagent with extended shelf life and tightly-controlled weight fill. Our most cost-conscious reagent platform.

### **SwifTest™ Reagent Dispenser**

The easy way to dispense reagents for high volume testing. Just squeeze to add reagent, and reload with easy-to-use vials. No need to open individual containers!

### **TNT (Test 'N Tube™) Vial (16 mm)**

Vial chemistry platform that incorporates PermaChem™ powder technology for economical, easy-to-use methods. The right blend of simplicity and economy.

### **AccuVac® Ampules**

Optical-quality, evacuated glass ampules that contain the precise amount of reagent needed for a single test and can be used as the measurement cuvette. Quick, easy, and economical. Snap the tip and the ampule draws in the correct amount of sample.

### **TNTplus® Vial Chemistries (13 mm)**

Hach's DR 6000 and DR 3900 spectrophotometers read the vial barcode to automatically select and run the correct method, and check shelf life of the reagents, thus eliminating human error and speeding up analysis. No reagent blank necessary—this saves you time and money.

### **Titration Cartridges**

For use with digital titrator. Eliminates glass burets, evaporation, and potential reagent contamination.

### **Prepared Microbiological Media**

Eliminate measuring, mixing, and sterilization. Hach has the fastest EPA-approved presence/absence test on the market.

## Hach Standards

### **Multi and Single Parameter Standards**

Easy-to-use, no dilutions necessary—combined analytes result in increased efficiency. Typical drinking water and wastewater parameters and concentrations. Single parameter standards are available for most applications.

### **SpecV™ Standards**

No preparation necessary. Colored gels mimic the chemistry test colors, and are stable for two years after the date of manufacture. Saves time with easy and quick verification of Hach instrument optical performance. Assures consistent measurement in the field or lab, across multiple operators.

### **Voluette® and PourRite® Ampule Standards**

Specific analytes contained in a sealed, glass ampule for easy standard additions accuracy checks. The right way to ensure analytical accuracy. Each ampule is designed for one-time use. Prevents accidental contamination of bulk standard solutions.

*Due to the nature of their high purity composition, many Hach chemicals have a fixed lifetime within which they must be used. The shelf life of specific chemicals varies from 3 months to 5 years. Chemicals, like all Hach products, can be returned within 30 days of purchase for a full refund.*

*Some products contain mercury or other hazardous materials. Dispose of these items according to local, state, and federal regulations.*

# MOST POPULAR REAGENTS

## Chlorine *See pages 163-164 for details.*

(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

Description	Prod. No.
Free Chlorine, 10 mL Powder Pillows, 100/pk	2105569
Free and Total Chlorine TNTplus, 24/pk	TNT867
Free Chlorine, SwifTest Dispenser + Reagent (250 tests)	2802300
Free Chlorine, SwifTest Dispenser Reagent (refill)	2105560
Total Chlorine, 10 mL Powder Pillows, 100/pk	2105669
Total Chlorine, SwifTest Dispenser+ Reagent (250 tests)	2802400
Total Chlorine, SwifTest Dispenser Reagent (refill)	2105660
Spec $\checkmark$ Gel Secondary Standard Kit-LR Chlorine, DPD	2635300
Spec $\checkmark$ Gel Secondary Standard Kit-HR Chlorine, DPD	2893300



Spec $\checkmark$ ™ Standards

## COD (Chemical Oxygen Demand) *See page 170 for details.*

Description	Prod. No.
COD Digestion Vials—16 mm, LR, 25/pk	2125825
COD Digestion Vials—16 mm, LR, 150/pk	2125815
COD TNTplus—13 mm, LR, 25/pk	TNT821
COD TNTplus—13 mm, LR, 150/pk	TNT82106

## Fluoride *See page 177 for details.*

Description	Prod. No.
SPADNS Fluoride AccuVac, 25/pk	2506025
SPADNS Reagent Solution, 500mL	44449
SPADNS 2 ARSENIC-FREE Fluoride AccuVac, 25/pk	2527025
SPADNS 2 ARSENIC-FREE Reagent Solution, 500mL	2947549
Spec $\checkmark$ Gel Secondary Standard Kit - Fluoride	2712500

## Iron *See page 184 for details.*

Description	Prod. No.
FerroVer Iron Reagent Powder Pillows, 10mL, 100/pk	2105769
Iron TNTplus, 25/pk	TNT858

## Nitrate *See page 191 for details.*

Description	Prod. No.
Nitrate Reagent Set, 10 mL, LR, 100 tests	2429800
Nitrate, Nitrogen TNTplus, LR, 25/pk	TNT835
Nitrate, Nitrogen TNTplus, HR, 25/pk	TNT836

## Ammonia *See page 154 for details.*

Description	Prod. No.
Ammonia Reagent Set, Salicylate, 10 mL, 100 tests	2668000
Ammonia Reagent Set, Nessler's, 250 tests	2458200
Ammonia TNTplus, ULR, 25/pk	TNT830
Ammonia TNTplus, LR, 25/pk	TNT831
Ammonia TNTplus, HR, 25/pk	TNT832



Ammonia TNTplus®

## Phosphorus *See page 201 for details.*

Description	Prod. No.
PhosVer 3 Powder Pillows, 10mL, 100/pk	2106069
Phosphorus TNTplus, Reactive, 25/pk	TNT846
Phosphorus TNTplus, Reactive and Total, LR, 25/pk	TNT843
Phosphorus TNTplus, Reactive and Total, HR, 25/pk	TNT844
Phosphorus TNTplus, Reactive and Total, UHR, 25/pk	TNT845

## Ozone *See page 196 for details.*

Description	Prod. No.
Ozone AccuVac, LR, 25/pk	2516025
Ozone AccuVac, MR, 25/pk	2517025
Ozone AccuVac, HR, 25/pk	2518025
Spec $\checkmark$ Gel Secondary Standard Kit - Ozone MR	2708000



Ozone and Fluoride AccuVac® Ampules

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U.S. customers only.





# TEST KIT PLATFORMS



Total Alkalinity Test Strips  
Prod. No. 2744850  
See page 152.



Selecting a Hach test kit that meets your budget and testing needs is easy. Hach offers single parameter kits with easy-to-use color comparators and comprehensive portable laboratories with advanced instruments—for fast, accurate results in the field or in the lab. Plus, including 50 or 100 tests means that Hach test strips and test kits provide low cost on every test.

## Hach Test Strips

- Easy to use, disposable, and inexpensive
- A great way to get a quick answer while in the field or the lab

## Drop Count Titration Kits

- A simple, economical titration method available for many parameters
- All required reagents, solutions, and glassware are together in one rugged kit

High Range Chlorine Kit  
Prod. No. 2444400  
See page 166.



## Color Disc Kits

- The most accurate visual test kit method—Hach's color wheel provides fast, accurate comparisons



Storm Water Kit  
Prod. No. 2481300  
See page 257.



## Digital Titrator

(included in many test kits)

- Offers higher levels of precision and accuracy than drop count procedures, with reproducibility comparable to a buret titration
- Rugged titration device—ideal for field use with no glass burets required
- Many Digital Titrator procedures are now EPA Compliant!



Alkalinity Test Kit with Digital Titrator  
Prod. No. 2063700  
See page 152.

## Rugged Portable Instruments

(included in many test kits)

- Provide the highest level of accuracy and repeatability
- Portable colorimeters, spectrophotometers, pH, DO, and conductivity meters are included in many portable laboratories and test kits
- Chlorine Pocket Colorimeter II—EPA Compliant, Prod. No. 5870000



Chlorine Pocket Colorimeter II  
Prod. No. 5870000  
See page 166.



# MOST POPULAR TEST KITS & TEST STRIPS

## Free and Total Chlorine Test Strips

(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

- Accurate and easy to use—just dip and read!
- Great for quick, on-site evaluations of chlorine levels

Prod. No.	Range	Steps	No. of Tests
2745050	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0 mg/L	Bottle of 50
2793944	Also available individually wrapped		Box of 250



## Arsenic Test Kit

- No lab analysis needed—detect arsenic levels in the field to assess compliance with the new EPA Arsenic Rule
- Reliable test strip method recovers 100% of inorganic arsenic in samples

Prod. No.	Range	Steps	No. of Tests
2800000	0-500 µg/L (ppb)	0, 10, 30, 50, 70, 300, 500 µg/L (ppb)	100



## Free and Total Chlorine Test Kit Model CN-66

(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

- Our most popular test kit!
- Quickly and accurately measure chlorine levels in the field or lab

Prod. No.	Range	No. of Tests
223101	0 – 3.4 mg/L	50 Free Cl <sub>2</sub> 50 Total Cl <sub>2</sub>

Other kits also available:

223102	Model CN-66F Free Chlorine	100
223103	Model CN-66T Total Chlorine	100



## Nitrate and Nitrite Test Strips

- Accurate and easy to use – just dip and read!
- Get results in less than 1 minute, in the field or in the lab

Prod. No.	Range	Steps	No. of Tests
2745425	Nitrate: 0-50 mg/L Nitrite: 0-3 mg/L	0, 1, 2, 5, 10, 20, 50 mg/L 0, 0.15, 0.3, 1, 1.5, 3.0 mg/L	Bottle of 25



## 5-in-1 Water Quality Test Strips

(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

- Great for quick, on-site evaluations of water quality
- Five water quality measurements on 1 strip!

Prod. No.	Parameter	Range	Steps	No. of Tests
2755250	Free Chlorine	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0	Bottle of 50
	Total Chlorine	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0	
	Total Hardness (as CaCO <sub>3</sub> )	0-25 gpg 0-425 mg/L	0, 1.5, 3, 7, 15, 25 0, 25, 50, 120, 250, 425	
	Total Alkalinity (as CaCO <sub>3</sub> )	0-240 mg/L	0, 40, 80, 120, 180, 240	
	pH	6.2-8.4	6.2, 6.8, 7.2, 7.8, 8.4 pH units	



Hach's single parameter test strips and test kits are listed alphabetically by test parameter name beginning on page 150. See our Test Kit Section pages 251-270 for a selection of our most popular water quality labs, application test kits, single-parameter test kits, and test strips.

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U.S. customers only.





# ACIDITY

## Reagents

Description	Method	Platform	Ranges	EPA Compliant	# Tests	Prod. No.
<b>BURET TITRATION</b>	8219 (MO)		0 - 5,000 mg/L CaCO <sub>3</sub> (MO)	WW†		
	8010 (P)		0 - 10,000 mg/L CaCO <sub>3</sub> (P)	WW		
Bromphenol Blue Indicator Powder Pillows, 100/pk		PP			100	1455099
Phenolphthalein Indicator Powder Pillows, 100/pk		PP			100	94299
Sodium Hydroxide Standard Solution, 0.020 N (N/50), 1 L		S				19353
Water, Deionized, 4 L		S				27256
<b>DIGITAL TITRATOR TITRATION</b>	8201 (MO)			WW		
	8202 (P)			WW		
<b>Acidity Reagent Set, Digital Titrator</b>		DT	10 - 160 mg/L CaCO <sub>3</sub> 100 - 4,000 mg/L CaCO <sub>3</sub>		100	2272800
Set includes: Bromphenol Blue Powder Pillows (for Methyl Orange endpoint), Phenolphthalein Powder Pillows and Sodium Hydroxide Digital Titrator Cartridges (0.1600 N and 1.600N). Replacement Reagents						
Bromphenol Blue Indicator Powder Pillows, 100/pk		PP			100	1455099
Phenolphthalein Indicator Powder Pillows, 100/pk		PP			100	94299
Sodium Hydroxide Digital Titrator Cartridge, 0.1600 N		DT	10 - 160 mg/L CaCO <sub>3</sub>		40 - 100	1437701
Sodium Hydroxide Digital Titrator Cartridge, 1.600 N		DT	100 - 4,000 mg/L CaCO <sub>3</sub>		40 - 100	1437901
Water, Deionized, 4 L		S				27256
<b>OPTIONAL REAGENTS</b>						
Bromphenol Blue Indicator Solution, 100 mL MDB		S				1455232
Phenolphthalein Indicator Solution, 5 g/L, 100 mL MDB (APHA)		S				16232
Methyl Orange Indicator Solution, 100 mL MDB		S				14832

†Equivalent to 40 CFR 136.3 Standard Method 2310 B

PARAMETERS

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
P & Total (MO) as CaCO <sub>3</sub> (Model AC-DT)	DT	10 - 4,000 mg/L CaCO <sub>3</sub>	100	2064000

## Standards

Description	Prod. No.
Sulfuric Acid Standard Solution, 0.500 N, 100 mL	212132
Buffer Powder Pillows, pH 8.30, 50 mL, 25/pk	89868

## Accessories Required to Run Tests

Product Description	Prod. No.
Digital Titrator	1690001
Buret, Class A, 25 mL	2636540

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCH=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



## Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>BURET TITRATION</b>					
	8288 (Acid)		0 - 25,000 meq/L		
	8289 (Base)				
Phenolphthalein Indicator Powder Pillows, 100/pk		PP		100	94299
Water, Deionized, 4 L		S			27256
For acid measurement, pick one or more based on range, all are for a buret titration:					
Sodium Hydroxide Standard Solution, 0.020 N (N/50), 1 L		S	0 - 10 meq/L		19353
Sodium Hydroxide Standard Solution, 0.100 N (N/10), 1 L		S	10 - 100 meq/L		19153
Sodium Hydroxide Standard Solution, 1.000 N, 1 L		S	100 - 25,000 meq/L		104553
For base measurement, pick one or more based on range, all are for buret titration:					
Sulfuric Acid Standard Solution, 0.020 N (N/50), 1 L		S	0 - 10 meq/L		20353
Sulfuric Acid Standard Solution, 0.100 N (N/10), 1 L		S	10 - 100 meq/L		20253
Sulfuric Acid Standard Solution, 1.000 N, 1 L		S	100 - 25,000 meq/L		127053
<b>DIGITAL TITRATOR TITRATION</b>					
	8200 (Acid)		1 - 4,000 meq/L		
	8233 (Base)				
Phenolphthalein Indicator Powder Pillows, 100/pk		PP		100	94299
Water, Deionized, 4 L		S			27256
For acid measurement:					
Sodium Hydroxide Digital Titrator Cartridge, 1.600 N		DT	1 - 10 meq/L	40 - 100	1437901
Sodium Hydroxide Digital Titrator Cartridge, 8.00 N		DT	10 - 4,000 meq/L	40 - 100	1438101
For base measurement:					
Hydrochloric Acid Digital Titrator Cartridge, 8.00 N		DT	10 - 4,000 meq/L	40 - 100	1439001
Sulfuric Acid Digital Titrator Cartridge, 1.600 N		DT	1 - 10 meq/L	40 - 100	1438901
Sulfuric Acid Digital Titrator Cartridge, 8.00 N		DT	10 - 4,000 meq/L	40 - 100	1439101

## Accessories Required to Run Tests

Product Description	Prod. No.
Digital Titrator	1690001
Buret, Class A, 25 mL	2636540

## Standards

Description	Prod. No.
NaOH Solution, 1 N (5%), 900 mL	104553
Sulfuric Acid Standard Solution, 1.000 N, 1 L	127053

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# ALKALINITY

- Four reagent platforms to choose from (buret, digital titration, drop count, or test strips)
- EPA accepted buret methods
- Determines Phenolphthalein or Total Alkalinity
- Extended ranges meet your testing demands

**EPA COMPLIANT**  
WHERE INDICATED

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>BURET TITRATION</b>							
	8221		0 - 5,000 mg/L CaCO <sub>3</sub>				
Bromcresol Green-Methyl Red Indicator Powder Pillows, 100/pk		PP				100	94399
Phenolphthalein Indicator Powder Pillows, 100/pk		PP				100	94299
Sulfuric Acid Standard Solution, 0.020 N (N/50), 1 L		S					20353
Water, Deionized, 4 L		S					27256
<b>DIGITAL TITRATOR TITRATION</b>							
	8203						
<b>Alkalinity Reagent Set, Digital Titrator</b>		DT	10 - 4,000 mg/L as CaCO <sub>3</sub>		WW†	100	2271900
Set includes: Bromcresol Green-Methyl Red Indicator Powder Pillows, Phenolphthalein Indicator Powder Pillows, Sulfuric Acid Titration Cartridge (1.600 N), Sulfuric Acid Titration Cartridge (0.1600 N). Replacement Reagents							
Bromcresol Green-Methyl Red Indicator Powder Pillows, 100/pk		PP				100	94399
Phenolphthalein Indicator Powder Pillows, 100/pk		PP				100	94299
Sulfuric Acid Digital Titrator Cartridge, 1.600 N		DT	100 - 4000 mg/L CaCO <sub>3</sub>			40 - 100	1438901
Sulfuric Acid Digital Titrator Cartridge, 0.1600 N		DT	10 - 160 mg/L CaCO <sub>3</sub>			40 - 100	1438801
Water, Deionized, 4 L		S					27256
<b>COLORIMETRIC</b>							
Alkalinity (Total) TNTplus Reagent Set	10239	TNT+	25 - 400 mg/L as CaCO <sub>3</sub>	DR 6000, DR 3900 DR 2800		25	TNT870

\*Equivalent to 40 CFR 136.3 Standard Method 2320 B.

See pages 115-117 for  
Hach Digital Titrator products.

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Total Alkalinity Test Strip	TS	0 - 240 ppm Steps: 0, 40, 80, 120, 180, 240 ppm	50	2744850

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
P & Total (MO) as CaCO <sub>3</sub> (Model AL-AP)	DCT, PP	0.4 - 8 gpg 1 - 20 gpg	100	2444300
P & Total (MO) as CaCO <sub>3</sub> (Model AL-AP, MG-L)	DCT, PP	5 - 100 mg/L 20 - 400 mg/L	100	2444301
P & Total (MO) as CaCO <sub>3</sub> (Model AL-TA)	DCT, PP	23 - 495 gpg 385 - 8,500 mg/L	100	2314500
P & Total (MO) as CaCO <sub>3</sub> (Model AL-DT)	DT, PP	10 - 4,000 mg/L CaCO <sub>3</sub>	100	2063700

Note: 1 gpg = 17.1 mg/L (MO) = Methyl Orange

## Standards

Description	Prod. No.
Alkalinity Standard Solution, 25,000 mg/L as CaCO <sub>3</sub> (NIST), 16/pk - 10 mL Voluette® Ampules	1427810
Buffer Powder Pillows, pH 4.50, 50 mL, 25/pk	89568
Buffer Powder Pillows, pH 8.30, 50 mL, 25/pk	89868

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001
Delivery Tubes, straight with J hook	1720500
Buret, Class A, 25 mL	2636540
Buret, Class A, 50-mL	2636541

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



• Photometric determination of low levels of Aluminum

- 3 Methods:
  - Aluminon, highest range
  - Chromazurol S, mid range
  - Eriochrome Cyanine R (ECR), low range

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Aluminum TNTplus, Chromazurol S	10215	TNT+	0.02 - 0.50 mg/L Al	DR 6000, 3900, 2800, 1900	24	TNT848
<b>Aluminum Reagent Set, Eriochrome Cyanine R (ECR) Method, 20 mL</b>	8326	PP, S	0.002 - 0.250 mg/L Al	DR 6000, DR 3900, DR 2800, DR 2700, DR 1900, DR/2010	100	2603700
Set includes: ECR Reagent Powder Pillows, Hexamethylenetetramine Buffer Reagent Powder Pillows, ECR Masking Reagent Solution.						
Replacement Reagents						
ECR Reagent Powder Pillows, 20 mL, 100/pk		PP			100	2603849
Hexamethylenetetramine Buffer Reagent Powder Pillows, 100/pk		PP			100	2603999
ECR Masking Reagent Solution, 25 mL SCDB		S			100	2380123
<b>Aluminum Reagent Set, Eriochrome Cyanine R (ECR) Method, 50 mL</b>	8326	PP, S	0 - 0.220 mg/L Al	DR/3000, DR/2000	100	2443400
Set includes: ECR Reagent Powder Pillows, Hexamethylenetetramine Buffer Reagent Powder Pillows, ECR Masking Reagent Solution.						
Replacement Reagents						
ECR Reagent Powder Pillows, 50 mL, 25/pk		PP			25	2380268
Hexamethylenetetramine Buffer Reagent Powder Pillows, 50/pk		PP				187866
ECR Masking Reagent Solution, 25 mL SCDB		S			100	2380123
<b>Aluminum Reagent Set, Aluminon</b>	8012	PP	0.008 - 0.800 mg/L Al	All	100	2242000
Set includes: AluVer® 3 Aluminum Reagent Powder Pillows, Ascorbic Acid Powder Pillows and Bleaching 3 Reagent Powder Pillows						
Replacement Reagents						
AluVer 3 Aluminum Reagent Powder Pillows, 100/pk		PP			100	1429099
Ascorbic Acid Powder Pillows, 100/pk		PP			100	1457799
Bleaching 3 Reagent Powder Pillows, 100/pk		PP			100	1429449

PARAMETERS

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Aluminum	8012	PCII, PP	0.01 - 0.80 mg/L Al	Kit includes PC II	100	5870025

## Standards

Description	Prod. No.
Aluminum Standard Solution, 100 mg/L as Al (NIST), 100 mL	1417442
Aluminum Standard Solution, 50 mg/L as Al (NIST), 16/pk - 10 mL Voluette® Ampules	1479210
Aluminum Standard Solution, 10 mg/L as Al (NIST), 100 mL	2305842

## Accessories Required to Run Tests

Description	Prod. No.
Sample Blank Vials for TNTplus, 5/pk	TNT919



Pocket Colorimeter™ II  
Aluminum Test Kit  
Prod. No. 5870025

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# AMMONIA

Hach's complete line of Ammonia methods (Nessler and Salicylate) provides the right choice for your application.

- Multiple methods and reagent platforms available
- Nessler method is EPA accepted
- Salicylate ammonia tests are mercury-free

- TNTplus methods are barcoded for automatic method detection
- ISE also available, see pages 29 and 49



## Reagents

PARAMETERS

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>Nitrogen-Ammonia Reagent Set, Salicylate, 10 mL</b>	8155	PP	0.01 - 0.50 mg/L NH <sub>3</sub> -N	All except DR/4000, DR/3000, DR/2000, DR820		100	<b>2668000</b>
Salicylate Method set includes: Ammonia Cyanurate Reagent Powder Pillows and Ammonia Salicylate Reagent Powder Pillows.							
Replacement Reagents							
Ammonia Salicylate Reagent Powder Pillows, 10 mL, 100/pk		PP				100	<b>2653299</b>
Ammonia Cyanurate Reagent Powder Pillows, 10 mL, 100/pk		PP				100	<b>2653199</b>
<b>Nitrogen-Ammonia Set, Salicylate, 25 mL</b>	8155	PP	0.01 - 0.50 mg/L NH <sub>3</sub> -N	DR/4000, DR/3000, DR/2000		100	<b>2243700</b>
Salicylate Method set includes: Ammonia Cyanurate Reagent Powder Pillows and Ammonia Salicylate Reagent Powder Pillows.							
Replacement Reagents							
Ammonia Salicylate Reagent Powder Pillows, 25 mL, 50/pk		PP				25	<b>2395366</b>
Ammonia Cyanurate Reagent Powder Pillows, 25 mL, 50/pk		PP				25	<b>2395566</b>
<b>Nitrogen-Ammonia Reagent Set, Nessler</b>	8038	S	0.02 - 2.50 mg/L NH <sub>3</sub> -N	All except DR 900, DR/800 Series, PC II	<b>WW†</b>	250	<b>2458200</b>
Set includes: Nessler Reagent, Mineral Stabilizer, Polyvinyl Alcohol Dispersing Agent.							
Replacement Reagents							
Nessler Reagent, 500 mL		S				250	<b>2119449</b>
Mineral Stabilizer Solution, 50 mL SCDB		S				250	<b>2376626</b>
Polyvinyl Alcohol Dispersing Agent, 50 mL SCDB		S				250	<b>2376526</b>
<b>Nitrogen-Ammonia Reagent Set, TNT, AmVer (Salicylate), LR</b>	10023	TNT	0.02 - 2.50 mg/L NH <sub>3</sub> -N	All except DR/820, PC II		25 - 50 <sup>‡</sup>	<b>2604545</b>
<b>Nitrogen-Ammonia Reagent Set, TNT, AmVer (Salicylate), HR</b>	10031	TNT	0.4 - 50.0 mg/L NH <sub>3</sub> -N	All except DR/820, PC II		25 - 50 <sup>‡</sup>	<b>2606945</b>
Ammonia TNTplus, ULR	10205 ULR	TNT+	0.015 - 2.00 mg/L NH <sub>3</sub> -N	DR 6000, 3900, 2800, 1900	<b>WW**</b>	25	<b>TNT830</b>
Ammonia TNTplus, LR	10205 LR	TNT+	1 - 12 mg/L NH <sub>3</sub> -N	DR 6000, 3900, 2800, 1900	<b>WW**</b>	25	<b>TNT831</b>
Ammonia TNTplus, HR	10205 HR	TNT+	2 - 47 mg/L NH <sub>3</sub> -N	DR 6000, 3900, 2800, 1900	<b>WW**</b>	25	<b>TNT832</b>

<sup>†</sup>Distillation may be required. <sup>‡</sup> Dependent on the number of performed reagent blanks.  
<sup>\*\*</sup>Equivalent to USEPA Methods 350.1 and 351.2

**For control of biological nutrient removal, see Reagent Sets under Nutrients on page 195.**

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Ammonia Test Strip	TS	0 - 6 ppm Steps: 0, 0.25, 0.5, 1.0, 3.0, 6.0 ppm	25	<b>2755325</b>

## Test Kits

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Pocket Colorimeter™ II - Ammonia	8155	PCII, PP	0.01 to 0.80 mg/L NH <sub>3</sub> -N	Kit includes PC II	100	<b>5870040</b>
Nitrogen Ammonia Test Kit (Model NI-SA)		CD	0 to 2.4 mg/L NH <sub>3</sub> -N		100	<b>2428700</b>
Nitrogen Ammonia Test Kit, For Freshwater (Model NI-8)		CD	0 to 3.0 mg/L NH <sub>3</sub> -N		100	<b>224100</b>

*\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.*

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip





## Standards

Description	Concentration	Prod. No.
Wastewater Influent Inorganics Quality Control Standard, 500 mL	Ammonia Nitrogen 15 mg/L NH <sub>3</sub> -N; Nitrate Nitrogen 10 mg/L NO <sub>3</sub> -N; COD: 500 mg/L; Phosphate 10 mg/L PO <sub>4</sub> <sup>3-</sup> ; Sulfate 400 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC: 161 mg/L	2833149
Wastewater Effluent Inorganics Quality Control Standard, 500 mL	Ammonia Nitrogen 2 mg/L NH <sub>3</sub> -N; Nitrate Nitrogen 4 mg/L NO <sub>3</sub> -N; COD: 25 mg/L; Phosphate 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; Sulfate 50 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC: 8 mg/L	2833249
Nitrogen-Ammonia Standard Solution, 1 mg/L as NH <sub>3</sub> -N, 500 mL		189149
Nitrogen-Ammonia Standard Solution, 10 mg/L as NH <sub>3</sub> -N, 500 mL		15349
Nitrogen-Ammonia Standard Solution, 50 mg/L as NH <sub>3</sub> -N, 16/pk - 10 mL Voluette® Ampules		1479110
Nitrogen-Ammonia Standard Solution, 50 mg/L as NH <sub>3</sub> -N, 20/pk - 2 mL PourRite® Ampules		1479120
Nitrogen-Ammonia Standard Solution, 100 mg/L as NH <sub>3</sub> -N, 500 mL		2406549
Nitrogen-Ammonia Standard Solution, 150 mg/L NH <sub>3</sub> -N, 16/pk - 10 mL Voluette® Ampules		2128410
Nitrogen-Ammonia Standard Solution, 160 mg/L as NH <sub>3</sub> -N, 16/pk - 10 mL Voluette® Ampules		2109110
Nitrogen-Ammonia Standard Solution, 1,000 mg/L as NH <sub>3</sub> -N, 1 L		2354153

## AMMONIA, FREE

- Fast method
- Increased accuracy
- Extended range
- Ideal for identifying nitrification excursions
- Available on Hach Spectrophotometers and Colorimeters for versatile use in field and lab environments

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Free Ammonia and Monochloramine Reagent Set, 50 tests</b> Set includes: Free Ammonia Reagent Solution and Monochlor F Powder Pillows. Replacement Reagents Free Ammonia Reagent Solution, 4 mL SCDB Monochlor F Reagent Powder Pillows, 100/pk	10200	PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N	All except DR/820	50	2879700
<b>Free Ammonia and Monochloramine Reagent Set, 250 tests</b> Set includes: same as above (5 each)	10200	PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N	All except DR/820	250	2879701
<b>Free Ammonia-Monochloramine Reagent Starter Set A</b> Includes reagents, sample cells, and instructions.	10200	PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N	DR 6000, DR/4000, DR 3900 DR 1900, DR/2010, DR 900	50	2879704
<b>Free Ammonia-Monochloramine Reagent Starter Set B</b> Includes reagents, sample cells, and instructions.	10200	PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N	DR 3800, DR 2800, DR 2700, DR/2500, DR/2400	50	2879705

**For controlling drinking water distribution systems, see products for determining Nitrite (p. 193) and Trihalomethanes (pp. 213-214).**

## Standards

Description	Volume	Concentration	Prod. No.
Spec✓ Secondary Gel Standards Set for Monochloramine & Free Ammonia.	Set of 4 Vials	0.04-4.50 mg/L Cl <sub>2</sub> 0.02-0.50 mg/L NH <sub>3</sub> -N	2507500

## Test Kits

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Pocket Colorimeter™ II Test Kit - Free Ammonia & Monochloramine	10200	PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N 0.04 - 4.50 mg/L Cl <sub>2</sub>	Kit includes PC II	100 Monochloramine or 50 Free Ammonia to 100	5870026
<b>Nitrification Control Kit</b> Contains tests for: Free Ammonia Monochloramine Nitrite Total Chlorine, LR Total Chlorine, HR		PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N 0.04 - 4.50 mg/L Cl <sub>2</sub> 0.002 - 0.350 mg/L NO <sub>2</sub> -N 0.02 - 2.00 mg/L Cl <sub>2</sub> 0.1 - 10.0 mg/L Cl <sub>2</sub>	Kit includes DR 900 + Sample Cells	50 100 100 100 100	2882200

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# AQUA AMMONIA / HR AMMONIUM HYDROXIDE

- Measure Aqua Ammonia concentrations in delivered bulk solutions
- Portable system for control at chloramination facilities

## Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>DIGITAL TITRATOR TITRATION</b>					
<b>Aqua Ammonia Reagent Set, Digital Titrator</b>	10222	DT	5 - 35% = 50-350 g/L NH <sub>3</sub>	100	2930500
Set includes: Sulfuric Acid Digital Titrator Cartridge and Wide Range pH Indicator.					
Replacement Reagents					
Sulfuric Acid Digital Titrator Cartridge, 8.00 N		DT			1439101
Wide Range pH Indicator Solution, 100 mL MDB		S			2329332

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001

## Standards

Description	Prod. No.
Ammonium Hydroxide Solution, 10%, 500 mL	1473649

To monitor the assay of chlorine solutions, see Hypochlorite on page 183.

# ARSENIC

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant WW	# Tests	Prod. No.
<b>SILVER DIETHYLDITHIOCARBAMATE LAB METHOD</b>	8013		0 - 0.200 mg/L As	All except DR/800 Series, PC II		Varies	
Distillation Required.							
Arsenic Standard Solution, 1000 mg/L as As, 100 mL		S					1457142
Hydrochloric Acid, 500 mL		S					13449
Lead Acetate Solution, 10%, 100 mL		S					1458042
Potassium Iodide Solution, 20% 100 mL		S					1456842
Pyridine, 500 mL		S					1446949
Silver Diethyldithiocarbamate, 25 g		Jar					1447624
Stannous Chloride Solution, 100 mL		S					1456942
Water, Deionized, 4 L		S					27256
Zinc, 20 Mesh, 454 g		Jar					79501

- Portable method, ideal for field use
- Method eliminates interference from sulfide
- Specially designed cap eliminates exposure to arsine gas
- Kits include two reaction vessels for simultaneous testing

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Arsenic, Low Range Test Kit	TS	0 to 500 ppb As	Steps: 0, 10, 30, 50, 70, 300, 500	100 2800000
EZ Arsenic, High Range Test Kit	TS	0 to 500 ppb As 0 to 4000 ppb As	Steps: 0, 10, 25, 50, 250, 500 ppb Steps: 0, 35, 75, 175, 1500, 4000 ppb	100 2822800

## Accessories Required to Run Tests

Description	Prod. No.
Distillation Apparatus, Arsenic Accessories	2265400
AND	
General Purpose Distillation Apparatus Set	2265300
AND EITHER	
Heater and Support Apparatus, 115 Vac, 60 Hz	2274400
OR	
Heater and Support Apparatus, 230 Vac, 50 Hz	2274402

See Procedure for additional common labware required for this test.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# ASCORBIC ACID

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Ascorbic Acid Test Kit (Model ASC-1)	DCT	10 - 200 mg/L Ascorbic Acid	100	2308100

# ATRAZINE

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Atrazine Immunoassay Reagent Set	10050	IA	0.1, 0.5, 3.0 ppb thresholds	All except DR 900 DR/800 Series	Up to 18	2762700

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Atrazine Pocket Colorimeter II Test Kit	10050	IA	0.1, 0.5, 3.0 ppb thresholds	Kit includes PC II	up to 18	2763500

# BARIUM

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
BariVer™ 4 Barium Reagent Powder Pillows, 100/pk	8014	PP	2 - 100 mg/L Ba	All except DR/3000, DR/800, PC II	100	1206499

## Standards

Description	Prod. No.
Barium Standard Solution, 1,000 mg/L as Ba (NIST), 100 mL	1461142

# BENZOTRIAZOLE / TOLYTRIAZOLE

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Triazole Reagent Powder Pillows, 100/pk	8079	PP	1.0 - 16.0 mg/L Benzotriazole 1.0 - 20.0 mg/L Tolytriazole	All except PC II, DR/850, DR820	100	2141299

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Triazole Test Kit (Model TZ-1), 115V	CD	0 - 15.0 mg/L	100	2167500
Triazole Test Kit (Model TZ-1), 230V	CD	0 - 15.0 mg/L	100	2167502
Triazole Test Kit (Model TZ-1) without lamp or power supply	CD	0 - 15.0 mg/L	100	2167570

## Standards

Description	Prod. No.
Benzotriazole Standard Solution, 500 mg/L, 100 mL	2141342

## Accessories Required to Run Tests

Description	Prod. No.
UV Lamp with power supply, 115V, includes goggles	2082800
UV Lamp with power supply, 220V, includes goggles	2082802
UV Safety Goggles	2113400

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# BOD (BIOCHEMICAL OXYGEN DEMAND)

- Dilution method requires measurement of Dissolved Oxygen. See page 117 for titration reagents and pages 15-70 for water quality meters & probes
- Complete line of products for BOD preparation
- Prepackaged nutrient buffer
- Convenient, easy-to-use, pre-measured products

## Reagents

Description	Method	EPA Compliant WW	# Tests	Prod. No.
<b>DILUTION METHOD</b>				
Nitrification Inhibitor for BOD, Formula 2533™, TCMP, 35 g	8043		200	253335
Dispenser Cap for Formula 2533 Nitrification Inhibitor 35 g Bottle, 1/pk				45901
Nitrification Inhibitor for BOD, Formula 2533™, TCMP, 500 g			2500	253334
BOD Seed Inoculum, POLYSEED, 50 capsules/pk				2918700
<b>FOR DILUTION WATER PREPARATION</b>				
BOD Nutrient Buffer Pillows, 300 mL, 50/pk				1416066
BOD Nutrient Buffer Pillows, 3 liter, 50/pk				1486166
BOD Nutrient Buffer Pillows, 4 liter, 50/pk				2436466
BOD Nutrient Buffer Pillows, 6 liter, 50/pk				1486266
BOD Nutrient Buffer Pillows, 19 liter, 25/pk				1486398
<i>Reagents are packaged to the specifications in EPA-approved (405.1) Standard Method 5210B.</i>				
<b>BODTRAK RESPIROMETRIC METHOD 10099</b>				
Lithium Hydroxide Powder Pillows, 100/pk	10099			1416369
Stopcock Grease, 150g				56275

## Standards

Description	Prod. No.
BOD Standard Solution, 300 mg/L, 16/pk - 10-mL Voluette® Ampules	1486510
BOD Standard Solution, 3,000 mg/L, 16/pk - 10-mL Voluette® Ampules	1486610
ez GGA - No Pipette GGA, Single Dose BOD Standard, 20/pk - 2-mL ampules (150 mg/L GGA, 198 mg/L BOD)	2514420
Oxygen Demand Quality Control Standard, 16/pk - 10 mL Voluette® Ampule	2833510

## Accessories Required to Run Tests

Description	Method	Prod. No.
<b>DILUTION METHOD</b>		
BOD Bottle Cap, 6/pk	8043	241906
Bottle Stopper, acrylic, 25/pk		2943900
Bottle, BOD, Disposable, 300 mL, 117/case		2943100
Bottle with Stopper, BOD, 300 mL, 6/pk		62106
Incubator, BOD Model 205, 110V		2616200
<b>RESPIROMETRIC METHOD</b>		
Incubator, BOD Model 205, 110V	10099	2616200

# BORON

## Reagents

Description	Method	Ranges	Instrument*	# Tests	Prod. No.
<b>BORON, CARMINE METHOD</b>					
	8015	PP, S	0.2 - 14.0 mg/L B		
BoroVer® 3 Boron Reagent Powder Pillows, 100/pk			All except DR/800 Series, PC II	100	1417099
Sulfuric Acid, ACS, 2.5 L					97909
Water, Deionized, 4 L					27256

## Standards

Description	Prod. No.
Boron Standard Solution, 1,000 mg/L as B (NIST), 100 mL	191442

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>DPD METHOD</b>	8016		0.05 - 4.50 mg/L Br <sub>2</sub>			
DPD Total Chlorine Reagent AccuVac® Ampules, 25/pk		AV		All	25	2503025
DPD Total Chlorine Reagent Powder Pillows, 10 mL, 100/pk		PP		All except DR/3000, DR/2000	100	2105669
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 100/pk		PP		DR/3000, DR/2000	100	1406499

## Test Kits

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Pocket Colorimeter™ II Test Kit – Bromine	8016	PCII	0.05 - 4.50 mg/L Br <sub>2</sub> 0.2 - 10.0 Br <sub>2</sub>	Kit includes PC II	50-100	5870001

# CADMIUM

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Cadmium Reagent Set, Dithizone (No Air Shipments)</b>	8017	PP, S	0.7 - 80 µg/L Cd	All except DR 900, DR/800 Series, PC II	60 - 100	2242200
Set includes: Buffer Pillows (Citrate Type), Chloroform, DithiVer® Metals Reagent Pillows, Sodium Hydroxide Solution (50%). NOTE: No Air Shipments, see Prod. No. 2242201, it has been configured for Air Shipments.						
Replacement Reagents						
Buffer Powder Pillows for Heavy Metals, Citrate Type, 100/pk		PP			100	1420299
Chloroform, 4 L		S			60 - 100	1445817
DithiVer Metals Reagent Powder Pillows, 100/pk		PP			100	1261699
Potassium Cyanide, ACS, 100g		Jar			Varies	76714
Sodium Hydroxide Solution, 50%, 100 mL		S			25	218049
<b>Cadmium Reagent Set, Dithizone (Air Shipment)</b>					60 - 100	2242201
Set includes: Buffer Pillows (Citrate Type), Chloroform, DithiVer® Metals Reagent Pillows, Sodium Hydroxide Solution (50%). NOTE: Air Freight Configuration.						
Cadmium TNTplus	10217	TNT+	0.02 - 0.30 mg/L Cd	DR 6000, DR 3900, DR 2800, DR 1900	25	TNT852
Test determines soluble metals. Add Metals Prep Set TNT890 to determine total Cadmium metal. Add Calcium Separation Set TNT892 for Cadmium sample matrices containing more than 50 mg/L Calcium or Magnesium.						

## Standards

Description	Prod. No.
Cadmium Standard Solution, 100 mg/L as Cd (NIST), 100 mL	1402442

## Accessories Required to Run Tests

Description	Prod. No.
Reaction Tubes, 20 mm, 5/pk (For use with Metal Prep Set.)	LZP065
Metal Prep Set for TNTplus Cadmium and Lead, 25/pk	TNT890
Calcium Separation Set for 25 Calcium separations (Only needed when Ca <sup>2+</sup> and/or Mg <sup>2+</sup> > 50 mg/L)	TNT892

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# CALCIUM HARDNESS

Also see Hardness on pages 179-181.

## Reagents

Description	Method	Platform	Ranges	EPA Compliant	# Tests	Prod. No.
<b>BURET TITRATION</b>	8222		0 - 5,000 mg/L CaCO <sub>3</sub>			
<b>Hardness (Calcium) Reagent Set, Buret</b>		PP, S		WW	100	2447000
Set (Low Range) includes: CalVer® 2 Calcium Indicator Powder Pillows, Potassium Hydroxide Solution (8 N) and TitraVer® (EDTA) Hardness Titrant (0.0200 N). Replacement Reagents						
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S			Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 50 mL sample, 100/pk		PP			100	85299
EDTA Standard Solution, 0.0200 N, 1 L		S	0 - 5,000 mg/L CaCO <sub>3</sub>		40 - 100	20553
EDTA Standard Solution, 0.200 N, 500 mL		S	1,000 - 25,000 mg/L CaCO <sub>3</sub>			102149
Water, Deionized, 4 L		S				27256
<b>DIGITAL TITRATOR TITRATION</b>	8204		10 - 160 mg/L CaCO <sub>3</sub>	WW†		
<b>Hardness (Calcium) Reagent Set, LR, Digital Titrator</b>		DT			40-100	2447200
Set for Digital Titrator (LR) includes: CalVer® 2 Indicator Powder Pillows, Potassium Hydroxide Solution (8 N), 0.0800 M TitraVer EDTA Cartridge. Replacement Reagents						
EDTA Digital Titrator Cartridge, 0.0800 M		DT			40 - 100	1436401
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S			Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 50 mL sample, 100/pk		PP			100	85299
<b>Calcium Hardness Reagents (Low Range)</b>	8204		1 - 16 G.d.h. CaCO <sub>3</sub> †	WW†		
EDTA Digital Titrator Cartridge, 0.1428 M		DT			40 - 100	1496001
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S			Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 50 mL sample, 100/pk		PP			100	85299
<b>Hardness (Calcium) Reagent Set, HR, Digital Titrator</b>	8204	DT	100 - 4,000 mg/L CaCO <sub>3</sub>	WW†	40-100	2447500
Set for Digital Titrator (HR) includes: CalVer® 2 Indicator Powder Pillows, Potassium Hydroxide Solution (8 N) and 0.800 M TitraVer EDTA Cartridge. Replacement Reagents						
EDTA Digital Titrator Cartridge, 0.800 M		DT			40 - 100	1439901
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S			Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 50 mL sample, 100/pk		PP			100	85299
<b>Calcium Hardness Reagents (High Range)</b>	8204		10 - 100 G.d.h. CaCO <sub>3</sub> †	WW†		
EDTA Digital Titrator Cartridge, 0.714M		DT			40 - 100	1495901
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S			Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 50 mL sample, 100/pk		PP			100	85299
Water, Deionized, 4 L		S				27256

†G.d.h. = German degree hardness; 1 German degree hardness equals 17.9 mg/L CaCO<sub>3</sub>  
 ‡ Equivalent to Standard Methods 3500-Ca B or D

**See pages 115-117 for  
Hach Digital Titrator products.**

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Total Hardness Test Strips (as CaCO <sub>3</sub> )	TS	0 - 425 ppm 0 - 25 CaCO <sub>3</sub> (0, 25, 50, 120, 250, 425 steps)	1,000†	2793828
Total Hardness Test Strips (as CaCO <sub>3</sub> )	TS	0 - 425 ppm 0 - 25 CaCO <sub>3</sub> (0, 25, 50, 120, 250, 425 steps)	250†	2793844
Total Hardness Test Strips (as CaCO <sub>3</sub> )	TS	0 - 425 ppm 0 - 25 gpg CaCO <sub>3</sub> (0, 25, 50, 120, 250, 425 steps)	50	2745250

†Individually wrapped.

## Standards

Description	Prod. No.
Calcium Standard Solution, 1,000 mg/L as CaCO <sub>3</sub> , 1 L	12153
Calcium Hardness Standard Solution, 10,000 mg/L as CaCO <sub>3</sub> (NIST), 16/pk-10-mL Voluette Ampules	218710

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001
Buret, Class A, 25 mL	2636540

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



## Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>BURET TITRATION</b>					
	8233		0 - 250 mg/L CO <sub>2</sub>		
Phenolphthalein Indicator Powder Pillows, 100/pk		PP		100	94299
Sodium Hydroxide Standard Solution, 0.0227 N, 1 L		S			19253
<b>DIGITAL TITRATOR TITRATION</b>					
	8205				
<b>Carbon Dioxide Reagent Set, Digital Titrator</b>					
Set (Digital Titrator Method) includes: Phenolphthalein Pillows and two Sodium Hydroxide Cartridges: 0.3636 N and 3.636 N.					
Replacement Reagents					
Phenolphthalein Indicator Powder Pillows, 100/pk		PP		100	94299
Sodium Hydroxide Digital Titrator Cartridge, 0.3636 N		DT		40 - 100	1437801
Sodium Hydroxide Digital Titrator Cartridge, 3.636 N		DT		40 - 100	1438001
<b>Carbon Dioxide Reagents (Low Range)</b>					
			10 - 100 mg/L		
Phenolphthalein Indicator Powder Pillows, 100/pk		PP		100	94299
Sodium Hydroxide Digital Titrator Cartridge, 0.3636 N		DT		40 - 100	1437801
<b>OPTIONAL REAGENTS</b>					
Phenolphthalein Indicator Solution, 5 g/L, 100 mL MDB (APHA)		S			16232

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Carbon Dioxide Test Kit (Model CA-23)	DCT	1.25 - 100 mg/L CO <sub>2</sub> †	200	143601
Carbon Dioxide Test Kit (Model CA-DT)	DT	10 - 1,000 mg/L CO <sub>2</sub>	50	2064100

†Three ranges available: 1.25-25 mg/L; 2-40 mg/L; 5-100 mg/L

## Standards

Description	Prod. No.
Carbon Dioxide Standard (KHP), 10,000 mg/L as CO <sub>2</sub> equivalent, 16/pk - 10 mL Voluette® Ampules	1427510
Carbon Dioxide Standard Solution, 100 mg/L as CO <sub>2</sub> equivalent, 100 mL	226142

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001
Buret, Class A, 25 mL	2636540

# CHELANT

## Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>FREE CHELANT- DIGITAL TITRATOR TITRATION</b>					
	8352		0 - 20.0 mg/L CaCO <sub>3</sub>		
Hardness 1 Buffer Solution, 100 mL MDB		S		100	42432
Manver 2 Hardness Indicator Powder Pillows, 50 mL Sample, 100/pk		PP		100	85199
Magnesium Chloride Digital Titrator Cartridge, 0.080 M		DT		40 - 100	2062501
<b>OPTIONAL REAGENTS</b>					
Hardness 2 Indicator Solution, 100 mL MDB		S		~ 300	42532
<b>TOTAL CHELANT- DIGITAL TITRATOR TITRATION</b>					
	8350		0 - 40.0 mg/L Na <sub>4</sub> EDTA		
Ascorbic Acid Powder Pillows, 100/pk		PP		Varies	1457799
Bismuth Nitrate Digital Titrator Cartridge, 0.0200 M		DT		40 - 100	2434501
Methylthymol Blue Indicator Powder Pillows, 100/pk		PP		100	2284799
Sulfuric Acid Standard Solution, 5.25 N, 100 mL MDB		S		Varies	244932

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001

# CHLORAMINE, MONO

See Monochloramine on pages 189-190.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# CHLORIDE

## Reagents

PARAMETERS

Description	Method	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>MERCURIC THIOCYANATE COLORIMETRIC METHOD</b>						
	8113					
<b>Chloride Reagent Set, Mercuric Thiocyanate</b>		0.1 - 25.0 mg/L Cl <sup>-</sup>	All except DR 900, DR/800 Series, PC II		100	2319800
Set includes: Ferric Ion Solution and Mercuric Thiocyanate Solution.						
Replacement Reagents						
Ferric Ion Solution, 100 mL					100	2212242
Mercuric Thiocyanate Solution, 200 mL					100	2212129
Water, Deionized, 4 L						27256
<b>MERCURIC NITRATE DIGITAL TITRATOR TITRATION</b>						
<b>Chloride Reagent Set, Mercuric Nitrate Digital Titrator</b>	8206	10 - 8,000 mg/L Cl <sup>-</sup>		WW†	100	2272600
Set includes: Diphenylcarbazone Reagent Powder Pillows, Mercuric Nitrate Titration Cartridge (0.2256 N), and Mercuric Nitrate Titration Cartridge (2.256 N).						
Replacement Reagents						
Diphenylcarbazone Reagent Powder Pillows, 100mL sample, 100/pk					100	83699
Mercuric Nitrate Digital Titrator Cartridge, 0.2256 N					40 - 100	1439301
Mercuric Nitrate Digital Titrator Cartridge, 2.256 N					40 - 100	92101
Water, Deionized, 4 L						27256
<b>SILVER NITRATE DIGITAL TITRATOR TITRATION</b>						
<b>Chloride Reagent Set, LR, Digital Titrator</b>	8207	10 - 100 mg/L Cl <sup>-</sup>		WW†	100	2444100
Set includes: Chloride 2 Indicator Powder Pillows, two Silver Nitrate Cartridges (0.2256N).						
Replacement Reagents						
Chloride 2 Indicator Powder Pillows, 100 mL, 50/pk					50	105766
Silver Nitrate Digital Titrator Cartridge, 0.2256 N					40 - 100	1439601
<b>Chloride Reagent Set, Silver Nitrate Digital Titrator, Full Range</b>	8207	10 - 10,000 mg/L Cl <sup>-</sup>		WW†	100	2288000
Set (Digital Titrator Method) Silver Nitrate Method includes: Chloride 2 Indicator Powder Pillows, Silver Nitrate Titration Cartridge, 0.2256 N and Silver Nitrate Titration Cartridge, 1.128 N.						
Replacement Reagents						
Chloride 2 Indicator Powder Pillows, 100 mL, 50/pk					50	105766
Silver Nitrate Digital Titrator Cartridge, 0.2256 N					40 - 100	1439601
Silver Nitrate Digital Titrator Cartridge, 1.128 N					40 - 100	1439701
Water, Deionized, 4 L						27256
<b>SILVER NITRATE BURET TITRATION METHOD</b>						
	8225			WW		
Chloride 2 Indicator Powder Pillows, 100 mL, 50/pk					50	105766
Silver Nitrate Standard Solution, 0.0141 N, 1 L		0 - 500 mg/L Cl <sup>-</sup>				31653
Silver Nitrate Standard Solution, 0.141 N, 500 mL		0 - 25,000 mg/L Cl <sup>-</sup>				1255149

† Equivalent to Standard Methods 4500-Cl B

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Low Range Chloride Test Strip (Quantab®)	TS	30 - 600 ppm Cl <sup>-</sup>	40	2744940
High Range Chloride Test Strip (Quantab®)	TS	300 - 6,000 ppm Cl <sup>-</sup>	40	2751340

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Chloride Test Kit (Model 8-P)	DCT	5 - 100 mg/L Cl <sup>-</sup> 20 - 400 mg/L Cl <sup>-</sup>	100	144001
Chloride Test Kit (Model CD-51)	DCT	500 - 10,000 mg/L Cl <sup>-</sup> 5,000 - 100,000 mg/L Cl <sup>-</sup>	100	208601
Chloride Test Kit (Model CD-DT), Mercuric Nitrate	DT	10 - 8,000 mg/L Cl <sup>-</sup>	100	2063500
Chloride Test Kit (Model CDS-DT), Silver Nitrate	DT	10 - 10,000 mg/L Cl <sup>-</sup>	100	2580600

## Standards

Description	Prod. No.
Chloride Standard Solution, 12,500 mg/L as Cl <sup>-</sup> (NIST), 16/pk - 10 mL Voluette® Ampules	1425010
Chloride Standard Solution, 1,000 mg/L Cl <sup>-</sup> (NIST), 500 mL	18349
Chloride Standard Solution, 100 mg/L as Cl <sup>-</sup> (NIST), 1 L	2370853

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001
Buret, Class A, 25 mL	2636540
Buret, Class A, 50-mL	2636541

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip





- Multiple reagent platforms available
- Hach's DPD formulation allows for high levels of sample hardness with no interference and unparalleled reagent stability

- EPA accepted DPD method
- Multiple ranges available— from ultra low range to high range

## Reagents

(These reagents are not cleared for use in testing chlorine or chloramines in dialysis applications.)

Description	Method	Platform	Ranges	Instrument*		# Tests	Prod.
<b>ULTRA LOW RANGE</b>	8370						
	10014				DW WW		
<b>Chlorine Reagent Set (Total), Ultra Low Range DPD</b>			2 - 500 g/L - as Cl <sub>2</sub>	All except DR 900, DR/800 Series, PC II		20	2563000
Set includes: Buffer Solution, DPD Chlorine Indicator Solution, and Blanking Reagent.							
Replacement Reagents							
Buffer Solution, ULR Chlorine, 20/pk		S				20	2493120
DPD Chlorine Indicator Solution Ampules, ULR, 20/pk		S				20	2493220
Blanking Reagent for ULR Chlorine, 29 mL		S				20	2493023
<b>LOW RANGE</b>							
<b>Total Chlorine Reagent Set</b>	10060	RL	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/4000, DR 900, DR/800 Series, PC II		450	2557000
Set includes: CL17 DPD Indicator, CL17 Total Chlorine Indicator Solution, and CL17 Total Chlorine Buffer Solution.							
Replacement Reagents							
CL17 DPD Indicator Powder (Free and Total)		Jar				450	2297255
CL17 Total Chlorine Indicator Solution		S					2263411
CL17 Total Chlorine Buffer Solution		S				450	2263511
<b>Free Chlorine Reagent Set</b>	10059	RL	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/4000, DR 900, DR/800 Series, PC II		450	2556900
Set includes: CL17 DPD Indicator, CL17 Free Chlorine Indicator Solution, and CL17 Free Chlorine Buffer Solution.							
Replacement Reagents							
CL17 DPD Indicator Powder (Free and Total)		Jar				450	2297255
CL17 Free Chlorine Indicator Solution		S				450	2314011
CL17 Free Chlorine Buffer Solution		S				450	2314111
<b>FREE CHLORINE, LOW RANGE</b>							
DPD Free Chlorine Reagent Powder Pillows, 10 mL, 100/pk	8021	PP	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW	100 100	2105569
DPD Free Chlorine Reagent Powder Pillows, 10 mL, 300/pk	8021	PP	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW	300	2105503
DPD Free Chlorine Reagent Powder Pillows, 10 mL, 1,000/pk	8021	PP	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW	1000	2105528
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 100/pk	8021	PP	0.02 - 2.00 mg/L Cl <sub>2</sub>	DR/3000, DR/2000	DW	Varies 100	1407099
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 1,000/pk	8021	PP	0.02 - 2.00 mg/L Cl <sub>2</sub>	DR/3000, DR/2000	DW	1000	1407028
DPD Free Chlorine Reagent AccuVac® Ampules, 25/pk	8021	AV	0.02 - 2.00 mg/L Cl <sub>2</sub>	All	DW	25	2502025
DPD Free Chlorine Reagent, SwifTest™ Dispenser	8021	SW	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW	250	2802300
DPD Free Chlorine Reagent, SwifTest™ Dispenser Refill Vial, 250 Tests	8021	SW	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW	250	2105560
Free Chlorine TNTplus	10231	TNT+	0.05 - 2.00 mg/L Cl <sub>2</sub>	DR 6000, DR 3900, DR 2800		24	TNT866
Free Chlorine Indophenol Method Monochlor F Reagent Powder Pillows, 100/pk	10241	PP	0.04 - 4.50 mg/L Cl <sub>2</sub>	All		Varies	2802299
Freechlor F Reagent Solution, 50 mL		S					2964926
<b>TOTAL CHLORINE, LOW RANGE</b>							
DPD Total Chlorine Reagent Powder Pillows, 10 mL, 100/pk	8167	PP	0.02 - 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW, WW	100	2105669
DPD Total Chlorine Reagent Powder Pillows, 10 mL, 300/pk	8167	PP	0.02 to 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW, WW	300	2105603
DPD Total Chlorine Reagent Powder Pillows, 10 mL, 1,000/pk	8167	PP	0.02 to 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW, WW	1000	2105628
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 100/pk	8167	PP	0.02 to 2.00 mg/L Cl <sub>2</sub>	DR/3000, DR/2000	DW, WW	100	1406499
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 1,000/pk	8167	PP	0.02 to 2.00 mg/L Cl <sub>2</sub>	DR/3000, DR/2000	DW, WW	1000	1406428
DPD Total Chlorine Reagent AccuVac® Ampules, 25/pk	8167	AV	0.02-2.00; 0.02-4.50 mg/L Cl <sub>2</sub>	All	DW, WW	25	2503025
DPD Total Chlorine Reagent, SwifTest™ Dispenser	8167	SW	0.02-2.00; 0.02-4.50 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW, WW	250	2802400
DPD Total Chlorine Reagent, SwifTest™ Dispenser Refill Vial, 250 Tests	8167	SW	0.02 to 2.00 mg/L Cl <sub>2</sub>	All except DR/3000, DR/2000	DW, WW	250	2105660
Chlorine, Free and Total TNTplus	10232	TNT+	0.05 - 2.00 mg/L Cl <sub>2</sub>	DR 6000, DR 3900, DR 1900	WW <sup>†</sup>	24	TNT867

<sup>†</sup>Total Chlorine equivalent to Standard Methods 4500-Cl G

Continued on next page.

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PARAMETERS

# CHLORINE

## Reagents (Continued)

(These reagents are not cleared for use in testing chlorine or chloramines in dialysis applications.)

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>HIGH RANGE</b>							
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 100/pk	10069	PP	0.1 - 10.0 mg/L Cl <sub>2</sub>	DR/3000, DR/2000	DW, WW	Varies	1407099
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 1,000/pk	10069	PP	0.1 - 10.0 mg/L Cl <sub>2</sub>	DR/3000, DR/2000	DW, WW	1000	1407028
DPD Free Chlorine Reagent, Test 'N Tube Vials, 50/pk	10102	TNT	0.09 - 5.00 mg/L Cl <sub>2</sub>	All except PC II	DW, WW	50	2105545
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 100/pk	10070	PP	0.1 - 10.0 mg/L as Cl <sub>2</sub>	DR/3000, DR/2000	DW, WW	100	1406499
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 1,000/pk	10070	PP	0.1 - 10.0 mg/L as Cl <sub>2</sub>	DR/3000, DR/2000	DW, WW	1000	1406428
DPD Total Chlorine Reagent, Test 'N Tube Vials, 50/pk	10101	PP	0.09 - 5.00 mg/L Cl <sub>2</sub>		DW, WW	50 50	2105645
<b>AMPEROMETRIC TITRATOR TITRATION</b> (Buret Titration for Free Chlorine)	8334		0.5 mg/L and above Cl <sub>2</sub>	AutoCat™ 9000	DW‡, WW		
Phenylarsine Oxide (PAO) Standard Solution, 0.00564 N, 1 L		S					199953
Buffer, Phosphate, pH 7, for Amperometric Chlorine, 100 mL MDB		S				100	2155332
<b>AMPEROMETRIC DIGITAL TITRATOR TITRATION</b> (Digital Titrator titration for Free Chlorine)	10024		0 - 1,000 g/L Cl <sub>2</sub>				
Phenylarsine Oxide (PAO) Digital Titrator Cartridge, 0.00564 N		DT					199901
Buffer, Phosphate, pH 7, for Amperometric Chlorine, 100 mL MDB		S				100	2155332
<b>AMPEROMETRIC TITRATOR TITRATION</b> (Back Titration for Total Chlorine)	10025		0.0051 - 5.00 mg/L Cl <sub>2</sub>	AutoCat™ 9000	WW		
Acetate Buffer Solution, pH 4.0, 100 mL		S				100	1490932
Iodine Standard Solution, 0.0282 N, 1 L		S				100	2333353
Phenylarsine Oxide (PAO) Standard Solution, 0.00564 N, 1 L		S					199953
Buffer, Phosphate, pH 7, for Amperometric Chlorine, 100 mL MDB		S				100	2155332
Potassium Iodide SwiftTest™ Dispenser Refill		SW					107760
<b>AMPEROMETRIC TITRATOR TITRATION</b> (Forward Titration for Total Chlorine)	8168		0.0012 - 5,000 mg/L Cl <sub>2</sub>	AutoCat™ 9000	DW, WW		
Acetate Buffer Solution, pH 4.0, 100 mL		S				100	1490932
Phenylarsine Oxide (PAO) Standard Solution, 0.00564 N, 1 L		S					199953
Potassium Iodide SwiftTest™ Dispenser Refill		SW					107760
<b>AMPEROMETRIC DIGITAL TITRATOR TITRATION</b> (Back Titration for Total Chlorine)	10025		0.0051 - 5.00 mg/L Cl <sub>2</sub>	AutoCat™ 9000	WW		
Acetate Buffer Solution, pH 4.0, 100 mL		S				100	1490932
Potassium Iodide Powder Pillows, 100/pk		PP				100	107799
Iodine Standard Solution Digital Titrator Cartridge, 0.0282 N		DT					2333301
Sodium Thiosulfate Standard Solution, 0.00564 N, 100 mL		S				100	2408842
<b>AMPEROMETRIC DIGITAL TITRATOR TITRATION</b> (Forward Titration for Total Chlorine)	10026		15 - 1,000 g/L Cl <sub>2</sub>		DW		
Phenylarsine Oxide (PAO) Digital Titrator Cartridge, 0.00564 N		DT					199901
Acetate Buffer Solution, pH 4.0, 100 mL		S				100	1490932
Potassium Iodide Powder Pillows, 100/pk		PP				100	107799
<b>IODOMETRIC</b> (Using Sodium Thiosulfate)	8161		0 - 40,000 mg/L				
Dissolved Oxygen 3 Reagent Powder Pillows, 100/pk		PP				100	98799
Potassium Iodide Powder Pillows, 100/pk		PP				100	107799
Sodium Thiosulfate Standard Solution, 0.025 N, 1 L		S				Varies	35253
Starch Indicator Solution, 100 mL MDB		S				Varies	34932

\*Total Chlorine equivalent to Standard Methods 4500-Cl G †AutoCat™ 9000 performs Standard Methods 4500-Cl D

Continued on next page.



## Reagents (Continued)

(These reagents are not cleared for use in testing chlorine or chloramines in dialysis applications.)

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>DPD - FEAS</b>	8210		0 - 3.00 mg/L Cl <sub>2</sub>				
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 100/pk		PP				Varies	1407099
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 100/pk		PP				100	1406499
Ferrous Ethylenediammonium Sulfate Digital Titrator Cartridge, 0.00564 N		DT					2292301
Potassium Iodide solution, 30 g/L, 100 mL		S					34332
<b>DIGITAL TITRATOR TITRATION</b>	8209		1 - 400 mg/L Cl <sub>2</sub>				
<b>Total Chlorine Reagents, Digital Titrator, (LR)</b>							
Acetate Buffer Solution, pH 4.0, 100 mL		S				100	1490932
Potassium Iodide Powder Pillows, 100/pk		PP				100	107799
Sodium Thiosulfate Digital Titrator Cartridge, Stabilized, 0.02256 N		DT				40 to 100	2409101
Starch Indicator Solution, 100 mL MDB		S				Varies	34932
<b>Chlorine (Total) Reagent Set, Digital Titrator, Mid-Range</b>		DT	20 - 2,000 mg/L Cl <sub>2</sub>			100	2272500
Set includes: Dissolved Oxygen 3 Reagent Powder Pillows, Potassium Iodide Powder Pillows, Sodium Thiosulfate Digital Titrator Cartridge, and Starch Indicator Solution.							
Replacement Reagents							
Dissolved Oxygen 3 Reagent Powder Pillows, 100/pk		PP				100	98799
Potassium Iodide Powder Pillows, 100/pk		PP				100	107799
Sodium Thiosulfate Digital Titrator Cartridge, 0.113 N		DT				40 - 100	2267301
Starch Indicator Solution, 100 mL MDB		S				Varies	34932
<b>Chlorine (Total) Reagent Set, HR Digital Titrator</b>		DT	2,000 - 70,000 mg/L Cl <sub>2</sub>			100	2444800
Set includes: Dissolved Oxygen 3 Reagent Powder Pillows, Potassium Iodide Powder Pillows, Potassium Iodide Powder Pillows, Sodium Thiosulfate Digital Titrator Cartridge, and Starch Indicator Solution.							
Replacement Reagents							
Dissolved Oxygen 3 Reagent Powder Pillows, 100/pk		PP				100	98799
Potassium Iodide Powder Pillows, 50/pk		PP				50	2059996
Sodium Thiosulfate Digital Titrator Cartridge, 2.00 N		DT				40 - 100	1440101
Starch Indicator Solution, 100 mL MDB		S				Varies	34932

PARAMETERS

Also see Hypochlorite on page 183 to assay disinfectant solutions.

## Test Strips

Description	Platform	Ranges	Steps	# Tests	Prod. No.
Free & Total Chlorine Test Strips, Low Range	TS	0 - 10 mg/L Cl <sub>2</sub>	Steps: 0, 0.5, 1, 2, 4, 10	50	2745050
Free & Total Chlorine Test Strips, Low Range	TS	0 - 10 mg/L Cl <sub>2</sub>	Steps: 0, 0.5, 1, 2, 4, 10	250	2793944
				Individually Wrapped	
Free Chlorine Test Strips, High Range	TS	0 - 600 mg/L Cl <sub>2</sub> (0, 25, 50, 100, 200, 400, 600 steps)	Steps: 0, 25, 50, 100, 200, 400, 600	100	2890200

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# CHLORINE

## Test Kits

(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

PARAMETERS

Description	Method	Platform	Ranges	EPA Compliant	# Tests	Prod. No.
<b>TEST KITS-LOW RANGE</b>						
Free & Total Chlorine Test Kit (Model CN-66)		CD	0 - 3.4 mg/L Cl <sub>2</sub>		50 F, 50 T	223101
Free Chlorine Test Kit (CN-66F)		CD	0 - 3.4 mg/L Cl <sub>2</sub>		100	223102
Total Chlorine Test Kit (CN-66T)		CD	0 - 3.4 mg/L Cl <sub>2</sub>		100	223103
Free Chlorine Test Kit (CN-70F)		CD	0.02 - 0.68 mg/L Cl <sub>2</sub> 0 - 3.4 mg/L Cl <sub>2</sub>		200	1454201
Total Chlorine Test Kit (CN-70T)		CD	0.02 - 0.68 mg/L Cl <sub>2</sub> 0.02 - 3.4 mg/L Cl <sub>2</sub>		200 <sup>†</sup>	1454202
Free & Total Chlorine Test Kit (Model CN-70)		CD	0.02 - 0.68 mg/L Cl <sub>2</sub> 0 - 3.4 mg/L Cl <sub>2</sub>		100 F, 100 T	1454200
Free & Total Chlorine Test Kit (Model CN-80)		CD	0 - 0.68 mg/L Cl <sub>2</sub> 0 - 3.4 mg/L Cl <sub>2</sub> 0 - 10 mg/L Cl <sub>2</sub>		100	2129000
Pocket Colorimeter™ II, Chlorine, F&T	8021 (F), 8167 (T)	PCII, PP	0.02 - 2.00 mg/L F&T Cl <sub>2</sub> 0.1 - 8.0 mg/L Cl <sub>2</sub>	DW, WW	50-100	5870000
<b>TEST KITS-MID AND HIGH RANGE</b>						
Total Chlorine Test Kit (Model CN-65)		DCT	0.2 - 4 mg/L Cl <sub>2</sub>		100	225401
Total Chlorine Test Kit (Model CN-21P)		DCT	10 - 200 mg/L Cl <sub>2</sub>		100	2444400
Pocket Colorimeter™ II, Chlorine, F&T	8021 (F), 8167 (T)	PCII, PP	0.02 - 2.00 mg/L F&T Cl <sub>2</sub> 0.1 - 8.0 mg/L Cl <sub>2</sub>	DW, WW	50-100	5870000
Pocket Colorimeter™ II, Chlorine, F&T, MR/HR	10245(F), 10250(T)	PCII, PP	0.05 - 4.00 mg/L Cl <sub>2</sub> 0.1 - 10.0 mg/L Cl <sub>2</sub>	DW, WW	100 F, 100 T	5870062
Pocket Colorimeter™ II – Chlorine, Free & Total & pH (Not for regulatory reporting.)		PCII, PP, S	0.1 - 10.0 Cl <sub>2</sub> 6.0 - 8.5 pH		100	5870012
Chlorine Test Kit (Model CN-DT)		DT	20 - 2,000 mg/L Cl <sub>2</sub>		100	2471100
<b>CHLORINE, SWIFTEST™ DISPENSER KITS</b>						
Pocket Colorimeter™ II, Free Chlorine	8021	SW	0.02 - 2.00 mg/L Cl <sub>2</sub> 0.1 - 8.0 mg/L Cl <sub>2</sub>	DW, WW	125 to 250	5870023
Pocket Colorimeter™ II, Total Chlorine	8167	SW	0.02 - 2.00 mg/L Cl <sub>2</sub> 0.1 - 8.0 mg/L Cl <sub>2</sub>		125 to 250	5870024

- Spec✓ colored gels provide a stable simulation of the colors produced by the analytical method. Use them for a convenient check on instrument performance.

## Standards

Description	Volume	Concentration	Prod. No.
Spec✓ Gel Secondary Standard Kit-LR Chlorine, DPD	Set of 4 Vials	0 - 2.0 mg/L Cl <sub>2</sub>	2635300
Spec✓ Gel Secondary Standard Kit-HR Chlorine, DPD	Set of 4 Vials	0 - 8.0 mg/L Cl <sub>2</sub>	2893300
Spec✓ Gel Secondary Standard Kit-MR Chlorine, DPD	Set of 4 Vials	0 - 4.0 mg/L Cl <sub>2</sub>	2980500
Chlorine Standard Solution as Cl <sub>2</sub> (NIST)	20 /pk - 2 mL PourRite Ampules	25 - 30 mg/L Cl <sub>2</sub>	2630020
Chlorine Standard Solution as Cl <sub>2</sub> (NIST)	20 /pk - 2 mL PourRite Ampules	50 - 75 mg/L Cl <sub>2</sub>	1426820
Chlorine Standard Solution as Cl <sub>2</sub> (NIST)	16 /pk - 10 mL Voluette Ampules	50 to 75 mg/L Cl <sub>2</sub>	1426810

# CHLORINE DEMAND / REQUIREMENT

- Determine chlorine demand and chlorine requirements for drinking water production
- Establish background data and chlorine demand constants
- Determine chlorine demand on distributed waters

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
DPD Free Chlorine Reagent Powder Pillows, 10 mL, 100/pk	10223	PP	Varies	All except DR/3000, DR/2000	100	2105569
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 100/pk		PP		DR/3000, DR/2000	Varies	1407099
Chlorine Dosing Solution Ampules, 1,000 - 1,500 mg/L as Cl <sub>2</sub> , 16/pk		S		All	Varies	2504810

## Accessories Required to Run Tests

Product Description	Prod. No.
Caps, Black, PP Teflon liner, 12/pkg	2401812
Bottles, Amber Glass, 118 mL, 6/pkg	714424

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



- Multiple methods available
- Available in multiple test formats

- Direct-read (reagentless) methods are available on spectrophotometers, see pages 75-92

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>COLORIMETRIC</b>							
<b>Chlorine Dioxide Reagent Set, Chlorophenol Red</b>	8065	PP, S	0.01 - 1.00 mg/L ClO <sub>2</sub>	All except DR 900, DR/800 Series, PC II		100	2242300
Set includes: Chlorine Dioxide Reagent 1, 2, and 3, and Dechlorinating Reagent Powder Pillows.							
Replacement Reagents							
Chlorine Dioxide Reagent 1, 100 mL		S				50	2070042
Chlorine Dioxide Reagent 2, 100 mL		S				50	2070142
Chlorine Dioxide Reagent 3, 100 mL		S				50	2070242
Dechlorinating Reagent Powder Pillows, 100/pk		PP				100	1436369
<b>Chlorine Dioxide Reagent Set, DPD Glycine, 10 mL</b>	10126	PP, S	0.04 - 5.00 mg/L ClO <sub>2</sub>	All	DW	100	2770900
Set includes: DPD Free Chlorine Reagent Powder Pillows and Glycine Reagent.							
Replacement Reagents							
DPD Free Chlorine Reagent Powder Pillows, 10 mL, 100/pk		PP			DW	100	2105569
Glycine Reagent, 10%, 29 mL SCDB		S				100	2762133
<b>Chlorine Dioxide Reagent Set, DPD Glycine AccuVac® Ampules</b>	10126	AV, S	0.04 - 5.00 mg/L ClO <sub>2</sub>	All	DW	25	2771000
Set includes: DPD Free Chlorine Reagent AccuVac® Ampules, Glycine Reagent.							
Replacement Reagents							
DPD Free Chlorine Reagent AccuVac® Ampules, 25/pk		AV		All	DW	25	2502025
Glycine Reagent, 10%, 29 mL SCDB		S				100	2762133
<b>AMPEROMETRIC TITRATOR TITRATION (Buret Titration for Chlorine Dioxide and Chlorite)</b>							
Phenylarsine Oxide (PAO) Standard Solution, 0.00564 N, 1 L		S	0.5 mg/L and above Cl <sub>2</sub>	AutoCat™ 9000			199953
Hydrochloric Acid Standard Solution, 2.5 N, 100 mL MDB		S		AutoCat™ 9000			141832
Buffer, Phosphate, pH 7, for Amperometric Chlorine, 100 mL MDB		S	0.5 mg/L and above Cl <sub>2</sub>	AutoCat™ 9000		100	2155332
Potassium Iodide, ACS, 100 g		Jar	0.10 - 5.00 mg/L	AutoCat™ 9000		50	16726H

## Test Kits

Description	Method	Platform	Ranges	Instrument	EPA Compliant	# Tests	Prod. No.
Pocket Colorimeter™ II – Chlorine Dioxide, DPD Method	10126	PP	0.05 - 5.00 mg/L ClO <sub>2</sub>	Kit includes PC II	DW	100	5870051
Chlorine Dioxide Test Kit (Model CLD-2), DPD Method		CD	0 to 2.0 mg/L ClO <sub>2</sub>			100	2842800

## Accessories Required to Run Tests

Description	Prod. No.
Pipet, Volumetric, Class A, 1.00-mL	1451535
Pipette Filler, Safety Bulb	1465100
Cylinder, Graduated Mixing, 50-mL	189641

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titration; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# CHROMATE

## Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>DIGITAL TITRATOR TITRATION</b>					
<b>Chromate Reagent Set, Digital Titrator</b>	8211	PP, DT	20 - 400 mg/L CrO <sub>4</sub> <sup>2-</sup>	40 - 100	2272400
Set includes: Dissolved Oxygen 3 Reagent Powder Pillows, Potassium Iodide Powder Pillows, Sodium Thiosulfate Cartridge (0.2068 N), and Starch Indicator Solution.					
Replacement Reagents					
Dissolved Oxygen 3 Reagent Powder Pillows, 100/pk		PP		100	98799
Potassium Iodide Powder Pillows, 50/pk		PP		50	2059996
Sodium Thiosulfate Digital Titrator Cartridge, 0.2068N		DT		40 - 100	2267601
Starch Indicator Solution, 100 mL MDB		S		Varies	34932

## Standards

Description	Prod. No.
Chromium, Hexavalent, Standard Solution, 1,000 mg/L as Cr <sup>6+</sup> (NIST), 100 mL	1466442
Chromium, Hexavalent, Standard Solution, 50 mg/L Cr <sup>6+</sup> (NIST), 100 mL	81042H

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	1690001

# CHROMIUM, HEXAVALENT AND TOTAL

- Hexavalent Chromium method EPA accepted for wastewater analysis
- Rapid, accurate results
- Easily monitor total chromium for process control



## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
ChromaVer® 3 Chromium Reagent Powder Pillows, 5 or 10 mL, 100/pk	8023	PP	0.010 - 0.700 mg/L Cr <sup>6+</sup>	All except DR/3000, DR/2000, DR/850, DR/820	WW	100	1271099
ChromaVer® 3 Chromium Reagent Powder Pillows, 5 or 10 mL, 1000/pk	8023	PP	0.010 - 0.700 mg/L Cr <sup>6+</sup>	All except DR/3000, DR/2000, DR/850, DR/820	WW	1000	1271028
ChromaVer® 3 Chromium Reagent AccuVac® Ampules, 25/pk	8023	AV	0.010 - 0.700 mg/L Cr <sup>6+</sup>	All except DR/850, DR/820	WW	25	2505025
ChromaVer® 3 Chromium Reagent Powder Pillows, 25 mL, 100/pk	8023	PP	0 - 1.00 mg/L Cr <sup>6+</sup>	DR/3000, DR/2000	WW	100	1206699
<b>Chromium Total Reagent Set</b>	8024	PP	0.01 - 0.70 mg/L Cr	All except DR/850, DR/820, PC II		100	2242500
Set includes: Acid Reagent Powder Pillows, ChromaVer® 3 Chromium Reagent Powder Pillows, Chromium 1 and Chromium 2 Reagent Powder Pillows.							
Replacement Reagents							
Acid Reagent Powder Pillows, 100/pk		PP				100	212699
ChromaVer® 3 Chromium Reagent Powder Pillows, 25 mL, 100/pk		PP				100	1206699
Chromium 1 Reagent Powder Pillows, 100/pk		PP				100	204399
Chromium 2 Reagent Powder Pillows, 100/pk		PP				100	204499
Chromium TNTplus	10218 (Cr <sup>6+</sup> ) 10219 (T)	TNT+	0.03 - 1.00 mg/L Cr	DR 6000, DR 3900, DR 2800, DR 1900	WW†	25	TNT854

\*EPA equivalent to Standard Methods 3500-Cr B or D for Cr<sup>6+</sup> only.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# CHROMIUM, HEXAVALENT AND TOTAL

## Test Kits

Description	Method	Platform	Ranges	# Tests	Prod. No.
Chromium Test Kit, as Hexavalent Cr (Model CH-8)		CD	0 to 1.3 mg/L Cr <sup>6+</sup>	100	183400
Chromium Test Kit, as Hexavalent and Total Trivalent by difference (Model CH-12)		CD	0 to 1.3 mg/L Cr	50 (Cr <sup>6+</sup> ), 50 (Total)	222800
Pocket Colorimeter™ II - Chromium Hexavalent	8023	PCII	0.01 - 0.70 mg/L Cr <sup>6+</sup>	100	5870017
Chromium Test Kit, as Hexavalent Cr (Model CH-14)		DCT	5 - 100 mg/L Cr <sup>6+</sup> 50 - 1,000 mg/L Cr <sup>6+</sup>	100	222702

## Standards

Description	Prod. No.
Chromium, Trivalent, Standard Solution, 50 mg/L as Cr <sup>3+</sup> (NIST), 100 mL	1415142
Chromium, Hexavalent Standard Solution, 12.5 mg/L as Cr <sup>6+</sup> (NIST), 16/pk - 10 mL Voluette® Ampules	1425610
Chromium, Hexavalent, Standard Solution, 1,000 mg/Ls as Cr <sup>6+</sup> (NIST), 100 mL	1466442
Chromium, Hexavalent, Standard Solution, 5 mg/L as Cr <sup>6+</sup> (NIST), 20 /pk - 2 mL PourRite® Ampule	2605620
Chromium, Hexavalent, Standard Solution, 50 mg/L Cr <sup>6+</sup> (NIST), 100 mL	81042H

## Accessories Required to Run Tests

Description	Prod. No.
DRB200 Reactor (Required for Total Cr digestion with Product No. TNT854-to order, visit www.hach.com or contact your Hach representative.)	
Hot Plate, 4 - inch, 120 Vac	1206701
Water Bath and Rack	195555

## COBALT

- 0 – 2 mg/L range
- Low cost alternative
- Easy-to-use colorimetric method
- Determine both cobalt and nickel concentrations with one test

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Cobalt / Nickel Reagent Set, PAN Method, 10 mL</b>	8078	PP, S	0.01 - 2.00 mg/L Co	All except DR/3000, DR/2000, DR/800	100	2651600
Set includes: EDTA Reagent Powder Pillows, Phthalate-Phosphate Reagent Powder Pillows and PAN Indicator Solution (0.3%).						
Replacement Reagents						
EDTA Reagent Powder Pillows, 100/pk		PP			50	700599
Phthalate-Phosphate Reagent Powder Pillows, 10 mL, 100/pk		PP			50	2615199
PAN Indicator Solution, 0.3%, 100 mL		S			50 - 100	2150232
<b>Cobalt / Nickel Reagent Set, PAN Method, 25-mL sample</b>	8078	PP, S	0.01 - 2.00 mg/L Co	DR/3000, DR/2000, DR/890 <sup>†</sup>	100	2242600
Set includes: EDTA Reagent Powder Pillows, Phthalate-Phosphate Reagent Powder Pillows, PAN Indicator Solution (0.3%) for 100 tests.						
Replacement Reagents						
EDTA Reagent Powder Pillows, 100/pk		PP			50	700599
Phthalate-Phosphate Reagent Powder Pillows, 25 mL, 50/pk		PP			25	2150166
PAN Indicator Solution, 0.3%, 100 mL		S			50 - 100	2150232

<sup>†</sup>DR/890 performs nickel only with these reagents.

## Test Kits

Description	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Nickel and Cobalt	PCII, PP, S	0.01 - 1.00 mg/L Ni 0.02 - 2.00 mg/L Co	Kit includes PC II	100	5870020

## Standards

Description	Prod. No.
Cobalt Standard Solution, 1,000 mg/L as Co (NIST), 100 mL	2150342

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# COD (CHEMICAL OXYGEN DEMAND)

- EPA approved, can be used for NPDES reporting
- Accurate, rapid method
- Allows you to respond to changing operational conditions

- COD 2 reagents are Mercury-free
- TNTplus™ Reagents: Bar code—Auto Test Recognition, Fast Results, Flat-Bottom Vials, EPA Approved

**EPA  
COMPLIANT**  
WHERE INDICATED

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	Digestion Required	# Tests	Prod. No.
<b>COD DIGESTION VIALS - 16 MM</b>								
COD Digestion Vials, Ultra Low Range, 25/pk	8000	TNT/COD	0.7 - 40.0 mg/L	DR 6000, DR 3900 DR 2800, DR/4000		Yes	25	2415825
COD Digestion Vials, Ultra Low Range, 150/pk			0.7 - 40.0 mg/L	DR 6000, DR 3900 DR 2800, DR/4000		Yes	150	2415815
COD Digestion Vials, Low Range, 25/pk			3 - 150 mg/L LR	All except DR/850, DR/820, PC II	WW	Yes	25	2125825
COD Digestion Vials, Low Range, 150/pk			3 - 150 mg/L LR	All except DR/850, DR/820, PC II	WW	Yes	150	2125815
COD Digestion Vials, High Range, 25/pk			20 - 1,500 mg/L	All except DR/820, PC II	WW	Yes	25	2125925
COD Digestion Vials, High Range, 150/pk			20 - 1,500 mg/L	All except DR/820, PC II	WW	Yes	150	2125915
COD Digestion Vials, High Range Plus, 25/pk			200 - 15,000 mg/L	All except DR/820, PC II		Yes	25	2415925
COD Digestion Vials, High Range Plus, 150/pk			200 - 15,000 mg/L	All except DR/820, PC II		Yes	150	2415915
<b>COD 2 DIGESTION VIALS - 16 MM</b>								
COD2 Digestion Vials, LR, Mercury-free, 25/pk			3 - 150 mg/L	All except DR/850, DR/820, PC II		Yes	25	2565025
COD2 Digestion Vials, HR, Mercury-free, 25/pk			20 - 1,500 mg/L	All except DR/820, PC II		Yes	25	2565125
COD2 Digestion Vials, HR, Mercury-free, 150/pk			20 - 1,500 mg/L	All except DR/820, PC II		Yes	150	2565115
COD2 Digestion Vials, UHR, Mercury-free, 25/pk			200 - 15,000 mg/L	All except DR/820, PC II		Yes	25	2834325
<b>COD TNTPLUS™ - 13 MM</b>								
		TNT+		DR 6000, DR 3900, DR 2800, DR 1900				
Chemical Oxygen Demand (COD) Reagent, TNTplus, ULR, 24 tests	10211		1.0 - 60.0 mg/L			Yes	24	TNT820
Chemical Oxygen Demand (COD) Reagent, TNTplus, LR, 25 tests	8000		3 - 150 mg/L LR		WW	Yes	25	TNT821
Chemical Oxygen Demand (COD) Reagent, TNTplus, LR, 150 tests	8000		3 - 150 mg/L LR		WW	Yes	150	TNT82106
Chemical Oxygen Demand (COD) Reagent, TNTplus, HR, 25 tests	8000		20 - 1,500 mg/L		WW	Yes	25	TNT822
Chemical Oxygen Demand (COD) Reagent, TNTplus, HR, 150 tests	8000		20 - 1,500 mg/L		WW	Yes	150	TNT82206
Chemical Oxygen Demand (COD), Mercury-Free, TNTplus, HR, 25 tests	10236		25 - 1,000 mg/L			Yes	25	TNT825
Chemical Oxygen Demand (COD) Reagent, TNTplus, UHR, 25 tests	10212		250 - 15,000 mg/L			Yes	25	TNT823

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# COD (CHEMICAL OXYGEN DEMAND)

## Standards

Description	Concentration	Prod. No.
Wastewater Influent Inorganics Quality Control Standard, 500 mL	Ammonia 15 mg/L NH <sub>3</sub> -N; Nitrate- 10 mg/L NO <sub>3</sub> -N; Phosphate- 10 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD-500 mg/L COD; Sulfate-400 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC-161 mg/L TOC	2833149
Wastewater Effluent Inorganics Quality Control Standard, 500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> -N; Phosphate- 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 25 mg/L COD; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC- 8 mg/L TOC	2833249
Oxygen Demand Quality Control Standard, 16/pk - 10 mL Voluette® Ampule	BOD - 396 mg/L BOD	2833510
COD Standard Solution, 300 mg/L as COD (NIST), 200 mL		1218629
COD Standard Solution, 300 mg/L as COD (NIST), 500 mL		1218649
COD Standard Solution, 1,000 mg/L as COD (NIST), 200 mL		2253929
COD Standard Solution, 800 mg/L as COD (NIST), 200 mL		2672629

## Accessories Required to Run Tests

Description	Prod. No.
Test Tube Cooling Rack, 8 x 16 mm tubes	1864100
Test Tube Cooling Rack, 13 mm Vials	2497900
Reactor Adapter, 16 mm to 13 mm, 5/pk (For use with older COD Reactors with 16 mm holes)	2895805
DRB200 Reactor (To order, visit <a href="http://www.hach.com">www.hach.com</a> or contact your Hach representative.)	

## ez COD™ Recycling

### Hassle-free, economical COD disposal!

- Low Cost—Save up to 75% vs current disposal options
- Hassle Free—Place entire vial into receptacle
- Environmentally Friendly—Mercury is reclaimed
- One Stop Shopping—Order COD and recycling from one source



### Introducing ez COD Recycling for Hach COD!

COD analysis exposes your facility to a potentially hazardous by-product. On-site storage of large quantities can be dangerous, while outside disposal services can be expensive. With Hach ez COD, your facility receives a DOT approved recycling container, prepared handling documents and pre-paid transportation to a recycling facility for easy and environmentally sound reagent reclamation. All at a fraction of what other services charge.

Prod. No.	Description
2895405	<b>5 Gallon Program (Mail Back)</b> Includes 5 gallon container, documentation and transportation to the recycling facility. 5 gallon holds approximately 400 16 mm COD vials or 650 13 mm TNTplus vials. (Maximum total weight of 25 lbs.)
2895405P	<b>5 Gallon Program (Pick Up)</b> Includes same items as the Mail Back Program above.
2895420	<b>20 Gallon Program</b> Includes 20 gallon container, documentation and transportation to the recycling facility. 20 gallon holds approximately 1,600 16 mm COD vials or 2,600 13 mm TNTplus vials.
2895455	<b>55 Gallon Program</b> Includes 55 gallon container, documentation and transportation to the recycling facility. 55 gallon holds approximately 4,400 16mm COD vials or 7,150 TNTplus vials.



*Not to be used for disposal of mercury-free product. Bucket must contain only Hach mercury-based COD products to qualify. For continental U.S. domestic customers only—not for Alaska and Hawaii.*

*Hazardous waste holding periods may apply. Check with your regulatory specialist.*

*NOTE: Small quantity generators (SQG) and large quantity generators (LQG) are not eligible for the 5 gallon mail-back service and must purchase a bucket that will be picked up. SQG and LQG customers that purchase this item are subject to an additional fee.*

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# COD, MANGANESE III

An alternative “green” method for determining COD.

- Eliminates heavy metals from your waste stream
- Minimizes or completely eliminates disposal costs

- Proven as a fast and reliable alternative to BOD for process control
- Optional Chloride Removal System—up to 1,000 mg/L Chloride
- Shows good correlation to BOD and COD (dichromate) methods

## Reagents

Description	Method	Platform	Ranges	Instrument*	Digestion Required	# Tests	Prod. No.
COD Digestion Vials, Manganese III, 25/pk	10067	TNT	30 - 1,000 mg/L	All except PC II	Yes	25	2623425
COD Digestion Vials, Manganese III, 150/pk	10067	TNT	30 - 1,000 mg/L	All except PC II	Yes	150	2623415
Manganese III Chloride Removal Cartridges, 25/pk	10067					25	2661825
Manganese III Chloride Removal Cartridges, 150/pk	10067					150	2661815
Sulfuric Acid, ACS, 2.5 L							97909

## Accessories Required to Run Tests

Description	Prod. No.
Test Tube Cooling Rack, 8 x 16 mm tubes	1864100
Blender, 1.2 L, 120 Vac	2616100
Blender, 1.2 L, 240 Vac	2616102

### FOR OPTIONAL CHLORIDE REMOVAL SYSTEM

Vacuum Pretreatment Device (VPD)	4900000
Vacuum Pump, with fittings, 115 V	2824800
Caps, Black, PP Teflon liner, 12/pkg	2401812

DRB200 Reactor (To order, visit [www.hach.com](http://www.hach.com) or contact your Hach representative.)

# COLOR

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>PLATINUM - COBALT STANDARD METHOD</b>	8025		3 - 200 Units 15 - 500 Units	DR 6000, DR 3900, DR 2800, and DR 2700 only All except DR/850, DR/820, PC II		
Hydrochloric Acid Standard Solution, 1.00 N, 1 L		S			Varies	2321353
NaOH Solution, 1 N (5%), 900 mL		S			Varies	104553
Water, Deionized, 4 L		S			Varies	27256

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Color Test Kit (Model CO-1)	CD	0 - 100 units 0 - 500 units	No Limit	223400

## Standards

Description	Prod. No.
Color Standard Solution, 500 Pt Co Units, 16/pk - 10-mL Voluette® Ampules	141410
Color Standard Solution, 500 Pt Co Units, 1 L	141453
Color Standard Solution, 15 Pt Co Units, 1 L	2602853

## Accessories Required to Run Tests

Description	Prod. No.
Filter Holder, magnetic, 47-mm	1352900
Filter, membrane, 47-mm, 0.45-microns, 100/pk	1353000
Sample Cell, 5 cm (50 mm) pathlength, rectangular glass (required for low range)	2629250
Flask, Filtering 500 mL	54649

# CONDUCTIVITY

For information about Hach laboratory and field conductivity instruments, please see pages 15-70.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titration; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



- Several ranges and methods available
- Field or laboratory testing

- Bicinchoninate method—EPA approved with digestion; Hach's mid range
- Porphyrin method—quick and easy; Hach's lowest range

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>COLORIMETRIC METHOD</b>							
<b>Copper Reagent Set, Porphyrin, 10 mL</b>	8143	PP	2 - 210 µg/L Cu	DR 6000, DR/4000, DR 3900, DR 2800, DR 2700, DR/2010, DR/890		100	2603300
Set includes: Copper Masking Reagent Powder Pillows, Porphyrin 1 and Porphyrin 2 Reagent Powder Pillows.							
Replacement Reagents							
Copper Masking Reagent Powder Pillows, 10 mL, 100/pk		PP				100	2603449
Porphyrin 1 Reagent Powder Pillows, 10 mL, 100/pk		PP				50 - 100	2603549
Porphyrin 2 Reagent Powder Pillows, 10 mL, 100/pk		PP				50 - 100	2603649
<b>Copper Reagent Set, Porphyrin, 25 mL</b>	8143	PP	2 - 210 µg/L Cu	DR/3000, DR/2000		100	2242700
Set includes: Copper Masking Reagent Powder Pillows, Porphyrin 1 and Porphyrin 2 Reagent Powder Pillows.							
Replacement Reagents							
Copper Masking Reagent Powder Pillows, 25-mL, 100/pk		PP				100	2187399
Porphyrin 1 Reagent Powder Pillows, 25-mL, 100/pk		PP				50	2187469
Porphyrin 2 Reagent Powder Pillows, 25-mL, 100/pk		PP				50	2187569
Copper TNTplus	10238	TNT+	0.1 - 8.0 mg/L Cu	DR 6000, DR 3900, DR 3800, DR 2800		25	TNT860
CuVer® 1 Copper Reagent Powder Pillows, 10 mL, 100/pk	8506	PP	0.04 - 5.00 mg/L Cu	All except DR/3000, DR/2000, DR/850, DR/820	WW	100	2105869
CuVer® 1 Copper Reagent Powder Pillows, 10 mL, 1000/pk	8506	PP	0.04 - 5.00 mg/L Cu	All except DR/3000, DR/2000, DR/850, DR/820	WW	1000	2105828
CuVer® 1 Copper Reagent Powder Pillows, 25 mL, 100/pk	8506	PP	0.04 - 5.00 mg/L Cu	DR/3000, DR/2000	WW	100	1418899
CuVer® 1 Copper Reagent Powder Pillows, 25 mL, 1000/pk	8506	PP	0.04 - 5.00 mg/L Cu	DR/3000, DR/2000	WW	1000	1418828
CuVer® 2 Copper Reagent AccuVac® Ampules, 25/pk	8026	AV	0.04 - 5.00 mg/L Cu	All except DR/850, DR/820		25	2504025
<b>Copper Reagent Set, Free and Total</b>		PP	0.04 - 5.00 mg/L Cu	All except DR/850, DR/820		100	2439200
Set includes: Free Copper Reagent Powder Pillows and Hydrosulfite Powder Pillows.							
Replacement Reagents							
Hydrosulfite Reagent Powder Pillows, 25 mL, 100/pk		PP				100	2118869
Free Copper Reagent Powder Pillows, 100/pk		PP				100	2182369
<b>ANODIC STRIPPING VOLTAMMETRY METHOD</b>							
Copper Sensor Pack, HSE-Cu, 10 Tests			50 - 2,000 µg/L Cu	SA 1100		10	5040200

For more information, see page 229.

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Copper Test Strips (Free & Total)	TS	0 - 3 ppm Cu	Steps: 0, 0.2, 0.5, 1, 3 ppm	25 2745125

## Test Kits

Description	Method	Platform	Ranges	EPA Compliant	# Tests	Prod. No.
Free and Total Copper Test Kit (Model CU-6)		CD	0 - 4 mg/L Cu		50 (Free), 50 (Total)	2194100
Free Copper Test Kit (Model CU-5)		CD	0 - 4 mg/L Cu		100	1421300
Pocket Colorimeter™ II - Copper	8506	PCII, PP	0.04 - 5.00 mg/L Cu	WW	100	5870019

## Standards

Description	Concentration	Prod. No.
Metals Quality Control Standard for Drinking Water, Low Range, 500 mL	Copper - 1.0 mg/L Cu; Iron - 0.3 mg/L Fe; Manganese - 0.1 mg/L Mn	2833749
Metals Quality Control Standard for Drinking Water, High Range, 500 mL	Copper 2.5 mg/L Cu; Iron - 1.5 mg/L Fe, Manganese - 5.0 mg/L Mn	2833649
Copper Standard Solution, 4 mg/L as Cu (NIST), 20/pk - 2 mL PourRite® Ampules		2605720
Copper Standard Solution, 10 mg/L as Cu (NIST), 100 mL MDB		12932
Copper Standard Solution, 75 mg/L as Cu (NIST), 16/pk - 10 mL Voluette® Ampules		1424710
Copper Standard Solution, 100 mg/L as Cu (NIST), 100 mL		12842
Copper Standard Solution, 1,000 mg/L as Cu (NIST), 100 mL		259342

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# CYANIDE

• Stable, 3-reagent system

• Sensitive—for low level determinations

• Low range is ideal for drinking water and wastewater

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Cyanide Reagent Set, CyaniVer, 10 mL</b>	8027	PP	0.002 - 0.240 mg/L CN <sup>-</sup>	All except DR/3000, DR/2000, DR/820, PC II	100	<b>2430200</b>
Set includes: CyaniVer® 3, 4, and 5 Reagent Powder Pillows.						
Replacement Reagents						
CyaniVer® 3 Cyanide Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2106869</b>
CyaniVer® 4 Cyanide Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2106969</b>
CyaniVer® 5 Cyanide Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2107069</b>
<b>Cyanide Reagent Set, CyaniVer, 25 mL</b>	8027	PP	0.002 - 0.240 mg/L CN <sup>-</sup>	DR/3000, DR/2000	100	<b>2242800</b>
Set includes: CyaniVer® 3, 4, and 5 Reagent Powder Pillows.						
Replacement Reagents						
CyaniVer® 3 Cyanide Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>1403969</b>
CyaniVer® 4 Cyanide Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>1404099</b>
CyaniVer® 5 Cyanide Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>1404169</b>

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Cyanide Test Kit (Model CYN-3)	CD	0 - 0.3 mg/L CN <sup>-</sup>	100	<b>201002</b>

## Accessories Required to Run Tests

Description	Prod. No.
Distillation Apparatus, Cyanide Accessories AND	<b>2265800</b>
General Purpose Distillation Apparatus Set AND EITHER	<b>2265300</b>
Heater and Support Apparatus, 115 Vac, 60 Hz OR	<b>2274400</b>
Heater and Support Apparatus, 230 Vac, 50 Hz	<b>2274402</b>

See Procedure for additional common labware required for this test.



Cyanide Test Kit,  
Prod. No. 201002

# CYANURIC ACID

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>TURBIDIMETRIC METHOD</b>						
Cyanuric Acid 2 Reagent Powder Pillows, 50/pk	8139	PP	5 - 50 mg/L	All except DR 6000, DR/4000, PC II	50	<b>246066</b>

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Cyanuric Acid Test Kit (Model CY-3)	TRB	20 - 100 mg/L	100	<b>185102</b>

# DEHA

See Oxygen Scavengers on page 196.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

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# DETERGENTS / SURFACTANTS

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Detergents Reagent Set (No Air Shipments)</b>	8028	PP, S	0.002 - 0.275 mg/L as LAS	All except DR/820, PC II	70 - 100	<b>2446800</b>
Set includes: Benzene, Buffer Solution, Detergents Reagent Powder Pillows. Note: No Air Shipments, see Prod. No. 2446801 that has Air Freight Configuration.						
Replacement Reagents						
Buffer Solution, Sulfate Type, 500 mL		S			50	<b>45249</b>
Benzene, ACS, 4L		S			75	<b>1444017</b>
Detergents Reagent Powder Pillows, 25/pk		PP			25	<b>100868</b>
<b>Detergents Reagent Set - Air Freight Configuration</b>					70 - 100	<b>2446801</b>
Set includes: Benzene, Buffer Solution, Detergents Reagent Powder Pillows. Note: This Reagent Set is configured for Air Freight delivery.						

## Test Kits

Product Description	Platform	Ranges	# Tests	Prod. No.
Detergents Test Kit (Model DE-2)	CD	0 - 1.2 mg/L LAS	32	<b>143203</b>

## Standards

Description	Prod. No.
Detergent Standard Solution, 60 mg/L as LAS, 16/pk - 10 mL Voluette® Ampules	<b>1427110</b>

Please refer to the Hach procedures at [www.hach.com](http://www.hach.com) for a complete list of accessories.

# DISSOLVED OXYGEN

- Colorimetric and titration methods available
- AccuVac® ampules are ideal for volatile analytes like dissolved oxygen—just snap and measure!

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>COLORIMETRIC METHOD</b>							
Dissolved Oxygen AccuVac® Ampules, LR, 25/pk	8316	AV	6 - 800 µg/L O <sub>2</sub>	All except DR/820, PC II		25	<b>2501025</b>
Dissolved Oxygen AccuVac® Ampules, High Range, 25/pk	8166	AV	0.3 - 15.0 mg/L O <sub>2</sub>	All		25	<b>2515025</b>
Dissolved Oxygen AccuVac® Ampules, High Range, 25/pk	8333	AV	1.0 - 40.0 mg/L O <sub>2</sub>	All except DR 900, DR/800 series		25	<b>2515025</b>
<b>DIGITAL TITRATOR TITRATION</b>							
<b>Dissolved Oxygen Reagent Set, Digital Titrator, 300 mL</b>	8215	DT	1 - 10 mg/L O <sub>2</sub>		<b>WW†</b>	50	<b>2272200</b>
Set includes: Alkaline Iodide-Azide Powder Pillows, Manganous Sulfate Powder Pillows, Sodium Thiosulfate Titrant Cartridge (0.2 N), Starch Indicator Solution, Sulfamic Acid Powder Pillows.							
Replacement Reagents							
Alkaline Iodide-Azide Reagent Powder Pillows, 50/pk		PP				50	<b>107266</b>
Manganous Sulfate Powder Pillows, 50/pk		PP				50	<b>107166</b>
Sodium Thiosulfate Digital Titrator Cartridge, 0.200 N		DT				40 - 100	<b>2267501</b>
Starch Indicator Solution, 100 mL MDB		S				Varies	<b>34932</b>
Sulfamic Acid Powder Pillows, 50/pk		PP				50	<b>2076266</b>
Sodium Thiosulfate Digital Titrator Cartridge, 2.00 N		DT	1 - > 10 mg/L O <sub>2</sub>			40 - 100	<b>1440101</b>
<b>BURET TITRATION</b>							
<b>Dissolved Oxygen Reagent Set, Buret, 300 mL sample</b>	8229	PP, S	1 - 10 mg/L O <sub>2</sub>		<b>WW</b>	100	<b>2351400</b>
Set includes: Alkaline Iodide-Azide Powder Pillows, Manganous Sulfate Powder Pillows, Sodium Thiosulfate Standard Solution (0.025 N), Starch Indicator, and Sulfamic Acid Powder Pillows.							
Replacement Reagents							
Sodium Thiosulfate Standard Solution, Stabilized, 0.0250 N, 1 L		S				Varies	<b>2409353</b>
Alkaline Iodide-Azide Reagent Powder Pillows, 50/pk		PP				50	<b>107266</b>
Manganous Sulfate Powder Pillows, 50/pk		PP				50	<b>107166</b>
Starch Indicator Solution, 100 mL MDB		S				Varies	<b>34932</b>
Sulfamic Acid Powder Pillows, 100/pk		PP				100	<b>107399</b>

†Equivalent to Standard Methods 4500-O C.

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# DISSOLVED OXYGEN

## Test Kits

Description	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - DO System	PCII, AV	0.2 - 10.0 mg/L O <sub>2</sub>	Kit Includes PC II	25	5870003
Dissolved Oxygen Test Kit (Model OX-2P)	DCT	0.2 - 4 mg/L O <sub>2</sub> 1 - 20 mg/L O <sub>2</sub>		100	146900
Dissolved Oxygen Test Kit (AccuVac) HR	CD, AV	0 - 15 mg/L O <sub>2</sub>		25	2515050

## DISSOLVED OXYGEN, LUMINESCENT



- No membranes to clean or replace
- Low maintenance
- No polarization time
- Rapid response
- 99% accuracy

**See Hach LDO® and other innovative Hach water quality meters & probes on pages 15-70.**

## EDTA

See Chelant on page 161.

## ERYTHORBIC ACID

See Oxygen Scavengers on page 196.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

## Hach's SPADNS Fluoride tests—for the simplicity & reliability you expect.

- Available in multiple reagent platforms (AccuVac® and bulk solution)
- Easy-to-use one reagent test
- EPA compliant, distillation required for reporting purposes
- Hach method can analyze samples with up to 5 mg/L chlorine with no interference

## ARSENIC-FREE SPADNS 2 Reagent!

- Removes chlorine interference without sodium arsenite
- Simplify waste disposal and minimize potential exposure
- Use as a direct replacement for SPADNS Reagent Solution or AccuVacs. SPADNS 2 Reagents can be used with existing Fluoride procedures.

**EPA  
COMPLIANT**  
WHERE INDICATED

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant†	# Tests	Prod. No.
<b>SPADNS 2 REAGENT - ARSENIC - FREE FORMULA!</b>							
SPADNS 2 Fluoride Reagent AccuVac® Ampules, 25/pk	10225	AV	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW‡	25	2527025
SPADNS 2 Fluoride Reagent Solution, 500 mL	10225	S	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW‡	125	2947549
SPADNS 2 Fluoride Reagent Solution, 1 L	10225	S	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW‡	250	2947553
SPADNS 2 Fluoride Reagent Solution, 3.78 L	10225	S	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW‡	945	2947517
SPADNS Fluoride Reagent AccuVac® Ampules, 25/pk	8029	AV	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW	25	2506025
SPADNS Fluoride Reagent Solution, 500 mL	8029	S	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW	125	44449
SPADNS Fluoride Reagent Solution, 1 L	8029	S	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW	250	44453
SPADNS Fluoride Reagent Solution, 3.78 L	8029	S	0.02 - 2.00 mg/L F <sup>-</sup>	All except DR/820	DW, WW	945	44417
<b>ION SELECTIVE ELECTRODE METHOD</b>							
Fluoride Ionic Strength Adjustor (ISA) Powder Pillows, 100/pk	8323	PP	0.01 mg/L to saturated		DW, WW	100	258999
Fluoride Ionic Strength Adjustor (ISA), 454 g		Jar	0.01 mg/L to saturated				258901
Fluoride Ionic Strength Adjustor (ISA), 3.78 L		S	0.01 mg/L to saturated			750	2829017

\*Distillation may be required. Methods on DR/890 and DR/850 are not EPA compliant.

‡Equivalent to USEPA Method 340.1 and Standard methods 4500-F

## Test Kits

Description	Method	Platform	Ranges	Instrument	EPA Compliant†	# Tests	Prod. No.
Pocket Colorimeter™ II - Fluoride	8029	PCII, AV	0.1 - 2.0 mg/L F <sup>-</sup>	Kit includes PC II	DW, WW	50	5870005
Pocket Colorimeter™ II - Fluoride SPADNS 2 Arsenic - free)	10225	PCII, AV	0.1 - 2.0 mg/L F <sup>-</sup>	Kit includes PC II	DW, WW‡	50	2513100

†Greater sensitivity (0.01 mg/L) is achieved by substituting bottled SPADNS reagent solution for the AccuVac® ampules in the kit.

‡Equivalent to Standard Methods 4500-F B or C

## Standards

Description	Volume	Concentration	Instrument*	Prod. No.
Spec✓ Gel Secondary Standard Set, Fluoride	Set of 4 Vials	0 - 2.00 mg/L F <sup>-</sup>	All except DR/3000, DR 900 and DR/800 Series	2712500
Inorganics Quality Control Standard for Drinking Water, 500 mL		Fluoride: 1 mg/L F <sup>-</sup> ; Nitrate- 2 mg/L NO <sub>3</sub> <sup>-</sup> -N; Phosphate- 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup>		2833049
Fluoride Standard Solution, 0.2 mg/L as F <sup>-</sup> (NIST), 500 mL				40502
Fluoride Standard Solution, 0.5 mg/L as F <sup>-</sup> (NIST), 500 mL				40505
Fluoride Standard Solution, 0.8 mg/L as F <sup>-</sup> (NIST), 500 mL				40508
Fluoride Standard Solution, 1.0 mg/L as F <sup>-</sup> (NIST), 500 mL				29149
Fluoride Standard Solution, 1.0 mg/L as F <sup>-</sup> (NIST), 1 L				29153
Fluoride Standard Solution, 1.2 mg/L as F <sup>-</sup> (NIST), 500 mL				40512
Fluoride Standard Solution, 1.5 mg/L as F <sup>-</sup> (NIST), 500 mL				40515
Fluoride Standard Solution, 2.0 mg/L as F <sup>-</sup> (NIST), 500 mL				40520
Fluoride Standard Solution, 5.0 mg/L as F <sup>-</sup> (NIST), 500 mL				2797149
Fluoride Standard Solution, 10.0 mg/L as F <sup>-</sup> (NIST), 500 mL				35949
Fluoride Standard Solution, 100 mg/L as F <sup>-</sup> (NIST), 500 mL				23249

## Accessories Required to Run Tests (When distillation is required for EPA reporting.)

Description	Prod. No.
General Purpose Distillation Apparatus Set	2265300
Heater and Support Apparatus, 115 Vac, 60 Hz	2274400
Heater and Support Apparatus, 230 Vac, 50 Hz	2274402

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# FORMALDEHYDE

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Formaldehyde Reagent Set, LR</b>	8110	PP, S	3 - 500 g/L CH <sub>2</sub> O	All except DR 900, DR/800 Series, PC II	100	<b>2257700</b>
Set includes: Developing solution for Low Range Formaldehyde (500 mL) and MBTH Powder Pillows.						
Replacement Reagents						
Formaldehyde Developing Solution, LR, 500 mL		S			100	<b>2257249</b>
MBTH Powder Pillows, 100/pk		PP			50 - 100	<b>2257169</b>

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Formaldehyde Test Kit (Model FM-1)	DCT	0.05 - 1 % 0.5 - 10 %	100	<b>2183100</b>

## Accessories Required to Run Tests

Description	Prod. No.
Pipette Filler, Safety Bulb	<b>1465100</b>
Cylinder, Graduated Mixing, 50-mL	<b>189641</b>
Pipette, Serological, 5 mL	<b>53237</b>

## Standards

Description	Prod. No.
Formaldehyde Standard Solution, 4,000 mg/L, 16/pk - 10-mL Voluette® Ampule	<b>2257310</b>

# GLUTARALDEHYDE

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Glutaraldehyde Test Kit (Model GT-1)	CD	1 - 2800 mg/L multiple ranges	100	<b>2587200</b>

## Accessories Required to Run Tests

Description	Prod. No.
Hot Plate, 120 Vac	<b>2881400</b>

# GLYCOL

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Glycol Test Kit (Model EG-1) Semiquantitative determination of glycol in water or oil. Visual appearance of color indicates glycol presence.	Visual	Presence or absence of glycol 0- greater than 150 mg/L	25	<b>2186400</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



- Determine Magnesium Hardness by difference: Magnesium Hardness is the difference between Total Hardness and Calcium Hardness
- Multiple titration and colorimetric methods available
- A wide variety of reagent platforms available
- Calcium hardness methods (CalVer2) are highly sensitive and have sharp end points for accurate results. See Calcium Hardness, page 160.

- Total hardness methods (Calmagite) are formulated for enhanced stability and are free from most interferences
- Ultra low range method (Chlorophosphonazo) developed specifically to be used with Hach spectrophotometers for ultrapure and boiler feed water analysis



## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>ULTRA LOW RANGE</b>							
<b>COLORIMETRIC</b>							
<b>Hardness (ULR) Reagent Set, Bulk Solution</b>	8374	S	4 - 1,000 µg/L CaCO <sub>3</sub>	All except DR 900, DR/800 Series, PC II		250	<b>2603101</b>
Set includes: Chlorophosphonazo Indicator Solution (500 mL), CDTA Solution (10 mL), and Plastic 1 sample cell w/ cap.							
Replacement Reagents							
Chlorophosphonazo Indicator Solution for ULR Hardness, 500 mL		S				250	<b>2589549</b>
CDTA Reagent, 10 mL SCDB		S				100	<b>2589636</b>
<b>Hardness (ULR) Reagent Set, Solution Pillows</b>	8374	S	8 - 1,000 µg/L CaCO <sub>3</sub>	All except DR 900, DR/800 Series, PC II		100	<b>2603100</b>
Set includes: Chlorophosphonazo Indicator Solution Pillows, CDTA Solution (10 mL), and Plastic 1 sample cell w/ cap.							
Replacement Reagents							
Chlorophosphonazo Indicator Solution Pillows for ULR Hardness, 100/pk		SP				100	<b>2589599</b>
CDTA Reagent, 10 mL SCDB		S				100	<b>2589636</b>
<b>LOW RANGE</b>							
<b>COLORIMETRIC</b>							
<b>Hardness Reagent Set, Calmagite Colorimetric</b>	8030	S	0.05 - 4.00 mg/L Ca as CaCO <sub>3</sub> 0.05 - 4.00 mg/L Mg as CaCO <sub>3</sub>	All except PC II		100	<b>2319900</b>
Set includes: Alkali Solution (100 mL), Calcium/Magnesium Indicator Solution (100 mL), EDTA Solution (1 M, 50 mL), EGTA Solution (50 mL).							
Replacement Reagents							
EGTA Solution, 50 mL SCDB		S				100	<b>2229726</b>
Alkali Solution for Calcium and Magnesium, 100 mL MDB		S				100	<b>2241732</b>
Alkali Solution for Calcium and Magnesium, 500 mL						500	<b>2241749</b>
Calcium/Magnesium Indicator Solution, 100 mL MDB		S				100	<b>2241832</b>
Calcium/Magnesium Indicator Solution, 500 mL		S				500	<b>2241849</b>
EDTA Solution, 1M, 50 mL SCDB		S					<b>2241926</b>
<b>MID-RANGE</b>							
<b>DIGITAL TITRATOR TITRATION</b>							
<b>Hardness (Total) Reagent Set, LR, Digital Titrator</b>	8213	DT	10 - 160 mg/L CaCO <sub>3</sub>		<b>WW†</b>	40-100	<b>2448000</b>
Set (Total LR) includes: Buffer Solution (Hardness 1) 100 mL, EDTA Titrant Cartridge (0.0800 M), ManVer® 2 Hardness Indicator Powder Pillows.							
Replacement Reagents							
Hardness 1 Buffer Solution, 100 mL MDB		S				100	<b>42432</b>
Manver 2 Hardness Indicator Powder Pillows, 50 mL Sample, 100/pk		PP				100	<b>85199</b>
EDTA Digital Titrator Cartridge, 0.0800 M		DT				40 - 100	<b>1436401</b>
<b>Hardness Reagents (Total LR in G.d.h.)</b>	8213	DT	1 - 16 G.d.h. CaCO <sub>3</sub> †		<b>WW†</b>		
Hardness 1 Buffer Solution, 100 mL MDB		S				100	<b>42432</b>
Manver 2 Hardness Indicator Powder Pillows, 50 mL Sample, 100/pk		PP				100	<b>85199</b>
EDTA Digital Titrator Cartridge, 0.1428 M		DT				40 - 100	<b>1496001</b>

\*G.d.h. = German degrees hardness; 1 German degree hardness equals 17.9 mg/L CaCO<sub>3</sub>.  
 †Equivalent to EPA Reference Method 130.2.

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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PARAMETERS



# HARDNESS

## Reagents (Continued)

PARAMETERS

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>Hardness (Ca and Total Sequential) LR Reagent Set, Digital Titrator</b>	8329	DT	10 - 160 mg/L CaCO <sub>3</sub>			100	2448600
Set includes: Buffer Solution (Hardness 1), CalVer® 2 Calcium Indicator Powder Pillows, ManVer® 2 Hardness Indicator Powder Pillows, Potassium Hydroxide Solution (8 N), Sulfuric Acid (5.25 N) and EDTA Titration Cartridge.							
Replacement Reagents							
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S				Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 100/pk		PP				100	94799
ManVer® 2 Hardness Indicator Powder Pillows, 100/pk		PP				100	92899
EDTA Digital Titrator Cartridge, 0.0800 M		DT				40 - 100	1436401
Hardness 1 Buffer Solution, 100 mL MDB		S				100	42432
Sulfuric Acid Standard Solution, 5.25 N, 100 mL MDB		S				Varies	244932
<b>BURET TITRATION</b>							
<b>Hardness (Total) Reagent Set, Buret, LR</b>	8226	PP, S	0 - 2,500 mg/L CaCO <sub>3</sub>		WW	100	2447600
Set (Total LR) includes: Buffer Solution (Hardness 1) 100 mL, ManVer® 2 Hardness Indicator Powder Pillows, TitraVer® (EDTA) Titrant Solution (0.0200 N) 1 L.							
Replacement Reagents							
Hardness 1 Buffer Solution, 100 mL MDB		S				100	42432
Manver 2 Hardness Indicator Powder Pillows, 50 mL Sample, 100/pk		PP				100	85199
EDTA Standard Solution, 0.0200N, 1 L		S				40 - 100	20553
<b>HIGH RANGE</b>							
<b>DIGITAL TITRATOR TITRATION</b>							
<b>Hardness (Total) Reagent Set, HR, Digital Titrator</b>	8213	DT	100 - 4,000 mg/L CaCO <sub>3</sub>		WW†	100	2448100
Set ( Total HR) includes: Buffer Solution (Hardness 1) 100 mL, EDTA Titrant Cartridge (0.800 M), ManVer® 2 Hardness Indicator Powder Pillows.							
Replacement Reagents							
Hardness 1 Buffer Solution, 100 mL MDB		S				100	42432
Manver 2 Hardness Indicator Powder Pillows, 50 mL Sample, 100/pk		PP				100	85199
EDTA Digital Titrator Cartridge, 0.800 M		DT				40 - 100	1439901
<b>Hardness Reagents (Total HR)</b>	8213		10 - 100+ G.d.h. CaCO <sub>3</sub> †		WW†		
Hardness 1 Buffer Solution, 100 mL MDB		S				100	42432
Manver 2 Hardness Indicator Powder Pillows, 50 mL Sample, 100/pk		PP				100	85199
EDTA Digital Titrator Cartridge, 0.714M		DT				40 - 100	1495901
<b>Hardness (Ca and Total Sequential) HR Reagent Set, Digital Titrator</b>	8329	DT	100 - 4,000 mg/L CaCO <sub>3</sub>			100	2448700
Set includes: Buffer Solution (Hardness 1), CalVer® 2 Calcium Indicator Powder Pillows, ManVer® 2 Hardness Indicator Powder Pillows, Potassium Hydroxide Solution (8 N), Sulfuric Acid (5.25 N) and EDTA Titration Cartridge.							
Replacement Reagents							
Sulfuric Acid Standard Solution, 5.25 N, 100 mL MDB		S				Varies	244932
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S				Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 100/pk		PP				100	94799
ManVer® 2 Hardness Indicator Powder Pillows, 100/pk		PP				100	92899
EDTA Digital Titrator Cartridge, 0.800 M		DT				40 - 100	1439901
Hardness 1 Buffer Solution, 100 mL MDB		S				100	42432
<b>Hardness, Total Sequential Reagents</b>	8329	DT	1 - 16 G.d.h. CaCO <sub>3</sub> †				
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB		S				Varies	28232H
CalVer® 2 Calcium Indicator Powder Pillows, 100/pk		PP				100	94799
ManVer® 2 Hardness Indicator Powder Pillows, 100/pk		PP				100	92899
EDTA Digital Titrator Cartridge, 0.714M		DT				40 - 100	1495901
Hardness 1 Buffer Solution, 100 mL MDB		S				100	42432
Sulfuric Acid Standard Solution, 5.25 N, 100 mL MDB		S				Varies	244932

†G.d.h. = German degree hardness; 1 German degree hardness equals 17.9 mg/L CaCO<sub>3</sub>; †Equivalent to EPA Reference Method 130.2.

Continued on next page.

## Reagents (Continued)

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>BURET TITRATION</b>							
<b>Hardness (Total) Reagent Set, Buret, HR</b>	8222		100 - 25,000 mg/L CaCO <sub>3</sub>		<b>WW†</b>	100	<b>2447700</b>
Set (Total HR) includes: Buffer Solution (Hardness 1) 100 mL, ManVer® 2 Hardness Indicator Powder Pillows, TitraVer® (EDTA) Titrant Solution (0.200 N) 500 mL.							
Replacement Reagents							
Hardness 1 Buffer Solution, 100 mL MDB		S				100	<b>42432</b>
Manver 2 Hardness Indicator		PP				100	<b>85199</b>
Powder Pillows, 50 mL Sample, 100/pk							
EDTA Standard Solution, 0.200 N, 500 mL		S				40 - 100	<b>102149</b>
<b>TITRANTS, BUFFERS, INDICATORS</b>							
EDTA Standard Solution, 0.200 N, 500 mL		S	1,000 - 25,000 mg/L CaCO <sub>3</sub>				<b>102149</b>
EDTA Standard Solution, 0.0200N, 1 L		S	0 - 5000 mg/L CaCO <sub>3</sub>				<b>20553</b>
EDTA Standard Solution, 0.0200N, 4L		S	0 - 5,000 mg/L CaCO <sub>3</sub>				<b>20556</b>
EDTA Digital Titrator Cartridge, 0.0800 M		DT	10 - 160 mg/L CaCO <sub>3</sub>				<b>1436401</b>
EDTA Digital Titrator Cartridge, 0.800 M		DT	100 - 4,000 mg/L CaCO <sub>3</sub>				<b>1439901</b>
Hardness 1 Buffer Solution, 100 mL MDB		S					<b>42432</b>
Hardness 1 Buffer Solution, 500 mL		S					<b>42449</b>
Hardness 1 Buffer Solution, 1 L		S					<b>42453</b>
Hardness 2 Indicator Solution, 100 mL MDB		S					<b>42532</b>
Hardness 2 Indicator Solution, 500 mL		S					<b>42549</b>
Hardness 3 Solution, 500 mL		S					<b>42649</b>
Hardness 3 Solution, 1 L		S					<b>42653</b>
Manver 2 Hardness Indicator		PP				100	<b>85199</b>
Powder Pillows, 50 mL Sample, 100/pk							
ManVer® 2 Hardness Indicator		PP				100	<b>92899</b>
Powder Pillows, 100/pk							

\*G.d.h. = German degree hardness; 1 German degree hardness equals 17.9 mg/L CaCO<sub>3</sub>.

†Equivalent to Standard Methods 2340 B or C.

## Test Strips

Description	Platform	Ranges	Smallest Increment Steps	# Tests	Prod. No.
Total Hardness Test Strips (as CaCO <sub>3</sub> )	TS	0 - 425 ppm 0 - 25 gpg	Steps: 0, 25, 50, 120, 250, 425 ppm	1,000†	<b>2793828</b>
Total Hardness Test Strips (as CaCO <sub>3</sub> )	TS	0 - 425 ppm 0 - 25 gpg	Steps: 0, 25, 50, 120, 250, 425 ppm 0, 1.5, 3, 7, 15, 25 gpg	250†	<b>2793844</b>
Total Hardness Test Strips (as CaCO <sub>3</sub> )	TS	0 - 425 ppm 0 - 25 gpg	Steps: 0, 25, 50, 120, 250, 425 ppm 0, 1.5, 3, 7, 15, 25 gpg	50	<b>2745250</b>

†Individually wrapped.

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
<b>HARDNESS, TOTAL</b>				
Total Hardness Test Kit (Model 5-B)	DCT	1 - 30 gpg CaCO <sub>3</sub>	100	<b>145300</b>
Total Hardness Test Kit (Model HA-71A)	DCT	1 - 20 mg/L CaCO <sub>3</sub> 1 - 20 gpg CaCO <sub>3</sub>	100	<b>145201</b>
Total Hardness Test Kit (Model 5-EP) Powder Pillow Reagents	PP	1 - 30 gpg CaCO <sub>3</sub>	100	<b>145400</b>
Total Hardness Test Kit (Model 5-EP, MG-L)	DCT	20 - 400 mg/L CaCO <sub>3</sub>	100	<b>145401</b>
Total Hardness Test Kit (Model HA-DT)	DT	10 - 4,000 mg/L CaCO <sub>3</sub>	100	<b>2063600</b>
<b>HARDNESS, TOTAL &amp; CALCIUM</b>				
Total & Calcium Hardness Test Kit (Model HA-4P)	DCT	1 - 20 gpg CaCO <sub>3</sub>	100	<b>145700</b>
Total & Calcium Hardness Test Kit (Model HA-4P, MG-L)	DCT	20 - 400 mg/L CaCO <sub>3</sub>	100	<b>145701</b>
Total & Calcium Hardness Test Kit (Model HAC-DT)	DT	10 - 4,000 mg/L CaCO <sub>3</sub>	100 Ca, + 100 T	<b>2063900</b>

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	<b>1690001</b>
Buret, Class A, 25 mL	<b>2636540</b>
Buret, Class A, 50-mL	<b>2636541</b>

## Standards

Description	Prod. No.
Hardness Standard Solution, 0.50 mg/L as CaCO <sub>3</sub> (NIST), 946 mL	<b>2058016</b>
Hardness Standard Solution, 2.00 mg/L as CaCO <sub>3</sub> (NIST), 946 mL	<b>2058116</b>
Calcium Hardness Standard Solution, 10,000 mg/L as CaCO <sub>3</sub> (NIST), 16/pk-10-mL Voluette Ampules	<b>218710</b>
Hardness Quality Control Standard, Low Range - Total Hardness: 100 mg/L as CaCO <sub>3</sub> , Calcium Hardness: 50 mg/L as CaCO <sub>3</sub> , 500 mL	<b>2833449</b>
Hardness Quality Control Standard, High Range - Total Hardness: 1,000 mg/L as CaCO <sub>3</sub> , Calcium Hardness: 500 mg/L as CaCO <sub>3</sub> , 500 mL	<b>2833349</b>
Magnesium Standard Solution, 1,000 mg/L as Mg (NIST), 100 mL	<b>1479442</b>

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# HYDRAZINE

- Easy-to-use one reagent test
- Concentration ranges ideal for boiler water analysis
- Easy AccuVac® configuration for limiting oxygen exposure of sample

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
HydraVer® 2 Hydrazine Reagent, 100 mL	8141	S	4 - 600 µg/L N <sub>2</sub> H <sub>4</sub>	All except DR/850, DR/820, PC II	100	179032
HydraVer® 2 Hydrazine Reagent, 500 mL		S	4 - 600 µg/L N <sub>2</sub> H <sub>4</sub>	All except DR/850, DR/820, PC II	100	179049
HydraVer® 2 Hydrazine Reagent, 1 L		S	4 - 600 µg/L N <sub>2</sub> H <sub>4</sub>	All except DR/850, DR/820, PC II	100	179053
Hydrazine Reagent AccuVac® Ampules, 25/pk	8141	AV	4 - 600 µg/L N <sub>2</sub> H <sub>4</sub>	All except DR/850, DR/820, PC II	25	2524025

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Hydrazine Test Kit (Model HY-2)	CD	0 - 1 mg/L N <sub>2</sub> H <sub>4</sub>	300†	184900

†Reagents are supplied for 300 tests; enough DI water for 50 tests.

# HYDROGEN PEROXIDE

- Simple drop count titration provides quantitative measurement

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Hydrogen Peroxide Test Kit (Model HYP-1)	DCT	0.2 - 2.0 mg/L 1 - 10 mg/L	100	2291700

# HYDROGEN SULFIDE

Also see Sulfide on page 208.

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Hydrogen Sulfide Test Kit (Model HS-C) Effervescence of H <sub>2</sub> S	Color Card	0 - 5 mg/L H <sub>2</sub> S	18	2537800
Hydrogen Sulfide Test Kit (Model HS-WR) Methylene blue	CD	0 - 0.56 mg/L S <sup>2-</sup> (0.01 smallest increment) 0 - 2.0 mg/L S <sup>2-</sup> (0.5 smallest increment) 0 - 10 mg/L S <sup>2-</sup> (0.25 smallest increment)	30 - 60	223801

# HYDROQUINONE

See Oxygen Scavengers, page 196.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# HYPOCHLORITE / BLEACH SOLUTIONS

- Measure activity of hypochlorite-based disinfectants
- Digital Titrator or Drop Count kits provide a choice of methods
- Portable system allows determinations in the field or in the lab

## Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>DIGITAL TITRATOR TITRATION</b>					
<b>Hypochlorite (Bleach) Reagent Set (HR), for Digital Titrator</b>	10100	DT	5 - 15 % Cl <sub>2</sub>	100	2687000
Set includes: Acid Reagent Powder Pillows, Potassium Iodide Powder Pillows, Sodium Thiosulfate Titrant Cartridge (2.26 N), and Starch Indicator Solution (100 mL). Replacement Reagents					
Acid Reagent Powder Pillows, 25 mL, 100/pk		PP		100	104299
Potassium Iodide Powder Pillows, 50/pk		PP		50	2059996
Sodium Thiosulfate (Stabilized) Digital Titrator Cartridge, 2.26 N		DT		40 - 100	2686901
Starch Indicator Solution, 100 mL MDB		S		Varies	34932

## Test Kits

Description	Method	Platform	Ranges	# Tests	Prod. No.
Hypochlorite Test Kit (Model CN-HRDT)	10100	DT	5 - 15 % = 50-150 g/L Cl <sub>2</sub>	100	2687100
Hypochlorite Test Kit (CN-HR)		DCT	5 - 15 % Cl <sub>2</sub>	100	2687200

Hypochlorite Test Kit  
(Model CN-HRDT)  
Prod. No. 2687100



To assay ammonia solutions for chloramine formation, see Aqua Ammonia on page 156.

PARAMETERS

## IODINE

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>DPD METHOD</b>						
DPD Total Chlorine Reagent Powder Pillows, 10 mL, 100/pk	8031	PP	0.07 - 7.00 mg/L I <sub>2</sub>	All except DR/3000, DR/2000	100	2105669
DPD Total Chlorine Reagent Powder Pillows, 25 mL, 100/pk		PP	0.07 - 7.00 mg/L I <sub>2</sub>	DR/3000, DR/2000	100	1406499
DPD Total Chlorine Reagent AccuVac® Ampules, 25/pk		AV	0.07 - 7.00 mg/L I <sub>2</sub>	All except DR/3000, DR/2000, DR 900, DR/800 Series, PC II	25	2503025

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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## An Understanding of Iron—Its Forms and Analysis Methods

Hach Company offers the following guidance for selecting the right iron method for your application.

### Ferrous Iron Reagent

Determines iron in the ferrous (Fe<sup>2+</sup>) form. Digestion or other sample pretreatment may cause ferrous iron to be lost.

### FerroVer® Iron Reagent

For determination of total soluble iron including all ferric (Fe<sup>3+</sup>) and ferrous iron (Fe<sup>2+</sup>) as well as complexed iron compounds (Fe-EDTA). EPA approved for reporting total iron when an acid digestion is used. Total FerroVer – Ferrous Iron = Ferric Iron. Perfect for many applications and a wide range of concentrations. Determines iron in the presence of copper.

### TPTZ Iron Reagent

More sensitive than FerroVer.

### FerroZine™ Iron Reagent

Determines soluble ferric (Fe<sup>3+</sup>) and ferrous (Fe<sup>2+</sup>) iron. Digestion is needed for strongly chelated iron complexes (such as those with EDTA) and Total Iron. Use where trace level iron analysis is required.

### FerroMo™ Iron Reagent

Determines iron in the presence of molybdenum compounds in cooling tower waters. Eliminates the reduction of molybdenum which forms a black solution. No pretreatment necessary. Available as a two-powder pillow reagent system.

### Iron Titration Method

Determines high levels of soluble ferrous (Fe<sup>2+</sup>) and ferric (Fe<sup>3+</sup>) iron in industrial or oil field applications, usually without any sample pretreatment. Uses three unit-dose powder reagents and a Digital Titrator titration cartridge.

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>COLORIMETRIC</b>							
Iron TNTplus	10229	TNT+	0.2 - 6.0 mg/L Fe	DR 6000, DR 3900, DR 2800	WW†	25	TNT858
<b>FerroMo™ Iron Reagent Set</b>	8365	PP	0.01 - 1.80 mg/L Fe	All except DR/820, PC II		100	2544800
Set includes: FerroMo™ Reagent 1 Powder Pillows and FerroMo™ Reagent 2 Powder Pillows.							
Replacement Reagents							
FerroMo™ Iron Reagent 1 Powder Pillows, 25/pk		PP				25	2543768
FerroMo™ Iron Reagent 2 Powder Pillows, 50/pk		PP				50	2543866
Ferrous Iron Reagent Powder Pillows, 100/pk	8146	PP	0.02 - 3.00 mg/L Fe <sup>2+</sup>	All except PC II		100	103769
Ferrous Iron Reagent AccuVac® Ampules, 25/pk	8146	AV	0.02 - 3.00 mg/L Fe <sup>2+</sup>	All except PC II		25	2514025
FerroVer® Iron Reagent Powder Pillows, 10 mL, 100/pk	8008	PP	0.02 - 3.00 mg/L Fe	All except DR/3000, DR/2000	WW	100	2105769
FerroVer® Iron Reagent Powder Pillows, 10 mL, 1,000/pk	8008	PP	0.02 - 3.00 mg/L Fe	All except DR/3000, DR/2000	WW	1000	2105728
FerroVer® Iron Reagent AccuVac® Ampules, 25/pk	8008	AV	0.02 - 3.00 mg/L Fe	All	WW	25	2507025
FerroVer® Iron Reagent Powder Pillows, 25 mL, 100/pk	8008	PP	0.02 - 3.00 mg/L Fe	DR/3000, DR/2000	WW	100	85499
FerroVer® Iron Reagent Powder Pillows, 25 mL, 1,000/pk	8008	PP	0.02 - 3.00 mg/L Fe	DR/3000, DR/2000	WW	1000	85428
FerroZine® Iron Reagent, 500 mL	8147	S	0.009 - 1.400 mg/L Fe	All except DR/850, DR/820, PC II		500 - 1000	230149
FerroZine® Iron Reagent Solution Pillows, 50/pk	8147	SP	0.009 - 1.400 mg/L Fe	All except DR/850, DR/820, PC II		50	230166
TPTZ Iron Reagent Powder Pillows, 10 mL, 100/pk	8112	PP	0.012 - 1.800 mg/L Fe	All except DR/3000, DR/2000, DR/820		100	2608799
TPTZ Iron Reagent Powder Pillows, 25mL, 100/pk	8112	PP	0.012 - 1.800 mg/L Fe	DR/3000, DR/2000		100	2275699
TPTZ Iron Reagent AccuVac® Ampules, 25/pk	8112	AV	0.012 - 1.800 mg/L Fe	All except DR/820		25	2510025
<b>DIGITAL TITRATOR TITRATION</b>							
<b>Iron (Total) Reagent Set, LR, Digital Titrator</b>	8214	DT	10 - 100 mg/L Fe			100	2449200
Set includes: Citrate Buffer Powder Pillows, Sodium Periodate Powder Pillows, Sulfosalicylic Acid Powder Pillows and EDTA Titrant Cartridge (0.0716 M).							
Replacement Reagents							
Buffer Powder Pillows for Iron, Citrate Type, 100/pk		PP				100	2081599
Sulfosalicylic Acid Powder Pillows, 100/pk		PP				100	2081669
EDTA Digital Titrator Cartridge, 0.0716 M		DT	10 - 100 mg/L Fe			40 - 100	2081701
Sodium Periodate Powder Pillows for Manganese, 25 mL, 100/pk		PP				100	98499
<b>Iron (Total) Reagent Set, HR, Digital Titrator</b>	8214	DT	100 - 1,000 mg/L Fe			100	2449300
Set includes: Citrate Buffer Powder Pillows, Sodium Periodate Powder Pillows, Sulfosalicylic Acid Powder Pillows, and EDTA Titrant Cartridge (0.716 M).							
Replacement Reagents							
Buffer Powder Pillows for Iron, Citrate Type, 100/pk		PP				100	2081599
EDTA Digital Titrator Cartridge, 0.716 M		DT	100 - 1,000 mg/L Fe			40 - 100	2081801
Sulfosalicylic Acid Powder Pillows, 100/pk		PP				100	2081669
Sodium Periodate Powder Pillows for Manganese, 25 mL, 100/pk		PP				100	98499

†Equivalent to Hach Method 8008 with digestion.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Iron Test Strips, Total Dissolved Iron	TS	0 - 5 ppm Fe	25	2745325

## Test Kits

Description	Method	Platform	Ranges	Instrument	EPA Compliant WW	# Tests	Prod. No.
Pocket Colorimeter™ II – Iron, FerroVer®	8008	PCII, PP	0.02 - 5.00 mg/L Fe	Kit includes PC II		100	5870022
Pocket Colorimeter™ II – Iron, TPTZ	8112	PCII, PP	0.01 - 1.70 mg/L Fe	Kit includes PC II		50 - 100	5870016
Iron Test Kit, Low Range (Model IR-24)		CD	0 - 0.2 mg/L Fe 0 - 1.0 mg/L Fe			100	255600
Iron Test Kit, Low Range (Model IR-21)		CD	0 - 0.2 mg/L Fe 0 - 1.2 mg/L Fe			100	2299300
Iron Test Kit (Model IR-18)		CD	0 - 4 mg/L Fe			100	146400
Iron Test Kit (Model IR-18A)		CD	0.02 - 1.00 mg/L Fe			100	146500
Iron Test Kit (Model IR-18B)		CD	0 - 7 mg/L Fe			100	146401
Iron Ferrous Test Kit (Model IR-18C)		CD	0 - 7 mg/L Fe <sup>2+</sup>			100	2667200



Iron, Medium Range  
Color Disc Test Kit,  
Prod. No. 146400

## Standards

Description	Concentration	Prod. No.
Metals Quality Control Standard for Drinking Water, Low Range, 500 mL	Copper - 1.0 mg/L Cu; Iron - 0.3 mg/L Fe, Manganese - 0.1 mg/L Mn	2833749
Metals Quality Control Standard for Drinking Water, High Range, 500 mL	Copper 2.5 mg/L Cu; Iron - 1.5 mg/L Fe, Manganese - 5.0 mg/L Mn	2833649
Iron Standard Solution, 1 mg/L as Fe (NIST), 500 mL		13949
Iron Standard Solution, 10 mg/L as Fe (NIST), 500 mL		14049
Iron Standard Solution, 25 mg/L as Fe (NIST), 16/pk - 10 mL Voluette® Ampules		1425310
Iron Standard Solution, 50 mg/L as Fe (NIST), 16/pk - 10 mL Voluette® Ampules		1425410
Iron Standard Solution, 100 mg/L as Fe (NIST), 100 mL		1417542
Iron Standard Solution, 1,000 mg/L as Fe (NIST), 100 mL		227142

## ISO-ASCORBIC ACID

See Oxygen Scavengers, page 196.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# LEAD

- Dithizone method EPA accepted for NPDES reporting of total lead (digestion required for reporting)
- Low range suitable for trace analysis

- LeadTrak™ is a convenient field deployable method for drinking water only
- TNTplus™ convenience and accuracy

## Reagents

PARAMETERS

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>LeadTrak™ Reagent Set, Fast Column Extraction Method, 20 tests</b>	8317	PP, S	5 - 150 µg/L Pb	All except DR 900 DR/800 Series		20	<b>2375000</b>
Set Includes: pPb-1 Preservative, pPb-2 Fixer Solution, pPb-3 Eluant, pPb-4 Neutralizer, pPb-5 Indicator Powder Pillows, pPb-6 Decolorizer, Dropper LDPE, Pipette Tips, Lead Standard Solution, pPb Fast Column Extractors.							
Replacement Reagents							
pPb-1 Acid Preservative Solution, 236 mL		S				20	<b>2368531</b>
pPb-2, Fixer Reagent Solution, 43 mL		S				20	<b>2368655</b>
pPb-3, Eluant, 500 mL		S				20	<b>2368749</b>
pPb-4, Neutralizer, 22 mL		S				20	<b>2368855</b>
pPb-5, Indicator Reagent Powder Pillows, 20/pk		PP				20	<b>2368964</b>
pPb-6, Decolorizer, 10 mL SCDB		S				20	<b>2374755</b>
Dropper, Plastic, 0.5 & 1 mL, 20/pk							<b>2124720</b>
Pipette Tips (10/pk)							<b>2275410</b>
Lead Standard Solution, 10 mg/L as Pb (NIST), 25mL		S					<b>2374820</b>
pPb Fast Column Extractor							<b>2374900</b>
Lead TNTplus	10216	TNT+	0.1 - 2.0 mg/L Pb	DR 6000, DR 3900, DR 2800, DR 1900		25	<b>TNT850</b>
<b>Lead Reagent Set, Dithizone Method, (No Air Shipments)</b>	8033	PP, S	3 - 300 µg/L Pb	All except DR 900, DR/800 Series, PC II	<b>WW</b>	60 - 100	<b>2243100</b>
Set includes: Buffer Pillows, Citrate Type; Chloroform; DithiVer® Metals Reagent Pillows; Sodium Hydroxide Standard Solution (5 N); Potassium Cyanide.							
Replacement Reagents							
Buffer Powder Pillows for Heavy Metals, Citrate Type, 100/pk		PP				100	<b>1420299</b>
Chloroform, 4 L		S				60 - 100	<b>1445817</b>
DithiVer Metals Reagent Powder Pillows, 100/pk		PP				100	<b>1261699</b>
Potassium Cyanide, ACS, 100 g		Jar				Varies	<b>76714</b>
Sodium Hydroxide Standard Solution, 5.0 N, 1 L		S				100	<b>245053</b>
Sodium Hydroxide Standard Solution, 5.0 N, 50 mL SCDB		S				50	<b>245026</b>
<b>Lead Reagent Set, Dithizone Method, Air freight configuration</b>					<b>WW</b>	60 - 100	<b>2243101</b>
Set includes: Citrate Buffer Powder Pillows, Chloroform (7x1 L), DithiVer® Metals Reagent Pillows, Potassium Cyanide (100 g), Sodium Hydroxide (5N) 1 L, Sodium Hydroxide (5N) 59 mL.							
<b>ANODIC STRIPPING VOLTAMETRY METHOD</b>							
HSE-Pb, Lead Sensor Pack for SA1100 Analyzer	1001		2 - 100 µg/L	SA-1100	<b>DW</b>	10	<b>5040100</b>

See the SA1100 Lead & Copper Analyzer on page 299.

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II – LeadTrak™ System	8317	PCII	5 - 150 µg/L Pb	Kit includes PC II	20	<b>5870021</b>

## Standards

Description	Prod. No.
Lead Standard Solution, 10 mg/L as Pb (NIST), 25mL	<b>2374820</b>
Lead Standard Solution, 100 mg/L as Pb (NIST), 100 mL	<b>1261742</b>
Lead Standard Solution, 1,000 mg/L as Pb (NIST), 100 mL	<b>1279642</b>

## Accessories Required to Run Tests

Description	Prod. No.
DRB200 Reactor (For Total Lead determination with Prod. No. TNT850—to order, visit <a href="http://www.hach.com">www.hach.com</a> or contact your Hach representative.	
Reaction Tubes, 20 mm, 5/pk (For use with Metal Prep Set.)	<b>LZP065</b>
Metal Prep Set for TNTplus Cadmium and Lead, 25/pk	<b>TNT890</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# MAGNESIUM, HARDNESS

- Determine Magnesium by difference: Magnesium is difference between Total Hardness and Calcium
- See "Hardness" pages 179-181 for reagent sets

## MANGANESE

- High range method is EPA approved for wastewater analysis (digestion required for reporting purposes)
- Low range PAN method is highly sensitive and ideal for drinking water samples

**EPA  
COMPLIANT**  
WHERE INDICATED

### Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>Manganese Reagent Set, LR, PAN, 10 mL</b>	8149	PP, S	0.006 - 0.700 mg/L Mn	All except DR/3000, DR/2000, DR/850, DR/820		50	2651700
Set includes: Alkaline Cyanide Reagent, Ascorbic Acid Powder Pillows, PAN Indicator Solution (0.1%).							
Replacement Reagents							
Alkaline Cyanide Reagent, 50 mL SCDB		S				50	2122326
Ascorbic Acid Powder Pillows, 100/pk		PP				Varies	1457799
PAN Indicator Solution, 0.1%, 50 mL SCDB		S				50	2122426
<b>Manganese Reagent Set, LR, PAN, 25 mL</b>	8149	PP, S	0.006 - 0.700 mg/L Mn	DR/3000, DR/2000		100	2243300
Set includes: Ascorbic Acid Powder Pillows, Alkaline-Cyanide Reagent, PAN Indicator Solution (0.1%).							
Replacement Reagents							
Alkaline Cyanide Reagent, 100 mL MDB		S				50	2122332
Ascorbic Acid Powder Pillows, 100/pk		PP				Varies	1457799
PAN Indicator Solution, 0.1%, 100 mL		S				50	2122432
<b>Manganese Reagent Set, HR, 10 mL, Periodate Oxidation</b>	8034	PP	0.1 - 20.0 mg/L Mn	All except DR/3000, DR/2000	WW	100	2430000
Set includes: Citrate Buffer Powder Pillows and Sodium Periodate Powder Pillows.							
Replacement Reagents							
Citrate Buffer Powder Pillows for Manganese, 10 mL, 100/pk		PP				100	2107669
Sodium Periodate Powder Pillows for Manganese, 10 mL, 100/pk		PP				100	2107769
<b>Manganese Reagent Set, HR, 25 mL, Periodate Oxidation</b>	8034	PP	0.1 - 20.0 mg/L Mn	DR/3000, DR/2000	WW	100	2243200
Set Includes: Citrate Buffer Powder Pillows and Sodium Periodate Powder Pillows.							
Replacement Reagents							
Citrate Buffer Powder Pillows for Manganese, 25 mL, 100/pk		PP				100	98399
Sodium Periodate Powder Pillows for Manganese, 25 mL, 100/pk		PP				100	98499

### Test Kits

Description	Method	Platform	Ranges	Instrument	EPA Compliant	# Tests	Prod. No.
Pocket Colorimeter™ II – Manganese LR	8149	PCII	0.01 - 0.70 mg/L Mn	Kit includes PC II		50	5870018
Pocket Colorimeter™ II – Manganese HR	8034	PCII	0.2 - 20.0 mg/L Mn	Kit includes PC II	WW	100	5870015
Manganese Test Kit (Model MN-PAN)		CD	0 - 0.70 mg/L Mn			50	2350800
Manganese Test Kit (Model MN-5)		CD	0 - 3.0 mg/L Mn			100	146700

### Standards

Description	Concentration	Prod. No.
Metals Quality Control Standard for Drinking Water, Low Range, 500 mL	Copper- 1.0 mg/L Cu; Iron- 0.3 mg/L Fe; Manganese- 0.1 mg/L Mn	2833749
Metals Quality Control Standard for Drinking Water, High Range, 500 mL	Copper- 2.5 mg/L Cu; Iron- 1.5 mg/L Fe, Manganese- 5.0 mg/L Mn	2833649
Manganese Standard Solution, 10 mg/L as Mn (NIST), 20/pk - 2 mL PourRite Ampules		2605820
Manganese Standard Solution, 25 mg/L as Mn (NIST), 20/pk - 2 mL PourRite Ampules		2112820
Manganese Standard Solution, 250 mg/L as Mn (NIST), 16/pk - 10 mL Voluette® Ampules		1425810
Manganese Standard Solution, 1,000 mg/L as Mn (NIST), 100 mL		1279142

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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PARAMETERS

# MEKO (METHYLETHYLKETOXIME)

See *Oxygen Scavengers*, page 196.

## MERCURY

- Hach's patented cold vapor method allows you to measure down to 0.1 µg/L Hg
- Pre-measured, pre-packaged reagents

### Reagents

Description	Method	Platform	Ranges	# Tests	Prod. No.
<b>Mercury Reagent Set, Cold Vapor</b>	10065	PP, S	0.1 - 2.5 µg/L Hg All except DR/3000, DR/2000, DR 900, DR/800 Series, PC II	25	<b>2658300</b>
Set includes: Reagent A Stannous Sulfate Solution, Reagent B Sulfuric Acid Standard Solution, Reagent C Sodium Hypochlorite Solution, Reagent 3 Alkaline Reagent Powder Pillows, Reagent 4 Indicator Powder Pillows, Reagent 5 Hydroxide Solution, Reagent 6 Complexing Reagent Powder Pillows, and Mercury Scrubbers (2).					
Replacement Reagents					
HgEx Reagent A Stannous Sulfate Solution, 20 mL Ampules, 25/pk		S		25	<b>2658825</b>
HgEx Reagent B Sulfuric Acid Solution, 500 mL		S		25	<b>2658949</b>
HgEx Reagent C Sodium Hypochlorite Solution, 55 mL		S		25	<b>2659059</b>
HgEx Reagent 3 Alkaline Reagent Powder Pillows, 25/pk		PP		25	<b>2658448</b>
HgEx Reagent 4 Indicator Powder Pillows, 25/pk		PP		25	<b>2658548</b>
HgEx Reagent 5 Hydroxide Solution, 10 mL SCDB		S		25	<b>2658636</b>
HgEx Reagent 6 Complexing Reagent Powder Pillows, 25/pk		PP		25	<b>2658748</b>
Mercury Scrubber					<b>2655800</b>

Set requires Cold Vapor Mercury Apparatus Set and other accessories (see below)

### Standards

Description	Prod. No.
Mercury Standard Solution, 1,000 mg/L as Hg (NIST), 100 mL	<b>1419542</b>

### Accessories Required to Run Tests

Description	Prod. No.
Thermometer	<b>2635700</b>
Mercury, Cold Vapor, Apparatus Set	<b>2674400</b>
Vacuum Pump, with fittings, 115 V	<b>2824800</b>
Vacuum Pump, with fittings, 220 V	<b>2824802</b>

See *Procedure* for a complete list of required accessories.

## MICROBIOLOGY

See pages 245-250.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



- Choice of ranges and methods to meet testing needs, lab and portable methods available

- Two reagent platforms
- Low range ternary complex method is specifically designed for boiler and cooling water

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>TERNARY COMPLEX METHOD</b>						
<b>Molybdenum Reagent Set, LR, 20mL</b>	8169	PP, S	0.02 - 3.00 mg/L Mo	All except DR/3000, DR/2000, DR/820	100	<b>2449400</b>
Set includes: Molybdenum 1 Powder Pillows and Molybdenum 2 Reagent Solution.						
Molybdenum 1 Reagent Powder Pillows, 20 mL, 100/pk Replacement Reagents		PP			100	<b>2352449</b>
Molybdenum 2 Reagent Solution, 50 mL MDB		S			100	<b>2352512</b>
<b>Molybdenum Reagent Set, LR, 50 mL</b>	8169	PP, S	0.02 - 3.00 mg/L Mo	DR/3000, DR/2000	100	<b>2440200</b>
Set Includes: Molybdenum 1 Powder Pillows and Molybdenum 2 Reagent Solution.						
Replacement Reagents						
Molybdenum 2 Reagent Solution, 100 mL MDB		PP			Varies	<b>2352532</b>
Molybdenum 1 Reagent Powder Pillows, 50 mL, 100/pk		PP			100	<b>2352769</b>
<b>MERCAPTOACETIC ACID METHOD</b>						
<b>Molybdenum Reagent Set, HR, 10 mL</b>	8036	PP	0.3 - 40.0 mg/L Mo	All except DR/3000, DR/2000, DR/850, DR/820, PC II	100	<b>2604100</b>
Set includes: MolyVer® 1, 2 and 3 Molybdenum Reagent Powder Pillows.						
Replacement Reagents						
MolyVer® 1 Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2604299</b>
MolyVer® 2 Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2604399</b>
MolyVer® 3 Reagent Powder Pillows, 10 mL, 100/pk		PP				<b>2604499</b>
<b>Molybdenum Reagent Set, HR, 25 mL</b>	8036	PP	0 - 35.0 mg/L Mo	DR/3000, DR/2000	100	<b>2243400</b>
Set includes: MolyVer® 1, 2 and 3 Molybdenum Reagent Powder Pillows.						
Replacement Reagents						
MolyVer® 1 Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>1414669</b>
MolyVer® 2 Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>1414869</b>
MolyVer® 3 Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>1417869</b>
MolyVer® 6 Molybdenum Reagent		AV			25	<b>2522025</b>
AccuVac® Ampules, 25/pk						
CDTA Solution, 0.4M 15 mL SCDB		S				<b>2615436</b>

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Molybdate	8169	PCII, PP	0.02 - 3.00 mg/L Mo 0.1 - 12.0 mg/L Mo	Kit includes PC II	100	<b>5870010</b>
Molybdenum Test Kit (Model MO-LR)		CD	0 - 3 mg/L Mo		100	<b>2359300</b>
Molybdenum Test Kit (Model MO-2)		CD	0 - 8 mg/L Mo 0 - 40 mg/L Mo		100	<b>1419301</b>

## Standards

Description	Prod. No.
Molybdenum Standard Solution, 10 mg/L as Mo (NIST), 100 mL	<b>1418742</b>
Molybdenum Standard Solution, 1,000 mg/L as Mo (NIST), 100 mL	<b>1418642</b>

# MONOCHLORAMINE

- Measure monochloramine without interferences from other chlorine species

- Control your chloramination facility by pairing with the new Free Ammonia test

- 5 minute test

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Monochlor F Reagent Powder Pillows, 50/pk	10171	PP	0.04 - 4.50 mg/L Cl <sub>2</sub>	All except DR/820	50	<b>2802246</b>
Monochlor F Reagent Powder Pillows, 100/pk	10171	PP	0.04 - 4.50 mg/L Cl <sub>2</sub>	All except DR/820	Varies	<b>2802299</b>
Monochloramine Reagent Set, (Indophenol Method) HR TNT	10172	TNT	0.1 - 10.0 mg/L Cl <sub>2</sub>	All except DR/800 Series, PC II	50	<b>2805145</b>

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# MONOCHLORAMINE

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II	10200	PP, S	0.02 - 0.50 mg/L NH <sub>3</sub> -N	Kit includes PC II	100 Monochloramine or 50 Free Ammonia	5870026
Test Kit – Free Ammonia & Monochloramine			0.04 - 4.50 mg/L Cl <sub>2</sub>			
Nitrification Control Kit		PP, S		Kit includes DR 900 + Sample Cells		2882200
Free Ammonia			0.02 - 0.50 mg/L NH <sub>3</sub> -N		50	
Monochloramine			0.04 - 4.50 mg/L Cl <sub>2</sub>		100	
Nitrite			0.002 - 0.350 mg/L NO <sub>2</sub> -N		100	
Total Chlorine, LR			0.02 - 2.00 mg/L Cl <sub>2</sub>		100	
Total Chlorine, HR			0.1 - 10.0 mg/L Cl <sub>2</sub>		100	

## Standards

Description	Volume	Concentration	Prod. No.
Spec✓ Secondary Gel Standards Set for Monochloramine & Free Ammonia.	Set of 4 Vials	0.04 - 4.50 mg/L Cl <sub>2</sub> 0.01 - 0.50 mg/L NH <sub>3</sub> -N	2507500

# NICKEL

- *Heptoxime method—EPA approved for wastewater analysis (digestion required for reporting purposes)*
- *High range—TNTplus (Prod. No. TNT856) barcoded vials for automatic method detection*
- *PAN method—Hach's lowest range Nickel test—a quick and easy method*
- *PAN method measures Nickel and Cobalt on the same sample (with a spectrophotometer)*



## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>Cobalt / Nickel Reagent Set, PAN Method, 10 mL</b>	8150	PP, S	0.006 - 1.000 mg/L Ni	All except DR/3000, DR/2000, DR/800 Series		100	2651600
Set includes: EDTA Reagent Powder Pillows, Phthalate-Phosphate Reagent Powder Pillows and PAN Indicator Solution (0.3%).							
Replacement Reagents							
EDTA Reagent Powder Pillows, 100/pk		PP				50	700599
PAN Indicator Solution, 0.3%, 100 mL		S				50 - 100	2150232
Phthalate-Phosphate Reagent Powder Pillows, 10 mL, 100/pk		PP				50	2615199
<b>Cobalt / Nickel Reagent Set, PAN Method, 25-mL sample</b>	8150	PP, S	0.006 - 1.000 mg/L Ni	DR/3000, DR/2000, DR/890		100	2242600
Set includes: EDTA Reagent Powder Pillows, Phthalate-Phosphate Reagent Powder Pillows, PAN Indicator Solution (0.3%) for 100 tests.							
Replacement Reagents							
EDTA Reagent Powder Pillows, 100/pk		PP				50	700599
PAN Indicator Solution, 0.3%, 100 mL		S				50 - 100	2150232
Phthalate-Phosphate Reagent Powder Pillows, 25 mL, 50/pk		PP				25	2150166
<b>Nickel Reagent Set, Heptoxime</b>	8037	PP, S	0.02 - 1.80 mg/L Ni	All except DR 900, DR/800 Series, PC II	WW	50	2243500
Set for Nickel - Heptoxime Method includes: Chloroform, Nickel 1 Reagent Powder Pillows and Nickel 2 Reagent Powder Pillows.							
Replacement Reagents							
Chloroform, 500 mL		S					1445849
Nickel 1 Reagent Powder Pillows, 25/pk		PP				25	212368
Nickel 2 Reagent Powder Pillows, 25/pk		PP				25	212468
Nickel TNTplus	10220	TNT+	0.1 - 6.0 mg/L Ni	DR 6000, DR 3900, DR 2800, DR 1900		25	TNT856

Add Metals Prep Set Prod. No. TNT890 to determine total nickel.

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Nickel and Cobalt	8150	PCII, PP, S	0.01 - 1.00 mg/L Ni 0.02 - 2.00 mg/L Co	Kit includes PC II	100	5870020

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## Accessories Required to Run Tests

Description	Prod. No.
DRB200 Reactor (For Total Nickel determination with Prod. No TNT856, requires Metal Prep Set. To order, visit <a href="http://www.hach.com">www.hach.com</a> or contact your Hach representative.	
Reaction Tubes, 20 mm, 5/pk (For use with Metal Prep Set.)	LZP065
Metal Prep Set for TNTplus Cadmium and Lead, 25/pk	TNT890

## Standards

Description	Prod. No.
Nickel Standard Solution, 1,000 mg/L as Ni (NIST), 100 mL	1417642

# NITRATE

PARAMETERS

- Cadmium reduction method—quick and easy, three ranges available
- Test strips are easy to use, disposable, and inexpensive
- Chromotropic acid method—high range, convenient Test 'N Tube™ platform
- Dimethylphenol TNTplus™ Method now USEPA compliant for Drinking Water

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>CD REDUCTION METHOD</b>							
<b>Nitrogen-Nitrate Reagent Set, LR, 10 mL, Cadmium Reduction</b>	8192	PP	0.01 - 0.50 mg/L NO <sub>3</sub> <sup>-</sup> -N	All except DR/3000, DR/2010, DR/2000, PC II		100	2429800
Set Includes: NitraVer 6 Powder Pillows and NitriVer 3 Powder Pillows.							
Replacement Reagents							
NitraVer® 6 Nitrate Reagent Powder Pillows, 10 mL, 100/pk		PP	0.01 - 0.50 mg/L NO <sub>3</sub> <sup>-</sup> -N			100	2107249
NitriVer® 3 Nitrite Reagent Powder Pillows, 10 mL, 100/pk		PP				100	2107169
<b>Nitrogen-Nitrate Reagent Set, LR, 25 mL, Cadmium Reduction</b>	8192	PP	0 - 0.5 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR/3000, DR/2000		100	2245100
Sets includes: NitriVer® 3 Reagent Powder Pillows and NitraVer® 6 Reagent Powder Pillows.							
Replacement Reagents							
NitriVer® 3 Nitrite Reagent Powder Pillows, 25 mL, 100/pk		PP				100	1406599
NitraVer® 6 Nitrate Reagent Powder Pillows, 30 mL, 100/pk		PP				100	1411999
NitraVer® 5 Nitrate Reagent Powder Pillows, 10 mL, 100/pk	8039	PP	0.3 - 30.0 or 0.1 - 10.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	All except DR/3000, DR/2010, DR/2000†		100	2106169
NitraVer® 5 Nitrate Reagent Powder Pillows, 25 mL, 100/pk	8039	PP	0.3 - 30.0 or 0.1 - 10.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR/3000, DR/2000		100	1403499
NitraVer® 5 Nitrate Reagent Powder Pillows, 25 mL, 1,000/pk	8039	PP	0.3 - 30.0 or 0.1 - 10.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR/3000, DR/2000		1000	1403428
NitraVer® 5 Nitrate Reagent AccuVac® Ampules, 25/pk	8039	AV	0.3 - 30.0 or 0.1 - 10.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	All		25	2511025
<b>DIMETHYLPHENOL METHOD</b>							
Nitrate TNTplus, LR	10206	TNT+	0.2 - 13.5 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR 6000, DR 3900, DR 2800, DR 1900	DW	25	TNT835
Nitrate TNTplus, HR	10206	TNT+	5 - 35 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR 6000, DR 3900, DR 2800, DR 1900	DW	25	TNT836
<b>CHROMOTROPIC ACID METHOD</b>							
<b>NitraVer X Nitrogen-Nitrate Reagent Set, HR</b>	10020	TNT	0.2 - 30.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	All except DR/850, DR/820, PC II		50	2605345
<b>ION SELECTIVE ELECTRODE METHOD</b>							
Nitrate Ionic Strength Adjustor (ISA) Powder Pillows, 100/pk		PP	0.05 - 14,000 mg/L NO <sub>3</sub> <sup>-</sup> -N			100	4456369
Nitrate Ionic Strength Adjustor (ISA) Buffer Solution, 500 mL		S					2488349

\*MR method cannot be performed on the DR/850, DR/820, or PC II.

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

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# NITRATE

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Nitrate and Nitrite Test Strips	TS	Nitrate 0 - 50 mg/L ppm NO <sub>3</sub> -N Nitrite 0 - 3.0 mg/L ppm NO <sub>2</sub> -N	25	2745425

## Test Kits

Description	Method	Platform	Ranges	# Tests	Prod. No.
Pocket Colorimeter™ II – Nitrate	8039	PCII, PP	0.4 - 30.0 mg/L NO <sub>3</sub> -N Kit includes PC II	100	5870002
Nitrate Test Kit (Model NI-14)		CD	0 - 1 mg/L NO <sub>3</sub> -N 0 - 10 mg/L NO <sub>3</sub> -N	50	1416100
Nitrate Test Kit (Model NI-11)		CD	0 - 40 mg/L NO <sub>3</sub> -N	100	146803
Nitrate/Nitrite Test Kit (Model NI-12)		CD	0 - 40 mg/L NO <sub>3</sub> -N	100	1408100

## Standards

Description	Concentration	Prod. No.
Wastewater Influent Inorganics Quality Control Standard, 500 mL	Ammonia- 15 mg/L NH <sub>3</sub> -N; Nitrate- 10 mg/L NO <sub>3</sub> -N; Phosphate- 10 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 500 mg/L COD; Sulfate- 400 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC- 161 mg/L TOC	2833149
Wastewater Effluent Inorganics Quality Control Standard, 500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> -N; Phosphate- 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 25 mg/L COD; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC- 8 mg/L TOC	2833249
Inorganics Quality Control Standard for Drinking Water, 500 mL	Fluoride- 1 mg/L F <sup>-</sup> ; Nitrate- 2 mg/L NO <sub>3</sub> -N; Phosphate- 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup>	2833049
Nitrogen-Nitrate Standard Solution, 1 mg/L as NO <sub>3</sub> -N (NIST), 500 mL		204649
Nitrogen-Nitrate Standard Solution, 10 mg/L as NO <sub>3</sub> -N (NIST), 500 mL		30749
Nitrogen-Nitrate Standard Solution, 100 mg/L as NO <sub>3</sub> -N (NIST), 500 mL		194749
Nitrogen-Nitrate Standard Solution, 500 mg/L as NO <sub>3</sub> -N (NIST), 16/pk - 10 mL Voluette® Ampules		1426010
Nitrogen-Nitrate Standard Solution, 1,000 mg/L as NO <sub>3</sub> -N (NIST), 500 mL		1279249
Nitrogen-Nitrate Standard Solution, 5 mg/L as NO <sub>3</sub> -N (NIST), 16/pk - 10 mL Voluette® Ampules		2557810
Nitrogen-Nitrate Standard Solution, 500 mg/L as NO <sub>3</sub> -N (NIST), 2/pk - 2 mL PourRite® Ampules		1426020



Single and Multi-Parameter Standards

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

- Multiple ranges and methods available for lab or field use
- Ferrous Sulfate (NitriVer 2)—Hach's highest range Nitrite method, simple one reagent method

- Diazotization (NitriVer 3)—Hach's lowest range Nitrite method, EPA accepted for wastewater analysis



## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>NitriVer 3 TNT Reagent Set, Nitrogen-Nitrite, Low Range</b>	10019	TNT	0.003 - 0.500 mg/L NO <sub>2</sub> -N	All except PC II		50	2608345
NitriVer® 3 Nitrite Reagent Powder Pillows, 10 mL, 100/pk	8507	PP	0.002 - 0.300 mg/L NO <sub>2</sub> -N	All except PC II	WW	100	2107169
NitriVer® 3 Nitrite Reagent AccuVac® Ampules, 25/pk	8507	AV	0.002 - 0.300 mg/L NO <sub>2</sub> -N	All except PC II	WW	25	2512025
Nitrite TNTplus, LR	10207	TNT+	0.015 - 0.60 mg/L NO <sub>2</sub> -N	DR 6000, DR 3900, DR 2800, DR 1900	WW†	25	TNT839
Nitrite TNTplus™, HR	10237	TNT+	0.6 - 6.0 mg/L NO <sub>2</sub> -N (2.0-20.0 mg/L NO <sub>2</sub> <sup>-</sup> )	DR 6000, DR 3900, DR 2800, DR 1900	WW†	25	TNT840
NitriVer® 3 Nitrite Reagent Powder Pillows, 25 mL, 100/pk	8507	PP	0.002 - 0.300 mg/L NO <sub>2</sub> -N	DR/2000, DR/3000		100	1406599
NitriVer® 3 Nitrite Reagent Powder Pillows, 25 mL, 1,000/pk	8507	PP	0.002 - 0.300 mg/L NO <sub>2</sub> -N	DR/2000, DR/3000		1000	1406528
NitriVer® 2 Nitrite Reagent Powder Pillows, 10 mL, 100/pk	8153	PP	2 - 250 mg/L NO <sub>2</sub> <sup>-</sup>	All except DR/3000, DR/2000, DR/850, DR/820, PC II		100	2107569
NitriVer® 2 Nitrite Reagent Powder Pillows, 25 mL, 100/pk	8153	PP	2 - 150 mg/L NO <sub>2</sub> <sup>-</sup>	DR/2000, DR/3000		100	221969
<b>DIGITAL TITRATOR TITRATION</b>	8351	DT	100 - 2,500 mg/L NaNO <sub>2</sub>				
Ceric Standard Solution Digital Titrator Cartridge, 0.500 N							2270701
Ferriin Indicator Solution, 29 mL DB							181233
Sulfuric Acid Standard Solution, 5.25 N, 100 mL MDB							244932

† Equivalent to Hach Method 8507 and USEPA Method 353.2

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
Nitrate and Nitrite Test Strips	TS	Nitrate 0 - 50 mg/L ppm NO <sub>3</sub> <sup>-</sup> -N Nitrite 0 - 3.0 mg/L ppm NO <sub>2</sub> <sup>-</sup> -N	25	2745425

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Nitrite Test Kit (Model NI-6)	CD	0 - 80 mg/L NO <sub>2</sub> <sup>-</sup> 0 - 2,000 mg/L NO <sub>2</sub> <sup>-</sup>	100	224000
Nitrite Test Kit (Model NI-15)	CD	0 - 0.40 mg/L NO <sub>2</sub> <sup>-</sup> -N	100	2182000
<b>Nitrification Control Kit</b>	PP, S		50 - 100	2882200
Kit includes DR 900 Colorimeter, all required reagents and a carrying case. Contains tests for:				
Free Ammonia		0.02 - 0.50 mg/L NH <sub>3</sub> -N	50	
Monochloramine		0.04 - 4.50 mg/L Cl <sub>2</sub>	100	
Nitrite		0.002 - 0.350 mg/L NO <sub>2</sub> <sup>-</sup> -N	100	
Total Chlorine, LR		0.02 - 2.00 mg/L Cl <sub>2</sub>	100	
Total Chlorine, HR		0.1 - 10.0 mg/L Cl <sub>2</sub>	100	

## Standards

Description	Prod. No.
Nitrite Solution, Stock, 250 µg/mL (mg/L) as N, 500 mL (Limited Stability)	2340249

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# NITROGEN, TOTAL

• Rapid, easy-to-use methods

• Available as a TNTplus test for ultimate ease of use

## Reagents

Description	Method	Platform	Ranges	Instrument*	Digestion Required	# Tests	Prod. No.
<b>Total Nitrogen Reagent Set, LR, TNT</b>	10071	TNT	0.5 - 25.0 mg/L N	All except DR/850, DR/820, PC II	Yes	25 - 50 <sup>†</sup>	<b>2672245</b>
<b>Total Nitrogen Reagent Set, HR, TNT</b>	10072	TNT	10 - 150 mg/L N	All except DR/850, DR/820, PC II	Yes	25 - 50 <sup>†</sup>	<b>2714100</b>
Nitrogen (Total) TNTplus, LR	10208	TNT+	1 - 16 mg/L N	DR 6000, DR 3900, DR 2800, DR 1900	Yes**	25	<b>TNT826</b>
Nitrogen (Total) TNTplus, HR	10208	TNT+	5 - 40 mg/L N	DR 6000, DR 3900, DR 2800, DR 1900	Yes**	25	<b>TNT827</b>
Nitrogen (Total) TNTplus, UHR	10208	TNT+	20 - 100 mg/L N	DR 6000, DR 3900, DR 2800, DR 1900	Yes**	25	<b>TNT828</b>

### TOTAL KJELDAHL NITROGEN

Simplified TKN (s-TKN) TNTplus	10242	TNT+	0 - 16 mg/L N	DR 6000, DR 3900, DR 2800, DR 1900	Yes**	25	<b>TNT880</b>
<b>Reagent Set for Colorimetric TKN Determination</b>	8075	PP	1 - 150 mg/L N	All except DR/850, DR/820, PC II	Yes <sup>†</sup>	250	<b>2495300</b>

Set includes: Nessler Reagent, Hydrogen Peroxide 50%, TKN Indicator Solution, Potassium Hydroxide Standard (1.0 N), Polyvinyl Alcohol Dispersing Reagent, Mineral Stabilizer, Potassium Hydroxide Standard (8 N), and Sulfuric Acid.

#### Replacement Reagents

Nessler Reagent, 500 mL	S	250	<b>2119449</b>
Hydrogen Peroxide Solution, 50%, 490 mL	S	25	<b>2119649</b>
TKN Indicator Solution, 50 mL SCDB	S	250	<b>2251926</b>
Potassium Hydroxide Standard Solution, 1.0 N, 50 mL SCDB	S	250	<b>2314426</b>
Polyvinyl Alcohol Dispersing Agent, 50 mL SCDB	S	250	<b>2376526</b>
Mineral Stabilizer Solution, 50 mL SCDB	S	250	<b>2376626</b>
Potassium Hydroxide Standard Solution, 8.00 N, 100 mL MDB	S	Varies	<b>28232H</b>
Sulfuric Acid, ACS, 500 mL	S	250	<b>97949</b>

### TOTAL INORGANIC NITROGEN (TIN)

Requires both Prod. No. 2604945 and Prod. No. 2604545.

<b>Total Inorganic Nitrogen Pretreatment Reagent Set</b>	10021	TNT	0.2 - 25.0 mg/L N	All except DR/820, PC II	25 - 50 <sup>†</sup>	<b>2604945</b>
<b>Nitrogen-Ammonia Reagent Set, TNT, AmVer (Salicylate), LR</b>		TNT	0.02 - 2.50 mg/L NH <sub>3</sub> -N	All except DR/820, PC II	25 - 50 <sup>†</sup>	<b>2604545</b>

<sup>†</sup>Dependent on the number of performed reagent blanks. <sup>\*\*</sup>DRB with 20mm wells required. Visit [www.hach.com](http://www.hach.com) for more details. <sup>‡</sup>Digesdahl digestion required.

## Standards

Description	Concentration	Prod. No.
Wastewater Effluent Inorganics Quality Control Standard, 500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> -N; Phosphate-2 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 25 mg/L COD; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC- 8 mg/L TOC	<b>2833249</b>
Nitrogen-Ammonia Standard Solution, 10 mg/L as NH <sub>3</sub> -N, 500 mL		<b>15349</b>
Nitrogen-Ammonia Standard Solution, 100 mg/L as NH <sub>3</sub> -N, 500 mL		<b>2406549</b>
Nitrogen Primary Standard Set of 3 (Ammonium PTSA, Glycine PTSA, Nicotinic Acid PTSA), 25g each		<b>2277800</b>
Nitrogen-Ammonia Standard Solution, 1,000 mg/L as NH <sub>3</sub> -N, 1 L		<b>2354153</b>

## Accessories Required to Run Tests

Description	Prod. No.
DRB200 Reactor (For Total Nitrogen determination with Product Nos. TNT826, TNT827, TNT828) Requires reaction tubes, see below. To order, visit <a href="http://www.hach.com">www.hach.com</a> or contact your Hach representative.	
Centrifuge, 115 Vac, 6 x 15 mL	<b>2676500</b>
Centrifuge, 220 Vac, 6 x 15 mL	<b>2676502</b>
Tube Rack for Total Nitrogen Reaction Tubes, 20 mm	<b>2497902</b>
Reaction Tubes, 20 mm, 5/pk (For use with Metal Prep Set.)	<b>LZP065</b>
Cylinder, Mixing, 25 mL	<b>189640</b>
Pipet, TenSette®, 0.1-1.0 mL	<b>1970001</b>
Pipet, TenSette®, 1-10 mL	<b>1970010</b>
Test Tube Cooling Rack, 13 mm Vials	<b>2497900</b>
Test Tube Cooling Rack, 8 x 16 mm tubes	<b>1864100</b>
Digesdahl Digestion Apparatus, 115 Vac	<b>2313020</b>
Digesdahl Digestion Apparatus, 220 Vac	<b>2313021</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip





## Reagents

Description	Platform	Instrument*	Prod. No.
<b>Nutrients Basic Reagent Set, TNTplus</b>	TNT+	DR 6000, DR 3900, DR 2800, DR 1900	2925000 <sup>†</sup>
Nutrients Basic Reagent Set, TNTplus-includes 25 tests of each of the following: • Nitrogen • Total, LR • Phosphorus, Total and Reactive (ortho), LR			
<b>Nutrients Advanced Reagent Set, TNTplus</b>	TNT+	DR 6000, DR 3900, DR 2800, DR 1900	2925100 <sup>†</sup>
Nutrients Advanced Reagent Set, TNTplus-includes 25 tests of each of the following: • Nitrogen, Total, LR • Nitrogen, Ammonia, LR • Nitrogen, Nitrate, LR • Phosphorus, Total and Reactive (ortho), LR			
<b>Nutrients Basic Reagent Set, Test 'N Tube</b>	TNT	All except DR/850, DR/820, PC II	2925200 <sup>‡</sup>
Nutrients Testing Basic Reagent Set, Test 'N Tube 25 test each: Nitrogen, Total, LR (2672245) • Phosphorus, Total, LR (2742645)			
<b>Nutrients Advanced Reagent Set, Test 'N Tube</b>	TNT	All except DR/850, DR/820, PC II	2925300 <sup>‡</sup>
Test 'N Tube Reagent Set for Total Nitrogen, Total/Reactive Phosphorus, Ammonia, Nitrate, and Nitrite. Use to Optimize Waste Treatment Processes for Nutrient Removal. Contains one package each: 2742545, 2742645, 2608345, 2605345, 2606945 and 2672245			
<sup>†</sup> Requires Digestion. Use DRB200 Reactor (Prod. No. DRB20005) with 13 mm vial wells or use TNTplus Adaptor Sleeves 16 mm to 13 mm (Prod. No. 2895805) to convert from a 16 mm reactor vial well to 13 mm vial well.			
<sup>‡</sup> Requires Digestion. Use DRB200 Reactor (Prod. No. LTV082.53.40001) or other dry block reactors with 16 mm vial wells			

## Reagents

Description	Method	Platform	Ranges	EPA Compliant	# Tests	Prod. No.
<b>HEXANE EXTRACTABLE GRAVIMETRIC METHOD - LIQUID LIQUID EXTRACTION</b>	10056		15 - 3,000 mg/L HEM and SGT-HEM	WW <sup>†</sup>		
Acetone, 500 mL		S				1442949
Silica Gel, 100-200 mesh, 500 g		Jar				2665034
Silica Gel Desiccant with Indicator, 454 g		Jar				1426901
Sodium Sulfate, Anhydrous, 454 g		Jar				709901
Hexadecane, 99% 100 mL		S				2664842
pH Paper, pH 0-14		TS			100	2601300
Hydrochloric Acid Standard Solution, 6.0 N (1:1), 500 mL		S				88449
Stearic Acid, 500 g		Jar				2664934
Hexanes, 500 mL		S				1447849
<b>HEXANE EXTRACTABLE GRAVIMETRIC METHOD - SOLID-PHASE EXTRACTION</b>	10300		5 - 1,000 mg/L HEM and SGT-HEM	WW <sup>†</sup>		
Acetone, Low Residue, 1L		S				2510153
Sodium Sulfate, Anhydrous, 454 g		Jar				709901
Silica Gel, 100-200 mesh, 500 g		Jar				2665034
Hexadecane, 99% 100 mL		S				2664842
pH Paper, pH 0-14		TS			100	2601300
Hydrochloric Acid Standard Solution, 6.0 N (1:1), 500 mL		S				88449
Stearic Acid, 500 g		Jar				2664934
Hexanes (95% n-hexane), 1L		S				2510253
<sup>†</sup> Equivalent to USEPA Method 1664						

## Accessories Required to Run Tests

Description	Prod. No.
Oven, Laboratory, 120 Vac, 60 Hz	1428900
Desiccator, Polycarbonate	2088800
Aspirator, Vacuum	213100
Hot Plate, 4x4 in, 115V	2881400
Funnel, Separatory, Glass, 500 mL	52049
Serological Pipet, Glass, 5 mL	53237
<b>For Solid-Phase Extraction</b>	
Xenosep SPE Starter Kit without Solvent Recovery	2943231
or	
Starter Kit with Solvent Recovery	2943200

Refer to procedure for complete list of required accessories.

**Above products are for use with Hach Method 10056. See page 130 for Xenosep® SPE System for testing for Oil and Grease using EPA Method 1664A.**

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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## OIL & GREASE

# ORP

For information about Hach laboratory and field ORP instruments, please see pages 15-70.

## OXYGEN SCAVENGERS

Methods available for a wide variety of oxygen scavengers:

- carbohydrazide
- DEHA
- hydroquinone
- iso-ascorbic (erythorbic) acid
- methylethylketoxime
- Ferrous Iron values also determined

### Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Oxygen Scavenger Reagent Set	8140	PP, S	5 - 600 µg/L carbohydrazide 3 - 450 µg/L DEHA 9 - 1,000 µg/L hydroquinone 13 - 1,500 µg/L erythorbic acid/ iso-ascorbic acid (ISA) 15 - 1,000 µg/L methylethyl ketoxime (MEKO)	All except DR/850, DR/820, PC II	100	2446600
Set includes: DEHA 1 Powder Pillows and DEHA 2 Solution.						
DEHA Reagent 1 Powder Pillows, 100/pk		PP			50	2167969
DEHA Reagent 2 Solution, 100 mL		S			100	2168042

### Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Oxygen Scavenger Test Kit (Model OS-1)	CD	0 to 52 g/L DEHA (and other Oxygen Scavengers) 0 to 300 µg/L DEHA (and other Oxygen Scavengers) 0 to 1360 g/L DEHA (and other Oxygen Scavengers)	100	2349500

## OZONE

- Easy-to-use AccuVac® reagents are ideally suited for ozone analysis
- Indigo Trisulfonate Method
- Multiple ranges available
- Hach's reagent formulation prevents chlorine interference

### Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Ozone AccuVac® Ampules, LR, 25/pk	8311	AV	0.01 - 0.25 mg/L O <sub>3</sub>	All except DR/820	25	2516025
Ozone AccuVac® Ampules, MR, 25/pk		AV	0.01 - 0.75 mg/L O <sub>3</sub>	All except DR/820	25	2517025
Ozone AccuVac® Ampules, HR, 25/pk		AV	0.01 - 1.50 mg/L O <sub>3</sub>	All except DR/820, PC II	25	2518025

### Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Ozone	8311	PC II, AV	0.01 - 0.25 mg/L O <sub>3</sub> 0.01 - 0.75 mg/L O <sub>3</sub>	Kit includes PC II	25	5870004
Ozone Test Kit (AccuVac) Indigo Method		AV, CD	0 - 1.50 mg/L O <sub>3</sub>		25	2518050
Ozone Test Kit (Model OZ-2), DPD Method		CD	0 to 2.2 mg/L O <sub>3</sub>		100	2064400

### Standards

Description	Volume	Concentration	Instrument*	Prod. No.
Gel Secondary Standard Set, Ozone, Mid-Range	Set of 4 vials	0 - 0.75 mg/L O <sub>3</sub>	Includes values for all instruments, except DR/3000 and DR/700	2708000

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# PCB (POLYCHLORINATED BIPHENYLS)

- Portable systems allow on-site evaluation

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>PCB Reagent Set</b>	10050	IA	1, 5, 10, 50 ppm thresholds	All except DR/3000, DR/2000, DR 900, DR/800 Series	Up to 18	<b>2773500</b>
Soil Extraction Refill Kit						2775200
Water, Deionized, 500 mL						27248

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - PCB in Soil	10050	PC II, IA	1, 5, 10, 50 ppm thresholds	Kit includes PC II	Up to 18	<b>2773400</b>

## Accessories Required to Run Tests *(All are included in Pocket Colorimeter II Kit.)*

Description	Prod. No.
Pipet, TenSette®, 0.1-1.0 mL	1970001
Marker, Laboratory	2092000
Wipes, Disposable	2097000
Caps, flip-spout 2/pkg	2581802
Soil Scoop, 5 g each	2657205
Balance, Acculab Pocket Pro	2796900
Rack, for 1 cm microcuvettes	4879900

PARAMETERS

pH

## Test Strips

Description	Platform	Ranges	# Tests	Prod. No.
pH Test Strips	TS	4 to 9 pH Steps: 4,5,6,7,8,9 pH	50	2745650
pH Paper	TS	0 to 14 pH 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	100	2601300

## Test Kits

Description	Platform	Ranges	Instrument	# Tests	Prod. No.
<b>pH, MID-RANGE</b>					
Pocket Colorimeter™ II – Chlorine, Free & Total & pH (Not for regulatory reporting.)	PCII, PP	0.1 - 10.0 mg/L Cl <sub>2</sub> 6.0 - 8.5 pH	Kit includes PC II	100	<b>5870012</b>
pH Test Kit, Bromthymol Blue (Model 17F)	CD	5.6 - 8.4 pH		100	<b>147006</b>
pH Test Kit, Phenol Red Liquid (Model 17H)	CD	6.6 - 8.4 pH		200	<b>147008</b>
pH Test Kit, Thymol Blue (Model 17J)	CD	7.4 - 9.6 pH		200	<b>147009</b>
<b>pH, WIDE RANGE</b>					
pH Test Kit (Model 17N)	CD	4 - 10 pH		300	<b>147011</b>

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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## Standards (Buffers)

Description	Prod. No.
<b>COLOR-CODED</b>	
Buffer Solution, pH 4.01 (NIST), Color-coded red, 500 mL	2283449
Buffer Solution, pH 4.01 (NIST), Color-coded red, 4 L	2283456
Buffer Solution, pH 4.01 (NIST), Color-coded red, 20 L	2283461
Buffer Powder Pillows, pH 4.01 (NIST), Color-coded red, 50/pk†	2226966
Buffer Powder Pillows, pH 4.01 (NIST), Color-coded red, 250/pk†	2226964
Buffer Solution, pH 7.00 (NIST), Color-coded yellow, 500 mL	2283549
Buffer Solution, pH 7.00 (NIST), Color-coded yellow, 4 L	2283556
Buffer Solution, pH 7.00 (NIST), Color-coded yellow, 20 L	2283561
Buffer Powder Pillows, pH 7.00 (NIST), Color-coded yellow, 50/pk†	2227066
Buffer Powder Pillows, pH 7.00 (NIST), Color-coded yellow, 250/pk†	2227064
Buffer Solution, pH 10.01 (NIST), Color-coded blue, 500 mL	2283649
Buffer Solution, pH 10.01 (NIST), Color-coded blue, 4 L	2283656
Buffer Solution, pH 10.01 (NIST), Color-coded blue, 20 L	2283661
Buffer Powder Pillows, pH 10.00 (NIST), Color-coded blue, 50/pk†	2227166
Buffer Powder Pillows, pH 10.00 (NIST), Color-coded blue, 250/pk†	2227164
Buffer Powder Pillows, pH 4.01 & pH 7.00 (NIST), 10 Powder Pillows of each	2299264
<b>COLOR-CODED 3-PACKS</b>	
pH Buffer Solution Kit, Color-coded, pH 4.01, pH 7.00 and pH 10.01, 500 mL each	2947600
pH Buffer Solution Kit, Color-coded, pH 4.01, pH 7.00 and pH 10.01, 4 L each	2507200
pH Buffer Solution Kit, Color-coded, pH 4.01, pH 7.00 and pH 10.01, 20 L each	2507300
<b>COLORLESS</b>	
Buffer Solution, pH 4.01 (NIST), Colorless, 500 mL	1222349
Buffer Solution, pH 4.01 (NIST), Colorless, 4 L	1222356
Buffer Powder Pillows, pH 6.00 (NIST), 50/pk†	1405566
Buffer Powder Pillows, pH 6.86 (NIST), 15/pk†	1409895
Buffer Solution, pH 7.00 (NIST), Colorless, 500 mL	1222249
Buffer Solution, pH 7.00 (NIST), Colorless, 4 L	1222256
Buffer Powder Pillows, pH 8.00 (NIST), 15/pk†	1407995
Buffer Powder Pillows, pH 9.00 (NIST), 50/pk	1410766
Buffer Solution, pH 10.01 (NIST), Colorless, 500 mL	1222149
Buffer Solution, pH 10.01 (NIST), Colorless, 4 L	1222156
<b>SINGLET™ SOLUTION PACKS</b>	
SINGLET™ Single-Use pH Buffer, Combination Pack, pH 7.00 & 10.01, 10 of each	2769820
SINGLET™ Single-Use pH Buffer, Combination Pack, pH 4.01 & 7.00, 10 of each	2769920
SINGLET™ Single-Use pH Buffer, pH 4.01 (NIST), 20/pk	2770020
SINGLET™ Single-Use pH Buffer, pH 7.00 (NIST), 20/pk	2770120
SINGLET™ Single-Use pH Buffer, pH 10.01 (NIST), 20/pk	2770220

†NOTE: one Powder Pillow of buffer prepares 50 mL.

## Indicators

Description	Prod. No.
Bromcresol Green Indicator Solution, 500 mL	2329549
Bromcresol Green-Methyl Red Indicator Powder Pillows, 100/pk	94399
Bromcresol Green-Methyl Red Indicator Powder, 15 g	94323
Bromcresol Green-Methyl Red Indicator Solution, 15 mL SCDB	2329236
Bromcresol Green-Methyl Red Indicator Solution, 100 mL MDB	2329232
Bromcresol Green-Methyl Red Indicator Solution, 500 mL	2329249
Bromcresol Purple Indicator Solution, 100 mL MDB	25432
Phenolphthalein Indicator Powder Pillows, 100/pk	94299
Bromphenol Blue Indicator Powder Pillows, 100/pk	1455099
Bromphenol Blue Indicator Solution, 100 mL MDB	1455232
Bromthymol Blue Indicator Powder Pillows, 100/pk	2067299
Bromthymol Blue Indicator Solution, 100 mL MDB	25532
Bromthymol Blue Indicator Solution, 500 mL	25549
Methyl Orange Indicator Solution, 100 mL MDB	14832
Methyl Orange Indicator Solution, 500 mL	14849
Methyl Purple Indicator Solution, 100 mL MDB	2193432
Methyl Purple Indicator Solution, 500 mL	2193449
Methyl Red Indicator Solution, 500 mL	14949

Continued on next page.

**Indicators (Continued)**

Description	Prod. No.
Phenol Red Indicator Solution, 15 mL SCDB	21136
Phenol Red Indicator Solution, 50 mL SCDB	21126
Phenol Red Indicator Solution, 100 mL MDB	21132
Phenol Red Indicator Solution, Spec. Grade, 50 mL	2657512
Phenol Red Indicator Solution, 500 mL	21149
Thymol Blue Indicator Solution, 100 mL MDB	25732
Thymolphthalein Indicator Solution, 1 g/L, 15 mL SCDB	2185336
Wide Range pH Indicator Solution, 100 mL MDB	2329332
Wide Range pH Indicator Solution, 500 mL	2329649
Wide Range pH Indicator Solution, 1 L	2329353

**PHENOLS****Reagents**

Description	Method	Platform	Ranges	Instrument*	EPA Compliant WW†	# Tests	Prod. No.
<b>Phenols Reagent Set (No Air Shipments)</b>	8047	PP, S	0.002 - 0.200 mg/L Phenol	All except DR 900, DR/800 Series, PC II	WW†	100	2243900
Set includes: Hardness 1 Buffer Solution, Chloroform, Phenol Reagent Powder Pillows and Phenol 2 Reagent Powder Pillows.							
Replacement Reagents							
Hardness 1 Buffer Solution, 500 mL		S				50	42449
Chloroform, 4 L		S				60 - 100	1445817
Phenol Reagent Powder Pillows, 100/pk		PP				50	87299
Phenol 2 Reagent Powder Pillows, 100/pk		PP				50	183699
<b>Phenols Reagent Set (Air Shipment)</b>		PP, S	0.002 - 0.200 mg/L Phenol	All except DR 900, DR/800 Series, PC II	WW†	100	2243901
Set includes: Same as 2243900. Chloroform is packaged for air freight shipment.							
†Distillation required.							

**Test Kits**

Description	Platform	Ranges	# Tests	Prod. No.
PL-1 Test Kit	CD	0 to 4.0 mg/L	100	2483600

**Standards**

Description	Prod. No.
Phenol, 113 g	75814

**Accessories Required to Run Tests**

Description	Prod. No.
Pipet, Volumetric, Class A, 5.00 mL	1451537
General Purpose Distillation Apparatus Set	2265300
Heater and Support Apparatus, 115 Vac, 60 Hz	2274400
Heater and Support Apparatus, 230 Vac, 50 Hz	2274402
Cylinder, graduated, 500 mL	50849
Funnel, Separatory, 500 mL	52049

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# PHOSPHONATES

- Hach's unique UV Oxidation provides quick determination of phosphonates, without hot plate digestions

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Phosphonate Reagent Set, 10 mL</b> Set includes: Potassium Persulfate Powder Pillows and PhosVer 3 Powder Pillows. Replacement Reagents	8007	PP	0.02 - 125 mg/L PO <sub>4</sub> <sup>3-</sup> †	All except DR/820	100	<b>2429700</b>
Potassium Persulfate Powder Pillows, 100/pk		PP			100	<b>2084769</b>
PhosVer® 3 Phosphate Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2106069</b>
<b>Phosphonate Reagent Set, 25 mL</b> Set includes: Potassium Persulfate Powder Pillows and PhosVer 3 Powder Pillows. Replacement Reagents	8007		0.02 - 125 mg/L PO <sub>4</sub> <sup>3-</sup> †	DR/2000, DR/3000	100	<b>2244000</b>
Potassium Persulfate Powder Pillows, 100/pk		PP			100	<b>2084769</b>
PhosVer® 3 Phosphate Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>212599</b>

†Multiple Ranges

PARAMETERS

**Also see Benzotriazole  
on page 157 and  
Oxygen Scavengers on page 196.**

## Test Kits

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Phosphonate Test Kit (Model PN-10), with UV Lamp, 115V		CD	0 to 100 mg/L PO <sub>4</sub> <sup>†</sup>		0 - 100	<b>2113300</b>
Phosphonate Test Kit (Model PN-10), with UV Lamp, 220V		CD	0 to 100 mg/L PO <sub>4</sub> <sup>†</sup>		0 - 100	<b>2113302</b>
Phosphonate Test Kit (Model PN-10), without Lamp		CD	0 to 100 mg/L PO <sub>4</sub> <sup>†</sup>		0 - 100	<b>2113301</b>
Pocket Colorimeter™ II – Phosphonate	8007	PP	0.1 to 125 mg/L PO <sub>4</sub> <sup>†</sup>	Kit includes PC II	100	<b>5870007</b>

†Kits measure multiple ranges

## Standards

Description	Prod. No.
Phosphate Standard Solution, 1 mg/L as PO <sub>4</sub> (NIST), 500 mL	<b>256949</b>
Phosphate Standard Solution, 10 mg/L as PO <sub>4</sub> (NIST), 946 mL	<b>1420416</b>
Phosphate Standard Solution, 50 mg/L as PO <sub>4</sub> (NIST), 16/pk - 10-mL Voluette® Ampules	<b>17110</b>

## Accessories Required to Run Tests

Description	Prod. No.
Bottle, mixing, with 25-mL mark	<b>1704200</b>
Cylinder, Graduated Mixing, 50-mL	<b>189641</b>
UV Lamp with power supply, 115V, includes goggles	<b>2082800</b>
UV Lamp with power supply, 220V, includes goggles	<b>2082802</b>
UV Lamp 9V Power Supply Field Pack	<b>2670600</b>
UV Lamp, Shortwave, 254 nm, 1.75 bulb	<b>2670800</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# PHOSPHORUS

- PhosVer® 3 (Ascorbic Acid)—EPA accepted for wastewater analysis, obtain results quickly and easily with Hach's PhosVer® 3 reagent
- Amino Acid—Hach's mid-range Phosphorus method, a simple two-reagent method



- Molybdovanadate—Hach's highest range Phosphorus method, ideal method for process control of high phosphorus concentrations
- Hach's Test 'N Tube™ reagents—make Total Phosphorus testing easy by allowing you to add sample, digest, and read in one vial
- TNTplus™ reagents—the ultimate in convenience and accuracy

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	Digestion Required	# Tests	Prod. No.
<b>PHOSPHORUS™ TNTPLUS — 13 MM</b>								
Phosphorus, Reactive (Ortho) TNTplus	10214	TNT+	1.6 - 30 mg/L P (5.0 - 90 mg/L PO <sub>4</sub> )	DR 6000, DR 3900, DR 2800, DR 1900			25	TNT846
Phosphorus TNTplus, LR Reactive and Total	10209	TNT+	0.05 - 1.5 mg/L P (0.15-4.5 mg/L PO <sub>4</sub> )	DR 6000, DR 3900, DR 2800, DR 1900	WW†	Yes for Total	25	TNT843
Phosphorus TNTplus, HR Reactive and Total	10209	TNT+	0.5 - 5 mg/L P (1.5-15.0 mg/L PO <sub>4</sub> )	DR 6000, DR 3900, DR 2800, DR 1900	WW†	Yes for Total	25	TNT844
Phosphorus TNTplus, UHR Reactive and Total	10209	TNT+	2 - 20 mg/L P (6-60 mg/L PO <sub>4</sub> )	DR 6000, DR 3900, DR 2800, DR 1900	WW†	Yes for Total	25	TNT845
<b>PHOSPHORUS</b>								
<b>Phosphorus Reagent Set, Ascorbic Acid Rapid Liquid™</b>	10055	S	19 - 3,000 µg/L PO <sub>4</sub>	All except DR 900, DR/800 Series, PC II			250	2678600
Set Includes: Ascorbic Acid Reagent Dilution Solution, Ascorbic Acid Reagent Powder, and Molybdate Reagent Solution.								
Replacement Reagents								
Ascorbic Acid Reagent Dilution Solution for Phosphorus, 450 mL		S					250	2599949
Ascorbic Acid Reagent Powder for Phosphorus, 48 g		Jar					250	2651255
Molybdate Reagent Solution for Phosphorus, 500 mL		S					250	2599849
<b>Phosphorus (Total and Acid Hydrolyzable) TNT Reagent Set, LR Ascorbic Acid Method</b>	8180	TNT	0.06 - 3.50 mg/L PO <sub>4</sub>	All except DR/820, PC II		Yes	25-50†	2742745
PhosVer® 3 Phosphate Reagent Powder Pillows, 10 mL, 100/pk	8048	PP	0.02 - 2.50 mg/L PO <sub>4</sub>	All except DR/3000, DR/2000, DR/820	DW, WW		100	2106069
PhosVer® 3 Phosphate Reagent Powder Pillows, 25 mL, 100/pk	8048	PP	0.02 - 2.50 mg/L PO <sub>4</sub>	DR/3000, DR/2000	DW, WW		100	212599
PhosVer® 3 Phosphate Reagent AccuVac® Ampules, 25/pk	8048	AV	0.02 - 2.50 mg/L PO <sub>4</sub>	All except DR/820	DW, WW		25	2508025
<b>Phosphorus (Reactive) TNT Reagent Set, LR</b>	8048	TNT	0.06 - 5.00 mg/L PO <sub>4</sub>	All except DR/820, PC II	DW, WW		25-50†	2742545
<b>Phosphorus, Reactive, Reagent Set, Amino Acid</b>	8178	S	0.23 - 30.00 mg/L PO <sub>4</sub>	All except PC II			100	2244100
Set includes Amino Acid Reagent (100 mL) and Molybdate Reagent (100 mL).								
Replacement Reagents								
Amino Acid Reagent, 100 mL MDB		S					100	193432
Molybdate Reagent, 100 mL MDB		S					100	223632
Molybdovanadate Reagent, 100 mL MDB	8114	S	0.3 - 45.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			50	2076032
Molybdovanadate Reagent, 500 mL	8114	S	0.3 - 45.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			250	2076049
Phosphorus (Phosphate) AccuVac® Ampules, Molybdovanadate, 25/pk	8114	AV	0.3 - 45.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			25	2525025
<b>Phosphorus (Reactive) TNT Reagent Set, HR Molybdovanadate</b>	8114	TNT	1.0 - 100.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			25-50†	2767345
<b>Phosphorus (Total) TNT Reagent Set, HR Molybdovanadate</b>	10127	TNT	1.0 - 100.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II		Yes	25-50†	2767245
<b>Phosphorus (Total) TNT Reagent Set, LR</b>	8190	TNT	0.06 - 3.50 mg/L PO <sub>4</sub>	All except DR/820, PC II	WW	Yes	25-50†	2742645
<b>Phosphorus Digestion Reagent Set</b>	8190	PP, S		All		Yes	100	2459000
Set includes: Sulfuric Acid 5.25 N, Sodium Hydroxide 5.0 N, Potassium Persulfate Powder Pillows.								
Replacement Reagents								
Sulfuric Acid Standard Solution, 5.25 N, 100 mL MDB		S					Varies	244932
Sodium Hydroxide Standard Solution, 5.0 N, 100 mL MDB		S					Varies	245032
Potassium Persulfate Powder Pillows, 100/pk		PP					100	245199
PhosVer® 3 Phosphate Reagent Powder Pillows, 10 mL, 1000/pk	8048	PP	0.02 - 2.50 mg/L PO <sub>4</sub>	All except DR/820	DW, WW		1000	2106028
PhosVer® 3 Phosphate Reagent Powder Pillows, 25 mL, 100/pk	8048	PP	0.02 - 2.50 mg/L PO <sub>4</sub>	DR/3000, DR/2000	DW, WW		100	212599
PhosVer® 3 Phosphate Reagent Powder Pillows, 25 mL sample, 1000/pk	8048	PP	0.02 - 2.50 mg/L PO <sub>4</sub>	DR/3000, DR/2000	DW, WW		1000	212528

\*Dependent on the number of performed reagent blanks. †Equivalent to USEPA Method 365.1 and 365.3

Continued on next page.

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# PHOSPHORUS

## Test Strips

Product Description	Platform	Ranges	# Tests	Prod. No.
Phosphate, Ortho (as PO <sub>4</sub> )	TS	0 - 50 ppm PO <sub>4</sub>	50	2757150

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Phosphate	8048	PC II	0.02 - 3.00 mg/L PO <sub>4</sub>	Kit includes PC II	100 C**	5870006
Orthophosphate Test Kit (reactive) (Model PO-19) For clean samples		CD	0 - 0.8 mg/L PO <sub>4</sub> 0 - 4 mg/L PO <sub>4</sub> 0 - 40 mg/L PO <sub>4</sub>		100	224800
Orthophosphate Test Kit (reactive) ( Model PO-19A) For clean samples and turbid samples		CD	0 - 0.8 mg/L PO <sub>4</sub> 0 - 4 mg/L PO <sub>4</sub> 0 - 40 mg/L PO <sub>4</sub>		100 C/T**	224801
Orthophosphate Test Kit (reactive) (Model PO-14)†		CD	0 - 4.4 mg/L PO <sub>4</sub> 0 - 44 mg/L PO <sub>4</sub>		100 C**	147500

†PO-14 is especially suited for measuring orthophosphate in waters conditioned with Poly-4 or similar orthophosphate compounds. \*\*C for Clear samples. T for Turbid samples

## Standards

Description	Concentration	Prod. No.
Wastewater Influent Inorganics Quality Control Standard, 500 mL	Ammonia- 15 mg/L NH <sub>3</sub> -N; Nitrate- 10 mg/L NO <sub>3</sub> -N; Phosphate-10 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 500 mg/L COD; Sulfate- 400 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC-161 mg/L TOC	2833149
Wastewater Effluent Inorganics Quality Control Standard, 500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> -N; Phosphate- 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 25 mg/L COD; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC- 8 mg/L TOC	2833249
Inorganics Quality Control Standard for Drinking Water, 500 mL	Fluoride- 1 mg/L F <sup>-</sup> ; Nitrate- 2 mg/L NO <sub>3</sub> -N; Phosphate- 2 mg/L PO <sub>4</sub> <sup>3-</sup> ; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup>	2833049
Phosphate Standard Solution, 1 mg/L as PO <sub>4</sub> (NIST), 500 mL		256949
Phosphate Standard Solution, 3 mg/L as PO <sub>4</sub> (NIST), 946 mL		2059716
Phosphate Standard Solution, 10 mg/L as PO <sub>4</sub> (NIST), 946 mL		1420416
Phosphate Standard Solution, 15 mg/L as PO <sub>4</sub> (NIST), 100 mL		1424342
Phosphate Standard Solution, 30 mg/L as PO <sub>4</sub> (NIST), 946 mL		1436716
Phosphate Standard Solution, 50 mg/L as PO <sub>4</sub> (NIST), 500 mL		17149
Phosphate Standard Solution, 100 mg/L as PO <sub>4</sub> (NIST), 100 mL MDB		1436832
Phosphate Standard Solution, 500 mg/L as PO <sub>4</sub> (NIST), 100 mL MDB		1424232
Phosphorus Standard Solution, 1,000 mg/L as P (NIST), 100 mL		2321142
Phosphorus Standard Solution, 25 mg/L as P (NIST), 16/pk - 10 mL Voluette Ampules		2109210
Phosphate Standard Solution, 50 mg/L as PO <sub>4</sub> (NIST), 20/pk - 2 mL Pour-Rite Ampules		17120H
Phosphate Standard Solution, 50 mg/L as PO <sub>4</sub> (NIST), 16/pk - 10-mL Voluette Ampules		17110
Phosphate Standard Solution, 500 mg/L as PO <sub>4</sub> (NIST), 16/pk - 10-mL Voluette Ampules		1424210

## Accessories Required to Run Tests

Description	Prod. No.
Reactor Adapter, 16 mm to 13 mm, 5/pk (For use with older COD Reactors with 16 mm holes)	2895805
Sample Blank Vials for TNTplus, 5/pk	TNT919

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Potassium Reagent Set</b>	8049	PP	0.1 - 7.0 mg/L K	All except DR 900, DR/800 Series, PC II	100	<b>2459100</b>
Set includes: Potassium 1 Reagent Powder Pillows, Potassium 2 Reagent Powder Pillows and Potassium 3 Reagent Powder Pillows.						
Replacement Reagents						
Potassium 1 Reagent Powder Pillows, 25/pk		PP			25	<b>1432198</b>
Potassium 2 Reagent Solution Pillows, 25/pk		SP			25	<b>1432298</b>
Potassium 3 Reagent Powder Pillows, 100/pk		PP			100	<b>1432399</b>

## Standards

Description	Prod. No.
Potassium Standard Solution, 100 mg/L as K (NIST), 500 mL	<b>2351749</b>
Potassium Standard Solution, 250 mg/L as K (NIST), 16/pk - 10 mL Voluette® Ampules	<b>1479010</b>

# QUATERNARY AMMONIUM COMPOUNDS

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Quaternary Ammonium Compound Reagent Set</b>	8337	PP	0.2 - 5.0 mg/L CTAB	All except DR 900, DR/800 Series, PC II	100	<b>2459200</b>
Set includes: QAC Reagent 1 Powder Pillows and QAC Reagent 2 Powder Pillows.						
Replacement Reagents						
QAC Reagent 1 Powder Pillows, 50/pk		PP			50	<b>2401066</b>
QAC Reagent 2 Powder Pillows, 25/pk		PP			12.5	<b>2401268</b>

## Standards

Description	Prod. No.
Quaternary Ammonium Compound (QAC) Standard Solution, 100 mg/L, 100 mL	<b>2415342</b>

# SALINITY

Also see *Water Quality Meters & Probes Section, pages 15-70*

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>MERCURIC NITRATE METHOD</b>	10073					
Diphenylcarbazone Powder Pillows, 100/pk		PP	0 - 100 ppt salinity		100	<b>96799</b>
Mercuric Nitrate Digital Titrator Cartridge, 2.570 N		DT	0 - 100 ppt salinity	Digital Titrator	40 - 100	<b>2393701</b>
Water, Deionized, 4 L		S				<b>27256</b>

## Accessories Required to Run Tests

Description	Prod. No.
Digital Titrator	<b>1690001</b>
Vial with 2, 5, 10, 15, 20, and 25-mL marks	<b>219300</b>
Syringe, 3cc Luer Lock Tip	<b>4321300</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# SELENIUM

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Selenium Reagent Set (No air freight)</b>	8194	S	0.01 - 1.00 mg/L Se	All except DR 900, DR/800 Series, PC II	66 - 100	<b>2244200</b>
Set includes: Sulfate Buffer Solution pH 2.0, Diaminobenzidine tetrahydrochloride, Potassium Hydroxide Std Soln 12N, EDTA Disodium Salt (TitraVer) and Toluene.						
<b>Replacement Reagents</b>						
Buffer Solution, Sulfate Type, 500 mL		S			50	<b>45249</b>
Diaminobenzidine, Tetrahydrochloride, 5 g		Jar			50	<b>706222</b>
Potassium Hydroxide Standard Solution, 12.0 N, 100 mL MDB		S			25	<b>23032</b>
EDTA, Disodium Salt, 100 g		Jar			250	<b>20426</b>
Toluene, 4 L		S			66 - 100	<b>1447017</b>
<b>Selenium Reagent Set (Air freight configuration)</b>					66 - 100	<b>2244201</b>
Water, Deionized, 4 L		S				<b>27256</b>
<b>DISTILLATION REAGENTS</b>						
Hydrochloric Acid Standard Solution, 0.10 N, 1 L		S				<b>1481253</b>
Hydrogen Peroxide Solution, 30%, 473 mL (No Air Shipments)		S				<b>14411</b>
Methyl Orange Indicator Solution, 500 mL		S				<b>14849</b>
Phenol Solution, 30 g/L, 29 mL		S				<b>211220</b>
Potassium Permanganate Solution, 1g/L, 100 mL		S				<b>1416442</b>
Sodium Hydroxide Standard Solution, 0.100 N (N/10), 1 L		S				<b>19153</b>
Sulfuric Acid Standard Solution, 19.2 N, 500 mL		S				<b>203849</b>

## Standards

Description	Prod. No.
Selenium Standard Solution, 1,000 mg/L as Se (NIST), 100 mL	<b>2240742</b>

## Accessories Required to Run Tests

Description	Prod. No.
Pipet, Volumetric, Class A, 5.00 mL	<b>1451537</b>
General Purpose Distillation Apparatus Set	<b>2265300</b>
Heater and Support Apparatus, 115 Vac, 60 Hz	<b>2274400</b>
Heater and Support Apparatus, 230 Vac, 50 Hz	<b>2274402</b>
Hot Plate, Stirring, 7 x 7, 115V	<b>2881600</b>
Hot Plate, Stirring, 7 x 7, 230V	<b>2881602</b>

Please refer to the Hach procedure at [www.hach.com](http://www.hach.com) for a complete list.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip





- Hach's Silica analyzers have set the standard for monitoring trace Silica concentrations in boiler water for many years, and our laboratory solutions provide a great complement to these reliable products
- Hach's multiple Silica analysis methods and ranges offer a more complete solution to your Silica testing needs
- Silicomolybdate—Hach's highest range Silica method
- Heteropoly Blue—Hach's lowest range Silica method, two ranges available (low and ultra low range), developed specifically for boiler and ultra pure water analysis

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Silica Reagent Set, Ultra Low Range Rapid Liquid™</b>	8282	S	3 - 1,000 µg/L SiO <sub>2</sub>	All except DR/4000, DR 900, DR/800 Series, PC II	250	<b>2678500</b>
Set includes: Molybdate 3 Reagent Solution, Citric Acid Reagent Solution, Amino Acid F Dilution Solvent, Amino Acid F Reagent Powder.						
Replacement Reagents						
Molybdate 3 Reagent, 500 mL		S			250	<b>199549</b>
Citric Acid F Reagent Solution, 500 mL		S			250	<b>2254249</b>
Amino Acid F Dilution Solvent, for Rapid Liquid Silica, 475 mL		S			250	<b>2353011</b>
Amino Acid F Reagent Powder, for Rapid Liquid Silica, 55 g		Jar			250	<b>2651155</b>
<b>Silica Reagent Set, Ultra Low Range, Bulk Solution</b>	8282	S	3 - 1,000 µg/L SiO <sub>2</sub>	All except DR 900, DR/800 Series, PC II	100	<b>2553500</b>
Set includes: Molybdate 3 Reagent Solution, Citric Acid F Reagent Solution, Amino Acid F Reagent Solution.						
Replacement Reagents						
Molybdate 3 Reagent, 100 mL		S			100	<b>199532</b>
Citric Acid F Reagent Solution, 100 mL		S			100	<b>2254232</b>
Amino Acid F Reagent Solution, 100 mL		S			100	<b>2386442</b>
<b>Silica Reagent Set, Ultra Low Range, 40 tests</b>	8282	S	3 - 1,000 µg/L SiO <sub>2</sub>	All except DR/3000, DR 900, DR/800 Series, PC II	40	<b>2581400</b>
Set includes: Molybdate 3 Reagent Solution, Citric Acid F Reagent Solution and Amino Acid F Solution Ampules						
Replacement Reagents						
Molybdate 3 Reagent, 100 mL		S			100	<b>199532</b>
Citric Acid F Reagent Solution, 100 mL		S			100	<b>2254232</b>
Amino Acid F Reagent Solution, 20 Ampules		S			20	<b>2386420</b>
<b>Silica, Low Range, Reagent Set, 10 mL</b>	8186	PP, S	0.010 - 1.600 mg/L SiO <sub>2</sub>	All except DR/3000, DR/2000, DR/820, PC II	100	<b>2459300</b>
Set includes: Molybdate 3 Reagent, Citric Acid Powder Pillows for Silica and Amino Acid F Powder Pillows						
Replacement Reagents						
Molybdate 3 Reagent Solution, 50 mL SCDB		S			50	<b>199526</b>
Citric Acid Reagent Powder Pillows for Silica, 10 mL, 100/pk		PP			50 - 100	<b>2106269</b>
Amino Acid F Reagent Powder Pillows, 10 mL, 100/pk		PP			100	<b>2254069</b>
<b>Silica Reagent Set, High Range, 10 mL</b>	8185	PP	1 - 100 mg/L SiO <sub>2</sub>	All except DR/3000, DR/2000, DR/850, DR/820, PC II	100	<b>2429600</b>
Set includes: Acid Reagent Powder Pillows for HR Silica, Citric Acid Reagent Powder Pillows and Molybdate Reagent Powder Pillows.						
Replacement Reagents						
Acid Reagent Powder Pillows for HR Silica, 10-mL, 100/pk		PP			100	<b>2107469</b>
Citric Acid Reagent Powder Pillows for Silica, 10 mL, 100/pk		PP			50 - 100	<b>2106269</b>
Molybdate Reagent Powder Pillows for HR Silica, 10 mL, 100/pk		PP			100	<b>2107369</b>
<b>Silica Reagent Set, LR Silica, 25 mL</b>	8186	PP, S	0.010 - 1.600 mg/L SiO <sub>2</sub>	DR/2000	100	<b>2346800</b>
Set includes: Molybdate 3 Reagent Solution, Citric Acid Powder Pillows and Amino Acid F Reagent Powder Pillows.						
Replacement Reagents						
Molybdate 3 Reagent, 100 mL		S			100	<b>199532</b>
Citric Acid Powder Pillows for Silica, 25 mL, 100/pk		PP			100	<b>1454899</b>
Amino Acid F Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>2253869</b>
<b>Silica Reagent Set, HR, 25 mL</b>	8185	PP	1 - 100 mg/L SiO <sub>2</sub>	DR/3000, DR/2000, DR/890	100	<b>2244300</b>
Set includes: Molybdate Reagent HR Powder Pillows, Acid Reagent Powder Pillows and Citric Acid Powder Pillows.						
Replacement Reagents						
Molybdate Reagent Powder Pillows for HR Silica, 25mL, 100/pk		PP			100	<b>104199</b>
Acid Reagent Powder Pillows, 25 mL, 100/pk		PP			100	<b>104299</b>
Citric Acid Powder Pillows for Silica, 25 mL, 100/pk		PP			100	<b>1454899</b>

Continued on next page.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# SILICA

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II - Silica HR	8185	PCII, PP	1 - 100 mg/L SiO <sub>2</sub>	Kit includes PC II	100	5870034
Silica Test Kit, LR (Model SI-7)		CD	0 - 1.00 mg/L SiO <sub>2</sub>		100	2255000
Silica Test Kit, HR (Model SI-5)		CD	0 - 30 mg/L SiO <sub>2</sub> 0 - 600 mg/L SiO <sub>2</sub>		100	1455400

## Standards

Description	Prod. No.
Silica Standard Solution, 0.5 mg/L as SiO <sub>2</sub> (NIST), 3.78 L	2100817
Silica Standard Solution, 1 mg/L as SiO <sub>2</sub> (NIST), 500 mL	110649
Silica Standard Solution, 10 mg/L as SiO <sub>2</sub> (NIST), 500 mL	140349
Silica Standard Solution, 25 mg/L as SiO <sub>2</sub> (NIST), 236 mL	2122531
Silica Standard Solution, 50 mg/L as SiO <sub>2</sub> (NIST), 200 mL	111729
Silica Standard Solution, 1,000 mg/L as SiO <sub>2</sub> (NIST), 500 mL	19449

## Accessories Required to Run Tests

The Rapid Liquid and Ultra Low Range Methods require a Pour-Thru Cell or Sipper Module  
—please reference the procedure for specifics.

# SILVER

- Digestion required for total silver determination or when interferences are present

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
Silver Reagent Set, Colorimetric Method	8120	PP	0.02 - 0.70 mg/L	All except DR 900, DR/800 Series, PC II	50	2296600
Set includes: Silver 1 Reagent Powder Pillows, Silver 2 Reagent Solution Pillows and Sodium Thiosulfate Powder Pillows.						
Replacement Reagents						
Silver 1 Reagent Powder Pillows, 50/pk		PP			50	2293566
Silver 2 Reagent Solution Pillows, 50/pk		SP			50	2293666
Sodium Thiosulfate Powder Pillows, 50/pk		PP			50	2293766

### DIGESTION REAGENTS (FOR DIGESDAHL DIGESTION)

Hydrogen Peroxide Solution, 50%, 490 mL	S					2119649
Phenolphthalein Indicator Solution, 1 g/L, 15 mL	S					189736
Sodium Hydroxide Solution, 50%, 100 mL	S					218049
Sodium Hydroxide Standard Solution, 1.000 N, 100 mL MDB	S					104532
Sulfuric Acid, ACS, 2.5 L	PP					97909
Thymolphthalein Indicator Solution, 1 g/L, 15 mL SCDB	S					2185336

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
RapidSilver™, Visual Comparison	Color Match	5 - 50 ppb Ag	100	2674500

## Standards

Description	Prod. No.
Silver Standard Solution, 1,000 mg/L as Ag (NIST), 100 mL	1461342
Water, Deionized, 4 L	27256

## Accessories Required to Run Tests

Description	Prod. No.
Boiling Chips, Silicon Carbide	2055734
Digesdahl Digestion Apparatus, 115 Vac	2313020
Safety Shield for Digesdahl	5003000

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



## SOLIDS, SUSPENDED

### Required Apparatus

Product Description	Method	Instrument*	Prod. No.
<b>PHOTOMETRIC METHOD</b>	8006	All except DR/4000, PC II	
Beaker, 600 mL, poly			108052
Blender, 1.2 L, 120 Vac			2616100
Blender, 1.2 L, 240 Vac			2616102
Cylinder, Graduated, 500 mL, poly			108149
Pipet, Serological 25 mL			206640

## SOLIDS, TOTAL

### Required Apparatus

Product Description	Prod. No.
<b>GRAVIMETRIC</b>	
Cylinder, Graduated 50 mL, Glass	50841
Dessicant, Indicating, Drierite, 454 g	2088701
Dessicator	1428500
Dessicator Plate, Ceramic	1428400
Dish, Aluminum (63 X 17.5 mm), 100/pk	2164000
Oven, Laboratory, 120 Vac, 60 Hz	1428900
Tongs, Crucible	56900
Balance, Analytical, 80g	2936701

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

# SULFATE



- Single reagent systems
- SulfaVer® 4 method is EPA compliant for wastewater

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>SULFAVER 4 METHOD</b>	8051						
SulfaVer® 4 Sulfate Reagent Powder Pillows, 10 mL, 100/pk		PP	2 - 70 mg/L SO <sub>4</sub> <sup>2-</sup>	All except DR/4000, DR/3000, DR/2010, DR/2000	WW	100	2106769
SulfaVer® 4 Sulfate Reagent AccuVac® Ampules, 25/pk		AV	2 - 70 mg/L SO <sub>4</sub> <sup>2-</sup>	All	WW	25	2509025
SulfaVer® 4 Sulfate Reagent Powder Pillows, 25-mL, 100/pk		PP	2 - 70 mg/L SO <sub>4</sub> <sup>2-</sup>	DR/4000, DR/3000, DR/2010, DR/2000	WW	100	1206599
SulfaVer® 4 Sulfate Reagent Powder Pillows, 25-mL, 1,000/pk		PP	2 - 70 mg/L SO <sub>4</sub> <sup>2-</sup>	DR/4000, DR/3000, DR/2010, DR/2000	WW	1000	1206528
Sulfate TNTplus, Low Range	10227	TNT+	40 - 150 mg/L SO <sub>4</sub>	DR 6000, DR 3900, DR 2800, DR 1900		25	TNT864
Sulfate TNTplus, High Range	10227	TNT+	150 - 900 mg/L SO <sub>4</sub>	DR 6000, DR 3900, DR 2800, DR 1900		25	TNT865

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ II –Sulfate	8051	PCII, PP	2 - 80 mg/L	Kit includes PC II	100	5870029
Sulfate Test Kit (Model SF-1)			50 - 200 mg/L		100	225100

## Standards

Description	Prod. No.
Sulfate Standard Solution, 50 mg/L as SO <sub>4</sub> (NIST), 500 mL	257849
Sulfate Standard Solution, 100 mg/L as SO <sub>4</sub> (NIST), 500 mL	89149
Sulfate Standard Solution, 1,000 mg/L as SO <sub>4</sub> (NIST), 500 mL	2175749
Sulfate Standard Solution, 2,500 mg/L as SO <sub>4</sub> (NIST), 500 mL	1425249
Sulfate Standard Solution, 2,500 mg/L as SO <sub>4</sub> (NIST), 16/pk - 10 mL Voluette® Ampules	1425210

# SULFIDE / HYDROGEN SULFIDE



- Quick, easy test kits available for field use
- Stable formulations

## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>Sulfide Reagent Set, Methylene Blue</b>	8131	S	5 - 800 µg/L S <sup>2-</sup>	All except DR/820, PC II	WW	100	2244500
Set includes: Sulfide 1 Reagent, and Sulfide 2 Reagent. Replacement Reagents							
Sulfide 1 Reagent, 100 mL MDB		S				50	181632
Sulfide 2 Reagent, 100 mL MDB		S				50	181732

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Hydrogen Sulfide Test Kit (Model HS-C)	Color Card	0 - 5 mg/L H <sub>2</sub> S	18	2537800
Hydrogen Sulfide Test Kit (Model HS-WR) Methylene blue	CD	0 - 0.56 mg/L S <sup>2-</sup> 0 - 2.0 mg/L S <sup>2-</sup> 0 - 10 mg/L S <sup>2-</sup>	30 - 60	223801

## Accessories Required to Run Tests

Description	Prod. No.
Pipet, Serological 10 mL	53238

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



• Choice of titration method (buret titration, Digital Titrator)

• Reagents formulated for boiler water analysis

## Reagents

Description	Method	Platform	Ranges	EPA Compliant	# Tests	Prod. No.
<b>BURET TITRATION</b>						
<b>Sulfite Reagent Set, Buret Titration</b>	8071	PP, S	0 >500 mg/L SO <sub>3</sub> <sup>2-</sup>	WW	100	2459800
Set includes: Starch Indicator Solution, Dissolved Oxygen 3 Powder Pillows and Potassium Iodide-Iodate Standard Solution.						
Replacement Reagents						
Starch Indicator Solution, 100 mL MDB		S			Varies	34932
Dissolved Oxygen 3 Reagent Powder Pillows, 100/pk		PP			100	98799
Potassium Iodide-Iodate Standard Solution, 0.0125 N, 1 L		S			40 - 100	1400153
Water, Deionized, 4 L		S				27256
<b>DIGITAL TITRATOR TITRATION</b>						
<b>Sulfite Reagent Set, Digital Titrator</b>	8216	DT	4 >400 mg/L SO <sub>3</sub> <sup>2-</sup>	WW†	100	2272300
Set includes: Starch Indicator Solution, Dissolved Oxygen 3 Powder Pillows and Iodate-Iodide Digital Titrator Cartridge.						
Replacement Reagents						
Starch Indicator Solution, 100 mL MDB		S			Varies	34932
Dissolved Oxygen 3 Reagent Powder Pillows, 100/pk		PP			100	98799
Iodate-Iodide Digital Titrator Cartridge, 0.3998 N		DT			40 - 100	1496101

†Equivalent to Standard Methods 4500-S03 B

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Sulfite Test Kit (Model SU-5)	DCT	1 - 20 mg/L SO <sub>3</sub> <sup>2-</sup> 10 - 200 mg/L SO <sub>3</sub> <sup>2-</sup>	100	148002
Sulfite Test Kit, Digital Titrator (Model SU-DT)	DT	4 - 800 mg/L SO <sub>3</sub> <sup>2-</sup>	100	2063300

## Standards

Description	Prod. No.
Sodium Thiosulfate Standard Solution, Stabilized, 0.0250 N, 1 L	2409353
Sulfite Standard Solution, 15 mg/L as SO <sub>3</sub> (equiv.), 500 mL	2408449
Sulfite Equivalent Standard Solution, 5,000 mg/L as SO <sub>3</sub> , 16/pk - 10 mL Voluette® Ampules	2267410

## SURFACTANTS

See Detergents on page 175.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# TANNIN & LIGNIN

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>Tannin-Lignin Reagent Set</b>	8193	S	0.1 - 9.0 mg/L as Tannic Acid	All except DR/820, PC II	100	<b>2244600</b>
Replacement Reagents						
Sodium Carbonate Solution, 500 mL		S			100	<b>67549</b>
TanniVer 3 Tannin-Lignin Reagent, 100 mL MDB		S			100	<b>256032</b>
Water, Deionized, 4 L		S				<b>27256</b>

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Tannin and Lignin Test Kit (Model TA-3)	CD	0 - 15 mg/L as Tannic Acid 0 - 150 mg/L	100	<b>193701</b>

## Standards

Description	Prod. No.
Tannic Acid, 113 g	<b>79114</b>

## Accessories Required to Run Tests

Description	Prod. No.
Pipet, Volumetric, Class A, 0.5 mL	<b>1451534</b>
Pipet, Volumetric, Class A, 5.00 mL	<b>1451537</b>
Cylinder, Graduated, Mixing, 25 mL	<b>2088640</b>

# TDS (TOTAL DISSOLVED SOLIDS)

See pages 15-70.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# TOC (TOTAL ORGANIC CARBON)

• Eliminates hazardous Mercury, Chromium and Silver waste

• Correlates well to instrumental TOC methods

• Effective means to monitor disinfection by-product precursors

## Reagents

Description	Method	Platform	Ranges	Instrument*	Digestion Required	# Tests	Prod. No.
<b>Total Organic Carbon (TOC) Reagent Set, LR</b>	10129	TNT	0.3 - 20.0 mg/L C	All except DR/3000, DR/2000, DR/820, PC II	Yes	25 to 50 <sup>†</sup>	<b>2760345</b>
Set includes: Acid Digestion Solution Vials Low Range TOC, Sulfate Buffer Solution, Funnel, Indicator Ampules Low Range TOC, and TOC Persulfate PP.							
<b>Total Organic Carbon (TOC) Reagent Set, MR</b>	10173	TNT	15 - 150 mg/L C	All except DR/3000, DR/2000, DR/820, PC II	Yes	25 to 50 <sup>†</sup>	<b>2815945</b>
Set includes: Acid Digestion Solution Vials Mid Range TOC, Sulfate Buffer Solution, Funnel, Indicator Ampules Mid/High Range TOC, and TOC Persulfate PP.							
<b>Total Organic Carbon (TOC) Reagent Set, HR</b>	10128	TNT	100 - 700 mg/L C	All except DR/3000, DR/2000, DR/820, PC II	Yes	25 to 50 <sup>†</sup>	<b>2760445</b>
Set includes: Acid Digestion Solution Vials High Range TOC, Sulfate Buffer Solution, Funnel, Indicator Ampules Mid/High Range TOC, and TOC Persulfate PP.							
<b>Total Organic Carbon (TOC) Reagent Set, LR TNTplus</b>	10260	TNT+	1.5 - 30.0 mg/L C	DR 6000, DR 3900, DR 2800, DR 1900	Yes	25	<b>TNT810</b>
<b>Total Organic Carbon (TOC) Reagent Set, HR TNTplus</b>	10261	TNT+	30 - 300 mg/L C	DR 6000, DR 3900, DR 2800, DR 1900	Yes	25	<b>TNT811</b>
Dilution Water, Organic Free, 500 mL		S					<b>2641549</b>

<sup>†</sup>Dependent on the number of performed reagent blanks.

## Standards

Description	Concentration	Prod. No.
Total Organic Carbon (TOC) Standard Solution, 1,000 mg/L C, 5/pk - 20 mL	1000 mg/L C	<b>2791505</b>
Oxygen Demand Quality Control Standard, 16/pk - 10 mL Voluette® Ampule	BOD - 396 mg/L BOD COD - 617 mg/L COD TOC - 242 mg/L TOC	<b>2833510</b>
Wastewater Influent Inorganics Quality Control Standard, 500 mL	Ammonia- 15 mg/L NH <sub>3</sub> -N; Nitrate-10 mg/L NO <sub>3</sub> -N; Phosphate-10 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD-500 mg/L COD; Sulfate-400 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC-161 mg/L TOC	<b>2833149</b>
Wastewater Effluent Inorganics Quality Control Standard, 500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> -N; Phosphate-2 mg/L PO <sub>4</sub> <sup>3-</sup> ; COD- 25 mg/L COD; Sulfate- 50 mg/L SO <sub>4</sub> <sup>2-</sup> ; TOC- 8 mg/L TOC	<b>2833249</b>
Potassium Acid Phthalate (KHP), 500 g		<b>31534</b>

## Accessories Required to Run Tests

Description	Prod. No.
Test Tube Cooling Rack, 8 x 16 mm tubes	<b>1864100</b>
Pipet, TenSette®, 0.1-1.0 mL	<b>1970001</b>
Pipet, TenSette®, 1-10 mL	<b>1970010</b>
Magnetic Stirrer, 4 x 4 in., 115 V	<b>2881200</b>
pH Paper, 1.0 - 11.0 pH, pk of 5 rolls	<b>39133</b>
Stir Bar, Teflon-coated, 2.22 x 0.48 cm	<b>4531500</b>
TOC-X5 Shaker	<b>LQV148.99.00002</b>
DRB 200 Digesters (visit <a href="http://www.hach.com">www.hach.com</a> or contact your RSM for more information)	

## TOLYTRIAZOLE

See Benzotriazole, on page 157.

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# TOXICITY

- Quick and inexpensive method makes it easy to monitor more frequently
- Economical alternative to bioassays

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>ToxTrak™ Toxicity Reagent Set</b>	10017	PP, S	0 - 100 % Inhibition	All except DR/3000, DR/820, PC II	25 - 49	<b>2597200</b>
Set includes: ToxTrak Powder Pillows and Accelerator Solution, Total Bacteria Media Set, Culture Tubes, Sterile Transfer Pipets and Sodium Thiosulfate Standard.						
Replacement Reagents						
ToxTrak™ Reagent Powder Pillows, 50/pk		PP			50	<b>2560766</b>
ToxTrak™ Accelerator Solution, 15 mL		S			50	<b>2560836</b>
Media Set, Total Bacteria Count					Varies	<b>2277700</b>
Tube, Culture, 16 x 100 mm, 6/pk						<b>2275806</b>
Pipet, Sterile, Transfer, 15/pk						<b>2232512</b>
Sodium Thiosulfate Standard Solution, Stabilized, 0.0246 N, 100 mL MDB		S			Varies	<b>2409232</b>

## Test Kits

Description	Instrument	# Tests	Prod. No.
Eclox™ Water Test Kit	Kit includes STS Luminometer	50	<b>2886800</b>
Culture Set, ToxTrak™		30	<b>2597800</b>

## Accessories Required to Run Tests

Description	Prod. No.
Single Block Incubator, 120 volt, 50/60 Hz	<b>2281400</b>

# TPH IN SOIL (TOTAL PETROLEUM HYDROCARBONS)

- Portable systems allow on-site evaluation
- Detect TPH in soil or water

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>TPH Reagent Set</b>	10050	IA	20, 50, 100, 200 ppm threshold	All except DR/3000, DR/2000, DR 900, DR/800 Series	Up to 18	<b>2774300</b>
Soil Extraction Refill Kit						<b>2775200</b>
Water, Deionized, 500 mL						<b>27248</b>

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ - TPH in Soil	10050	PCII, IA	20, 50, 100, 200 ppm thresholds	Kit includes PC II	Up to 18	<b>2775000</b>

## Accessories Required to Run Tests (Included in Pocket Colorimeter Kit)

Description	Prod. No.
Balance, Portable, Ohaus®	<b>2796900</b>
Soil Scoop, 5 g	<b>2657205</b>
Caps, flip-spout 2/pkg	<b>2581802</b>
Rack, for 1 cm microcuvettes	<b>4879900</b>
Pipet, TenSette, 0.1 - 1.0 mL	<b>1970001</b>
Wipes, Disposable	<b>2097000</b>
Pen, Laboratory	<b>2092000</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip



# TPH IN WATER (TOTAL PETROLEUM HYDROCARBONS)

## Reagents

Description	Method	Platform	Ranges	Instrument*	# Tests	Prod. No.
<b>TPH Reagent Set</b>	10050	IA	20, 50, 100, 200 ppm threshold	All except DR/3000, DR/2000, DR 900, DR/800 Series	Up to 18	<b>2774300</b>
Water, Deionized, 500 mL						27248

## Test Kits

Description	Method	Platform	Ranges	Instrument	# Tests	Prod. No.
Pocket Colorimeter™ - TPH in Water	10050	PCII, IA	2, 5, 10, 20 ppm thresholds	Kit includes PC II	Up to 18	<b>2774200</b>

## Accessories Required to Run Tests *(Included in Pocket Colorimeter Kit)*

Description	Prod. No.
Pipet, TenSette®, 0.1-1.0 mL	1970001
Marker, Laboratory	2092000
Wipes, Disposable	2097000
Caps, flip-spout 2/pkg	2581802
Rack, for 1 cm microcuvettes	4879900

## TRIAZOLE

See Benzotriazole, on page 157.

## TRIHALOMETHANE FORMATION POTENTIAL

- Determine the potential of source waters to form disinfection by-products when chlorinated
- Evaluate water treatment processes and water sources
- Predict THM formation in distribution systems

## Reagents

Description	Method	Platform	Instrument*	# Tests	Prod. No.
Chlorine Dosing Solution Ampules, 1,000 - 1,500 mg/L as Cl <sub>2</sub> , 16/pkg, 1,190-1,310 mg/L as Cl <sub>2</sub>	10224	S	DR 6000, DR 3900, DR 2800, DR 2700, DR 1900	Varies	<b>2504810</b>
DPD Free Chlorine Reagent Powder Pillows, 25 mL, 100/pkg		PP		Varies	<b>1407099</b>
<b>Total Trihalomethanes (THM) Reagent Set</b> Set includes: THM 1, 2, 3 Reagent Solutions and THM 4 Powder Pillows.		PP, S		50 to 99	<b>2790800</b>

## Standards

Description	Prod. No.
THM Standard, 10 ppm as chloroform, 2mL - 7/pkg	<b>2756707</b>
Dilution Water, Organic Free, 500 mL	<b>2641549</b>

## Accessories Required to Run Tests

Description	Prod. No.
Caps, Black, PP Teflon liner, 12/pkg	<b>2401812</b>
Sample Cells, 10 mL w/caps	<b>2427606</b>
Evaporating Dish, 125 mm x 65 mm	<b>2764700</b>
Hot Plate, Stirring, 7 x 7, 115V	<b>2881600</b>
Stir Bar, Teflon-coated, 2.22 x 0.48 cm	<b>4531500</b>
Cooling Basket; Cell Holder Assembly	<b>4788000</b>
Bottles, Amber Glass, 118 mL, 6/pkg	<b>714424</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# TTHM (TOTAL TRIHALOMETHANES)

- Fast results
- Detection limit of 10 ppb
- Use to screen for hot spots in distribution systems
- Designed specifically for drinking water plants
- More cost effective than GC method
- Use to optimize plant operations for DBP control

## Reagents

Description	Method	Platform	Ranges	Instrument*	Digestion Required	# Tests	Prod. No.
<b>COLORIMETRIC</b>							
<b>Total Trihalomethanes (THM) Reagent Set</b>	10132	PP, S	10 - 600 µg/L CHCl <sub>3</sub>	DR 6000, DR/4000, DR 3900, DR 2800, DR 2700, DR/2400, DR 1900	Yes	50 - 99	<b>2790800</b>
Set includes: THM 1, 2, 3 Reagent Solutions and THM 4 Powder Pillows.							
Replacement Reagents							
THM Reagent 1 Solution, SCDB		S				50	<b>2753929</b>
THM Reagent 2 Solution, 330 mL		S				50	<b>2754048</b>
THM Reagent 3 Solution, 100 mL		S				50	<b>2754142</b>
THM Reagent 4 Powder Pillows, 100/pk		PP				50	<b>2756699</b>

PARAMETERS

## Standards

Description	Prod. No.
THM Standard, 10 ppm as chloroform, 2mL - 7/pk	<b>2756707</b>
Dilution Water, Organic Free, 500 mL	<b>2641549</b>

## Accessories Required to Run Tests

Description	Prod. No.
TenSette Pipette: 1.0 - 10.0 mL	<b>1970010</b>
Hot Plate, Stirrer, 7x7 in, 115V	<b>2881600</b>
Hot Plate, Stirrer, 7x7 in, 230 Vac	<b>2881602</b>
Cooling Basket; Cell Holder Assembly	<b>4788000</b>

*This TTHM test requires heating and the use of transfer pipets and several other common lab items. Please refer to the Hach Procedure at [www.hach.com](http://www.hach.com) for a complete list.*

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip







2100 Series Laboratory Turbidimeters

For lab and portable turbidimeters, see pages 93-98.



2100Q Portable Turbidimeter

## VOLATILE ACIDS

### Reagents

Description	Method	Platform	Ranges	Instrument*	Digestion Required	# Tests	Prod. No.
<b>COLORIMETRIC</b>							
<b>Volatile Acids TNTplus Reagent Set</b>	10240	TNT+	50 - 2,500 mg/L Acetic Acid	DR 6000, DR 3900, DR 2800, DR 1900	Yes†	25	<b>TNT872</b>
<b>Volatile Acids Reagent Set, Esterification</b>	8196	S	27 - 2,800 mg/L Acetic Acid	All except PC II		100	<b>2244700</b>
Set includes: Hydroxylamine Hydrochloride Solution, Sulfuric Acid Standard Solution 19.2 N, Ethylene Glycol, Sodium Hydroxide Standard Solution 4.5 N, and Ferric Chloride-Sulfuric Acid Solution.							
Replacement Reagents							
Hydroxylamine Hydrochloride Solution, 100 g/L, 100 mL		S				100	<b>81842</b>
Ferric Chloride-Sulfuric Acid Solution, 1 L		S				50	<b>204253</b>
Sulfuric Acid Standard Solution, 19.2 N, 100 mL MDB		S				250	<b>203832</b>
Ethylene Glycol, 1 L		S				333	<b>203953</b>
Sodium Hydroxide Standard Solution, 4.5 N, 1 L		S				250	<b>204053</b>
<b>BURET TITRATION</b>							
Distillation required. See Accessories Required, below.							
Phenolphthalein Indicator Powder Pillows, 100/pk	8291	PP	100 - 2,400 mg/L CH <sub>3</sub> COOH			100	<b>94299</b>
Sodium Hydroxide Standard Solution, 0.100 N (N/10), 1 L		S					<b>19153</b>
<b>DIGITAL TITRATOR TITRATION</b>							
Distillation required. See Accessories Required below.							
<b>Volatile Acids Reagent Set, Digital Titrator</b>	8218	DT, PP	100 - 2,400 mg/L CH <sub>3</sub> COOH			100	<b>2460200</b>
Replacement Reagents							
Sodium Hydroxide Digital Titrator Cartridge, 0.9274 N		DT				40 - 100	<b>1484201</b>
Phenolphthalein Indicator Powder Pillows, 100/pk		PP				100	<b>94299</b>

\*DRB200 Reactor with 13 mm wells required. Visit [www.hach.com](http://www.hach.com) for more details.

### Standards

Description	Prod. No.
Volatile Acid Standard Solution, 62,500 mg/L as Acetic Acid (NIST), 16/pk - 10 mL Voluette® Ampules	<b>1427010</b>

### Accessories Required to Run Tests

Description	Prod. No.
Centrifuge, Laboratory, 115 Vac, 60 Hz 2.1 A	<b>2676500</b>
Centrifuge Tubes, 15 mL, 10/pkg	<b>2278739</b>
Hot Plate, 4 - inch, 120 Vac	<b>1206701</b>
Water Bath and Rack	<b>195555</b>
General Purpose Distillation Apparatus Set (Heater and support apparatus also required)	<b>2265300</b>
Heater and Support Apparatus, 115 Vac, 60 Hz	<b>2274400</b>
Heater and Support Apparatus, 230 Vac, 50 Hz	<b>2274402</b>

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus®; TRB=Turbidity; TS=Test Strip

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# WATER IN OIL

- Detect coolant leakage into engine lubricants

## Test Kits

Description	Platform	Ranges	# Tests	Prod. No.
Model WO-1 Test Kit	Visual	0.05 - 1 % 0 - 10 %	25	2237300

## ZINC

- Zincon method EPA approved for NPDES reporting after digestion
- Accurate, reliable results
- Easy to use



## Reagents

Description	Method	Platform	Ranges	Instrument*	EPA Compliant	# Tests	Prod. No.
<b>Zinc Reagent Set, 20 mL</b>	8009	PP, S	0.01 - 3.00 mg/L Zn	All except DR/3000, DR/2000	<b>WW</b>	100	2429300
Set includes: Cyclohexanone and ZincoVer® 5 Reagent Powder Pillows.							
Replacement Reagents							
Cyclohexanone, 100 mL		S					1403332
ZincoVer® 5 Zinc Reagent Powder Pillows, 20 mL, 100/pk		PP	0.01 - 3.00 mg/L Zn			100	2106669
<b>Zinc Reagent Set, Zincon, 50 mL</b>	8009	PP, S	0.01 - 2.00 mg/L Zn	DR/3000, DR/2000	<b>WW</b>	100	2244800
Set includes: Cyclohexanone and ZincoVer® 5 Reagent Powder Pillows.							
Replacement Reagents							
Cyclohexanone, 100 mL		S					1403332
ZincoVer 5 Zinc Reagent Powder Pillows, 50 mL, 25/pk		PP	0.01 - 2.00 mg/L Zn			25	1403268

## Test Kits

Description	Platform	Ranges	Instrument	EPA Compliant	# Tests	Prod. No.
Pocket Colorimeter™ II – Zinc	PCII, PP	0.02 to 3.00 mg/L Zn	Kit includes PC II	<b>WW</b>	100	5870009

## Standards

Description	Prod. No.
Zinc Standard Solution, 25 mg/L as Zn (NIST), 16/pk - 10 mL Voluette® Ampules	1424610
Zinc Standard Solution, 100 mg/L as Zn (NIST), 100 mL	237842
Zinc Standard Solution, 1,000 mg/L as Zn (NIST), 100 mL	1417742

## Accessories Required to Run Tests

Description	Prod. No.
Cylinder, Graduated Mixing, 50-mL	189641
Cylinder, Graduated, Mixing, 25 mL	2088640

\*Generally, the DR 6000 performs the same methods as the DR 5000. The DR 3900 performs the same methods as the DR 3800 and DR 2800. The DR 1900 performs the same methods as the DR 3900 and DR 2800. Some exceptions do exist.

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**Assure confidence in chemical analysis results  
with water analysis reagents from Hach.**



*Be Right™*

# WHY HACH REAGENTS?



## Complete Hach System

Hach products are designed as an integrated combination of reagents, analytical instruments, procedure instructions and technical support. Great care is taken to create an easy-to-use, accurate system—one that gives reliable results in the intended application.

## Hach, your partner in generating accurate and reliable results.

### Best Analytical System— Hach Chemical Reagents and Instruments

Hach chemistries and instruments are manufactured under stringent conditions to ensure quality and consistency for an accurate test every time. Our chemical synthesis and purification is all done in-house, ensuring the highest quality.

- Formulated to minimize interferences, test complexity and analysis time
- Confirmed test performance—by chemists who understand your application
- Designed for maximum stability and consistency
- Manufactured to assure that your reagents will perform exactly as expected, batch after batch
- Rigorous ISO certified process procedures for producing and testing all reagents and ingredients

### Easy-to-Use—Hach Analytical Procedures

- Instruction for proper sample preparation/storage and matrix-specific adjustments
- Documented method performance data, and NIST traceable standards for accuracy confirmation

### Peace of Mind with TNTplus®

When used with DR 6000 or DR 3900 spectrophotometers, users will receive a notification if the shelf life of a TNTplus chemistry has expired.

### Help When You Need It—Hach Technical Support

Hach's highly skilled Technical Support staff is dedicated to helping you resolve technical issues before, during and after the sale.

Contact us by phone at (800) 227-4224, or chat live with a Hach expert at: hach.com.

Using the Hach reagent and instruments together assures that we can troubleshoot any issues you may have.

Hach is a dedicated, in-house chemistry manufacturer with more than 60 years of history in formulating and packaging high-quality reagents. Hach understands our customers' applications and formulates and tests our reagents to ensure performance under real-use conditions. No other company can offer these advantages.

## Globally Harmonized System (GHS) Labels

### Hach Reagent Labels are Changing to Meet the Standard

In 2002 the United Nations adopted and published the Globally Harmonized System on Classification and Labeling (GHS), which will cause a worldwide transformation not only in the look of chemical product labeling and MSDSs, but also in the classification of hazards.

As we phase in the new system, you will see changes to labels when you order Hach products. The products are exactly the same, just the labeling has changed. This will provide consistent labeling information to all our customers worldwide.

### Key Features of the GHS Label

- Signal Word: Either Danger or Warning
- Hazard Pictogram
- Hazard and Precautionary Statements: in national language(s)



## AccuVac® Ampules

Optical-quality, evacuated glass ampules that contain the precise amount of reagent needed for a single test and can be used as the measurement cuvette. Quick, easy, and economical. Snap the tip and the ampule draws in the correct amount of sample.



AccuVac® Ampule

## SwifTest™ Reagent Dispenser

The easy way to dispense reagents for high volume testing. Just squeeze to add reagent, and reload with easy-to-use vials. No need to open individual containers!



SwifTest™  
Reagent  
Dispenser

## TNT (Test 'N Tube™) Vial (16 mm)

Vial chemistry platform that incorporates PermaChem™ powder technology for economical, easy-to-use methods. The right blend of simplicity and economy.

## TNTplus® Vial Chemistries (13 mm)

Hach's new spectrophotometers read the vial barcode to automatically check for expired reagents, select and run the correct method, thus eliminating human error and speeding up analysis. No reagent blank necessary—this saves you time and money.

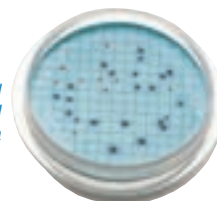
## PermaChem™ Powder Pillows

Prepackaged unit dose reagent with extended shelf life and tightly-controlled weight fill. Our most cost-conscious reagent platform.

## Prepared Microbiological Media

Eliminate measuring, mixing, and sterilization. Hach has the fastest EPA-approved presence/absence test on the market.

Prepared  
Microbiological  
Media



## Titrant Cartridges

For use with digital titrator. Eliminates glass burets, evaporation, and potential reagent contamination.

## Single and Multi-Parameter Standards

Easy-to-use, no dilutions necessary—combined analytes result in increased efficiency. Typical drinking water and wastewater parameters and concentrations.



TNT  
(Test 'N Tube™)

## Spec✓™ Standards

No preparation necessary. Colored gels mimic the chemistry test colors, and are stable for two years after the date of manufacture. Saves time with easy and quick verification of Hach instrument optical performance. Assures consistent measurement in the field or lab, across multiple operators.



TNTplus®  
Chemistries

## Voluette® and PourRite® Ampule Standards

Specific analytes contained in a sealed, glass ampule for easy standard additions accuracy checks. The right way to ensure analytical accuracy. Each ampule is designed for one-time use. Prevents accidental contamination of bulk standard solutions.

*Due to the nature of their high purity composition, many Hach chemicals have a fixed lifetime within which they must be used. The shelf life of specific chemicals varies from 3 months to 5 years. Chemicals, like all Hach products, can be returned within 30 days of purchase for a full refund.*

### CHEMICAL STABILITY—WHAT THE DAGGER (†) MEANS

*After confirming that you have received the correct chemicals, it is good practice to date chemicals, rotate supplies, and confirm accuracy and performance with periodic checks. Pay special attention to the performance of reagents designated with a dagger (†). All reagents should be stored in a cool, dry place for maximum life. When applicable, the label will note special storage recommendations.*

*Some products contain mercury or other hazardous materials. Dispose of these items according to local, state, and federal regulations.*



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Powder Pillows

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## Assure confidence in results.

Stop questioning the results of laboratory tests. Regular use of standard solutions can ensure laboratory process control, increase analyst confidence, and help provide evidence of performance to inspectors, regulators, and clients.

## What are Standards?

A standard solution can be used in place of a sample because it contains a known concentration of chemicals or analytes. The analyst can run through a testing process knowing what the final value should be. Standards can be used to establish calibration curves, to determine matrix interferences using standard additions, for control charting and troubleshooting.

## Why use Standards?

When a value is questioned, troubleshooting with standards can quickly pinpoint if, and where, there is a problem. Whether a problem is suspected in the reagents, procedure, instrument, or the analyst, the cause of an inaccurate value can be determined and resolved—saving time and money. Regular use of standards can verify all aspects of a system, and alert an analyst to small problems before the entire process gets out of control.

## Three Types of Standards

### Single Parameter Standards

Available in a variety of analytes and concentrations, including Voluette and PourRite Ampule standards to support standard additions procedures for proof of accuracy.

### Mixed Parameter Quality Control Standards

Packaged for specific applications and formulated to match the ranges of Hach Methods, so no dilution is necessary.

### Spec✓ Standards

Each set of Spec✓ standards contains four vials filled with gels that simulate the test color at various concentrations. These standards provide a quick and easy way to confirm that instruments are operating properly. Standards are available for several popular methods.

## Technical Support

Hach Company offers technical expertise on [www.hach.com](http://www.hach.com) and through our technical consulting team. We will help you understand the best use of standards and how to develop a quality assurance program for your laboratory. Visit our website, order the Water Analysis Handbook CD (LITWA04) or call our technical consulting staff with questions.

Customer Need	Intended Use/Feature of Standard	Single Parameter Standards	Mixed Parameter Quality Control Standards
Laboratory Maintenance	Calibration Curves Minimum Detection Limits (MDL's) Sample Spikes Program Verification	■ ■ ■ ■	■
Confidence Building	Technician Confidence Operator to operator variability In House QC	■ ■ ■	■ ■ ■
Time/Money/Space Savings	No dilutions necessary with Hach Methods Multiple analytes in one bottle improves efficiency		■ ■

# SINGLE PARAMETER STANDARDS

## Single Parameter Standard Solutions

Prod. No.	Standard Solution Parameter	Concentration	Volume	Ampule Volume/Qty	Application*			
212132	Acidity	0.500 N	100 mL		DW, E			
1427810	Alkalinity	0.500 N		10 mL/16	DW, WM, BC			
2305842	Aluminum as Al (NIST)	10 mg/L	100 mL	10 mL/16	DW, WM, WI, BC			
1479210		50 mg/L						
1417442		100 mg/L	100 mL					
1457142	Arsenic as As	1000 mg/L	100 mL		DW, WM, WI, E			
1461142	Barium as Ba (NIST)	1000 mg/L	100 mL		WI, E			
2141342	Benzotriazole	500 mg/L	100 mL		BC			
1486510	BOD (NIST) (Glucose plus Glutamic Acid)	300 mg/L		10 mL/16	DW, WM, WI, E			
1486610		3000 mg/L		10 mL/16				
2514420	BOD (pre-measured)	150 mg/L		2 mL/20 ez GGA Ampules	WM, WI, E			
191442	Boron as B	1000 mg/L	100 mL		WI, BC, E			
1402442	Cadmium as Cd (NIST)	100 mg/L	100 mL		DW, WM, WI			
2305442	Calcium as Ca (NIST) (for Hardness)	10 mg/L	100 mL		DW, BC, E			
4457649		100 mg/L	500 mL					
2240349		1000 mg/L	500 mL					
232516	Calcium (NIST) as CaCO <sub>3</sub> (CaCl <sub>2</sub> ) (for Hardness)	1 mg/L	946 mL		DW, BC, E			
2058116		2 mg/L	946 mL					
235616		5 mg/L	946 mL					
2127716		50 mg/L	946 mL					
12153		1000 mg/L	1 L					
218710		10,000 mg/L		10 mL/16				
1427510	Carbon Dioxide as CO <sub>2</sub>	10,000 mg/L		10 mL/16	DW, E			
2370853	Chloride as Cl <sup>-</sup> (NIST)	100 mg/L	1 L		DW, WM, WI, BC, E			
18349		1000 mg/L	500 mL					
1425010		12,500 mg/L				10 mL/16		
2630020	Chlorine as Cl <sub>2</sub> (NIST)	25 to 30 mg/L		2 mL/20	DW, WM, WI, BC, E			
1426820		50 to 75 mg/L		2 mL/20				
1426810		50 to 75 mg/L		10 mL/16				
2756707	Chloroform for TTHM analysis	10 ppm		2 mL/7	DW			
2605620	Chromium Hexavalent as Cr <sup>6+</sup> (NIST)	5 mg/L	100 mL	2 mL/20	DW, WM, WI, BC, E			
1425610		12.5 mg/L		10 mL/16				
81042H		50 mg/L						
1466442		1000 mg/L						
1415142	Chromium Trivalent as Cr <sup>3+</sup> (NIST)	50 mg/L	100 mL		DW, WM, E			
2150342	Cobalt as Co (NIST)	1000 mg/L	100 mL		WM, WI, E			
1218629	COD (NIST)	300 mg/L	200 mL		DW, WM, WI, E			
1218649		300 mg/L	500 mL					
2672629		800 mg/L	200 mL					
2253929		1000 mg/L	200 mL					
2602853	Color as PtCo Units	15 units	1 L	10 mL/16	DW			
141410		500 units						
141453		500 units	1 L					
2605720	Copper as Cu (NIST)	4 mg/L	100 mL MDB	2 mL/20	DW, WM, WI, BC, E			
12932		10 mg/L						
1424710		75 mg/L		10 mL/16				
12842		100 mg/L						
259342		1000 mg/L		100 mL				
1427110	Detergent as LAS	60 mg/L		10 mL/16	WM, WI			
40502	Fluoride as F <sup>-</sup> (NIST)	0.2 mg/L	500 mL		DW, WI			
40505		0.5 mg/L	500 mL					
40508		0.8 mg/L	500 mL					
29149		1.0 mg/L	500 mL					
29153		1.0 mg/L	1 L					
40512		1.2 mg/L	500 mL					
40515		1.5 mg/L	500 mL					
40520		2.0 mg/L	500 mL					
2797149		5.0 mg/L	500 mL					
35949		10 mg/L	500 mL					
23249		100 mg/L	500 mL					
2257310		Formaldehyde as CH <sub>2</sub> O (NIST)	4000 mg/L				10 mL/16	WI, E
2058016		Hardness as CaCO <sub>3</sub> (NIST) also see Calcium	0.50 mg/L			946 mL	10 mL/16	DW, WM, WI, BC, E
2058116	2.0 mg/L		946 mL					
218710	10,000 mg/L							
13949	Iron as Fe (NIST)	1 mg/L	500 mL	10 mL/16	DW, WM, WI, BC, E			
14049		10 mg/L	500 mL					
1425310		25 mg/L						
1425410		50 mg/L						
1417542		100 mg/L	100 mL					
227142		1000 mg/L	100 mL					

\* DW = Drinking Water; WW = Wastewater; WM = Wastewater, Municipal; WI = Wastewater, Industrial; BC = Boiler/Cooling Water; E = Environmental

NOTE: These are only suggested applications. Other applications may apply.

Continued on next page.

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# SINGLE PARAMETER STANDARDS

## Single Parameter Standard Solutions *Continued*

Prod. No.	Standard Solution Parameter	Concentration	Volume	Ampule Volume/Qty	Application*
2374820	Lead as Pb (NIST)	10 mg/L	25 mL		DW, WM, WI, E
1261742		100 mg/L	100 mL		
1279642		1000 mg/L	100 mL		
1479442	Magnesium as Mg	1000 mg/L	100 mL		DW, WW, WI, BC
2605820	Manganese as Mn (NIST)	10 mg/L		2 mL/20	DW, WI
2112820		25 mg/L		2 mL/20	
1425810		250 mg/L		10 mL/16	
1279142		1000 mg/L	100 mL		
1419542	Mercury as Hg (NIST)	1000 mg/L	100 mL		DW, WM, WI
1418742	Molybdenum as Mo (NIST)	10 mg/L	100 mL		WI, BC, E
1418642		1000 mg/L	100 mL		
1417642	Nickel as Ni (NIST)	1000 mg/L	100 mL		DW, WM, WI, E
2340249	Nitrite Solution, Stock as N, APHA	250 µg/mL	500 mL		DW, WM, BC, E
189149	Nitrogen-Ammonia as NH <sub>3</sub> -N	1 mg/L	500 mL		DW, WM, BC, E
15349		10 mg/L	500 mL		
1479120		50 mg/L		2 mL/20	
1479110		50 mg/L		10 mL/16	
2406549		100 mg/L	500 mL		
2128410		150 mg/L		10 mL/16	
2354153		1000 mg/L	1 L		
204649	Nitrogen-Nitrate as NO <sub>3</sub> -N (NIST)	1 mg/L	500 mL		DW, WM, WI, BC, E
2557810		5 mg/L		10 mL/16	
30749		10 mg/L	500 mL		
2415132		15 mg/L	100 mL		
194749		100 mg/L	500 mL		
1426010		500 mg/L		10 mL/16	
1279249		1000 mg/L	500 mL		
2664842	Oil & Grease	Hexadecane (99%)	100 mL		WM, WI
2664934		Stearic Acid	500 gm		
256949	Phosphate as PO <sub>4</sub> <sup>3-</sup> (NIST)	1 mg/L	500 mL		DW, WM, WI, BC, E
2059716		3 mg/L	946 mL		
2059703		3 mg/L	2.9 L		
1420416		10 mg/L	946 mL		
1424342		15 mg/L	100 mL		
1436716		30 mg/L	946 mL		
17110		50 mg/L		10 mL/16	
17149		50 mg/L	500 mL		
1436832		100 mg/L	100 mL MDB		
1424210		500 mg/L		10 mL/16	
1424232		500 mg/L	100 mL MDB		
2109210	Phosphorus as P (NIST)	25 mg/L		10 mL/16	DW, WM, WI, BC, E
2321142		1000 mg/L	100 mL		
2351749	Potassium as K (NIST)	100 mg/L	500 mL		DW, E
1479010		250 mg/L		10 mL/16	
2415342	Quaternary Ammonium Compounds as CTAB	100 mg/L	100 mL		BC
2240742	Selenium as Se	1000 mg/L	100 mL		DW, WW, WI, E
2100817	Silica as SiO <sub>2</sub> (NIST)	0.5 mg/L	3.78 L		DW, BC, E
110649		1 mg/L	500 mL		
140349		10 mg/L	500 mL		
2122531		25 mg/L	236 mL		
111729		50 mg/L	200 mL		
19449		1000 mg/L	500 mL		
1461342	Silver as Ag (NIST)	1000 mg/L	100 mL		DW, WM, WI, E
2318153	Sodium as Na	100 mg/L	1 L		DW, WM, WI, BC, E
1474949		1000 mg/L	500 mL		
257849	Sulfate as SO <sub>4</sub> <sup>2-</sup> (NIST)	50 mg/L	500 mL		DW, WI, E
89149		100 mg/L	500 mL		
2175749		1000 mg/L	500 mL		
1425210		2500 mg/L		10 mL/16	
1425249		2500 mg/L	500 mL		
2408449	Sulfite as SO <sub>3</sub> <sup>2-</sup>	15 mg/L	500 mL		DW, WM, WI, BC, E
2267410		5000 mg/L		10 mL/16	
	Turbidity (request Lit. #2498)				DW, WM, WI, BC, E
1427010	Volatile Acids as HOAC	62,500 mg/L		10 mL/16	WM
1420542		1000 mg/L	100 mK	10 mL/16	
1424610	Zinc as Zn (NIST)	25 mg/L		10 mL/16	DW, WM, WI, BC, E
237842		100 mg/L	100 mL		
1417742		1000 mg/L	100 mL		

\* DW = Drinking Water; WW = Wastewater; WM = Wastewater, Municipal; WI = Wastewater, Industrial; BC = Boiler/Cooling Water; E = Environmental  
 NOTE: These are only suggested applications. Other applications may apply.

# MIXED PARAMETER STANDARDS

## Mixed Parameter Quality Control Standards

Prod. No.	Description	Parameter	Concentration	Volume
2833749	Metals Low Range Drinking Water	Copper Iron Manganese	1 mg/L Cu 0.3 mg/L Fe 0.1 mg/L Mn	500 mL
2833649	Metals High Range Drinking Water	Copper Iron Manganese	2.5 mg/L Cu 1.5 mg/L Fe 5 mg/L Mn	500 mL
2833049	Drinking Water Inorganics	Fluoride Nitrate Phosphate Sulfate	1 mg/L F <sup>-</sup> 2 mg/L NO <sub>3</sub> <sup>-</sup> -N 2 mg/L PO <sub>4</sub> <sup>3-</sup> 50 mg/L SO <sub>4</sub> <sup>2-</sup>	500 mL
2833449	Low Range Hardness	Total Hardness Calcium Hardness	100 mg/L as CaCO <sub>3</sub> 50 mg/L as CaCO <sub>3</sub>	500 mL
2833349	High Range Hardness	Total Hardness Calcium Hardness	1000 mg/L as CaCO <sub>3</sub> 500 mg/L as CaCO <sub>3</sub>	500 mL
2833149	Wastewater Influent Inorganics	Ammonia Nitrate Phosphate COD Sulfate TOC*	15 mg/L NH <sub>3</sub> -N 10 mg/L NO <sub>3</sub> <sup>-</sup> -N 10 mg/L PO <sub>4</sub> <sup>3-</sup> 500 mg/L COD 400 mg/L SO <sub>4</sub> <sup>2-</sup> 161 mg/L TOC	500 mL
2833249	Wastewater Effluent Inorganics	Ammonia Nitrate Phosphate COD Sulfate TOC*	2 mg/L NH <sub>3</sub> -N 4 mg/L NO <sub>3</sub> <sup>-</sup> -N 2 mg/L PO <sub>4</sub> <sup>3-</sup> 25 mg/L COD 50 mg/L SO <sub>4</sub> <sup>2-</sup> 8 mg/L TOC	500 mL
2833510	Oxygen Demand	BOD COD TOC	396 mg/L BOD 613 mg/L COD 242 mg/L TOC	10 mL ampules

\*TOC concentration values may differ from the stated target.

ALPHA REAGENTS

## SPEC✓ STANDARDS

### Spec✓ Gel Secondary Standard Kits

Prod. No.	Description	Concentration	Unit
2635300	Chlorine, DPD LR	0 to 2.0 mg/L Cl <sub>2</sub>	Set of 4 Vials
2980500	Chlorine, DPD MR	0 to 4.0 mg/L Cl <sub>2</sub>	Set of 4 Vials
2893300	Chlorine, DPD HR	0 to 6.5 mg/L Cl <sub>2</sub>	Set of 4 Vials
2712500	Fluoride	0 to 2.00 mg/L F <sup>-</sup>	Set of 4 Vials
2507500	Monochloramine/Free Ammonia	0 to 4.5 mg/L Cl <sub>2</sub> and 0 to 0.50 mg/L NH <sub>3</sub> -N	Set of 4 Vials
2708000	Ozone, MR	0 to 0.75 mg/L O <sub>3</sub>	Set of 4 Vials

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# A-1 BROTH — AMMONIA NITROGEN

## A

### A-1 Broth Medium, Dehydrated

Broth for 24-hour MPN method for fecal coliforms  
**2309934** 500 g  
(See Microbiological Products, pages 248-250 for prepared media.)

### Acetate Buffer Solution, pH 4.0

Total Chlorine (Amperometric Method)  
**1490932** 100 mL MDB

### Acetate Standard Solution

1000 mg/L as acetic acid. Suitable for use as volatile acid standard  
**1420542** 100 mL

### Acetic Acid, Glacial

ACS Grade, CAS No. 64-19-7, C<sub>2</sub>H<sub>4</sub>O<sub>2</sub>, FW = 60.05  
**10049** 500 mL  
Assay: ≥99.7%

### Acetone

ACS Grade, CAS No. 67-64-1, C<sub>3</sub>H<sub>6</sub>O, FW=58.08  
**1442949** 500 mL  
**1442917** 4 L (No Air Shipments)

### Acid Electrode Cleaning Solution

**2975126** 50 mL  
**2975149** 500 mL

### Acid Detergent Concentrate

For acid detergent fiber test  
**2164949** 500 mL

### Acid Reagent Powder Pillows

For high range silica 5-mL sample  
**1454599** 100  
10-mL sample  
**2107469** 100/pk  
**2107428** 1000/pk  
25-mL sample  
**104299** 100/pk  
For total chromium  
**212699** 100/pk

### Acid Reagent Solution

For sulfite, 2.5N HCl  
**141832** 100 mL MDB

### Acidity Reagent Sets

(See Parameters Section page 150 for details.)

#### Digital Titrator Method

Methyl Orange Endpoint- Bromphenol Blue Indicator; Methyl Orange and Phenolphthalein Endpoints, 10-4,000 mg/L as CaCO<sub>3</sub>  
**2272800** 100 tests

### Acridine Orange Solution Ampules

Sterile, 2-mL ampules for AODC Procedure  
**2375620** 20

### Alkali Buffer, 3.0 N

Used in the determination of calcium and magnesium in brine  
**2307242** 100 mL

### Alkali Solution

For colorimetric calcium and magnesium determination  
**2241732** 100 mL MDB  
**2241749** 500 mL

### Alkaline Cyanide Reagent

For determination of low level manganese  
**2122326** 50 mL SCDB  
**2122332** 100 mL MDB  
**2122349** 500 mL

### Alkaline Iodide Reagent

Winkler Reagent in D.O. test  
**27649** 500 mL

### Alkaline Iodide-Azide Reagent

For dissolved oxygen  
**27749** 500 mL

### Alkaline Iodide-Azide Reagent Powder Pillows

For dissolved oxygen, 300 mL sample  
**107266** 50pk

### Alkalinity Reagent Set

Digital Titrator  
Phenolphthalein and Total Alkalinity  
10-4,000 mg/L as CaCO<sub>3</sub>  
**2271900** 100

### Alkalinity Standard Solution (NIST) (25,000 mg/L) CaCO<sub>3</sub>

0.500 N, 10-mL Voluette® Ampule  
**1427810** 16/pk

### Alkalinity TNTplus®

25-400 mg/L CaCO<sub>3</sub>  
**TNT870** 25 tests

### AlkaSeltzer Tablets

Without aspirin, for hydrogen sulfide test  
**1453300** 36

### Aluminum Reagent Sets

(See Parameters Section page 153 for details.)

#### Aluminon Method

0.008-0.800 mg/L Al  
**2242000** 100 tests

#### ECR Method

10 mL sample, 0.002-0.250 mg/L Al  
**2603700** 100 tests  
25 mL sample, 0-0.220 mg/L Al  
**2443400** 100 tests

#### Chromazurol S Method

0.02-0.50 mg/L Al, TNTplus  
**TNT848** 24 tests

### Aluminum TNTplus®

Chromazurol S Method, 0.02-0.50 mg/L Al  
**TNT848** 24 tests

### Aluminum Standard Solutions as Al (NIST)

10 mg/L  
**2305842** 100 mL  
50 mg/L, 10-mL Voluette Ampule  
**1479210** 16/pk  
100 mg/L  
**1417442** 100 mL

### AluVer® 3 Aluminum Reagent Powder Pillows

**1429099** 100/pk

### Amino Acid Reagent

For silica and phosphate  
**193432** 100 mL MDB  
**193449** 500 mL  
**193417** 3.78 L

### Amino Acid Reagent Powder Pillows

For low range silica (0-2 mg/L SiO<sub>2</sub>)  
25-mL sample  
**80499** 100/pk  
**80428** 1000/pk

### Amino Acid F Dilution Solvent

For ultra low range silica  
**2353011** 475 mL

### Amino Acid F Reagent Powder Pillows

For silica analysis  
10-mL sample  
**2254069** 100/pk  
25-mL sample  
**2253869** 100/pk

### Amino Acid F Reagent Powder

For ultra low range silica  
**2651155** 55 g

### Amino Acid F Reagent Solution

For ultra low range silica analysis  
**2386420** 20 ampules  
**2386442†** 100 mL

### Amino Acid F Reagent Solution Package

For silica analysis  
**2254117** 3.78 L (No Air Shipments)

### Ammonia Analysis

Also see Nitrogen-Ammonia

### Ammonia Cyanurate Reagent

For Nitrogen, Ammonia Salicylate Method  
5-mL sample  
**2395466** 50/pk  
10-mL sample  
**2653199** 100/pk  
25 mL sample  
**2395566** 50/pk

### Ammonia Electrode Filling Solution

For Model 50250 electrode  
**4447226** 50 mL

### Ammonia Ionic Strength Adjustor

Powder Pillows  
**4447169** 100/pk  
Solution  
**2824349** 500 mL

### Ammonia Nitrogen 1 Solution

**1455523** 25 mL SCDB

### Ammonia Nitrogen 2 Solution (Nessler Reagent, extra alkaline)

**2119432** 100 mL MDB

†Chemical Stability—See page 219.



## Ammonia Reagent Sets

(See Parameters Section page 154 for details.)

### Nessler Method

0.02-2.50 mg/L NH<sub>3</sub>-N  
**2458200** 250 tests

### Salicylate Method

10 mL sample, 0.01-0.50 mg/L NH<sub>3</sub>-N  
**2668000** 100 tests  
 25 mL sample, 0.01-0.50 mg/L NH<sub>3</sub>-N  
**2243700** 100 tests

### AmVer LR (Salicylate) TNT Method

0.02-2.50 mg/L NH<sub>3</sub>-N  
**2604545** 25-50 tests

### AmVer HR (Salicylate) TNT Method

0.4-50.0 mg/L NH<sub>3</sub>-N  
**2606945** 25-50 tests

### Ammonia TNTplus ULR

0.015-2.00 mg/L NH<sub>3</sub>-N  
**TNT830** 25 tests

### Ammonia TNTplus LR

1-12 mg/L NH<sub>3</sub>-N  
**TNT831** 25 tests  
 Ammonia TNTplus HR  
 2-47 mg/L NH<sub>3</sub>-N  
**TNT832** 25 tests

## Ammonia, Free, Reagent Sets

(See Parameters Section page 155 for details and starter kits —kits include reagents, instructions and sample cells.)

### Free Ammonia Reagent Set

0.02-0.50 mg/L NH<sub>3</sub>-N  
**2879700** 50 tests

### Free Ammonia Reagent Set

(same as above - 5 each)  
**2879701** 250 tests

## Ammonia Salicylate Reagent

For Nitrogen, Ammonia Salicylate Method

5-mL sample  
**2395266** 50/pk  
 10-mL sample  
**2653299** 100/pk  
 25-mL sample  
**2395366** 50/pk

## Ammonia Standard Solution as NH<sub>3</sub>-N

150 mg/L, 10-mL Voluette Ampule  
**2128410** 16

## Ammonia Standard Solution as NH<sub>3</sub>-N

1 mg/L  
**189149** 500 mL  
 10 mg/L  
**15349** 500 mL  
 100 mg/L  
**2406549** 500 mL  
 1000 mg/L  
**2354153** 1 L

Also see Mixed Parameter Quality Control Standards on page 223.

## Ammonia TNTplus®, ULR

0.015-2.00 mg/L NH<sub>3</sub>-N  
**TNT830** 25 tests

## Ammonia TNTplus®, LR

1-12 mg/L NH<sub>3</sub>-N  
**TNT831** 25 tests

## Ammonia TNTplus®, HR

2-47 mg/L NH<sub>3</sub>-N  
**TNT832** 25 tests

## Ammonium Chloride

ACS Grade, CAS No. 12125-02-9  
 NH<sub>4</sub>Cl, FW = 53.49  
**10501H** 454 g

## Ammonium Hydroxide

ACS Grade, CAS No. 1336-21-6  
 NH<sub>4</sub>OH, approx. 58%, FW = 35.05  
**10649** 500 mL  
**10604** 2.5 L  
 Assay: ≥28.0 but ≤30% NH<sub>3</sub>

## Ammonium Hydroxide, 10%

Used to adjust pH in determination of metals  
**1473632** 100 mL MDB  
**1473649** 500 mL

## Ammonium Molybdate Reagent

For phosphate  
**11032H** 100 mL MDB  
 For silica  
**193332** 100 mL MDB  
**193317** 3.78 L

## Ammonium Persulfate

ACS Grade, CAS No. 7727-54-0  
 (NH<sub>4</sub>)<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, FW = 228.20  
**11201H** 454 g  
 Assay: ≥98.0%

## Ammonium Purpurate

See Murexide Indicator Powder Pillows

## Ammonium p-Toluenesulfonic Acid

(Ammonium-PTSA)  
 Protein-TKN standard: 7.402% N,  
 46.26% crude protein  
**2277924** 25 g

## Anionic Surfactant Solution

For low range phosphate analyzer  
**2375503** 2.9 L

## Aqua Ammonia Reagent Set

See Parameter Section page 156 for details.)  
 5-35% (=50-350 g/L) NH<sub>3</sub>  
**2930500** 100 tests

## Arsenic Standard Solution as As

[NaOH matrix]  
 1000 mg/L  
**1457142** 100 mL

## L-Ascorbic Acid

Analytical Grade, CAS No. 50-81-7  
**613826** 100 g

## Ascorbic Acid Powder Pillows

For Aluminum and LR Manganese  
**1457799** 100

## Ascorbic Acid Reagents for Phosphate

See Phosphorus, Reactive Rapid Liquid Reagents and PhosVer.

## Ascorbic Acid Titrant

For determination of ascorbic acid in juice-based beverages  
**2308232** 100 mL MDB  
**2308249** 500 mL

## Atrazine Reagent Set

Immunoassay Method  
 0.1, 0.5, 3.0 ppb thresholds  
**2762700** 18 tests

## B

## Barium Chloride, Dihydrate

BaCl<sub>2</sub>•2H<sub>2</sub>O, FW=244.28  
 ACS Grade, CAS No. 10326-27-9  
**11401** 454 g

## Barium Standard Solutions as Ba (NIST)

1000 mg/L (HCl matrix)  
**1461142** 100 mL

## BariVer® 4 Barium Reagent

Powder Pillows  
**1206499** 100

## BARTS

### (Biological Activity Reaction Tests)

See Microbiological Products, page 249.

## Benzene

ACS Grade, CAS No. 71-43-2  
 C<sub>6</sub>H<sub>6</sub>, FW = 78.11  
**1444049** 500 mL  
**1444017** 4 L

## Benzotriazole Reagents

Triazole Reagent Powder Pillows  
**2141299** 100/pk

## Benzotriazole Standard Solution (NIST)

500 mg/L  
**2141342** 100 mL

## Biochemical Oxygen Demand Nutrient Buffer

(See Nutrient Buffer Pillows)

## Biochemical Oxygen Demand Standards

(See BOD Standard Solutions)

## Bismuth Nitrate Titration Cartridge

For Total Chelants  
**2434501†** 0.0200 M

## Bleaching 3 Reagent

Powder Pillows for Aluminum  
**1429449** 100

## BOD Nitrification Inhibitor

See Nitrification Inhibitor

## BOD Nutrient Buffer

See Nutrient Buffer Pillows

## BOD Seed Inoculum-Polyseed®

**2918700** 50 capsules

## BOD Standard Solutions (NIST)

For dilution method; glucose plus glutamic acid, 300 mg/L of each, 10-mL Voluette Ampule  
**1486510** 16/pk  
 For manometric method; glucose plus glutamic acid, 3000 mg/L of each, Voluette Ampule  
**1486610** 16/pk  
 ez GGA pre-measured Glucose plus Glutamic Acid (Dilution Method), equivalent to 150 mg/L GGA for the BOD<sub>5</sub> test, 2 mL ampules  
**2514420** 20/pk

## Borate Buffer Solution

APHA, Nitrogen-Ammonia distillation  
**1470953** 1 L

## Boric Acid

ACS Grade, CAS No. 10043-35-3  
 H<sub>3</sub>BO<sub>3</sub>, FW = 61.83  
**71301** 454 g

## Boric Acid Powder Pillows

For ammonia distillation  
**1481799** 100/pk

†Chemical Stability—See page 219.

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# BORIC ACID — BUFFERS

## Boric Acid Solution (Indicating)

20 g/L for Nitrogen-Ammonia, APHA  
2339053† 1 L

## Boron Standard Solutions as B (NIST)

1000 mg/L (H<sub>2</sub>O matrix)  
191442 100 mL

## BoroVer® 3 Boron Reagent Powder Pillows

1417099 100

## Brilliant Green Bile Broth 2%, Dehydrated

15926 100 g  
(See Microbiological Products, pages 248-250 for prepared media.)

## Brine, Ca & Mg Hardness Method

HNB Dilution Solvent  
2305042 100 mL  
Calcium Standard, 10 mg/L Ca  
2305442 100 mL  
Alkali Buffer, 3.0 N  
2307242 100 mL  
HNB Reagent Package  
2307300

## Brine, Aluminum Method

Ammonium Fluoride, 30%  
2305726 50 mL SCDB  
Masking Reagent for Al  
2310542 100 mL  
ECR Reagent for Al  
2310629 200 mL  
Buffer Reagent, Al Brine  
2310742 100 mL

## Brine, Iodine Method

Formate Reagent  
2329032 100 mL MDB

## Bromcresol Green Indicator Solution

pH indicator: pH 3.8 (yellow)-pH 5.4 (blue)  
2329549 500 mL

## Bromcresol Green-Methyl Red Indicator

For alkalinity titrations  
Powder Pillows  
94399 100  
Powder  
94323 15 g

## Bromcresol Green-Methyl Red Indicator Solution

APHA, Alkalinity (Titration Method)  
2329236 15 mL SCDB  
2329232 100 mL MDB  
2329249 500 mL

## Bromcresol Purple Indicator Solution

0.02% (alc.)  
Standardized for colorimetric pH determination  
Range: 5.2 to 6.8  
25432 100 mL MDB

## Bromine Reagent

DPD Method  
DPD Total Chlorine Reagent Powder Pillows  
2105669 100 tests  
DPD Total Chlorine Reagent AccuVac Ampules  
2503025 25 tests

## Bromine Water

30 g/L  
221120† 25 mL  
221149† 500 mL

## Bromphenol Blue Indicator

Powder Pillows  
pH indicator for acidity and alkalinity titrations  
Visual transition interval: pH 3.0 (yellow)-  
pH 4.6 (blue)  
50-mL sample  
1455099 100/pk

## Bromphenol Blue Indicator Solution

pH indicator for acidity and alkalinity titrations  
Visual transition interval: pH 3.0 (yellow)-  
pH 4.6 (blue)  
1455232 100 mL MDB

## Bromthymol Blue Indicator

Powder Pillows  
pH indicator Visual transition interval: pH 6.0  
(yellow)- pH 7.6 (blue)  
2067299 100

## Bromthymol Blue Indicator Solution

Standardized for colorimetric pH determination  
pH range 5.5-7.3  
25532 100 mL MDB  
25549 500 mL

## Buffer-Masking Solution

For colorimetric calcium/magnesium determination  
in feeds  
2229653 1 L

## Buffers: pH Standardization

POWDER PILLOWS  
Many are color-coded for easy identification.  
All prepare 50 mL of buffer. pH is  $\pm 0.02$  at 25°C.  
pH 4.01 (color-coded red) (NIST)  
2226995 15  
2226966 50  
2226964 250  
pH 6.00  
1405566 pk/50  
pH 6.86  
1409895 pk/15  
pH 7.00 (color-coded yellow) (NIST)  
2227095 15  
2227066 50  
2227064 250  
pH 8.00  
1407995 pk/15  
pH 9.00  
1410766 pk/50  
pH 10.01 (color-coded blue) (NIST)  
2227195 15  
2227166 pk/50  
2227164 250  
pH 4.01 and pH 7.00 (color-coded red and yellow  
pillows) (NIST) Contains: 10 pillows of pH 4.01  
buffer and 10 pillows of pH 7.00 buffer, for 50 mL  
2299264 10 each

SOLUTIONS (color-coded) pH is  $\pm 0.02$  at 25°C.  
pH 4.01 (color-coded red) (NIST)  
2283436 15 mL SCDB  
2283426 50 mL  
2283449 500 mL  
2283456 4 L  
2283461 20 L  
pH 7.00 (color-coded yellow) (NIST)  
2283536 15 mL SCDB  
2283526 50 mL  
2283549 500 mL  
2283556 4 L  
2283561 20 L  
pH 10.01 (color-coded blue) (NIST)  
2283636 15 mL SCDB  
2283626 50 mL  
2283649 500 mL  
2283656 4 L  
2283661 20 L

SOLUTIONS (color-coded) (NIST): 3-packs

2947600 Includes one each 500mL  
of pH 10.01, 7.00, 4.01  
2507200 Includes one each 4L of  
pH 10.01, 7.00, 4.01  
2507300 Includes one each 20L of  
pH 10.01, 7.00, 4.01

SOLUTIONS (colorless)  
pH is  $\pm 0.02$  at 25°C. pH 4.01 (NIST)  
1222336 15 mL SCDB  
1222349 500 mL  
1222356 4L  
pH 6.86 (NIST)  
2973936 15 mL SCDB  
pH 7.00 (NIST)  
1222249 500 mL  
1222256 4 L  
pH 9.18 (NIST)  
2974036 15 mL SCDB  
pH 10.01 (NIST)  
1222149 500 mL  
1222156 4 L

SINGLET™ SOLUTION PACKS  
pH 7.00 and pH 10.01 Buffer Solution  
2769820 10 each  
pH 4.01 and pH 7.00 Buffer Solution  
2769920 10 each  
pH 4.01 Buffer Solution  
2770020 20 pkg.  
pH 7.00 Buffer Solution  
2770120 20 pkg.  
pH 10.01 Buffer Solution  
2770220 20 pkg.

## Buffers: Special Use

POWDER PILLOWS  
For Alkalinity Standardization  
50-mL sample. pH is  $4.5 \pm 0.05$  at 20°C  
89568 25  
For Alkalinity Standardization and  
Monochloramine Standard Preparation  
pH 8.3  
89868 25/pkg  
For Heavy Metals, Citrate type  
1420299 100  
For Iron, Citrate type  
2081599 100  
For Manganese, cold periodate method.  
Citrate type  
10-mL sample  
2107669 100  
25-mL sample  
98399 100

## SOLUTIONS

Acetate Buffer Solution  
pH 4.0 for Chlorine  
(Amperometric Method)  
1490932 100 mL MDB  
For Aluminum in Brine  
2310742 100 mL  
For Amperometric Chlorine  
Phosphate type, pH 7, APHA  
2155332 100 mL MDB  
2155353 1000 mL MDB  
For BOD  
APHA, pH 7.2. Phosphate type  
43149 500 mL  
For Detergents, Lab Test  
Sulfate type, pH 2.0  $\pm$  0.1 after 1:30 dilution  
45249 500 mL  
For Detergents, Kit Method  
Wash water for test kit detergents test  
99949 500 mL  
Hardness Buffer, Aminoethanol Type  
Suitable for use in APHA Hardness Test  
2311149 500 mL  
Hardness 1 Buffer  
pH 10.1  $\pm$  0.1 at 20°C  
42426 50 mL SCDB  
42432 100 mL MDB  
42449 500 mL  
42453 1 L

†Chemical Stability—See page 219.





## Cadmium Reagent Sets

(See Parameters Section page 159 for details.)

### Colorimetric Method

Dithizone Method, 0.7-80 µg/L Cd

**2242200** 100 tests (No Air Shipments)

Air Freight Configuration

**2242201** 100 tests

Cation Method, 0.02-0.30 mg/L Cd, TNTplus

**TNT852** 25 tests

## Cadmium Standard Solutions as Cd (NIST)

100 mg/L

**1402442** 100 mL

## Cadmium TNTplus®

Cation Method, 0.02-0.30 mg/L Cd

**TNT852** 25 tests

## Calcium Separation Set

For use with TNTplus TNT852 Cadmium test

**TNT892** 25 tests

## Calcium and Total Hardness

See Hardness Reagent Sets

## Calcium Carbonate

Primary Standard, ACS Grade

CAS No. 471-34-1 CaCO<sub>3</sub>, FW = 100.09

**12014** 113 g

**12001** 454 g

Assay: ≥99.0%

## Calcium Chloride Solution

APHA, BOD nutrient

**42849** 500 mL

## Calcium/Magnesium Indicator Solution

For colorimetric calcium and magnesium determinations in water. (For determinations in food and feed samples, see Calmagite Solution.)

**2241832** 100 mL MDB

**2241849** 500 mL

## Calcium Reagents

See Hardness (Calcium) Reagent Sets.

## Calcium Standard Solutions as Ca

10.0 mg/L

**2305442** 100 mL (NIST)

100 mg/L

**4457649** 500 mL (NIST)

1000 mg/L (HCl matrix)

**2240349** 500 mL (NIST)

## Calcium Standard Solutions (NIST) as CaCO<sub>3</sub> (CaCl<sub>2</sub>)

1 mg/L

**232516†** 946 mL

2 mg/L

**2058116†** 946 mL

5 mg/L

**235616†** 946 mL

50 mg/L

**2127716†** 946 mL

1000 mg/L

**12153†** 1 L

10,000 mg/L, 10-mL Voluette Ampule

**218710** 16

## Calmagite

[1-(1-Hydroxy-4-methyl-2-phenylazo)-2-naphthol-4-sulfonic acid]

Analytical Grade, CAS No. 3147-14-6

Indicator for calcium and magnesium

C<sub>17</sub>H<sub>14</sub>N<sub>2</sub>O<sub>5</sub>S•H<sub>2</sub>O, FW = 376.37

**82522** 5 g

Assay: ≥60%

## Calmagite Solution

For colorimetric calcium and magnesium

determinations in food and feed samples 0.003%

**2230356** 4 L

## CalVer® 2 Calcium Indicator

For calcium determination using EDTA titration

Powder

**28114H** 113 g

**28101H** 454 g

Powder Pillows

**94799** 100 (Test kit)

**85299** 100 (Dig. Titr. or buret)

## Carbon Dioxide Reagent Sets

### Digital Titrator Method

Range: 10-1000 mg/L as CO<sub>2</sub>

(0.3636 N and 3.636 N titrants)

**2272700** 100 tests

### Drop Count Titration Method

Range: 0-100 mg/L as CO<sub>2</sub>

**2437500** 100 tests

## Carbon Dioxide Standards as CO<sub>2</sub> (NIST)

100 mg/L

**226142†** 100 mL

10,000 mg/L, 10-mL Voluette Ampules

**1427510** 16

## Cartridge Assembly, Complete, Empty

For your own reagents when using the Digital Titrator.

**1449501** each

## CDTA (Cyclohexanediaminetetraacetic acid)

Free Acid, ACS Grade, chelating agent

CAS No. 87095-89-4

**700726** 100 g

Assay: ≥98% as monohydrate

## CDTA Cartridges for Digital Titrator

**1440201** 0.08 M

Digits x 0.1 = mg/L CaCO<sub>3</sub> in 100 mL

Digits x 0.0001 = mmole

**1440301** 0.800 M

Digits = mg/L CaCO<sub>3</sub> in 100 mL

Digits x 0.001 = mmole

## CDTA Disodium Magnesium Salt

(Cyclohexanediaminetetraacetic acid, disodium magnesium salt) Trihydrate

C<sub>6</sub>H<sub>10</sub>N<sub>2</sub>(CH<sub>2</sub>COO)<sub>4</sub>Na<sub>2</sub>Mg•3H<sub>2</sub>O, FW = 466.64

Analytical Grade, CAS No. 63451-33-2

Assay: ≥95%

Powder

**1408026** 100 g

Powder Pillows

**1408099** 100 powder pillows

## CDTA Solution

For ultra low range hardness

**2589636** 10 mL SCDB

For use with Molybdenum (MolyVer)

AccuVac Ampules, 0.4 M

**2615436** 15 mL SCDB

## CDTA Titrant (HexaVer®)

Standard Solution, 0.020 N (0.010 M)

**74053** 1 L

**74056** 4 L

## Ceric Standard Cartridge for Digital Titrator

**2270701†** 0.500 N

Digits x 0.105 = g/L H<sub>2</sub>O<sub>2</sub> in 0.1 mL

Digits x 0.000625 = meq

## Charcoal

Decolorizing carbon, powdered, for plant tissue and soil sulfate testing

**2052626** 100 g

## Chelants Reagents

See Parameters Section page 161.

## Chemical Oxygen Demand

See COD

## Chloramine, Mono

Low Range 0.04-4.50 mg/L as Cl<sub>2</sub>

Monochlor F Reagent Pillow

**2802246** 50

High Range 0.1-10.0 mg/L as Cl<sub>2</sub>, TNT

**2805145** Up to 50 tests

## Chloride 2 Indicator

Powder for argentometric (silver nitrate) methods

Powder

**104320** 28.3 g

Powder Pillows

For test kit

**104399** 100

For 100 mL sample

**105766** 50

## Chloride Reagent Sets

(See Parameters Section page 162 for details.)

### Colorimetric Method

Mercuric Thiocyanate Method

Range: 0.1-25.0 mg/L Cl<sup>-</sup>

**2319800** 100 tests

### Digital Titrator Method

Silver Nitrate Method

Range: 10-100 mg/L as Cl<sup>-</sup>

(0.2256 N titrant)

**2444100** 100 tests

Range: 10-10,000 mg/L as Cl<sup>-</sup>; 2.5-150

g/L as Cl<sup>-</sup> in Surface Finishing Solutions

(0.2256 N and 1.128 N titrants)

**2288000** 100 tests

### Mercuric Nitrate Method

Range: 10-8,000 mg/L Cl<sup>-</sup>

**2272600** 100 tests

### Drop Count Titration Method

Silver Nitrate Method

Range: 0-400 mg/L as Cl<sup>-</sup>

(0.0493 N titrant)

**2437600** 100 tests

### Buret Method

See Parameters Section page 162 for reagents.

## Chloride Standard Solutions as Cl<sup>-</sup> (NIST)

100 mg/L (0.00282 N)

**2370853** 1 L

1000 mg/L

**18349** 500 mL

12,500 mg/L, 10-mL Ampule

**1425010** 16

†Chemical Stability—See page 219.

# CHLORIDE — CHROMIUM

## Chloride Titrant

Silver nitrate-for low range test kit  
**39732** 100 mL MDB  
Silver nitrate, 0.0493 N  
**2349832** 100 mL MDB  
Silver nitrate, 1.88 N  
**2349432** 100 mL MDB

## Chlorine, Free

DPD Free Chlorine AccuVac Ampules  
**2502025** 25  
DPD Free Chlorine Reagent Powder Pillows  
5-mL sample  
**2197846** 50  
**1407799** 100  
**1407728** 1000-pac  
10-mL sample  
**2105569** 100  
**2105503** 300  
**2802300** SwiftTest bulk dispenser,  
250 tests  
**2105560** SwiftTest replacement  
Vial, 250 tests  
**2105528** 1000-pac  
25-mL sample  
**1407099** 100  
**1407028** 1000-pac

## Chlorine, Free, Rapid Liquid™ Reagents

For rapid liquid chlorine (DPD), 0-2 mg/L  
Reagent Set (CL17)  
**2556900** 450+ tests  
Contains one each of the following items.  
DPD Indicator Powder  
**2297255** 24 g  
Free Chlorine  
Indicator Solution  
**2314011** 473 mL  
Free Chlorine Buffer Solution  
**2314111** 473 mL

## Chlorine (Free and Total) Reagent Sets

(See Parameters Section pages 163-165 for details.)

### Colorimetric Method

DPD Method  
Range: 0-2.00 mg/L as Cl<sub>2</sub> for 10-mL sample  
**2459500** 100 tests  
Range: 0-3.5 mg/L as Cl<sub>2</sub> for 5-mL sample  
**2438800** 100 tests

### Digital Titrator Method

FEAS Titration Method  
Range: 0-3+ mg/L as Cl<sub>2</sub>  
**2445300** 100 tests

## Chlorine, Free, Test 'N Tube

DPD Method  
0.09-5.00 mg/L Cl<sub>2</sub>  
**2105545** 50 tests

## Chlorine, Free, Indophenol Method

Range: 0.04-4.50 mg/L as Cl<sub>2</sub>  
Freechlor F Reagent Solution  
**2964926** 50 mL SCDB  
Monochlor F Reagent Pillows  
**2802299** 100

## Chlorine, Free TNTplus®

0.05-2.00 mg/L as Cl<sub>2</sub>  
**TNT866** 24 tests

## Chlorine, Free & Total TNTplus®

0.05-2.00 mg/L as Cl<sub>2</sub>  
**TNT867** 24 tests

## Chlorine, Total

DPD Total Chlorine AccuVac Ampules  
**2503025** 25  
DPD Total Chlorine Reagent Powder Pillows  
5-mL sample  
**2198246** 50  
**1407699** 100  
**1407628** 1000-pac  
10-mL sample  
**2105669** 100  
**2105603** 300  
**2802400** SwiftTest bulk dispenser,  
250 tests  
**2105660** SwiftTest replacement  
Vial, 250 tests  
1000-pac  
**2105628** 25-mL sample  
**1406499** 100  
**1406428** 1000-pac

## Chlorine, Total, Rapid Liquid™ Reagents

Reagent Set (CL17)  
**2557000** 450+ tests  
Contains one each of the following items.  
**2297255** 24 g  
Total Chlorine Indicator Solution  
**2263411** 473 mL  
Total Chlorine Buffer Solution  
**2263511** 473 mL

## Chlorine, Total, Test 'N Tube

DPD Method 0.09-5.00 mg/L Cl<sub>2</sub>  
**2105645** 50 tests

## Chlorine (Total) Reagent Sets

(See Parameters Section pages 163165 for details.)

### Buret Titration Method

Amperometric Method  
Range: 0-10 mg/L as Cl<sub>2</sub>  
**2460700** 100 tests

### Digital Titration Method

Iodometric Method  
Range: 20-2000 mg/L as Cl<sub>2</sub>  
(0.113 N titrant)  
**2272500** 100 tests  
Range: 2000-70,000 mg/L as Cl<sub>2</sub>  
(2.0 N titrant)  
**2444800** 100 tests

### Drop Count Titration Method

Thiosulfate Method  
Range: 0-20 mg/L as Cl<sub>2</sub>  
(0.00246 N titrant)  
**2438600** 100 tests  
Range: 0-200 mg/L as Cl<sub>2</sub>  
(0.0246 N titrant)  
**2437700** 100 tests

## Chlorine, Total - ULR

(See Parameters Section page 163 for details.)

### DPD Method

2-500 µg/L as Cl<sub>2</sub>  
ULR Chlorine Reagent Set  
**2563000**  
ULR Chlorine Quick Filter Apparatus Set for  
Wastewater  
**2595600**

## Chlorine Dioxide Reagent 1

For ClO<sub>2</sub> determination, CPR Method  
**2070042** 100 mL

## Chlorine Dioxide Reagent 2

For ClO<sub>2</sub> determination, CPR Method  
**2070142** 100 mL

## Chlorine Dioxide Reagent 3

For ClO<sub>2</sub> determination, CPR Method  
**2070242** 100 mL

## Chlorine Dioxide Reagent Set

(See Parameters Section page 167 for details.)

### Chlorophenol Red Method

0.01-1.00 mg/L ClO<sub>2</sub>  
**2242300** 100 tests

### DPD/Glycine Method

AccuVac Ampules 0.04-5.00 mg/L ClO<sub>2</sub>  
**2771000** 25 tests  
Powder Pillows 0.04-5.00 mg/L ClO<sub>2</sub>  
**2770900** 100 tests

## Chlorine Standard Solution as Cl<sub>2</sub> (NIST)

25-30 mg/L, 2-mL PourRite Ampule  
**2630020** 20  
50-75 mg/L, 2-mL PourRite Ampule  
**1426820** 20  
50-75 mg/L, 10-mL Voluette Ampule  
**1426810** 16

Also see SpecV Gel Secondary Standards on page 223.

## Chloroform

ACS Grade, CAS No. 67-66-3  
CHCl<sub>3</sub>, FW = 119.38  
**1445849** 500 mL  
**1445853** 1 L  
**1445817** 4 L (No Air Shipments)  
Assay: ≥99.8%

## Chloroform Standard Solution

10 ppm 2 mL ampules  
**2756707** 7/pkg

## Chlorophosphonazo Reagent

For ultra low range hardness  
Solution Pillows  
**2589599** 100  
Bulk Solution  
**2589549** 500 mL

## 2-Chloro-6 (Trichloromethyl) Pyridine(TCMP)

(N-Serve®) Analytical Grade  
CAS No. 1929-82-4  
For prepared formula that is water soluble, see  
Nitrification Inhibitor, Formula 2533™  
C<sub>6</sub>H<sub>3</sub>Cl<sub>4</sub>N, FW = 230.9  
**257924** 25 g

## Chromate Reagent Set

Digital Titrator Method  
Range: 20 to 400 mg/L as CrO<sub>4</sub>  
**2272400** 100 tests

## ChromaVer® 3 Chromium Reagent

Range: 0.010 - 0.700 mg/L Cr<sup>6+</sup>  
AccuVac Ampules  
**2505025** 25  
Powder Pillows 5-mL or 10-mL sample  
**1271099** 100  
**1271028** 1000-pac  
25-mL sample  
**1206699** 100  
**1206628** 1000-pac

## Chromic Acid Cleaning Solution

For cleaning glassware (no dilution necessary)  
**123349** 500 mL

## Chromium, Hexavalent

(See ChromaVer® 3 Chromium Reagents)

## Chromium, Hexavalent and Total TNTplus®

0.03-1.00 mg/L Cr  
**TNT854** 25 tests



## Chromium, Hexavalent, Standard Solutions as Cr<sup>6+</sup> (NIST)

5 mg/L, 2-mL PourRite™ Ampule	
<b>2605620</b>	20
12.5 mg/L, 10-mL Voluette Ampule	
<b>1425610</b>	16
50 mg/L	
<b>81042H</b>	100 mL
1000 mg/L (H <sub>2</sub> O matrix)	
<b>1466442</b>	100 mL

## Chromium, Total, Reagent Sets

(See Parameters Section page 168 for details.)

### Colorimetric Method

1,5-Diphenylcarbohydrazide Method  
Range: 0.01-0.70 mg/L as total chromium  
25-mL sample

**2242500** 100 tests

Range: 0-1.5 mg/L as total chromium  
25-mL sample

Includes demineralized water

**2242501** 100 tests

## Chromium, Trivalent, Standard Solutions as Cr<sup>3+</sup> (NIST)

50 mg/L	
<b>1415142</b>	100 mL

## Chromium 1 Reagent Powder Pillows

**204399** 100

## Chromium 2 Reagent Powder Pillows

**204499** 100

## Citric Acid Powder Pillows

For silica analysis

5-mL sample

**1454999** 100

10-mL sample

**2106269** 100

**2106228** 1000-pac

25-mL sample

**1454899** 100

**1454828** 1000-pac

## Citric Acid F Reagent Solution

For ULR silica

**2254232** 100 mL MDB

**2254249** 500 mL

## Cleaning Solutions

Acid probe cleaning solution

**2975126** 50 mL

**2975149** 500 mL

Non-ionic probe rinse solution

Probe cleaning solution for proteins

**2964349** 500 mL bottle

Non-ionic probe rinse solution

**2964449** 500 mL

## Cobalt Chloride Solution

For spectrophotometer linearization

**1422249** 500 mL

## Cobalt/Nickel Reagent Set

Colorimetric Method

PAN Method 0.02-2.00 mg/L Co

For 25-mL sample

**2242600** 100 tests

10-mL sample

**2651600** 100 tests

## Cobalt Standard Solution as Co (NIST)

1000 mg/L (HNO<sub>3</sub> matrix)

**2150342** 100 mL

## COD Digestion Vials, Dichromate

Reactor Digestion Method 16 mm

Ultra Low Range (0.7-40.0 mg/L COD)

**2415825** 25

**2415815** 150

Low Range (3-150 mg/L COD)

**2125825** 25

**2125815** 150

High Range (20-1500 mg/L COD)

**2125925** 25

**2125915** 150

High Range Plus (200-15,000 mg/L COD)

**2415925** 25

**2415915** 150

See the ezCOD recycling service on page 171.

## COD Digestion Vials, Manganese III

Reactor Digestion Method 16 mm, 30-1000 mg/L

**2623425** 25

**2623415** 150

Chloride Removal Cartridges

(for use with Manganese III COD Vials)

**2661825** 25

**2661815** 150

## COD2 Digestion Vials, Dichromate

Mercury-Free Formulation 16 mm

Low Range (3-150 mg/L COD)

**2565025** 25

High Range (20-1500 mg/L COD)

**2565125** 25

**2565115** 150

Ultra High Range (200-15,000 mg/L COD)

**2834325** 25/pk

## COD Standard Solution (NIST)

300 ± 15 mg/L as COD

**1218629†** 200 mL

**1218649†** 500 mL

800 mg/L as COD ± 40 mg/L

**2672629** 200 mL

1000 ± 50 mg/L as COD

**2253929** 200 mL

Oxygen Demand QC Mixed-parameter

standard, 10 mL ampules

**2833510** 16/pk

## COD TNTplus® 13 mm

ULR, 1.0-60.0 mg/L COD

**TNT820** 24 tests

LR, 3-150 mg/L COD

**TNT821** 25 tests

**TNT82106** 150 tests

HR, 20-1500 mg/L COD

**TNT822** 25 tests

**TNT82206** 150 tests

UHR, 250-15,000 mg/L COD

**TNT823** 25 tests

See the ezCOD recycling service on page 171.

## COD, Mercury-Free TNTplus® HR

25 to 1,000 mg/L as COD

**TNT825** 25 tests

## Coliform Medium, Prepared

See *Microbiological Products*, pages 248-250 for prepared media.

## Color Standard Solution

15 platinum-cobalt units

**2602853** 1 L

500 platinum-cobalt units

**141453** 1 L

**141410** 10-mL Voluette Ampules

16/pk

## Conductivity Standard Solutions

See *Sodium Chloride, Potassium Chloride, and Natural Water Standard Solutions*

## Copper Masking Reagent Powder Pillows

For Copper Porphyrin method

10 mL sample

**2603449** 100

25 mL sample

**2187399** 100

## Copper Reagents

See *CuVer® 1 Copper Reagents*,

*CuVer® 2 Copper Reagents*.

## Copper Reagent Powder Pillows

(Bicinchoninate) For free copper determination in salt and fresh water, 25 mL sample

**2118669** 100

## Copper Reagent Sets

Also see *CuVer Copper Reagent*.

(See Parameters Section page 173 for details.)

### Colorimetric Method

Free and Total (Bicinchoninate) Method,

0-5 mg/L 25 mL sample

**2439200** 100 tests

Porphyrim Method, 2-210 µg/L

10-mL sample

**2603300** 100 tests

25-mL sample

**2242700** 100 tests

## Copper Sensor Pack

For SA1100 Analyzer

**5040200** 10 tests

## Copper Standard Solutions as Cu (NIST)

4 mg/L, 2-mL PourRite Ampule

**2605720** 20

10 mg/L

**12932** 100 mL MDB

75 mg/L, 10-mL Voluette Ampule

**1424710** 16

100 mg/L

**12842** 100 mL

1000 mg/L (HNO<sub>3</sub> matrix)

**259342** 100 mL

Also see *Mixed Parameter Quality Control Standards* on page 223.

## Copper TNTplus®

Bathocuproine Method 0.1 to 8.0 mg/L

**TNT860** 25 tests

## Copper Sulfate-Sulfamic Acid Inhibitor Solution

For APHA dissolved oxygen

**35732** 100 mL MDB

**35749** 500 mL

## CuVer® 1 Copper Reagent

Bicinchoninate Method

For copper (0.04-5.00 mg/L Cu)

Powder Pillows 5-mL sample

**1421199** 100

10-mL sample

**2105869** 100

**2105828** 1000-pac

25-mL sample

**1418899** 100

**1418828** 1000-pac



# COPPER — DPD

## CuVer® 2 Copper Reagent

For copper in the presence of high levels of aluminum, calcium, and iron. Calibrations for CuVer® 1 may be used. 0.04-5.00 mg/L Cu  
AccuVac Ampule  
2504025 25  
Powder  
2188226 100 g  
Powder pillows for 25-mL sample  
2188299 100

## Cyanide Reagent Sets

(See Parameters Section page 174 for details.)

### Colorimetric Method

Pyridine-Pyrazolone Method,  
0.002-0.240 mg/L CN<sup>-</sup>  
10-mL sample  
2430200 100 tests  
25-mL sample  
2242800 100 tests

## CyaniVer 3 Cyanide Reagent Powder Pillows

10 mL sample 0.002-0.240 mg/L CN<sup>-</sup>  
2106869 100  
25 mL sample 0.002-0.240 mg/L CN<sup>-</sup>  
1403969 100

## CyaniVer 4 Cyanide Reagent Powder Pillows

10 mL sample 0.002-0.240 mg/L CN<sup>-</sup>  
2106969 100  
25 mL sample 0.002-0.240 mg/L CN<sup>-</sup>  
1404099 100

## CyaniVer 5 Cyanide Reagent Powder Pillows

10 mL sample 0.002-0.240 mg/L CN<sup>-</sup>  
2107069 100  
25 mL sample 0.002-0.240 mg/L CN<sup>-</sup>  
1404169 100

## Cyanuric Acid

(2,4,6-Trihydroxy-1,3,5-triazine)  
CAS No. 108-80-5 Chlorine stabilizer  
C<sub>3</sub>H<sub>3</sub>N<sub>3</sub>O<sub>3</sub>, FW = 129.08  
712924 25 g

## Cyanuric Acid 2 Reagent Powder Pillows

246066 50

## Cyclohexanediaminetetraacetic Acid

See CDTA

## Cyclohexanediaminetetraacetic Acid, Disodium Magnesium Salt

See CDTA Disodium Magnesium Salt

## Cyclohexanone

CAS No. 108-94-1  
For zinc test C<sub>6</sub>H<sub>10</sub>O, FW = 98.15  
1403332 100 mL  
1403353 1 L  
Assay: 99.5%

## D

## Dechlorinating Reagent Powder Pillows

For dechlorinating water samples  
1436369 100

## Dechlorinating Solution

Sodium Thiosulfate 0.1N, 1 drop/25-mL sample  
32332 100 mL MDB  
32353 1 L

## DEHA Reagent Set

Colorimetric Method  
Iron Reduction Method for Oxygen Scavengers,  
3-450 µg/L  
2446600 100 tests

## DEHA 1 Reagent Powder Pillows

2167969 100

## DEHA 2 Reagent Solution

2168042 100 mL

## Deionized Water

See Water, Deionized

## Deminerizer Resin

See Resin, Demineralizer

## Desiccating (Drying) Agents

See Drierite; Silica Gel

## Detergents Reagent

For test kit  
105932 100 mL MDB

## Detergents Reagent Powder Pillows

For colorimeters and spectrophotometers  
100868 25

## Detergents Reagent Sets

(See Parameters Section page 175 for details.)

### Crystal Violet Method

0.002-0.275 mg/L LAS  
2446800 100 tests (No Air Shipments)  
Air Freight configuration  
2446801 100 tests

## Detergent Standard Solution as LAS

60 mg/L, 10-mL Voluette Ampule  
1427110 16

## Diaminobenzidine, Tetrahydrochloride

Analytical Grade, CAS No. 7411-49-6  
C<sub>12</sub>H<sub>14</sub>N<sub>4</sub>•4HCl, FW = 360.14  
706222 5 g  
Suitability as selenium indicator: Passes test  
Selenium blank: ≤0.0025%

## N,N-Diethyl-p-Phenylenediamine, Oxalate

See DPD Oxalate

## Digestion Reagent for Kjeldahl

APHA, Nitrogen (Kjeldahl)  
2340453 1 L

## Digestion Reagent for Kjeldahl

With copper catalyst per Standard Methods,  
19th ed.  
2742453 1 L

## Digital Titrator Cartridges

For empty cartridge, see Cartridge Assembly on  
pages 115-117.)

## Dilution Water, Organic Free

2641549 500 mL

## Dilution Water, Sterile

Visit: [hach.com](http://hach.com)

## Diphenylamine Sulfonic Acid Indicator Solution

2296323 25 mL SCDB

## Diphenylcarbazone Reagent

For chloride mercuric nitrate method  
Powder  
83514 113 g  
Powder pillows for 10-mL sample  
96799 100  
Powder pillows for 100-mL sample  
83699 100

## Dissolved Oxygen Reagent Sets

### Buret Titration Method

Winkler Method (Azide Modification)  
1- ≥10 mg/L as DO  
300-mL sample  
2351400 100 tests

### Digital Titrator Method

Winkler Method (Azide Modification)  
1- ≥10 mg/L as DO  
300-mL sample  
2272200 50 tests

### Drop Count Titration Method

For OX-2P Test Kit (Prod. No. 146900)  
2439802 100 tests

## Dissolved Oxygen Reagent AccuVac® Ampules

Low Range (6-800 µg/L)  
2501025 25  
Mid and High Range (0.3-15.0 and 1-40 mg/L)  
for natural waters  
2515025 25

## Dissolved Oxygen 1 Reagent Powder Pillows

60-mL sample  
98199 100

## Dissolved Oxygen 2 Reagent Powder Pillows

60-mL sample  
98299 100

## Dissolved Oxygen 3 Reagent Powder Pillows

60-mL sample  
98768 25  
98799 100

## Dissolved Oxygen Standard Solution

Equivalent to 10 mg/L as DO; APHA (for Winkler  
titrations only)  
0.00125 N KIO<sub>3</sub>  
40149 500 mL

## DithiVer® Metals Reagent Powder Pillows

1261699 100

## Dithizone

See DithiVer Metals Reagent.

## DPD Oxalate

(N,N-Diethyl-p-Phenylenediamine Oxalate)  
Analytical Grade, CAS No. 62637-92-7  
608424 25 g  
Assay: 65-95%

See Chlorine for additional DPD reagents.

## DPD Reagent Indicator Solution

APHA, Chlorine (DPD Titration Method)  
2335649† 500 mL

†Chemical Stability—See page 219.

## Drierite

Desiccating agent, 8 mesh Without indicator

**2285901** 454 g

With indicator

**2088701** 454 g

## E

### EC Medium, Dehydrated

**1410326** 100 g

### EC w/MUG, Dehydrated

**2310126** 100 g

### ECR Masking Reagent

Eriochrome Cyanine R Method for Aluminum

**2380123** 25 mL SCDB

### ECR Reagent Powder Pillows

Eriochrome Cyanine R Method for Aluminum

10 mL sample

**2603849** 100

25 mL sample

**2380268** 25

### ECR Reagent Solution

for Aluminum in Brine

**2310629** 200 mL

### EDTA (TitraVer) Cartridges for Digital Titrator

**2081701** 0.0716 M

Digits x 0.1 = mg/L Fe in 50 mL

Digits x 8.95 x 10<sup>-5</sup> = mmole Fe

**1496001** 0.1428 M

Digits x 0.1785 = mg/L CaCO<sub>3</sub> in 100 mL

Digits x 0.01 = German degrees hardness (Gdh)

**1495901** 0.714 M

Digits = 1.785 mg/L CaCO<sub>3</sub> in 50 mL

Digits x 0.1 = Gdh

**2081801** 0.716 M

Digits = mg/L Fe in 50 mL

Digits x 8.95 x 10<sup>-4</sup> = mmole Fe

**1436401** 0.0800 M

Digits x 0.1 = mg/L CaCO<sub>3</sub> in 100 mL

**1439901** 0.800 M

Digits = mg/L CaCO<sub>3</sub> in 100 mL

### EDTA Solution, 1 M

For colorimetric Ca, Mg

**2241926** 50 mL

### EDTA, Disodium Salt (TitraVer)

Ethylenediaminetetraacetic Acid, Disodium Salt

ACS Grade, CAS No. 60-00-4

FW = 292.25

**20426** 100 g

**20434** 500 g

### EDTA Powder Pillows

For Cobalt, Nickel, Phenols

**700599** 100

### EDTA Standard Solutions (TitraVer)

0.020 N (0.010 M) (N/50)

**20529** 200 mL

**20553** 1 L

**20556** 4 L

0.035 N

**2349932** 100 mL MDB

0.20 N (0.10 M)

**102149** 500 mL

## EDTA, Tetrasodium Salt

(Ethylenediaminetetraacetic Acid,

Tetrasodium Salt Dihydrate)

Analytical Grade, CAS No. 64-02-8

C<sub>2</sub>H<sub>4</sub>N<sub>2</sub>(CH<sub>2</sub>COO)<sub>4</sub>Na<sub>4</sub>•2H<sub>2</sub>O, FW = 416.23

**700534** 500 g

Assay: 100.0 ± 2.0%

Insoluble matter: ≤0.02%

## EGTA Solution

For colorimetric calcium and magnesium determination

**2229726** 50 mL SCDB

## Eriochrome Black T

[1-(1-Hydroxy-2-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid, sodium salt]

Practical Grade, CAS No. 1787-61-7

Color change: pH 5.0 (red)-pH 6.5 (blue)

C<sub>2</sub>OH<sub>12</sub>O<sub>7</sub>N<sub>3</sub>SNa, FW = 461.40

**13224** 25 g

Suitability for use as calcium and magnesium indicator: Passes test

## Ethylene Glycol

CAS No. 107-21-1 FW = 62.07

**203953** 1 L

IR spectrum: Passes test

## Ethylene Glycol Reagents

See *Glycol*.

## Ethylene Glycol Solution

0.05%

Used in Hach Glycol Test

**2183936** 15 mL SCDB

## Ethylenediaminetetraacetic Acid, Salts

See *EDTA and TitraVer Hardness Reagent*

## F

## m-FC Broth, Dehydrated

(See Microbiological Products, pages 248-250 for prepared media.)

**1462434** 500 g

**1462426** 100 g

## Ferric Chloride Reagent

For glutaraldehyde test

5-mL Voluette Ampule

**2171820** 20

## Ferric Chloride Solution

APHA, BOD

**42953** 1 L

## Ferric Chloride-Sulfuric Acid Solution

For volatile acids

**204253** 1 L

## Ferric Ion Solution

For colorimetric chloride determination

**2212242** 100 mL

## Ferrioin Indicator Solution

APHA, High Range COD

**181233** 29 mL DB

APHA, Low Range COD

**2055133** 25 mL DB

## FerroMo™ Reagent Set

(See Parameters Section page 184 for details.)

*Colorimetric method in presence of molybdenum*

FerroMo method, 0.01-1.80 mg/L Fe

Contains: FerroMo Reagent 1 and Reagent 2

**2544800** 100 tests

## FerroMo™ Iron Reagent 1

**Powder Pillows**

**2543768** 25

## FerroMo™ Iron Reagent 2

**Powder Pillows**

**2543866** 50

## Ferrous Ammonium Sulfate, Hexahydrate

ACS Grade, CAS No. 7783-85-9

Fe(NH<sub>4</sub>)<sub>2</sub>(SO<sub>4</sub>)<sub>2</sub>•6H<sub>2</sub>O, FW = 392.14

**1125614** 113 g

Assay: 98.5-101.5%

## Ferrous Ammonium Sulfate Standard Solutions

0.125 N

**2054849†** 500 mL

0.250 N

**181133NC** 29 mL DB

## Ferrous Ethylenediammonium Sulfate Standard Solution

Cartridge for use with Digital Titrator

For chlorine titration, FEAS method

**2292301†** 0.00564 N

## Ferrous Iron Reagent

Phenanthroline Method

AccuVac Ampules

**2514025** 25

Powder Pillows for 25-mL sample

**103769** 100

## Ferrous Sulfate, Heptahydrate

ACS Grade, CAS No. 7782-63-0

FeSO<sub>4</sub>•7H<sub>2</sub>O, FW = 278.02

**706834** 500 g

Assay: ≥99.0%

## FerroVer® Iron Reagent

For iron

AccuVac Ampules 0.02 - 3.00 mg/L

**2507025** 25

Powder

**30314** 113 g

Powder Pillows 5-mL sample

**92746** 50

**92799** 100

**92728** 1000-pac

10-mL sample 0.02 - 3.00 mg/L

**2105769** 100

**2105728** 1000-pac

25-mL sample

**85499** 100

**85428** 1000-pac

## FerroZine® Iron Reagent

[3-(2-Pyridyl)-5,6-bis(4-phenylsulfonic acid)-

1,2,4-triazine, monosodium salt, monohydrate]

CAS No. 69898-45-9

One of the most sensitive iron reagents known

N<sub>4</sub>C<sub>20</sub>O<sub>4</sub>H<sub>13</sub>S<sub>2</sub>O<sub>6</sub>Na•H<sub>2</sub>O, FW = 510.47

**230424** 25 g

Assay: >95%

Acidity: 1.0 ± 0.5 moles H<sup>+</sup> as FerroZine

Fe: ≤5 ppm Clarity of solution: Passes test

## FerroZine® Iron Reagent Solutions

For laboratory determination of iron

**230149** 500 mL

Pillows for 25-mL sample

**230166** 50

## Filtration Aid Solutions

**104633** 29 mL DB

†Chemical Stability—See page 219.

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# FLUORESCIN — HARDNESS

## Fluorescein, Disodium Salt

Practical Grade, CAS No. 518-47-8  
Suitable for dye tracing  
 $C_{20}H_{10}O_5Na_2$ , FW = 376.28  
**105101** 500 g  
Solubility: Passes test  
Fluorescence: Passes test

## Fluoride Ionic Strength Adjustor

Powder  
**258901** 454 g  
Powder Pillows  
**258999** 100  
Solution  
**2829017** 3.78 L

## Fluoride Reagent

See SPADNS Reagent

## Fluoride Reagent (SPADNS)

**AccuVac® Ampules**  
**2506025** 25

## Fluoride Reagent (SPADNS2)

**Arsenic-Free AccuVac Ampules**  
**2527025** 25

## Fluoride Standard Solutions as F<sup>-</sup> (NIST)

0.2 mg/L  
**40502** 500 mL  
0.5 mg/L  
**40505** 500 mL  
0.8 mg/L  
**40508** 500 mL  
1.0 mg/L  
**29149** 500 mL  
**29153** 1 L  
1.2 mg/L  
**40512** 500 mL  
1.5 mg/L  
**40515** 500 mL  
2.0 mg/L  
**40520** 500 mL  
5.0 mg/L  
**2797149** 500 mL  
10 mg/L  
**35949** 500 mL  
100 mg/L  
**23249** 500 mL

Also see Mixed Parameter Quality Control Standards on page 223.

## Formaldehyde

ACS Grade, CAS No. 50-00-0  
 $CH_2O$ , 36-38%, FW = 30.03  
**205932** 100 mL MDB  
Assay:  $\geq 36.5$  but  $\leq 38.0\%$

## Formaldehyde Developing Solution

For low-range test  
**2257249** 500 mL

## Formaldehyde Reagent Set

(See Parameters Section page 164 for details.)  
MBTH method, 3-500  $\mu g/L$   
**2257700** 100 tests

## Formaldehyde 1 Reagent Powder Pillows

For high-range formaldehyde determination  
**2182999** 100

## Formaldehyde Standard Solution (NIST)

4000 mg/L, 10-mL Voluette Ampule  
**2257310** 16

## Formate Reagent Solution

Total Iodine in Brine Method  
**2329032** 100 mL

## Formazin Stock Solution

4000 NTU, APHA, for turbidity standardization  
**246142** 100 mL  
**246149** 500 mL

## Formula 2533™

See Nitrification Inhibitor.

## Formula 2589™

See Fluoride Ionic Strength Adjustor.

## Free Ammonia Reagent Solution

**2877336** 4 mL SCDB

Also see Ammonia, Free.

## Free Copper Reagent Powder Pillows

For free copper using CU-6 test kit  
**2182369** 100

## G

## Gallic Acid Solution

For conductivity testing; used to neutralize hydroxide ion interference  
**1442326** 50 mL SCDB

## DL-Glutamic Acid, Monohydrate

$C_5H_9NO_4 \cdot H_2O$ , FW = 165.15  
CAS No. 56-86-0  
**2340923** 10 g  
Assay: 99%

## Glucose-Glutamic Acid Standards for BOD

For Manometric Method  
300 mg/L each (Glucose plus Glutamic Acid)  
10 mL ampules  
**1486510** 16  
For Dilution Method  
3000 mg/L each (Glucose plus Glutamic Acid)  
10 mL ampules  
**1486610** 16  
ezGGA 450 mg/L each (Glucose plus Glutamic Acid)  
2 mL ampules  
**2514420** 20

## Glycerin (Glycerol)

CAS No. 56-81-5  
 $C_3H_8O_3$ , FW = 92.10  
**243134** 500 g

## Glycine Reagent

For Chlorine Dioxide DPD Method  
**2762133** 29 mL SCDB  
For manganese interference removal in Indigo Method for ozone  
**2344042** 100 mL

## Glycine p-Toluenesulfonic Acid

(Glycine PTSA)  
Protein-TKN standard: 5.665% N,  
35.40% crude protein  
**2278024** 25 g

## Glycol Reagent 1 Powder Pillows

Used in Hach Glycol Test  
**2183668** 25

## Glycol Reagent 2 Powder Pillows

Used in Hach Glycol Test  
**2183768** 25

## Glycol Reagent 3 Vials

Used in Hach Glycol Test  
**2183825** 25

## H

## Hardness 1 Buffer Solution

pH 10.1  $\pm$  0.1 at 20°C  
**42426** 50 mL SCDB  
**42432** 100 mL MDB  
**42449** 500 mL  
**42453** 1 L

## Hardness 2 Solution

Calmagite indicator solution for hardness  
**42532** 100 mL MDB  
**42549** 500 mL

## Hardness 3 Solution

EDTA Titrant solution for hardness, 0.03 N (0.015 M)  
**42612** 50 mL DB  
**42632** 100 mL MDB  
**42649** 500 mL  
**42653** 1 L

## Hardness, Rapid Liquid™ Reagents

For rapid liquid ultra-low range hardness, 8-1000  $\mu g/L$  as  $CaCO_3$   
Chlorophosphonazo Indicator Solution  
**2589549** 500 mL  
CDTA Reagent  
**2589636** 10 mL

## Hardness (Calcium) Reagent Sets

(See Parameters Section—Calcium and Hardness pages 160 and 179-181 for details and German Degree Hardness reagents.)

### Colorimetric Methods

Calmagite Method for Water Analysis, 0.05-4.00 mg/L Calcium as  $CaCO_3$ ; 0.05-4.00 mg/L Magnesium as  $CaCO_3$   
**2319900** 50 tests

### Buret Titration Method

CalVer® 2 Indicator/EDTA Method  
Range: 0-5,000 mg/L as  $CaCO_3$  (0.020 N titrant)  
**2447000** 100 tests

### Digital Titrator Method

CalVer® 2 Indicator/EDTA Method  
Range: 10-160 mg/L as  $CaCO_3$  (0.0800 M titrant)  
**2447200** 100 tests  
Range: 100-4,000 mg/L as  $CaCO_3$  (0.800 M titrant)  
**2447500** 100 tests

## Hardness (Calcium and Total, Sequential) Reagent Sets

(See Parameters Section pages 179-181 for details.)

### Digital Titrator Method

EDTA Titration Method  
Range: 10-160 mg/L as  $CaCO_3$  (0.0800 M titrant)  
**2448600** 100 tests  
Range: 100-4,000 mg/L as  $CaCO_3$  (0.800 M titrant)  
**2448700** 100 tests  
Range: 10-4,000 mg/L as  $CaCO_3$  (without Sulfuric Acid; 0.0800 M and 0.800 M titrants)  
**2272100** 100 tests

## Hardness (Total) Reagent Sets

(See Parameters Section—Hardness pages 179-181 for details.)

### Buret Titration Method

ManVer® 2 Indicator/EDTA Method  
Range: 0-2,500 mg/L as CaCO<sub>3</sub>  
(0.0200 N titrant)

**2447600** 100 tests

Range: 100-25,000 mg/L as CaCO<sub>3</sub>  
(0.200 N titrant)

**2447700** 100 tests

### Digital Titrator Method

ManVer® 2 Indicator/EDTA Method  
Range: 10-160 mg/L as CaCO<sub>3</sub>  
(0.800 M titrant)

**2448000** 100 tests

Range: 100-4,000 mg/L as CaCO<sub>3</sub>  
(0.800 M titrant)

**2448100** 100 tests

Range: 10-4,000 mg/L as CaCO<sub>3</sub>  
(0.0800 M and 0.800 M titrants)

**2272000** 100 tests

### Drop Count Titration Method

Hardness Indicator/EDTA, 0-20 mg/L  
as CaCO<sub>3</sub>

**2437800** 100 tests

UniVer® 3 Indicator/EDTA  
Range: 0-30 gpg as CaCO<sub>3</sub>  
(Hardness 3 Titrant)

**2437900** 100 tests

## Hardness (Total) Ultra Low Range Reagent Sets

### Colorimetric Method

Chlorophosphonazo Method, 8-1000 µg/L as  
CaCO<sub>3</sub> with indicator solution pillows

**2603100** 100 tests

Same as above, with bottled Chlorophosphonazo  
Indicator Solution.

**2603101** 250 tests

## Hardness Standard Solutions as CaCO<sub>3</sub> (NIST)

0.50 mg/L hardness

**2058016** 946 mL

2.0 mg/L hardness

**2058116** 946 mL

10,000 mg/L hardness, 10-mL Volute Ampule

**218710** 16

**Also see Mixed Parameter Quality Control Standards on page 223.**

## Hardwater, 20 gpg

20 gpg (342 mg/L) as CaCO<sub>3</sub> and 2 mg/L Iron

**47949** 500 mL

## Hexadecane

Standard for Oil & Grease test

99% CAS No. 544-76-3

FW = 226.44

**2664842** 100 mL

## Hexamethylenetetramine

(Methenamine)

Analytical Grade, CAS No. 100-97-0

Suitable for preparation of formazin standards  
(CH<sub>2</sub>)<sub>6</sub>N<sub>4</sub>, FW = 140.19

**187834** 500 g

## Hexamethylenetetramine Powder Pillows

For Aluminum ECR method

10 mL sample

**2603999** 100

25 mL sample

**187866** 50

## Hexanes

ACS Grade, CAS No. 110-54-3

Primarily C<sub>6</sub>H<sub>14</sub>, FW = 86.18

**1447849** 500 mL

## Hexanes (95% n-hexane)

Organic Residue Analysis, CAS No. 110-54-3

FW = 86.18

**2510253** 1 L

## HexaVer® Powder Pillows

CDTA - for complexing interferences

**24399** 100

## HexaVer® Hardness Titrant

See CDTA Titrant.

## HNB Dilution Solvent

Used with HNB powder for the determination of  
calcium and magnesium in brine

**2305042** 100 mL

## HNB Lab Reagent Package

Each package contains one unit of HNB powder  
and one unit of HNB dilution solvent. Used for the  
determination of calcium and magnesium in brine

**2307300** each

## Holmium Trichloride Powder Pillows

For spectrophotometer wavelength checks

**2343267** 20

## Hydrazine Reagent, HydraVer® 2

**179032** 100 mL MDB

**179049** 500 mL

**179053** 1 L

## Hydrazine AccuVac® Ampules

**2524025** 25

## Hydrazine Sulfate

ACS Grade, CAS No. 10034-93-2

Suitable for preparation of formazin standards

H<sub>2</sub>NNH<sub>2</sub>•H<sub>2</sub>SO<sub>4</sub>, FW = 130.12

**74226** 100 g

Assay: ≥99.0%

## Hydrochloric Acid (12 N)

ACS Grade, CAS No. 7647-01-0

HCl, approx. 37%, FW = 36.45

**13449** 500 mL

**13406** 2.5 L

Assay: ≥36.5 but ≤38.0%

## Hydrochloric Acid Solutions

For soil analysis

Weak HCl solution 0.75 N

**1226729** 200 mL

Strong HCl solution 4.0 N

**1227429** 200 mL

## Hydrochloric Acid Standard Solutions

0.02 N

**2330353** 1 L

0.1 N

**1481253** 1 L

1.0 N, 1.0 M

**2321353** 1 L

2.5 N

**141832** 100 mL MDB

6.0 N (1:1)

**88449** 500 mL

## Hydrochloric Acid Standard Solution

Cartridge for Digital Titrator

**1439001** 8.00 N

Digits x 0.1 = meq

## Hydrogen Peroxide Solution, 30%

ACS Grade, CAS No. 7722-84-1

H<sub>2</sub>O<sub>2</sub>, FW = 34.01

**14411** 473 mL (No Air Shipments)

Assay: ≥29.0 but ≤32.0%

## Hydrogen Peroxide Solution, 50%

Suitable for use with Hach Digesdahl® Digestion

Apparatus

**2119649** 490 mL

(No Air/UPS Shipments)

## Hydrogen Sulfide Paper

**2537733** 100

## Hydrogen Sulfide Reagent Set

### Colorimetric Method

Methylene Blue Method, 5-800 µg/L S<sup>2-</sup>

(Color disc 0-2.25 mg/L) as S<sup>2-</sup>

Contains: Sulfide Reagents 1 and 2.

For turbid samples, also order Phenol Solution

211220 and Bromine Water 221120.

**2244500** 100 tests

## Hydrosulfite Reagent Powder Pillows

For reduction of chelated copper to Cu<sup>+</sup>

25-mL sample

**2118869** 100

## Hydroxylamine Hydrochloride

ACS Grade, CAS No. 5470-11-1

NH<sub>2</sub>OH•HCl, FW = 69.49

**24614** 113 g

Assay: ≥96.0%

## Hydroxylamine-Hydrochloride

### Solution, 100 g/L

For volatile acids

**81842** 100 mL

## Hydroxy Naphthol Blue

ACS Grade, CAS No. 63451-35-4

For use in calcium titrations

Also see CalVer® 2 Calcium Indicator.

**28114H** 113 g

**28101H** 454 g

## 1-(1-Hydroxy-2-Naphthylazo)-6-Nitro-2-Naphthol-4-Sulfonic Acid, Sodium Salt

See Eriochrome Black T

## Hypochlorite (Chlorine Bleach) Reagent Set

(See Parameters Section page 169 for details.)

For Digital Titrator, 5-15% Cl<sub>2</sub>

**2687000** 100 tests

## Indoxyl beta-D-glucopyranoside

Blue color indicator for *Enterococci*

**2813935** 2 g

Store in freezer (less than 0°C)

## Iodate Standard Solution

See Dissolved Oxygen (DO) Standard Solution.

## Iodate-Iodide Standard Solutions

Cartridge for Digital Titrator

**1496101†** 0.3998 N

Digits = mg/L SO<sub>3</sub> in 20 mL

Digits x 0.0005 = meq

†Chemical Stability—See page 219.

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# IODIDE-IODATE — MANGANESE

## Iodide-Iodate Solutions

(See Potassium Iodide-Iodate and Iodate-Iodide Standard Solutions)

## Iodine Standard Solution Cartridge for Digital Titrator

2333301† 0.0282 N

## Iodine Reagent

See *DPD Reagents for Chlorine*.

## Iodine Standard Solutions

0.0282 N  
2333353† 1 L  
0.1 N (0.05 M)  
2321453† 1 L

## Iron Reagents

See FerroMo™, Ferrous Iron Reagents, FerroVer®, FerroZine®, TPTZ Reagents (See Parameters Section for details on several methods.)

## Iron Standard Solutions as Fe (NIST)

1 mg/L  
13949 500 mL  
10 mg/L  
14049 500 mL  
25 mg/L, 10-mL Voluette Ampule  
1425310 16  
50 mg/L, 10-mL Voluette Ampule  
1425410 16  
100 mg/L  
1417542 100 mL  
1000 mg/L (HCl matrix)  
227142 100 mL

Also see **Mixed Parameter Quality Control Standards on page 223**.

## Iron TNTplus®

0.2-6.0 mg/L  
TNT858 25 tests

## Iron (Total) Reagent Sets

*Digital Titrator Method*  
EDTA Titration Method  
Range: 10-100 mg/L as Fe  
(0.0716 M titrant)  
2449200 100 tests  
Range: 100-1000 mg/L as Fe  
(0.716 M titrant)  
2449300 100 tests

## Isopropyl Alcohol

ACS Grade, CAS No. 67-63-0 Assay: ≥99.9%  
CH<sub>3</sub>CHOHCH<sub>3</sub>, FW = 60.10  
1445949 500 mL  
1445917 4 L  
Technical Grade.  
1227642 100 mL

## Lauryl Tryptose Broth, Dehydrated

19726 100 g  
19734 500 g  
(See Microbiological Products, pages 248-250 for prepared media.)

## Lauryl Tryptose w/MUG Broth, Dehydrated

2255734 500 g

## Lead, PPb-1 Acid Preservative Solution

For LeadTrak™ Lead Test  
2368531 236 mL

## Lead Acetate Solution, 10%

APHA, Arsenic and Selenium  
1458042 100 mL

## Lead Reagent Sets

(See Parameters Section page 186 for details.)

### *Colorimetric Method*

Dithizone Method, 3-300 µg/L Pb  
(Range depends on instruments used)  
2243100 100 tests (No Air Shipments)  
Air Freight Configuration  
2243101 100 tests  
LeadTrak™ Fast Column Extraction Method,  
5-150 µg/L Pb  
2375000 20 tests  
PAR Method, 0.1-2.0 mg/L Pb, TNTplus  
TNT850 25 tests

## Lead Sensor Pack

For SA1100 Analyzer  
5040100 10 tests

## Lead Standard Solutions as Pb (NIST)

10 mg/L  
2374820 25 mL  
100 mg/L  
1261742 100 mL  
1000 mg/L (HNO<sub>3</sub> matrix)  
1279642 100 mL

## Lead TNTplus®

PAR method, 0.1-2.0 mg/L Pb  
TNT850 25 tests

## Lights Solution Ampules

For checking ORP electrode response  
2612520 20

## Lignin Reagent

See *Tannin-Lignin Reagent Set*; also *TanniVer® 3 Tannin-Lignin Reagent*.

## Lithium Hydroxide Powder Pillows

For manometric BOD apparatus; for potassium test in acid digest  
1416369 100

## m-HPC Agar, Dehydrated

2280734 500 g

## m-TEC Agar, Dehydrated

A differential and selective MF medium for *E. coli*.

2281126 100 g  
(See Microbiological Products, pages 248-250 for prepared media.)

## m-TGE Broth, Dehydrated

2426400 500 g

## Magnesium, reagents for determination of

See *Hardness Reagent Sets*.

## Magnesium Chloride

ACS Grade, CAS No. 7791-18-6

MgCl<sub>2</sub>•6H<sub>2</sub>O, FW = 203.33

611434 500 g  
Assay: 99.0-102%

## Magnesium Chloride Cartridge for Digital Titrator

For chelants determination  
2062501 0.080 M  
Digits x 0.1 = mg/L Chelant as mg/L  
CaCO<sub>3</sub> in 100-mL sample

## Magnesium Chloride Pillows for Dilution Water Preparation

Visit: [hach.com](http://hach.com)

## Magnesium Chloride Solution, 51% w/v

APHA, Cyanide Distillation  
1476253 1 L

## Magnesium EDTA

See *EDTA, Magnesium Disodium Salt*.

## Magnesium Standard Solutions (NIST)

1000 mg/L as Mg (HNO<sub>3</sub> matrix)  
1479442 100 mL  
For checking Hardness Monitor response  
10,000 ± 1000 mg/L as CaCO<sub>3</sub>  
102233 29 mL DB

## Magnesium Sulfate Solution

APHA, BOD  
43049 500 mL

## Manganese Reagent Sets

(See Parameters Section page 187 for details.)

### *Colorimetric Method*

PAN Method, 0.006-0.700 mg/L as Mn  
For 10-mL samples  
2651700 50 tests  
For 25-mL samples  
2243300 100 tests  
Periodate Oxidation Method, 0.1-20.0 mg/L Mn  
(Color disc 0-3 mg/L) as Mn  
Contains: Buffer Powder Pillows (Citrate type),  
Sodium Periodate Powder Pillows  
For 10-mL samples  
2430000 100 tests  
For 25-mL samples  
2243200 100 tests

## K, L

### KHP

See *Potassium Acid Phthalate*.

### Kjeldahl Indicator

See *TKN Indicator Solution*.

### Lactose Broth, Dehydrated

19634 500 g  
(See Microbiological Products, pages 248-250 for prepared media.)

†*Chemical Stability*—See page 219.

## M

### m-E Agar, Dehydrated

2281234 500 g

### m-Endo Agar LES, Dehydrated

2406634 500 g

### m-Endo Broth, Dehydrated

1462326 100 g  
1462300 500 g

### m-Green YM Broth, Dehydrated

2428200 500 g



## Manganese Standard Solutions as Mn (NIST)

10 mg/L, 2-mL PourRite Ampule	
<b>2605820</b>	20
25 mg/L, 2-mL PourRite Ampule	
<b>2112820</b>	20
250 mg/L, 10-mL Voluette Ampule	
<b>1425810</b>	16
1000 mg/L (HNO <sub>3</sub> matrix)	
<b>1279142</b>	100 mL

Also see Mixed Parameter Quality Control Standards on page 223.

## Manganous Sulfate Powder Pillows

For dissolved oxygen; 300-mL sample

**107166** 50

## Manganous Sulfate Solution

APHA, Dissolved Oxygen Method

**27549** 500 mL

## Mannitol

ACS Grade, CAS No. 69-65-8

C<sub>6</sub>H<sub>14</sub>O<sub>6</sub>, FW = 182.17

**2288226** 100 g

## ManVer® 2 Hardness Indicator Solution

APHA, Hardness Method

**42532** 100 mL MDB

**42549** 500 mL

## ManVer® 2 Hardness Indicator Powder

APHA, Hardness Method

**28014** 113 g

Powder pillows for test kits

**92899** 100

Powder pillows for 50 mL sample

**85199** 100

## Masking Reagent for Aluminum in Brine

**2310542** 100 mL

## MBTH Powder Pillows

For formaldehyde determination

**2257169** 100

## Mercuric Nitrate Cartridges for Digital Titrator

**1439301** 0.2256 N

Digits = mg/L Cl<sup>-</sup> in 100 mL

**92101** 2.256 N

Digits x 0.000282 = meq

**2393701** 2.570 N

Digits x 0.1 = ppt salinity in 2 mL

Digits x 0.00321 = meq

## Mercuric Nitrate Standard Solutions

0.0141 N

**28553** 1 L

0.141 N

**192049** 500 mL

## Mercuric Sulfate

Analytical Grade, CAS No. 7783-35-9

Suitable for use as COD reagent

HgSO<sub>4</sub>, FW = 296.68

**191520** 28.3 g

Assay: 100 ± 2%

## Mercuric Thiocyanate Solution

For colorimetric chloride determination

**2212129** 200 mL

## Mercury Reagent Sets

(See Parameters Section page 188 for details.)

*Colorimetric Method*

Cold Vapor Method, 0.1-2.5 µg/L

**2658300** 25 tests

## Mercury Standard Solutions as Hg (NIST)

1000 mg/L (HNO<sub>3</sub> matrix)

**1419542** 100 mL

## Metals Prep Set

For determination of total metals with TNTplus reagents

**TNT890** 25 tests

## Methyl Alcohol

ACS Grade, CAS No. 67-56-1

CH<sub>3</sub>OH, FW = 32.04

**1446449** 500 mL

**1446417** 4 L (No Air Shipments)

## Methyl Orange Indicator Solutions

0.50 g/L, APHA

**14849** 500 mL

**14832** 100 mL MDB

## Methyl Purple Indicator Solution

1.0 g/L. For alkalinity titrations;

pH range 4.8 to 5.4

**2193432** 100 mL MDB

**2193449** 500 mL

## Methyl Red Indicator Solution

1.0 g/L, APHA

**14949** 500 mL

## Methylthymol Blue Powder Pillows

Indicator for metals and chelant titrations

**2284799** 100

## 4-Methylumbelliferyl-fl-D-Glucuronide

(MUG Fluorescence Crystals) CAS No. 6160-80-1

For rapid detection of *E. coli*

**2184421** 1 g

## Mineral Stabilizer Solution

Removal of hardness interference in ammonia method for soils, sludges and wastewater

**2376626** 50 mL SCDB

**2376649** 500 mL

## Molybdate Reagent

For high range (0.2-30.0 mg/L) phosphate

**223632** 100 mL MDB

**223653** 1 L

**223617** 3.78 L

For low range phosphate

**2599849** 500 mL

## Molybdate 3 Reagent

For low range silica

**199526** 50 mL SCDB

**199532** 100 mL MDB

**199549** 500 mL

**199553** 1 L

## Molybdate Reagent Powder Pillows

For high range silica (1-100 mg/L) silica 10-mL sample

**2107369** 100

**2107328** 1000

25-mL sample

**104199** 100

**104128** 1000

## Molybdate Reagent Powder Pillows

For low range (0-2 mg/L) silica 5-mL sample

**1454699** 100

## Molybdenum 1 Reagent Powder Pillows

For 5-mL sample

**2359299** 100

For 20-mL sample

**2352449** 100

For 50-mL sample

**2352769** 100

## Molybdenum 2 Reagent Solution

**2352523** 25 mL SCDB

**2352512** 50 mL MDB

**2352532** 100 mL MDB

**2352549** 500 mL

## Molybdenum (Molybdate) Reagent Sets

(See Parameters Section page 189 for details.)

*Colorimetric Method*

Mercaptoacetic Acid Method, 0.3-40.0 mg/L as Mo<sup>6+</sup>

10-mL sample

**2604100** 100 tests

25-mL sample

**2243400** 100 tests

*Ternary Complex Method*

0.02-3.00 mg/L as Mo<sup>6+</sup>

Contains: Molybdenum 1 and 2 Reagents for Low Range Molybdate

5-mL sample

**2439500** 100 tests

20-mL sample

**2449400** 100 tests

50-mL sample

**2440200** 100 tests

## Molybdenum Standard Solutions as Mo (NIST)

10 mg/L

**1418742** 100 mL

1000 mg/L [NH<sub>4</sub>OH(Cl<sup>-</sup>,NO<sub>3</sub><sup>-</sup>) matrix]

**1418642** 100 mL

## Molybdovanadate Reagent

For Reactive (ortho) Phosphate

**2076032** 100 mL MDB

**2076049** 500 mL

**2076053** 1 L

**2076004** 1 L, 4/pk

**2076017** 3.78 L

AccuVac Ampules

**2525025** 25

## MolyVer Reagent AccuVac Ampules

Mercaptoacetic Acid Method, 0.2-40.0 mg/L Mo<sup>6+</sup>

Also requires 0.4M CDTA 2615436.

**2522025** 25

## MolyVer 1 Molybdenum Reagent Powder Pillows

10 mL sample 0.3-40.0 mg/L Mo

**2604299** 100

25-mL sample 0-35.0 mg/L Mo

**1414669** 100

## MolyVer 2 Molybdenum Reagent Powder Pillows

10-mL sample 0.3-40.0 mg/L Mo

**2604399** 100

25-mL sample 0-35.0 mg/L Mo

**1414869** 100

*†Chemical Stability—See page 219.*

# MOLYBDENUM – NITROGEN-AMMONIA

## MolyVer 3 Molybdenum Reagent Powder Pillows

10-mL sample 0.3-40.0 mg/L Mo  
2604499 100  
25-mL sample 0-35.0 mg/L Mo  
1417869 100

## Monochlor F Reagent PP

2802246 50  
2802299 100

## Monochloramine Reagent Set, HR

Indophenol method, Test 'N Tube  
0.1-10.0 mg/L as Cl<sub>2</sub>  
2805145 Up to 50 tests

Also see SpecV Gel Secondary Standards for Monochloramine on page 223.

## MUG Reagent

See 4-Methylumbelliferyl-fl-D-Glucuronide.

## MUGGAL

(4-Methylumbelliferyl beta-D galactopyranoside)  
Fluorescent indicator for total coliforms  
2814135 2 g  
Store in freezer (less than 0°C)

## Murexide Indicator Powder Pillows

2701349 100

## N

## N-(1-Naphthyl)-ethylenediamine Dihydrochloride

Analytical Grade, CAS No. 1465-25-4  
C<sub>12</sub>H<sub>14</sub>N<sub>2</sub>•2HCl, FW = 259.17  
1124224 25 g  
Assay: ≥98.0%

## Nalidixic Acid

2407124 25 g

## Natural Water Standard Solutions (NIST)

For conductivity/TDS  
40% sodium sulfate, 40% sodium bicarbonate,  
20% sodium chloride  
30 mg/L TDS, 46.7 µS/cm  
2974526 50 mL  
2974549 500 mL  
300 mg/L TDS, 445 µS/cm  
2974626 50 mL  
2974649 500 mL  
1000 mg/L TDS, 1417 µS/cm  
2974726 50 mL  
2974749 500 mL  
3000 mg/L TDS, 3960 µS/cm  
2974826 50 mL  
2974849 500 mL

## Neodymium Chloride Solution

Wavelength calibration standard for spectrophotometers  
1421042 100 mL

## Nessler Reagent

2119432 100 tests MDB  
2119449 500 mL  
2119453 1000 mL

## Neutral Detergent Concentrate

Acid Detergent Fiber Test  
2277353 1 L

## Nickel 1 Reagent Powder Pillows

212368 25

## Nickel 2 Reagent Powder Pillows

212468 25

## Nickel Reagent Sets

(See Parameters Section page 190 for details.)

### Colorimetric Method

Heptoxime Method, 0.02-1.80 mg/L as Ni

2243500 50 tests  
PAN Method, 0.006-1.000 mg/L as Ni  
10-mL sample

2651600 100 tests  
25-mL sample

2242600 100 tests  
Dimethylglyoxime Method, 0.1-6.0 mg/L Ni  
TNTplus  
TNT856 25 tests

## Nickel Standard Solutions as Ni (NIST)

1000 mg/L (HNO<sub>3</sub> matrix)  
1417642 100 mL

## Nickel TNTplus®

Dimethylglyoxime Method, 0.1-6.0 mg/L Ni  
TNT856 25 tests

## Nicotinic Acid p-Toluenesulfonic Acid

(Nicotinic Acid PTSA)  
Protein-TKN standard: 4.743% N, 29.64% crude protein  
2278124 25 g

## Nitrate Ionic Strength Adjustor Powder Pillows

4456369 100

## Nitrate Ionic Strength Adjustor Buffer Solution

2488349 500 mL

## Nitrate Reagents

See Nitrogen, Nitrate Reagents and NitraVer Reagents.

## Nitrate Standard Solution

See Nitrogen, Nitrate Standard Solutions.

## NitraVer® 5 Nitrate Reagent

For mid- and high range: (0.1-10.0 or 0.3-30.0 mg/L as nitrate-N)

AccuVac Ampules  
2511025 25

Powder Pillows 5-mL sample

1403546 50  
1403599 100

10-mL sample

2106169 100  
2106103 300

25-mL sample  
1403499 100  
1403428 1000

## NitraVer® 6 Nitrate Reagent

Powder Pillows

For low range: 0.01-0.50 mg/L as nitrate-N.

Use with NitraVer 3

5-mL sample (saltwater)

2076199 100  
5-mL sample

1412099 100  
10-mL sample

2107249 100  
30-mL sample

1411999 100  
1411928 1000-pac

## Nitric Acid

ACS Grade, CAS No. 7697-37-2  
HNO<sub>3</sub> approx. 70%, FW = 63.01  
15249 500 mL (No FedEx Shipments)

## Nitric Acid Solution, 1:1

254049 500 mL

## Nitrification Inhibitor, Formula 2533™

Contains 2-chloro-6 (trichloromethyl) pyridine (N-Serve), coated on an inert substrate. Two shots in a 300-mL sample (use the dispenser cap, available below) inhibits nitrogenous oxygen demand in the BOD test. Approximately 200 samples can be treated with 35 g.

2533335 35 g

2533334 500 g

Dispenser cap (for 2533335)

45901 each

## Nitrite TNTplus®

LR, Diazotization method, 0.015-0.60 mg/L NO<sub>2</sub>-N

TNT839 25 tests

HR, Diazotization method, 0.6-6.0 mg/L NO<sub>2</sub>-N

TNT840 25 tests

## Nitrite Solution, Stock, 250 µg/mL (mg/L) as N

APHA, Nitrogen (Nitrite)  
2340249† 500 mL

## NitriVer® 2 Nitrite Reagent Powder Pillows

For high range: up to 250 mg/L as nitrite.

5-mL sample

181369 100

10-mL sample

2107569 100

25-mL sample

221969 100

## NitriVer® 3 Nitrite Reagent

For low range: 0.002-0.500 mg/L or 0.02-0.30 mg/L as nitrite-N.

AccuVac Ampules

2512025 25

Powder Pillows 5-mL sample

1407899 100

1407828 1000

10-mL sample

2107169 100

25-mL sample

1406599 100

1406528 1000

## Nitrogen Standards

For checking accuracy of crude protein test (TKN).

Set of three 25-g standards: Ammonium p-Toluenesulfonic Acid (Ammonium PTSA), Glycine PTSA and Nicotinic Acid PTSA.

2277800 Set of 3

## Nitrogen-Ammonia Reagent Sets

Also see Ammonia.

(See Parameters Section page 154 for details.)

### Colorimetric Method

Nessler Method, 0.02-2.50 mg/L NH<sub>3</sub>-N

2458200 250 tests

10-mL sample

2429900 100 tests

### Colorimetric Method

10-mL sample

2668000 100 tests

### Colorimetric Method

Test 'N Tube™ AmVer™ Reagent Set,

0.02-2.50 mg/L NH<sub>3</sub>-N mg/L

2604545 25-50 tests

Test 'N Tube™ AmVer™ Reagent Set,

0.4-50.0 mg/L NH<sub>3</sub>-N

2606945 25-50 tests

## Nitrogen-Ammonia Standard Solutions as NH<sub>3</sub>-N

1 mg/L	
<b>189149</b>	500 mL
10 mg/L	
<b>15349</b>	500 mL
50 mg/L, 2-mL PourRite Ampule	
<b>1479120</b>	20
50 mg/L, 10-mL Voluette Ampule	
<b>1479110</b>	16
100 mg/L	
<b>2406549</b>	500 mL
150 mg/L, 10-mL Voluette Ampule	
<b>2128410</b>	16
160 mg/L, 10-mL Voluette Ampule	
<b>2354153</b>	1 L

Also see **Mixed Parameter Quality Control Standards** on page 223.

## Nitrogen-Inorganic, Total Pretreatment Reagent Set

Test 'N Tube™ Titanium Chloride Method, 0.2-25.0 mg/L  
Contains: Total Inorganic Nitrogen Reductant Ampules, and Total Inorganic Nitrogen Pretreatment Reagent (Method also requires 2604545)  
**2604945** 25-50 tests

## Nitrogen-Nitrate Reagent Sets

(See Parameters Section page 192 for details.)  
(See NitraVer for additional Nitrate reagents.)

*Colorimetric Method*  
High Range Cadmium Reduction Method  
Range: 0-10 mg/L as NO<sub>3</sub>-N,  
5-mL sample  
**2460800** 100 tests  
Low Range Cadmium Reduction Method  
Range: 0.01-0.50 mg/L as NO<sub>3</sub>-N,  
10-mL sample  
**2429800** 100 tests  
30-mL sample  
**2245100** 100 tests  
*Colorimetric Method*  
Chromotropic Acid Method  
Test 'N Tube NitraVer X Reagent Set, 0.2-30.0 mg/L  
**2605345** 50 tests

## Nitrogen-Nitrate TNTplus®, LR

0.2-13.5 mg/L NO<sub>3</sub>-N  
**TNT835** 25 tests

## Nitrogen-Nitrate TNTplus®, HR

5-35 mg/L NO<sub>3</sub>-N  
**TNT836** 25 tests

## Nitrogen-Nitrate Standard Solutions as NO<sub>3</sub>-N (NIST)

1 mg/L as NO <sub>3</sub> -N, 4.43 mg/L as NO <sub>3</sub> <sup>-</sup>	
<b>204649</b>	500 mL
5 mg/L, 10-mL Voluette Ampule	
<b>2557810</b>	16
10 mg/L, 44.3 mg/L as NO <sub>3</sub> <sup>-</sup>	
<b>30749</b>	500 mL
15 mg/L	
<b>2415132</b>	100 mL MDB
100 mg/L as NO <sub>3</sub> -N, 443 mg/L as NO <sub>3</sub> <sup>-</sup>	
<b>194749</b>	500 mL
500 mg/L, 10-mL Voluette Ampule	
<b>1426010</b>	16
500 mg/L, 2-mL PourRite Ampule	
<b>1426020</b>	20
1000 mg/L as NO <sub>3</sub> -N; 4430 mg/L as NO <sub>3</sub> <sup>-</sup>	
<b>1279249</b>	500 mL

Also see **Mixed Parameter Quality Control Standards** on page 223.

## Nitrogen-Nitrite, Low Range, Reagent Set

*Colorimetric Method*  
Test 'N Tube NitriVer 3 Reagent Set, 0.002-0.500 mg/L  
Contains: NitriVer 3 Reagent Test 'N Tubes  
**2608345** 50 tests  
(Also see NitriVer 3 Nitrite Reagent Powder Pillows.)

## Nitrogen, Total Reagent Sets

(See Parameters Section page 194 for details.)  
Test 'N Tube LR method, 0.5-25.0 mg/L N  
**2672245** 25-50 tests  
Test 'N Tube HR method, 10-150 mg/L N  
**2714100** 25-50 tests  
TNTplus LR method, 1-16 mg/L N  
**TNT826** 25 tests  
TNTplus HR method, 5-40 mg/L N  
**TNT827** 25 tests  
TNTplus UHR method, 20-100 mg/L N  
**TNT828** 25 tests

## Nitrogen (Total Kjeldahl) Reagent Set

(See Parameters Section page 194 for details.)  
*Colorimetric Method*  
Nessler Method, 1-150 mg/L  
**2495300** 250 tests  
(No Air/UPS Shipments)

## Nitrogen (Simplified Total Kjeldahl) Reagent Set TNTplus®

0-16 mg/L N  
**TNT880** 25 tests

## Nitrogen, Total TNTplus®

See *Nitrogen, Total Reagent Sets*.

## Nitrogen, Total Kjeldahl Indicator

See *TKN Indicator*.

## m-Nitrophenol Indicator Solution

10 g/L, pH indicator  
**247632** 100 mL DB

## N-Serve

See *2-Chloro-6 (Trichloromethyl) Pyridine and Nitrification Inhibitor*

## Nutrient Broth, Dehydrated

General purpose medium for cultivating microorganisms that are not exacting in their food requirements. Specified by APHA for water, sewage and dairy products.  
**2560626** 100 g

## Nutrient Buffer Pillows

APHA, for preparing BOD dilution water. Ready for immediate use.  
0.5-mL size for 300 mL  
**1416066** 50  
3-mL size for 3 liters  
**1486166** 50  
4-mL size for 4 liters  
**2436466** 50  
6-mL size for 6 liters  
**1486266** 50  
19-mL size for 19 liters  
**1486398** 25  
Respirometric Nutrient Buffer Pillows for BODTrak II Apparatus  
**2962266** 50

O

## Oxalic Acid Reagent, 150 g/L

For silica determinations  
**97549** 500 mL

## Oxalic Acid 2 Reagent

For silica determination; removes phosphate interference  
**1409417** 3.78 L  
(No Air/UPS Shipments)

## Oxidase Reagent, 0.5 mL

**2622500** 50/pk

## Oxygen Demand, Biochemical

See *BOD*.

## Oxygen Demand, Chemical

See *COD*.

## Oxygen, Dissolved

See *Dissolved Oxygen*.

## Oxygen Scavenger Reagents

See *DEHA Reagent Set*.

## Ozone Reagent AccuVac® Ampules

Range: 0-0.25 mg/L; 1-inch cell path  
**2516025** 25  
Range: 0-0.75 mg/L; 1-inch cell path  
**2517025** 25  
Range: 0-1.5 mg/L; 1-inch cell path  
**2518025** 25

P

## P-A Broth, Dehydrated

See *Microbiological Products*, page 248 for *Presence-Absence Broth*.

## PAN Indicator Solutions

0.3% colorimetric reagent for low level nickel and cobalt determinations, indicator for EDTA titration of copper  
**2150232** 100 mL  
0.1% colorimetric reagent for low level manganese determinations  
**2122426** 50 mL SCDB  
**2122432** 100 mL  
**2122449** 500 mL  
(See also *Manganese Reagent Sets*)

## PCB Reagent Set

Immunoassay method, ppm thresholds  
**2773500** Up to 18 tests

## Peptone Diluent

See *Dilution Water; Dilution Water, Buffered, Sterile*. Visit: [hach.com](http://hach.com)

## pH Standardization Buffers

See *Buffers*.

## pH Electrode Storage Solution, 3M

**2756549** 500 mL  
**2756526** 50 mL

# pH — PHOSPHORUS

## pH Electrode Storage Solution

Powder Pillows

Each pillow makes 25 mL of storage solution

2657364 20

## 1,10-Phenanthroline Ferrous Sulfate

See *Ferrous Indicator Solution*.

## Phenol

ACS Grade, CAS No. 108-95-2

C<sub>6</sub>H<sub>5</sub>OH, FW = 94.11

75814 113 g

## Phenol Reagent Powder Pillows

87299 100

For nonextraction method

2481569 100

## Phenol 2 Reagent Powder Pillows

183699 100

## Phenol Red Indicator Powder Pillows

For pH Test Kit (color cube)

2074846 50

## Phenol Red Indicator Solutions

Standardized for colorimetric pH determination

Color range: pH 5.8 (yellow)-pH 7.3 (red)

21136 15 mL SCDB

21126 50 mL SCDB

21132 100 mL MDB

21149 500 mL

2657512 50 mL spec. grade  
(for photometers)

## Phenol Solution

30 g/L

211220 29 mL

## Phenols Reagent Set

(See Parameters Section page 199 for details.)

*Colorimetric Method*

4-Aminoantipyrine Method, 0.002-0.200 mg/L as phenol

2243900 100 tests

*No Air Shipments*

Air Freight Configuration

2243901 100 tests

## Phenolphthalein Indicator Solutions

1 g/L; pH indicator

189736 15 mL SCDB

189753 1 L

5 g/L, APHA

16236 15 mL SCDB

16232 100 mL MDB

16253 1 L

## Phenolphthalein Powder Pillows

94299 100

## Phenolsulfonphthalein

See *Phenol Red*.

## Phenylarsine Oxide (PAO) Cartridges for Digital Titrator

2259901† 0.00451 N

For chlorine:

1 digit = 1 µg/L Cl<sub>2</sub> in 200 mL

Digits x 0.0000564 = meq

2142001 0.0451 N

For chlorine:

Digits x 0.01 = mg/L Cl<sub>2</sub> in 200 mL

Digits x 0.0000564 = meq

199901† 0.00564 N

PAO Titrant

## Phenylarsine Oxide (PAO)

### Standard Solutions

PAO Titrants (also available in Digital Titrator

cartridges)

0.00564 N

199942† 100 mL

199953† 1 L

199917† 3.78 L

## Phenylarsine Oxide (PAO) Titrant, 0.00564N

Total and/or Free Chlorine (Amperometric Method)

2700349 500 mL

## Phosphate Buffer Solution Pillows, Sterile

AODC Procedure for Total Bacteria

2375866 50

## Phosphate Pretreatment

### Powder Pillows

1450199 100

## Phosphate 2 Reagent Powder Pillows

106199 100

## Phosphate Reagent

Also see *Phosphorus Reagents*.

## Phosphate (Acid Hydrolyzable)

### Reagent Set

(See Parameters Section—Phosphorus page 201 for details.)

*Colorimetric Method*

Test 'N Tube Total and Acid Hydrolyzable

Phosphate Reagent Set, 0.06-3.50 mg/L PO<sub>4</sub>

2742745 Up to 50 tests

## Phosphate Standard Solutions as PO<sub>4</sub> (NIST)

1 mg/L

256949 500 mL

3 mg/L

2059716 946 mL

2059703 2.9 L

10 mg/L

1420416 946 mL

15 mg/L

1424342 100 mL

30 mg/L

1436716 946 mL

50 mg/L, 10-mL Voluette Ampule

17110 16

50 mg/L, 2-mL PourRite Ampules

17120H 20

50 mg/L

17149 500 mL

100 mg/L

1436832 100 mL MDB

500 mg/L, 10-mL Voluette Ampule

1424210 16

500 mg/L

1424232 100 mL MDB

Also see **Mixed Parameter Quality Control Standards on page 223.**

## Phosphonates Reagent Set

*Colorimetric Method*

Persulfate/UV Oxidation Method, 0.1-5 mg/L,

1-125 mg/L

Contains: PhosVer 3 Phosphate Reagent Powder

Pillows

10-mL sample

2429700 100 tests

25-mL sample

2244000 100 tests

## Phosphoric Acid

ACS Grade, CAS No. 7664-38-2

H<sub>3</sub>PO<sub>4</sub>, approx. 85%, FW = 98.00

76215 2.5 L

Assay: ≥85.0%

## Phosphoric Acid, 10%

For phenol distillation and wastewater preservation

1476932 100 mL MDB

## Phosphorus, Rapid Liquid™ Reagents

For rapid liquid high-range phosphorus,

0.3-45.0 mg/L PO<sub>4</sub> Molybdovanadate Reagent

2076049 500 mL

## Phosphorus, Reactive, Rapid Liquid™ Reagents

For rapid liquid reactive phosphorus,

19-3000 µg/L PO<sub>4</sub>, low-range

Molybdate Reagent Solution

2599849 500 mL

Ascorbic Acid Solution

2599949 450 mL

Ascorbic Acid Powder

2651255 48 g

## Phosphorus Reagent Set Acid Hydrolyzable Phosphorus

Acid Hydrolyzable and Total Phosphate TNT

Reagent Set Ascorbic Acid Method,

0.06-3.50 mg/L PO<sub>4</sub>

2742745 Up to 50 tests

## Phosphorus, Reactive

(See Parameters Section page 201 for details.)

Amino Acid Method, 0.23-30.00 mg/L PO<sub>4</sub>

2244100 100 tests

Ascorbic Acid Method, Rapid Liquid, 19-3000 µg/L PO<sub>4</sub>

2678600 250 tests

Ascorbic Acid Method, PhosVer 3 Powder Pillows

10-mL Sample, 0.02-2.50 mg/L PO<sub>4</sub>

2106069 100

2106028 1000

25 mL Sample, 0.02-2.50 mg/L PO<sub>4</sub>

212599 100

212528 1000

Ascorbic Acid Method, PhosVer 3 AccuVac

Ampules, 0.02-2.50 mg/L PO<sub>4</sub>

2508025 25

Ascorbic Acid Method, PhosVer 3 TNT Vials,

0.06-5.00 mg/L PO<sub>4</sub>

2742545 Up to 50 tests

Reactive Phosphorus TNTplus, 1.6-30.0 mg/L PO<sub>4</sub>

TNT846 25

Molybdovanadate Method, 0.3-45.0 mg/L PO<sub>4</sub>

Molybdovanadate Phosphorus Reagent

2076032 100 mL

2076049 500 mL

Molybdovanadate Reagent AccuVac Ampules

2525025 25

Molybdovanadate Method TNT Vials,

1.0-100.0 mg/L PO<sub>4</sub>

2767345 Up to 50 tests

## Phosphorus, Reactive and Total Reagent Sets

(See Parameters Section page 201 for details.)

*Ascorbic Acid Method*

TNTplus LR Method, 0.05-1.5 mg/L P

(0.15-4.5 mg/L PO<sub>4</sub>)

TNT843 25

TNTplus HR Method, 0.5-5 mg/L P

(1.5-15.0 mg/L PO<sub>4</sub>)

TNT844 25

TNTplus UHR Method, 2-20 mg/L P

(6-60 mg/L PO<sub>4</sub>)

TNT845 25

†Chemical Stability—See page 219.



## Phosphorus, Total Reagent Sets

(See Parameters Section page 201 for details.)

Total Phosphorus Reagent Set, HR

Molybdovanadate Method TNT,

1.0-100.0 mg/L PO<sub>4</sub>

**2767245** 25-50 tests

Total Phosphorus Reagent Set, LR

Ascorbic Acid Method TNT, 0.06-3.50 mg/L PO<sub>4</sub>

**2742645** Up to 50 tests

Total Phosphorus Digestion Reagent Set

Includes Sulfuric Acid, Sodium Hydroxide and

Potassium Persulfate Powder Pillows

For digestion prior to analysis by a Reactive

Phosphorus method

**2459000** 100 tests

## Phosphorus 1 Reagent

Used for phosphorus determination in food and feed samples

**2260549** 500 mL

## Phosphorus 2 Reagent

Used for phosphorus determination in food and feed samples

**2260649** 500mL

## Phosphorus Standard Solutions as P (NIST)

25 mg/L, 10-mL Voluette Ampule

**2109210** 16

1000 mg/L

**2321142** 100 mL

## PhosVer® 3 Phosphate Reagent

AccuVac Ampules

**2508025** 25

Powder Pillows 5-mL sample

**220999** 100

**220928** pk/1000

10-mL sample

**2106069** 100

**2106028** pk/1000

25-mL sample

**212599** 100

**212528** pk/1000

## Phthalate-Phosphate Reagent Powder Pillows

For low-level determination of nickel and cobalt

10-mL sample

**2615199** 100

25-mL sample

**2150166** 50

## Plate Count Agar, Dehydrated

(TGY agar: Tryptone-glucose-yeast agar)

For standard plate count, APHA procedure

**2177826** 100 g

(See Microbiological Products, pages 248-250 for prepared media.)

## Polyseed®

BOD Seed Inoculum

**2918700** 50 capsules

## Polyvinyl Alcohol Dispersing Agent

Ammonia Method for soils, sludges and wastewater samples

**2376526** 50 mL SCDB

**2376549** 500 mL

## Polyvinyl Alcohol Solution

Suitable for crude protein determination in feeds

20 g/L

**2110042** 100 mL

## Porphyrin 1 Reagent Powder Pillows

For copper porphyrin method

10-mL sample

**2603549** 100

25-mL sample

**2187469** 100

## Porphyrin 2 Reagent Powder Pillows

For copper porphyrin method

10-mL sample

**2603649** 100

25-mL sample

**2187569** 100

## Potassium Acid Phthalate

Primary standard acid, ACS Grade

CAS No. 877-24-7

C<sub>8</sub>H<sub>5</sub>O<sub>4</sub>K, FW = 204.23

**31534** 500 g

Assay: ≥99.95 but ≤100.05%

## Potassium Adjustment Powder

See *Potassium Ionic Strength Adjustor*.

## Potassium Biiodate Standard Solution

0.025 N

**31249H†** 500 mL

## Potassium Chloride

ACS Grade, CAS No. 7447-40-7

KCl, FW = 74.55

**76401** 454 g

## Potassium Chloride Reference Electrolyte Gel Cartridges

**2546902** 2/pk

## Potassium Chloride Solution

50% saturated; for use in DO probe,

**1429323** 25 mL SCDB

## Potassium Chloride Standard Solutions (NIST)

Also suitable for standardizing conductivity apparatus.

74.55 mg/L KCl (0.001M), 146.9 μS/cm

**2974226** 50 mL

**2974249** 500 mL

745.5 mg/L KCl (0.01M), 1412 μS/cm

**2974326** 50 mL

**2974349** 500 mL

7455 mg/L KCl (0.1M), 12,890 μS/cm

**2974426** 50 mL

**2974449** 500 mL

35 ppt KCl Salinity, 53 mS/cm

**2714349** 500 mL

## Potassium Cyanide

ACS Grade, CAS No. 151-50-8

**76714** 125 g

Assay: ≥96.0%

## Potassium Dichromate Standard Solutions

1.000 N K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>

**2197153** 1 L

## Potassium Hydrogen Phthalate

See *Potassium Acid Phthalate*.

## Potassium Hydroxide Pellets

ACS Grade, CAS No. 1310-58-3 KOH,

approx. 85%, FW = 56.10

**31434** 500 g

Assay: ≥85%

## Potassium Hydroxide Standard Solutions

1.0 N

**2314426** 50 mL SCDB

8.00 N

**28232H** 100 mL MDB

**28249** 500 mL

12.0 N

**23032** 100 mL MDB

**23049H** 500 mL

## Potassium Iodide

ACS Grade, CAS No. 7681-11-0

KI, FW = 166.01

**16701H** 454 g

**16726H** 100 g

## Potassium Iodide-Iodate Standard Solutions

0.00125 N (equivalent to 10 mg/L DO)

**40149** 500 mL

0.0125 N (APHA for sulfite)

**1400153** 1 L

## Potassium Iodide Powder Pillows

For test kits and lab methods

**107799** 100

For chlorine and hypochlorite titrations

**2059996** 50

## Potassium Iodide Solutions (NIST)

30 g/L

**34332** 100 mL MDB

**34349** 500 mL

100 g/L

**1228949** 500 mL

20%

**1456842** 100 mL

## Potassium Iodide Starch Test Paper

Vial of 100 test strips

**2351600** each

## Potassium Iodide Swiftest Dispenser for AutoCAT Chlorine

SwifTest bulk dispenser with Potassium Iodide

**2834100** 250 tests

Replacement vial

**107760** 250 tests

## Potassium Permanganate

ACS Grade CAS No. 7722-64-7

FW = 158.04

**16801H** 454 g

## Potassium Permanganate Solution

1 g/L

**1416442** 100 mL

## Potassium Permanganate Standard Solution

0.1 N

**2321753†** 1 L

## Potassium Persulfate

ACS Grade, CAS No. 7727-21-1

K<sub>2</sub>S<sub>2</sub>O<sub>8</sub>, FW = 270.33

**2617501** 454 g

Assay: ≥99.0%

†Chemical Stability—See page 219.



# POTASSIUM PERSULFATE — SILVER

## Potassium Persulfate Powder Pillows

For total phosphate digestion (hot plate)

<b>245199</b>	100
For phosphonate test and Total Phosphate TNT	
<b>2084769</b>	100

## Potassium Phosphate, Monobasic

ACS Grade, CAS No. 7778-77-0

Suitable for preparation of microbiological dilution water and pH buffers  
 $\text{KH}_2\text{PO}_4$ , FW = 136.09  
**17001H** 454 g

## Potassium 1 Reagent Powder Pillows

<b>1432198</b>	25
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## Potassium 2 Reagent

Solution pillows  
**1432298** 25

## Potassium 3 Reagent Powder Pillows

<b>1432399</b>	100
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## Potassium Sodium Tartrate

See *Rochelle Salt*.

## Potassium Standard Solutions as K (NIST)

100 mg/L	
<b>2351749</b>	500 mL
250 mg/L, 10-mL Voluette Ampule	
<b>1479010</b>	16

## Potassium Sulfate, Anhydrous

ACS Grade, CAS No. 7778-80-5

$\text{K}_2\text{SO}_4$ , FW = 174.27  
**2340501** 454 g

## Presence-Absence (P-A) Broth, Dehydrated

Used to detect pollution in treated or potable water; described in the 22nd ed., Standard Methods.

<b>2280934</b>	500 g
(See Microbiological Products, pages 248-250 for prepared media.)	

## Pretreatment Reagent Set

For reduction of nitrite interferences in  $\text{NO}_3$  test

Purchase both:  
 Phenol Solution, 30 g/L  
**211220** 29 mL  
 Bromine Water, 30 g/L  
**221120** 29 mL

## Process Analyzer Reagents

See pages 393-394.

## 2-Propanol

(See *Isopropyl Alcohol*)

## Proteose Peptone #3

<b>2815134</b>	500 g
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## Pyridine

ACS Grade, CAS No. 110-86-1

$\text{C}_5\text{H}_5\text{N}$ , FW = 79.10  
**1446949** 500 mL

## 3-(2-Pyridyl)-5,6-Bis(4-Phenylsulfonic Acid)-1,2,4-Triazine, Monosodium Salt, Monohydrate

(See *FerroZine® Iron Reagent*)

## Q, R

### QAC Reagent 1 Powder Pillows

<b>2401066</b>	50
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### QAC Reagent 2 Powder Pillows

<b>2401268</b>	25
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### Quaternary Ammonium Compound (QAC) Standard

100 mg/L CTAB  
**2415342** 100 mL

### R2A Agar, Dehydrated

Low nutrient medium for enumeration and cultivation of bacteria from potable water. Used for pour or spread plate and MF methods; described in the 16th edition of Standard Methods.

<b>2281034</b>	500 g
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### Resin, Demineralizer, Dried

Replacement for resin in Hach Demineralizer Bottles (indicating type) 380 g of dried resin is equivalent to 454 g wet

<b>31101H</b>	380 g
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### Rochelle Salt Solution

(Potassium sodium tartrate)

<b>172533</b>	29 mL DB
<b>172549</b>	500 mL

### Rochelle Salt-PVA Reagent

For ammonia determination

<b>2199432</b>	100 mL MDB
<b>2199449</b>	500 mL

### Rosolic Acid

Used to increase selectivity of m-FC Broth.

<b>2162921</b>	1 g
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### RoVer® Rust Remover

<b>30001</b>	454 g
<b>30012</b>	454 g (12 bottles per case)
<b>30040</b>	18 kg

## S

### Salt

See *Sodium Chloride*.

### Sample Blank Vials

For use with TNTplus methods

<b>TNT919</b>	5/pk
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### Selenium Reagent Set

Diaminobenzidine method, 0.01-1.00 mg/L Se

<b>2244200</b>	100 tests
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### Selenium Standard Solution (NIST)

1000 mg/L Se	
<b>2240742</b>	100 mL

## Silica, Rapid Liquid™ Reagents

Amino Acid F Reagent Powder	
<b>2651155</b>	55 g
Amino Acid F Dilution Solvent	
<b>2353011</b>	475 mL
Citric Acid F Reagent Solution	
<b>2254249</b>	500 mL
Molybdate 3 Reagent Solution	
<b>199549</b>	500 mL

## Silica Analyzer Reagents

See page 394.

## Silica Gel, 100-200 mesh

<b>2665034</b>	500 g
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## Silica Gel with Indicator

For use as desiccant

<b>1426901</b>	454 g
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## Silica Reagent Sets

(See Parameters Section page 205 for details.)

*Heteropoly Blue Method - Low Range*

Ultralow Range Rapid Liquid,	
3-1000 µg/L $\text{SiO}_2$	
<b>2678500</b>	250 tests
Ultralow Range Bulk Solution,	
3-1000 µg/L $\text{SiO}_2$	
<b>2553500</b>	100 tests
Ultralow Range Ampuled Reagents,	
3-1000 µg/L $\text{SiO}_2$	
<b>2581400</b>	40 tests
Low Range, 0.01-1.60 mg/L $\text{SiO}_2$	
10-mL Sample, 0.010-1.600 mg/L $\text{SiO}_2$	
<b>2459300</b>	100 tests
25-mL Sample - for older instruments	
<b>2346800</b>	100 tests

*Silicomolybdate Method - High Range*

1-100 mg/L $\text{SiO}_2$	
10-mL Sample	
<b>2429600</b>	100 tests
25-mL Sample	
<b>2244300</b>	100 tests

## Silica 1 Reagent

<b>27026</b>	50 mL SCDB
<b>27032</b>	100 tests MDB
<b>27053</b>	1 L

## Silica 3 Reagent

Powder pillows	
<b>27169</b>	100

## Silica Standard Solutions as $\text{SiO}_2$ (NIST)

0.5 mg/L	
<b>2100817</b>	3.78 L
1 mg/L	
<b>110649</b>	500 mL
10 mg/L	
<b>140349</b>	500 mL
25 mg/L	
<b>2122531</b>	236 mL
50 mg/L	
<b>111729</b>	200 mL
1000 mg/L	
<b>19449</b>	500 mL

## Silicone Oil

<b>126936</b>	15 mL SCDB
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## Silver Diethyldithiocarbamate

ACS Grade, CAS No. 1470-61-7

$(\text{C}_2\text{H}_5)_2\text{NCS}_2\text{Ag}$ , FW = 256.13  
**1447624** 25 g

Suitability for determination of arsenic:  
 Passes test

## Silver Nitrate

ACS Grade, CAS No. 7761-88-8  
 $\text{AgNO}_3$ , FW = 169.87  
**17314H** 113 g

## Silver Nitrate Cartridges for Digital Titrator

**1439601†** 0.2256 N  
 Digits x 0.1 = mg/L  $\text{Cl}^-$  in 100 mL  
 Digits x 0.000282 = meq  
**1439701** 1.128 N  
 Digits x 10 = mg/L  $\text{Cl}^-$  in 5 mL  
 Digits x 0.00141 = meq

## Silver Nitrate Standard Solutions

0.0141 N (for chloride test)  
**31653†** 1 L  
 0.100 N  
**2321953** 1 L  
 0.141 N  
**1255149†** 500 mL

## Silver Reagent Set

Colorimetric method, 0.02-0.70 mg/L  
**2296600** 50 tests

## Silver 1 Reagent Powder Pillows

**2293566** 50

## Silver 2 Reagent Solution Pillows

**2293666** 50

## Silver Standard Solution as Ag (NIST)

1000 mg/L ( $\text{HNO}_3$  matrix)  
**1461342** 100 mL

## Silver Sulfate

ACS Grade, CAS No. 10294-26-5  
 $\text{Ag}_2\text{SO}_4$ , FW = 311.83  
**33414** 113 g

## Soap Solution,

### Hardness Demonstration

50-mL sample  
**39532** 100 mL MDB  
**39553** 1 L  
 25-mL sample  
**46212** 50 mL DB  
**46249** 500 mL

## Sodium Arsenite Solution, 5.0 g/L

Total and/or Free Chlorine (Colorimetric or Titrimetric Method) and Fluoride (SPADNS Method)  
**104732** 100 mL

## Sodium Bicarbonate

ACS Grade, CAS No. 144-55-8  
 $\text{NaHCO}_3$ , FW = 84.01  
**77601** 454 g  
 Assay:  $\geq 99.7\%$  but  $\leq 100.3\%$

## Sodium Carbonate Solution

For tannin-lignin  
**67532** 100 mL MDB  
**67549** 500 mL

## Sodium Carbonate Standard Solutions

0.02 N  
**18149** 500 mL

## Sodium Chloride

ACS Grade, CAS No. 7647-14-5  
 $\text{NaCl}$ , FW = 58.44  
**18201H** 454 g

## Sodium Chloride

### Standard Solutions (NIST)

Also suitable for standardizing conductivity apparatus  
 85.47 mg/L  $\text{NaCl}$ , 180  $\mu\text{S/cm}$   
**2307542** 100 mL  
 491 mg/L  $\text{NaCl}$ , 1000  $\mu\text{S/cm}$   
**1440026** 50 mL  
**1440042** 100 mL  
 1000 mg/L  $\text{NaCl}$ , 1990  $\mu\text{S/cm}$   
**210553** 1 L  
 1000 mg/L as  $\text{Cl}^-$  (1648 mg/L  $\text{NaCl}$ )  
**18349** 500 mL  
 10,246 mg/L  $\text{NaCl}$ , 18,000  $\mu\text{S/cm}$   
**2307426** 50 mL  
**2307442** 100 mL  
**2307449** 500 mL  
 49 mg/L  $\text{NaCl}$ , 100  $\mu\text{S/cm}$   
**2971826** 50 mL  
**2971842** 100 mL  
**2971849** 500 mL  
 491 mg/L  $\text{NaCl}$ , 1,000  $\mu\text{S/cm}$   
**1440042** 100 mL  
**1440049** 500 mL  
 5.37 g/L  $\text{NaCl}$ , 10,000  $\mu\text{S/cm}$   
**2972226** 50 mL  
**2972242** 100 mL  
**2972249** 500 mL

## Sodium Citrate Solution

For phosphate interference removal in silica test  
**1490849** 500 mL  
**1490817** 3.78 L

## Sodium Electrode Storage Solution

**4451659** 50 mL

## Sodium Hydroxide (Pellets)

ACS Grade, CAS No. 1310-73-2  
 $\text{NaOH}$ , FW = 40.00  
**18734** 500 g  
**18765** 2.5 kg  
 Assay:  $\geq 97.0\%$

## Sodium Hydroxide Cartridges for Digital Titrator

**1437701†** 0.1600 N  
 Digits x 0.1 = mg/L  $\text{CaCO}_3$  acidity in 100 mL  
 Digits x 0.0002 = meq  
**1437801†** 0.3636 N  
 Digits x 0.1 = mg/L  $\text{CO}_2$  in 200 mL  
 Digits x 0.000454 = meq  
**1484201†** 0.9274 N  
 For volatile acids determination  
**1437901** 1.600 N  
 Digits = mg/L  $\text{CaCO}_3$  acidity in 100 mL  
 Digits x 0.002 = meq  
**1438001** 3.636 N  
 Digits = mg/L  $\text{CO}_2$  in 200 mL  
 Digits x 0.00454 = meq  
**1438101** 8.00 N  
 Digits x 0.01 = meq

## Sodium Hydroxide Solution, 50% w/w

**218049** 500 mL

## Sodium Hydroxide

### Standard Solutions

0.01 N  
**67132†** 100 mL MDB  
**67153†** 1 L  
 0.02 N (N/50)  
**19353†** 1 L  
 0.0227 N (N/44)  
**19253†** 1 L  
 0.030 N  
**191132†** 100 mL MDB  
 0.035 N  
**2349332** 100 mL MDB  
 0.05 N  
**1476453** 1 L  
 0.100 N  
**19153** 1 L  
 0.25 N  
**1476353** 1 L  
 1.000 N  
**104532** 100 mL MDB  
**104553** 1 L  
 1.54 N  
**2743042** 100 mL  
 4.5 N  
**204053** 1 L  
 5.0 N  
**245026** 50 mL SCDB  
**245032** 100 mL MDB  
**245053** 1 L  
 6 N  
**2332453** 1 L  
 10 N  
**2545049** 500 mL

## Sodium Hydroxide-Thiosulfate Reagent

APHA, Nitrogen (Kjeldahl)  
**2340753** 1 L

## Sodium Nitrite

ACS Grade, CAS No. 7632-00-0  
 $\text{NaNO}_2$ , FW = 69.00  
**245201** 454 g  
 Assay:  $\geq 97.0\%$

## Sodium Periodate Powder Pillows

For manganese, cold periodate method and iron titrations  
 10-mL sample  
**2107769** 100  
 25-mL sample  
**98499** 100

## Sodium/Potassium Ionic Strength Adjustor

Powder Pillows  
**4451569** 100

## Sodium Pyrophosphate, Crystal

ACS Grade, CAS No. 13472-36-1  
 $\text{Na}_4\text{P}_2\text{O}_7 \cdot 10\text{H}_2\text{O}$ , FW = 446.09  
**1429525** 50 g  
 Assay: 99.0-103.0%

## Sodium Standard Solutions as Na (NIST)

100 mg/L  
**2318153** 1 L  
 1000 mg/L  
**1474949** 500 mL

# SODIUM SULFATE — SULFATE

## Sodium Sulfate, Anhydrous

ACS Grade, CAS No. 7757-82-6  
 $\text{Na}_2\text{SO}_4$ , FW = 142.04  
**709901** 454 g

## Sodium Sulfite, Anhydrous

ACS Grade, CAS No. 7757-83-7  
 $\text{Na}_2\text{SO}_3$ , FW = 126.04  
**19501H** 454 g  
 Assay:  $\geq 98.0\%$

## Sodium Thiosulfate Cartridges

### for Digital Titrator

**2267301†** 0.1130 N  
 Digits = mg/L  $\text{Cl}_2$  in 5-mL sample  
 Digits x 0.000141 = meq  
**2267501†** 0.2000 N  
 Digits x 0.01 = mg/L DO in 200-mL sample  
 Digits x 0.00025 = meq  
**2267601†** 0.2068 N  
 Digits x 0.2 = mg/L  $\text{CrO}_4$  in 50-mL sample  
**1440101†** 2.00 N  
 Digits x 0.1 = mg/L DO in 200-mL sample  
 Digits x 0.0025 = meq

## Sodium Thiosulfate, Pentahydrate

ACS Grade, CAS No. 10102-17-7  
 Suitable for dechlorinating water samples  
 $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ , FW = 248.18  
**46001** 454 g  
 Assay: 99.5-101.0%

## Sodium Thiosulfate, Stabilized, Standard Solutions

0.00246 N  
**2408532** 100 mL MDB  
**2408549** 500 mL  
 0.00564 N  
**2408842** 100 mL  
**2408853** 1 L  
 0.0109 N  
**2408932** 100 mL MDB  
**2408949** 500 mL  
 0.0113 N  
**2409032** 100 mL MDB  
 0.0246 N  
**2409232** 100 mL MDB  
**2409249** 500 mL  
 0.0250 N  
**2409353** 1 L  
**2409317** 3.78 L  
 0.0375 N  
**2409453** 1 L

## Sodium Thiosulfate, Stabilized, Cartridges, for Digital Titrator

**2409101** 0.02256 N  
 For chlorine:  
 Digits x 0.01 = mg/L  $\text{Cl}_2$  in 100 mL  
 Digits x 0.0000282 = meq  
**2409301** 0.0250 N  
 For dissolved oxygen:  
 Digits/100 = mg/L DO in 25 mL  
 Digits x 0.0000313 = meq  
**2409501** 0.0451 N  
 For chlorine:  
 Digits = mg/L  $\text{Cl}_2$  in 200 mL  
 Digits x 0.0000564 = meq  
**2686901** 2.26 N  
 For hypochlorite (bleach):  
 0.5 Digit = 1 g/L  $\text{Cl}_2$

## Sodium Thiosulfate Powder Pillows

For use in Hach Silver Method  
**2293766** 50

## Sodium Thiosulfate Standard Solutions

0.025 N for DO/BOD titrations  
**35253†** 1 L  
 0.1 N  
**32332†** 100 mL MDB  
**32353†** 1 L  
 0.125 N, 10-mL Voluette Ampule Standard  
 (Use for sulfite equivalent standard;  
 5000 mg/L as  $\text{SO}_3$ )  
**2267410** 16  
 1.0 N  
**35126** 50 mL SCDB

## Sodium Thiosulfate Titrant for Hydrogen Peroxide

**2408732** 100 mL MDB

## Soil Extraction Refill Kit

For PCB and TPH methods  
**2775200** 20 tests

## Solution 4

See *Wide Range-4 pH Indicator Solution*.

## SPADNS Ampules

See *Fluoride Reagent (SPADNS) AccuVac Ampules*.

## SPADNS Reagent for Fluoride

**44442** 100 mL  
**44449** 500 mL  
**44453** 1 L  
**44417** 3.78 L  
 AccuVac Ampules  
**2506025** 25

## SPADNS2 Reagent for Fluoride

Arsenic-free formulation  
**2947549** 500 mL  
**2947553** 1 L  
**2947517** 3.78 L  
 AccuVac Ampules  
**2527025** 25

## StabiCal® Formazin Turbidity Standards

StabiCal Ampule Calibration Kits  
 See *page 98 for contents of each kit*.  
**2659105** For 2100A  
**2659405** For 2100P  
**2662105** For 2100N & 2100N IS  
**2659505** For 2100AN & 2100AN IS  
**2971205** For 2100Q  
 StabiCal Ampule Standard, 1 NTU  
**2659802** For 2100N, 2100NIS, 2100AN, 2100ANIS each  
 StabiCal Bulk Solution Calibration Kits, 1 NTU  
**2659400** For 2100P  
**2662100** For 2100N & 2100N IS  
**2659500** For 2100AN & 2100AN IS  
**2659600** For 1720C & 1720D  
**2971200** For 2100Q  
 StabiCal Bulk Solution Calibration Kits, 100 mL bottles  
**2659410** For 2100P  
**2662110** For 2100N & 2100N IS  
**2659510** For 2100AN & 2100AN IS  
**2971210** For 2100Q

## Bulk Suspensions (bottles)

< 0.1 NTU  
**2659742** 100 mL  
**2659749** 500 mL  
**2659753** 1 L  
 0.30 NTU  
**2697942** 100 mL  
**2697953** 1 L  
 0.50 NTU  
**2698042** 100 mL  
**2698049** 500 mL  
**2698053** 1 L  
 1.0 NTU  
**2659842** 100 mL  
**2659849** 500 mL  
**2659853** 1 L  
 10 NTU  
**2659942** 100 mL  
**2659949** 500 mL  
 20 NTU  
**2660142** 100 mL  
**2660149** 500 mL  
**2660153** 1 L  
 100 NTU  
**2660242** 100 mL  
**2660249** 500 mL

## Stannous Chloride Solution

APHA, Arsenic and Selenium  
**1456942** 100 mL

## Starch Indicator Solution (0.5%)

APHA, Oxidation-Reduction Indicator  
**34932** 100 mL MDB  
**34953** 1 L

## Stearic Acid

Lab Grade, CAS # 57-11-4  
**2664934** 500 g

## s-TKN TNTplus®

Simplified TKN Reagent Set  
 0-16 mg/L N  
**TNT880** 25 tests

## Sulfamic Acid

Analytical Grade, CAS No. 5329-14-6  
 $\text{H}_2\text{NSO}_3\text{H}$ , FW = 97.10  
**234401** 454 g  
 Assay:  $\geq 98.0\%$

## Sulfamic Acid Powder Pillows

For chlorine, chromium, and sulfite determinations  
**105599** 100  
 For dissolved oxygen testing, 300-mL sample  
**107399** 100  
 For Model OX-DT Test Kit  
**2076266** 50

## Sulfate Extractant 1 Powder Pillows

Suitable for sulfate extraction in soils  
**2057799** 50

## Sulfate Standard Solutions as $\text{SO}_4$ (NIST)

50 mg/L  
**257849** 500 mL  
 100 mg/L  
**89149** 500 mL  
 1000 mg/L  
**2175749** 500 mL  
 2500 mg/L, 10-mL Voluette Ampule  
**1425210** 16  
 2500 mg/L  
**1425249** 500 mL

Also see *Mixed Parameter Quality Control Standards on page 223*.

## Sulfate TNTplus®, LR

40-150 mg/L  $\text{SO}_4$   
**TNT864** 25 tests

†Chemical Stability—See page 219.

## Sulfate TNTplus®, HR

150-900 mg/L SO<sub>4</sub>  
**TNT865** 25 tests

## SulfaVer® 4 Sulfate Reagent

For sulfate (0-100 mg/L SO<sub>4</sub>)  
 AccuVac Ampules  
**2509025** 25  
 Powder pillows 10-mL sample  
**2106769** 100  
 25-mL sample  
**1206599** 100  
**1206528** 1000

## Sulfide Inhibitor Reagent

Powder Pillows  
**241899** 100

## Sulfide 1 Reagent

**181632** 100 tests MDB  
**181649** 500 mL

## Sulfide 2 Reagent

**181732** 100 tests MDB  
**181749** 500 mL

## Sulfide Reagent Set

*Colorimetric Method*  
 Methylene Blue Method, 5-800 µg/L S<sup>2-</sup>  
 Contains: Sulfide 1 and 2 Reagent Solutions  
**2244500** 100 tests

## Sulfite Equivalent Standard

See *Sodium Thiosulfate Standard Solution*,  
 0.125 N.

## Sulfite 1 Reagent

Powder pillows  
**220399** 100

## Sulfite 3 Reagent

**70532** 100 mL MDB  
**70553** 1 L

## Sulfite Reagent Sets

(See Parameters Section page 195 for details.)

### *Buret Titration Method*

Iodometric Method, 0-500+ mg/L as SO<sub>3</sub><sup>2-</sup>  
**2459800** 100 tests

### *Digital Titrator Method*

Iodometric Method, 4-400 mg/L SO<sub>3</sub><sup>2-</sup>  
**2272300** 100 tests

### *Drop Count Titration Method*

Iodometric Method, 0-200 mg/L as SO<sub>3</sub><sup>2-</sup>  
 Contains: Sulfamic Acid Powder Pillows, Sulfite 1  
 Reagent Powder Pillows, Sulfite 3 Solution  
**2440000** 100 tests

## Sulfite Standard Solution as SO<sub>3</sub>

Prepared with stabilized Sodium Thiosulfate  
 15 mg/L  
**2408449** 500 mL

## Sulfite Standard Solution as SO<sub>3</sub>

5000 mg/L, 10-mL Voullette Ampule  
 (0.125 N Sodium Thiosulfate)  
**2267410** 16

## Sulfosalicylic Acid Powder Pillows

For iron determination  
**2081669** 100

## Sulfuric Acid, 36 N

ACS Grade, CAS No. 7664-93-9  
 H<sub>2</sub>SO<sub>4</sub>, FW = 98.08  
**97949** 500 mL  
**97909** 4 kg

## Sulfuric Acid Cartridges for Digital Titrator

**1438801** 0.1600 N  
 Digits x 0.1 = mg/L CaCO<sub>3</sub> alkalinity in 100 mL  
 Digits x 0.0002 = meq  
**1438901** 1.600 N  
 Digits = mg/L CaCO<sub>3</sub> alkalinity in 100 mL  
 Digits x 0.002 = meq  
**1439101** 8.00 N  
 Digits x 0.01 = meq

## Sulfuric Acid Standard Solutions

0.020 N (N/50)  
**20342** 100 mL  
**20353** 1 L  
**20356** 4 L  
 0.030 N  
**2620532** 100 mL  
**2620553** 1 L  
 0.035 N  
**2349732** 100 mL MDB  
 0.040 N  
**2339349** 500 mL  
 0.100 N  
**20232H** 100 mL MDB  
**20253** 1 L  
 0.500 N  
**212132** 100 mL  
 1.000 N  
**127032** 100 mL MDB  
**127053** 1 L  
 1.900 N  
**2183032** 100 mL MDB  
 5.25 N  
**244932** 100 tests MDB  
**244953** 1 L  
 10 N  
**93153** 1 L  
 19.2 N  
**203832** 100 mL MDB  
**203849** 500 mL

## T

## Tannic Acid

Analytical Grade, CAS No. 1401-55-4  
**79114** 113 g  
 Suitability as tannin standard

## Tannin-Lignin Reagent Sets

*Colorimetric Method*  
 Tyrosine Method, 0.1-9.0 mg/L as tannic acid  
 Contains: Sodium Carbonate Solution, and TanniVer  
 3 Tannin-Lignin Reagent  
 25-mL sample  
**2244600** 100 tests

## TanniVer® 3 Tannin-Lignin Reagent

**256032** 100 mL MDB  
**256049** 500 mL

## TCMP

See *2-Chloro-6 (Trichloromethyl) Pyridine*.

## THM

See *Total Trihalomethane*.

## Thymol Blue Indicator Solutions

Standardized for colorimetric pH determination  
 pH Range 7.4-9.5  
**25732** 100 mL MDB

## Thymolphthalein Indicator Solution

1.0 g/L  
 pH indicator: Visual transition interval: pH 8.8  
 (colorless)-pH 10.5 (blue)  
**2185336** 15 mL SCDB

## TISAB

See *Fluoride Ionic Strength Adjustment Buffer*.

## TitraVer® Cartridge for Digital Titrator

See *EDTA Cartridges for Digital Titrator*.

## TitraVer® Hardness Reagent

EDTA, Disodium Salt, ACS Grade  
**20426** 100 g  
**20434** 500 g

## TitraVer® Hardness Titrant

See *EDTA Standard Solutions*.

## TKN Indicator Solution

For Total Kjeldahl Nitrogen Test  
**2251926** 50 mL SCDB

## TKN Testing

See *Nitrogen-Kjeldahl*.

## TTC Solution, 1%, presterilized

(Enhances visibility of bacteria)  
**2406042** 100 mL

## Toluene

ACS Grade, CAS No. 108-88-3  
 C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub>, FW =92.14  
**1447049** 500 mL  
**1447017** 4 L (*No Air Shipments*)

## Total Organic Carbon Reagent Set

TNT - 16 mm  
*Colorimetric Method (TOC)*  
 Low Range 0.3-20.0 mg/L  
**2760345** 25-50 tests  
 Mid Range 15-150 mg/L  
**2815945** 25-50 tests  
 High Range 100-700 mg/L  
**2760445** 25-50 tests

## TOC TNTplus®

*Direct Colorimetric Method*  
 Low Range 1.5 - 30.0 mg/L C  
**TNT810** 25 tests  
 High Range 30 - 300 mg/L C  
**TNT811** 25 tests

## Total Organic Carbon (TOC) Standard Solution

1000 mg/L as C 20 mL ampules  
**2791505** 5/pk

Also see *Mixed Parameter Quality Control Standards on page 223*.

## Total Trihalomethanes Reagent Set (Colorimetric method) (THM)

Range: 6-200 ppb  
**2790800** 50 tests

## THM Standard

10 ppm Chloroform, 2 mL Ampules  
**2756707** 7/pk

## ToxTrak Toxicity Reagent Set

(See Parameters Section page 212 for details.)  
**2597200** 25-49 tests

## TPH Reagent Set

Immunoassay method, ppm threshold  
**2774300** up to 18 tests

## TPTZ Iron Reagent

For low range total iron determination  
 AccuVac Ampules  
**2510025** 25  
 Powder Pillows for 10-mL sample  
**2608799** 100  
 Powder Pillows for 25-mL sample  
**2275699** 100  
 See also *Iron, FerroMo™ Reagent*.

# TRIAZOLE — ZINC

## Triazole Standard Solution

See *Benzotriazole Standard Solution*.

## Triazole Reagent Powder Pillows

2141299 100

## Trihalomethane

See *Total Trihalomethane*.

## 3,4,5-Trihydroxybenzoic Acid

See *Gallic Acid, Monohydrate*.

## 2,4,6-Trihydroxy-1,3,5-Triazine

See *Cyanuric Acid*.

## Triphenyltetrazolium Chloride Solution (TTC) 1%

Additive ingredient for microbiological medium

2406042 100 mL

## Tryptic Soy Agar, Dehydrated

General purpose medium used without blood for cultivating fastidious microorganisms

2565926 100 g

## Tryptic Soy Broth, Dehydrated

General purpose medium for cultivating fastidious and nonfastidious microorganisms

2253534 500 g

## Turbidity Standards

See *StablCal*.

## U

## UniVer® 3 Hardness Reagent

Powder

21320H 28 g

21301H 454 g

Powder pillows

96299 100

## V, W

## Volatile Acids Reagent Sets

(See Parameters Section page 215 for details.)

*Colorimetric Method*

Esterification, 27-2800 mg/L Acetic Acid

2244700 100 tests

Digital Titrator Method, 100-2400 mg/L Acetic Acid

2460200 100 tests

## Volatile Acids Standard Solutions as Acetic Acid (NIST)

1000 mg/L

1420542 100 mL

62,500 mg/L, 10-mL Voluette Ampule

1427010 16

## Volatile Acids TNTplus®

50-2500 mg/L Acetic Acid

TNT872 25 tests

## Water, Buffered Dilution

Visit: [hach.com](http://hach.com)

## Water, Deionized

(Demineralized Type 2 Water)

27242 100 mL

27249 500 mL

27256 4 L

Specific conductance:  $\leq 1$   $\mu\text{S}/\text{cm}$

( $\mu\text{S}$  = micromho)

Silica ( $\text{SiO}_2$ ):  $\leq 30$   $\mu\text{g}/\text{L}$

Chloride (Cl):  $\leq 20$   $\mu\text{g}/\text{L}$

Hardness: Negative

Consumption of  $\text{KMnO}_4$ : Negative

## Water, Organic Free

For UV-254 and TOC methods

2641549 500 mL

## Water, Ultrapure Aldehyde-Free

2594649 500 mL

## Water, Zero Standard Solution

For low range phosphate analyzer

2600103 2.9 L

## Wide Range pH Indicator Solution

For colorimeters and spectrophotometers

2329649 500 mL

## Wide Range-4 pH Indicator Solution

For test kits

2329332 100 mL MDB

2329353 1 L

## Z

## Zinc

CAS No. 7440-66-6, AW = 65.37 Zn

20 mesh, ACS Grade

79501 454 g

## Zinc Acetate Solution

2 N, preservative for sulfide samples,

1470332 100 mL MDB

## Zinc Standard Solutions as Zn (NIST)

25 mg/L, 10-mL Voluette Ampule

1424610 16

100 mg/L

237842 100 mL

1000 mg/L (HCl matrix)

1417742 100 mL

## ZincoVer® 5 Zinc Reagent

Powder Pillows

20-mL sample

2106669 100

50-mL sample

1403268 25

## Zinc Reagent Set

*Zincon Method*

20-mL sample 0.01-3.00 mg/L Zn

2429300 100 tests

50-mL sample 0.01-2.00 mg/L Zn

2244800 100 tests



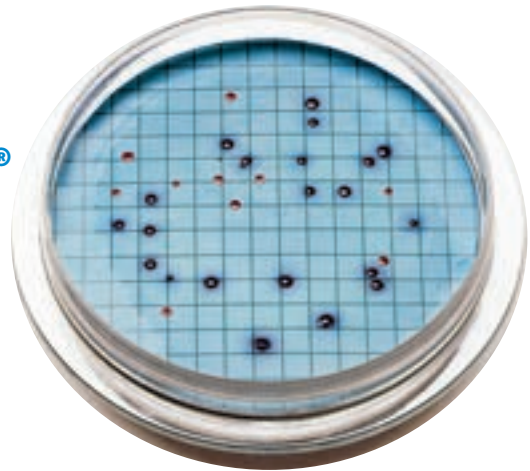
# MICROBIOLOGICAL PRODUCTS



**LuminUltra ATP  
microbiological testing  
solutions provide  
feedback on  
contamination sooner  
for proactive control!**

MICROBIOLOGICAL

**MOST POPULAR MEDIA!**  
**EPA-approved m-ColiBlue24®**  
**simultaneously detects**  
**total coliforms and *E. coli***  
**in just 24 hours—**  
**no confirmation necessary!**



**Be Right™**

# SAMPLING & HANDLING



## Whirl-Pak™ Sampling Bags

These bags feature a white, write-on strip for easy sample identification. Mark bags using an ordinary ballpoint pen, pencil, or felt-tip marker. The Dechlor bag meets National Environmental Laboratory Accreditation Conference (NELAC) standard for sampling waste water treated with 15 mg/L of chlorination agent. Both bags have 100 mL and 4-oz. fill lines (approximate volume).

Prod. No.	Description	Unit
2233199	Whirl-Pak Sterile Bag Vol: 207 mL (7oz), Dim (W x L): 9.5 cm x 18 cm, (3.75 x 7") 3.0 mil thick	100 /pk
2075333	Whirl-Pak Sterile Bag with Dechlorinating Agent 100 mL (4 oz)	100 /pk



## Sterile Sampling Bottle with Dechlorinating Agent

Hach Modified Colitag Sterile 120 mL Sample Bottle

Prod. No.	Description
8888006	Hach Modified Colitag Sterile 120 mL Sample Bottle



## Sample Vial

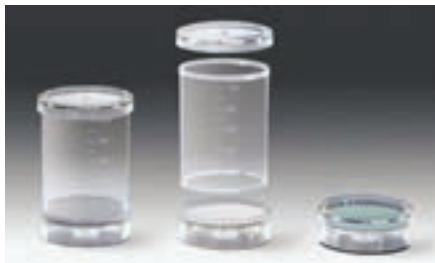
Sample vial contains thiosulfate and custody tie. 120 mL sterile, hinged-cap vials meet all EPA requirements for microbiology sampling. Collection, incubation, and accurate reading can all be done in the vial without a transfer step. 100 mL raised fill line. Polypropylene.

Prod. No.	Description	Capacity	Unit
2634001	Sample Vial with Thiosulfate and Custody Tie	120 mL	200 /pk



## Wire Inoculating Loop

Prod. No.	Description	Unit
2112100	Inoculating Wire Loop, 3 Nichrome V wire	1 each



## Sartorius Biosart™ 100 Monitors

Biosart 100 Monitors are specifically designed for microbiological testing of water and other liquids. These sterile disposables with incorporated membrane filter and cellulose pad are ready to use. After filtration, just remove the 100 mL funnel to convert the Monitor into a petri dish. Culture media for wetting the pad are available in individually sterilized, convenient plastic ampoules. Biosart 100 Monitors are ready to use filter units designed to be placed onto the bases of a vacuum manifold.

Prod. No.	Description	Capacity	Unit
2521100	Sartorius Biosart 100 Monitors, Bulk Pack	100 mL	48 /pk
2521101	Sartorius Biosart 100 Monitors, individually packaged	100 mL	48 /pk
2521401	1-branch Stainless Steel Manifold		1 each

# FILTERS & FUNNELS



## Millipore Microfil™ System Filters & Funnels

Convenient, easy to use system for well-accepted membrane filtration method conforms to international standards: CEN, Standard Methods, WHO. Disposable, stackable, light, recyclable plastic Microfil funnels eliminate autoclaving and minimize waste.

Prod. No.	Description	Capacity	Unit
2586300	Microfil Funnels	100 mL	72 /pk
2508900	Microfil V Funnels with integrated membrane	100 mL	24 /pk
2586200	Millipore Microfil Filter Assembly		1 each

## PALL MicroFunnel™ System

The PALL system features an integrated sample container and filter funnel designed to eliminate waste.

Prod. No.	Description	Unit
2619000	Pall MicroFunnel II Funnels	50 /pk
2831500	MicroFunnel LP Funnels	50 /pk
2831600	MicroFunnel single-place manifold	1 each



## Sartorius Combisart® Stainless Steel Filters and Funnels

Stainless steel is the most robust and longest lasting material for funnels and manifolds. Fully autoclavable, this material is ideal for high volume throughput labs seeking a material with minimal maintenance needs. The Sartorius system includes funnels, manifolds, lids, valves and all other needed components.

Prod. No.	Description	Capacity	Unit
2519700	Combisart 1-place Funnel/Manifold System	500 mL	1 each
2519701	Combisart 3-place Funnel/Manifold System	500 mL	1 each
2519702	Combisart 6-place Funnel/Manifold System	500 mL	1 each



## Glass Reusable Filters and Funnels

Though not as robust as the stainless steel alternative, glass systems provide a longer life than the plastic option.

Prod. No.	Description	Unit
234000	Glass Filtration Apparatus	1 each



## Polyphenylsulfone Reusable Filters and Funnels

Fully autoclavable for multiple uses, these funnels present the most economical solution for reusable systems.

Prod. No.	Description	Unit
1352900	Magnetic Polyphenylsulfone Filter Holder, 47 mm	1 each
2254400	Polysulfone Filter Holder	1 each



# MEMBRANES, PETRI DISHES

## Millipore EZ Pak™ Membrane System

A great option for high through-put operations, Millipore EZ Pak is a unique dispensing system for membranes in an easy to use manner. Membranes are sold separately from the dispenser.

Prod. No.	Description	Pore Size	Diameter	Unit
2916700	Millipore EZ Pak Dispenser	-	-	1 each
2916800	Millipore EZ Pak membranes; white, gridded, 0.45 m pore size	0.45 µm	47 mm	600 /pk



## PALL GN-6 Metrical™ Membrane Filters

PALL filters are individually packaged and sterile, featuring a gridded design ideal for enumeration.

Prod. No.	Description	Pore Size	Diameter	Unit
1353001	Individually packaged, gridded, sterile	0.45 µm	47 mm	200 /pk
1353002	Individually packaged, gridded, sterile	0.45 µm	47 mm	1000 /pk

## Petri Dishes

Both dish and lid, with glass fiber pad for pH stability.

Prod. No.	Description	Unit
1471799	Polystyrene Petri Dish with pad (PALL)	100 /pk
2936300	Dish with pad (Millipore)	150 /pk



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U.S. customers only.

# MEMBRANE FILTRATION MEDIA



## m-ColiBlue24®

EPA approved m-ColiBlue24 simultaneously detects total coliforms and *E. coli* in just 24 hours—no confirmation step necessary! And with the lowest published false positive count, you can have full confidence in your results.

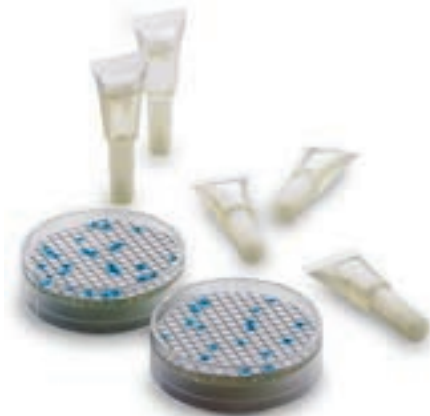
Prod. No.	Description	Applications	Unit
2608420	m-ColiBlue24 Broth Ampules; Glass	All Water Applications	20 /pk
2608450	m-ColiBlue24 Broth Ampules; Plastic	All Water Applications	
2608442	m-ColiBlue24 Broth in 100 mL Bottle	Drinking Water	1 each

## Other Prepared Media

Hach manufactures modified m-TEC, m-ENDO, and m-FC media in the following formats: dehydrated media, prepared media broths in glass or plastic ampules, and pre-poured plates.

Prod. No.	Description	Applications	Unit
2517150	MI Media Ampules; Plastic	Drinking Water	50 /pk
2373520	m-Endo Broth Ampules; Glass	Drinking Water	20 /pk
2373550	Total Coliform Bacteria, m-Endo Broth, 2 mL Plastic Ampules	Drinking Water	50 /pk
2811615	m-Endo Prep, Agar Plate	Drinking Water	15 /pk
2812350	R2A Broth Ampules; Plastic	Drinking Water	50 /pk
2812450	HPC Broth Ampules	Drinking Water	50 /pk
2373220	Fecal, Coliform Bacteria, mFC Glass Ampules	Wastewater, Source, Ground & Recreation Water	20 /pk
2811515	m-FC Prep, Agar Plate	Wastewater	15 /pk
2373250	m-FC Broth Ampules; Plastic	Wastewater	50 /pk
2428520	m-FC/Rosolic Acid Broth Ampules	Wastewater, Source, Ground & Recreation Water	20 /pk
2811815	<i>E. coli</i> coliform Bacteria, Modified m-TEC Agar Plate	Source, Ground & Recreation Water	15 /pk
2428550	m-FC/Rosolic Acid Broth Ampules	Wastewater	50 /pk
2561106	m-TEC Prep. Agar Tube	Source, Ground & Recreation Water	6 /pk

MICROBIOLOGICAL



# PRESENCE-ABSENCE MEDIA

## Modified Colitag™

Hach Modified Colitag is the fastest presence/absence test in the market—get EPA-approved results in a 16- or 22-hour testing timeframe with a single media. Test results remain valid for up to 32 hours after completion.

Prod. No.	Description	Unit
8888001	Comparator for use with Modified Colitag	1 each
8888003	Modified Colitag Snap Pack	20 /pk
8888004	Modified Colitag Snap Pack	100 /pk
8888005	Modified Colitag Snap Pack	200 /pk
8888006	Hach Modified Colitag Sterile 120 mL Sample Bottle	100 /pk
2184300	Hand Held UV Lamp	1 each

## Presence-Absence Tests

Presence-absence tests are a convenient way to detect coliforms and *E. coli* in your water system. Conforms to Standard Methods 9221 D.

Prod. No.	Description	Unit
2401650	Total Coliforms and <i>E. coli</i> P-A broth with MUG (Sterile bottle)	50 /pk
32215	Brilliant Green Bile (BGB) Tubes	15 /pk
2323250	Total Coliforms P-A Broth (Sterile bottle)	50 /pk





## PathoScreen™ Test Kit and Media

Effectively detect waterborne pathogens associated with fecal contamination in water sources. Hach's simple presence-absence method eliminates the need for incubation in tropical and semi-tropical climates.

Prod. No.	Description	Unit
2859100	PathoScreen Field Kit, each (100 P/A or 20 MPN tests) includes: PathoScreen Powder Pillows (pk/100; 20 mL sample), bleach solution (59 mL; 5-6%), MPN sample vials (5; with caps).	1 each
2610796	PathoScreen Powder Pillows, (P/A or MPN 20mL sample) 100/pk	100 /pk
2610696	PathoScreen Powder Pillows for 100 mL P/A	50 /pk



## Dip Slides and Paddle Testers

Dip slides, or paddle testers, are a versatile platform of products that can test for a variety of microbes including coliforms, yeasts, and molds.

Prod. No.	Description	Unit
2610810	Total Aerobic Bacteria/Yeast & Mold Tryptone Glucose Extract Agar/Sabouraud Dextrose Agar	10 /pk
2610910	Total Aerobic Bacteria/Total Coliform Red Bile Agar Tryptic Soy Agar (TSA)/Violet	10 /pk
2619510	Total Aerobic Bacteria/Disinfection Control TSA/DE Neutralizing Agar	10 /pk



MICROBIOLOGICAL

## Biological Activity Reaction Test (BART)

BART biotectors are excellent diagnostic tools to help identify the presence of process disruptors. Find out if you have bacteria creating slime layers and limiting disinfection, or discover if iron reducing bacteria are eating your pipes. Ten varieties to choose from.

Prod. No.	Description	Unit
2434809	Combination Pack: Convenient multi-pack for detection 3 each of IRB/SRB/SLYM (COMB) of iron-related, sulfate reducing, and slime forming bacteria	9 /pk
2478409	Pool and Spa Bacteria (POOL); Problematic pool and spa bacteria; Pseudomonas strains	9 /pk
2432509	Slime Forming Bacteria (SLYM); Aerobic/Anaerobic slime producing bacteria; Pseudomonads	9 /pk
2432409	Sulfate-Reducing Bacteria (SRB); Anaerobic and aerobic hydrogen sulfide generating bacterial strains	9 /pk
2432309	Iron Related Bacteria (IRB), Iron-related bacterial populations oxidizing, reducing, and "accumulating" strains	9 /pk
2490409	Heterotrophic Aerobic Bacteria (HAB); Broad spectrum of aerobic bacteria	9 /pk



## Total Living Biomass Assessment (ATP)

- Detect total active microorganisms in any type of sample
- Results in minutes - not hours or days - for real-time results
- Lab or field operable for maximum flexibility

Prod. No.	Description
EQP-PAC-PMT	LuminUltra PhotonMaster™ Luminometer
LC-SOFT-L	LumiCalc™ Software with lifetime license
QG21W-50C	QuenchGone21™ Wastewater Test Kit, 50 Tests
QGA-100C	Quench-Gone™ Aqueous Test Kit, 100 Tests

Visit [www.hach.com](http://www.hach.com) to view all ATP Test Kits available.



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U.S. customers only.



# MOST PROBABLE NUMBER (MPN) MEDIA

## Multiple Tube Fermentation and Most Probable Number (MPN)

MPN tubes, or multiple tube fermentation, is an alternative way to test for coliforms and *E. coli*. Though it eliminates manual counting of colonies, all techniques based on statistical probability sacrifice accuracy and precision, as compared to membrane filtration.



Prod. No.	Description	Unit
2560915	A-1 Medium	15 /pk
32215	Brilliant Green Bile (BGB) Tubes	15 /pk
1410415	EC Medium Tubes	15 /pk
2471515	EC Medium with MUG Tubes w/o durham tubes	15 /pk
2282415	EC Medium with MUG Tubes with durham tubes	15 /pk
2101315	Lactose Broth Tubes	15 /pk
19726	Lauryl Tryptose Broth Dehydrated, 100 g	1 each
2162315	Lauryl Tryptose Broth Tubes, single strength	15 /pk
2101415	Lauryl Tryptose Broth Tubes, concentrated	15 /pk
2182115	Lauryl Tryptose with MUG Broth Tubes, concentrated	15 /pk
2217515	Lauryl Tryptose with MUG Broth Tubes, single strength	15 /pk
2610796	PathoScreen Powder Pillows, (P/A or MPN 20mL sample) 100/pk	100 /pk
2277700	Total Bacteria Count Media Set	1 each
2564325	Tryptic Soy Broth Bottles	25 /pk

### Consumables for Most Probable Number Method

2361100	<i>E. coli</i> Fluorescence Standard	1 each
2749125	Inoculating Loop, Disposable, 10mL	25 /pk
2075333	Bag, Sterile, Whirl-Pak with Dechlorinating Agent, 177 mL, 100/pk	100 /pk

MICROBIOLOGICAL

# INCUBATION & ENUMERATION

## Incubators

All samples, regardless of preparation technique, require incubation. Hach sells a comprehensive line of incubators for lab or field use.



Prod. No.	Style	Description	Unit
2619200	Culture Incubator	Model 153 Low-Profile Incubator, 110/120 volt, 50/60 Hz	1 each
2569900	Portable Culture Incubator	Portable Incubator, 12 volt, DC battery or auto cigarette lighter powered	1 each
2281400	Dri-Bath Incubator	Single Block Incubator, 120 volt, 50/60 Hz	1 each

## Long Wave UV Lamp

Mid-size (6 Watt) high intensity, hand-held and line-operated. Intensity at 15.2 cm (6"), 750  $\mu\text{W}/\text{cm}^2$ . Filters: Two 6 x 7.6 cm (2.34 x 3") in snap on/off frame. Overall dimensions: 37.5 x 8.9 x 6.7 cm (14.8 x 3.5 x 2.3"). UL listed. Meets existing OSHA electrical standards. 352 nm.



Prod. No.	Description	Unit
2184300	Hand Held UV Lamp	1 each

## Quebec Colony Counter

The Quebec Colony Counter aids in fast and accurate bacteria colony counts. Glare free illumination spreads light uniformly across the entire plate surface. Adjustable dish holder allows centering of round or square dishes.



Prod. No.	Description	Unit
2252100	155 Vac, 60 Hz	1 each

# HACH TEST KITS

**NEW!**

## CEL Hydraulic Fracturing Water Analysis Laboratory



**SIMPLIFY TESTING!**  
Hach Water Quality Test Strips...get results in less than 1 minute, in the field or lab.



TEST KITS

**MOST POPULAR!**  
Free & Total Chlorine and pH Kit...simple, economical, accurate monitoring of chlorine and pH.



Be Right™

# COMPLETE WATER QUALITY LABORATORY



## DREL Complete Water Quality Laboratory

**Product No. 2922401**

Contains a DR 1900 portable spectrophotometer and Digital Titrator, along with the reagents and apparatus necessary to run approximately 100 tests on 24 different parameters. Two test kit cases with molded inserts are included. One case holds the instrument and accessories, and the other case holds reagents and testing apparatus. The instrument case has additional storage space for adding an optional pH meter, portable turbidimeter, and 2 probes. Case size (2 cases): 21x11.5x11" (WxDxH)

## DREL Complete Water Quality Laboratory, with Meters

**Product No. 2922601** (Shown above.)

Each of the Complete Water Quality Laboratories include a DR 1900 portable spectrophotometer and Digital Titrator, along with the reagents and apparatus necessary to run approximately 100 tests on 24 different parameters. Part 2922601 also includes HQ40d multi-meter, 2100Q Portable Turbidimeter, a PHC201 pH electrode (1 meter cable), and a CDC401 conductivity probe (1 meter cable) for more complete analysis. Both versions come in two test kit cases with molded inserts. One case holds instrument and accessories, and the other case holds reagents and testing apparatus. The instrument case has additional storage space for the included multi-meter, portable turbidimeter, and 2 probes. Case size (2 cases): 21x11.5x11 (WxDxH)

TEST KITS





# COMPLETE WATER QUALITY LABORATORY

## DREL/2800 Complete Water Quality Laboratory

Parameters	# of Tests*	Range
Acidity†	40 - 100	10–4000 mg/L
Alkalinity†	40 - 100	10–4000 mg/L
Ammonia	100	0.01–0.50 mg/L
Bromine	**	0.05–4.50 mg/L
Calcium†	40 - 100	10–4000 mg/L
Chloride†	40 - 100	10–10,000 mg/L
Chlorine, Free & Total	100 (F) 100 (T)	0.02–2.00 mg/L
Chromium 6+	100	0.010–0.700 mg/L
Color	Unlimited	15–500 units
Copper	100	0.04–5.00 mg/L
Hardness†	40 - 100	10–4000 mg/L
Iodine	**	0.07–7.00 mg/L
Iron	100	0.02–3.00 mg/L
Manganese	100	0.1–20.0 mg/L
Nitrate	100	0.1–30.0 mg/L
Nitrite LR	100	0.002–0.300 mg/L
pH (test strips)	50	4–9 pH (Steps: 4, 5, 6, 7, 8, & 9)
Phosphate, Total‡	100	0.02–2.50 mg/L
Phosphate, React	100	0.02–2.50 mg/L
Sulfate	100	2–70 mg/L
Sulfide	100	5 – 800 µg/L
Suspended Solids	Unlimited	5 – 750 mg/L

\*The titration methods may yield between 40 and 100 tests depending on amount of titrant used.

\*\*Bromine and Iodine tests use the same reagents as the Chlorine tests.

†Titration Method.

‡Requires additional heating apparatus. Order Heatab Cookit Kit (Prod. No. 220600) and other heating accessories.

The Complete Water Quality Laboratory contains: DR 1900 Spectrophotometer, Rechargeable Battery, 1 Matched Glass Sample Cells, Instrument Case, Reagent/Apparatus Case, Reagent Set, Apparatus Set, Cell Adapters, Power Supply.

Prod. No.	Description	Unit
2922601	DREL Complete Water Quality Laboratory, with Meters: HQ40d multi-meter, PHC201 pH electrode (1 meter cable), CDC401 conductivity probe (1 meter cable)	
2922401	DREL Complete Water Quality Laboratory, Basic	
2923200	Replacement Reagent Set for 2922401 and 2922601	
2923400	Replacement Apparatus Set for 2922401, 2922501, and 2922601	

### Accessories

5839700	Carrying Case	
5839100	DREL Apparatus and Reagents Case	
5838500	DREL Instruments Case	

### DREL Apparatus Set Replacement Items

2299442	50 mL Beaker	1 each
1704200	25 mL Mixing Bottle	1 each
69000	Brush	1 each
108141	50 mL Graduated Cylinder	1 each
108140	25 mL Graduated Cylinder	1 each
1720500	Delivery Tubes for Digital Titrator	5 /pk
1690002	Digital Titrator	1 each
2124720	Dropper, Plastic, 0.5 & 1 mL, 20/pk	20 /pk
4530700	Electrode Holder	1 each
4530600	Electrode Rod	1 each
50546	250 mL Erlenmeyer Flask	1 /pk
50541	50 mL Erlenmeyer Flask	1 /pk
1690008	User Manual for Digital Titrator	1 each
209738	10 mL Pipette	2 /pk
1465100	Pipet Filler, Safety Bulb	1 each
2552200	Sample Container, 120 mL	1 /pk
2369400	Shears	1 each
173106	Stopper for 18 mm tube	6 /pk
187701	Thermometer, -10 to 110°C	1 each

TEST KITS

Hach's water quality laboratories contain everything you need for water analysis—instruments, meters, reagents, apparatus, and accessories—all in convenient, rugged carrying cases!



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# WATER QUALITY LABORATORIES

## CEL Hydraulic Fracturing Water Analysis Laboratory

- Designed to deliver simple, fast, on-site analysis in oil and gas applications, including source water, frac fluid, produced water, flowback water, water treatment, drilling fluids, and enhanced oil recovery
- Includes reagents and apparatus necessary to measure critical oil and gas parameters using the Digital Titrator, DR 900 Colorimeter, and HQ40d Multi-Parameter Digital Meter
- Includes step by step procedures customized for samples encountered in hydraulic fracturing water applications

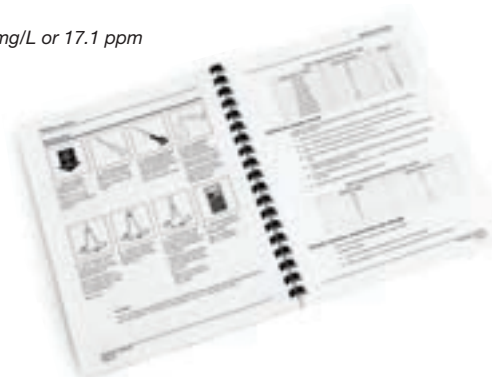


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Prod. No.	Parameter	Range*	# Tests	
2994000	Alkalinity (Phenolphthalein and Total) as CaCO <sub>3</sub>	10 - 4000 mg/L	100	
	Bacteria (Iron-related, Sulfate-reducing and Slime Forming)	Presence-Absence; population estimation	9	
	Barium	0-8,000 mg/L	100	
	Chloride as Cl <sup>-</sup>	10-200,000 mg/L	100	
	Conductivity (TDS)	0.01 uS/cm - 200 mS/cm (0 - 50,000 mg/L as NaCl)	Unlimited	
	Hardness, Total as CaCO <sub>3</sub>	100-200,000 mg/L	100 each range	
	Hardness, Calcium as CaCO <sub>3</sub>	100-200,000 mg/L	100 each range	
	Iron, Total as Fe	0-3.00 mg/L	100	
	pH	0 - 14 units	Unlimited	
	Sulfate as SO <sub>4</sub>	0 - 7,000 mg/L	100	
	2997100	Complete Reagent Set, CEL/890 Hydraulic Fracturing Water Analysis Kit		
	2527900	Boron Reagent Set, 0-50 mg/L		

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm



**Includes Hydraulic Fracturing Water Analysis Handbook!**

**To learn more, visit: [hach.com/fracwater](http://hach.com/fracwater)**

*The oil and gas industry's water management needs are higher today than ever, and so is the need to accurately determine water quality.*







## CEL Advanced Portable Laboratory

Our most versatile portable laboratory, this fully configured system meets the most demanding needs. The Advanced Portable Laboratory includes DR 900 Colorimeter, HQ40d multi-meter, PHC201 pH probe (1 meter cable), CDC401 conductivity probe (1 meter cable), Digital Titrator, illustrated instrument manual, procedure manual CD, reagent sets, and all required apparatus in a rugged carrying case.

### Prod. No. Description

- 251239** CEL Advanced Portable Laboratory
- 2690600** CEL Advanced Portable Laboratory - Replacement Reagent Set

Parameter	Range	No. of Tests
Acidity (as CaCO <sub>3</sub> )*	10-4,000 mg/L	100
Alkalinity (as CaCO <sub>3</sub> )*	10-4,000 mg/L	100
Ammonia, LR (as N)	0-0.50 mg/L	100
Carbon Dioxide*	10-1,000 mg/L	100
Chloride*	10-10,000 mg/L	100
Chlorine, Free	0-2.00 mg/L	100
Chlorine, Total	0-2.00 mg/L	100
Chlorine Dioxide	7-50 mg/L	†
Color	0-500 units	†
Conductivity/TDS	0-199.9 mS/cm	†
Copper	0-5.00 mg/L	100
Dissolved Oxygen	0-15.0 mg/L	25
Hardness (as CaCO <sub>3</sub> )*	10-4,000 mg/L	100
Iron, Total	0-3.00 mg/L	100
Manganese, HR	0-20.0 mg/L	100
Nitrate (as N)	0-30.0 mg/L	100
Nitrite (as N)	0-0.350 mg/L	100
pH	0-14 pH units	†
Phosphate	0-2.50 mg/L	100
Silica, LR	0-1.60 mg/L	100
Sulfate	0-70 mg/L	100
Sulfide	0-0.70 mg/L	100
Suspended Solids	0-750 mg/L	†
Temperature	-10 to 110°C	—
Turbidity	21-1,000 FAU	—
Zinc	0-3.00 mg/L	100

\*Titration method.

†No reagent required. For pH and conductivity, see pages 67-68 for standards.



## CEL Advanced Drinking Water Laboratory

The CEL Advanced Drinking Water Laboratory provides complete field capabilities, with instrumentation and tests that cover every major drinking water parameter. The Advanced Drinking Water Laboratory includes DR 900 Colorimeter, HQ40d Multi-meter, PHC201 pH probe (1 meter cable) & CDC401 conductivity probe (1 meter cable), Digital Titrator, reagent sets, apparatus, illustrated instrument manual, procedure manual CD and a sturdy field case.

### Prod. No. Description

- 251235** CEL Advanced Drinking Water Laboratory
- 2690200** CEL Advanced Drinking Water Laboratory - Replacement Reagent Set

Parameter	Range	No. of Tests
Alkalinity (as CaCO <sub>3</sub> )*	10-4,000 mg/L	100
Aluminum	0-0.800 mg/L	100
Ammonia, Free (as N)	0 - 0.50mg/L	50
Chloramine, mono (as Cl <sub>2</sub> )	0-4.50 mg/L	**100
Chlorine, Free	0-2.00 mg/L	100
Chlorine, Free	0-10.0 mg/L	100
Chlorine, Total	0-2.00 mg/L	100
Chlorine, Total	0-10.0 mg/L	100
Chlorine Dioxide	7-50 mg/L	†
Color	25-500 units	†
Conductivity/TDS	0-199.9 mS/cm	†
Copper	0-5.00 mg/L	100
Dissolved Oxygen	0-15.0 mg/L	25
Fluoride	0-2.0 mg/L	25
Hardness (as CaCO <sub>3</sub> )	10-4,000 mg/L	100
Iron, Total	0-3.00 mg/L	100
Manganese, LR	0-0.700 mg/L	100
Nitrate, HR (as N)	0-30.0 mg/L	100
Nitrate, LR (as N)	0-0.50 mg/L	100
Nitrite (as N)	0-0.350 mg/L	100
pH	0-14 pH units	†
Phosphate	0-2.50 mg/L	100
Sulfate	0-70 mg/L	100
Sulfide	0-0.70 mg/L	100
Temperature	10 to 110°C	†
Turbidity	21-1,000 FAU	†

\*Titration method.

\*\*100 tests for Chloramine or 50 tests for Chloramine plus 50 tests Free Ammonia  
†No reagent required..

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## Soil and Irrigation Water



### Model SIW-1

- Ideal for fertility analysis, site characterization, and irrigation water quality assessment
- Farmers, researchers, extension agents and educators can use kit in the field, in classroom - anywhere
- Uses color disc, drop count titration and dipstick methods
- Includes manual for interpretation of soil and irrigation water test results

Prod. No.	Parameter	Range*
2496000	<b>Soil Tests</b>	
	% Base Saturation	0-100%
	Cation Exchange Capacity	0-M <sup>+</sup> meq/100 g
	Exchangeable Sodium	-
	Free-Lime Estimation	-
	Gypsum Requirement	0-360 kg/ha (0-15 tons/ac)
	Exchangeable Ca and Mg	0-M <sup>+</sup> meq/100 g
	Lime Requirement	NOTE: No longer available in this test kit
	Pocket Pro pH	0-14 pH
	Phosphate	0-4.4 mg/L
	Phosphorus	1-130 mg/L
	Nitrate-Nitrogen	0-40 mg/L
	Potassium	0-250 mg/L
	Total Exchangeable Acidity	0-M <sup>+</sup> meq/100 g
	Sodium, exchangeable	-
	Soil Texture Estimation	-
	<b>Irrigation Water Tests</b>	
	Calcium and Magnesium	-
	Pocket Pro Multi	0.0 - 99.9 ppm
	Nitrate-Nitrogen	0-40 mg/L
	Pocket Pro pH	0-14 pH
	Potassium	0-5
Sodium Estimation	-	
Sodium Absorption Ratio	-	

## Ten-Parameter Aquaculture

### Model FF-2 with Digital Titrator

- Measure 10 fresh water parameters using Digital Titrator titration and color-disc colorimetry
- Meters for dissolved oxygen are available as options



Prod. No.	Parameter	Range*	# Tests
243001	Acidity (MO and Total) as CaCO <sub>3</sub>	100-4,000 mg/L	Up to 100 of each
	Alkalinity (P & M) as CaCO <sub>3</sub>	100-4,000 mg/L	Up to 100 of each
	Ammonia	0.1-3 mg/L	300
	Carbon Dioxide	10-100 mg/L	Up to 100
	Chloride	10-100 mg/L	100
	Dissolved Oxygen	0-10 mg/L	100
	Hardness as CaCO <sub>3</sub>	100-4,000 mg/L	100
	Nitrite	0.0-0.4 mg/L	100
	pH	4-10 pH units	300
	Temperature	-10 to 110°C (1-220°F)	Unlimited

Digital titrator methods may yield 40-100 tests depending on the amount of titrant used for each test.

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

†No upper limit.

## Nitrification Control

Prod. No.	Parameter	Range*	# Tests
2882200	Free Ammonia	0.02-0.50 mg/L NH <sub>3</sub> -N	50
	Monochloramine	0.0-4.50 mg/L Cl <sub>2</sub>	100
	Nitrite	0-0.350 mg/L NO <sub>2</sub> <sup>-</sup> -N	100
	Total Chlorine, LR	0-2.00 mg/L Cl <sub>2</sub>	100
	Total Chlorine, HR	0.1-10.0 mg/L Cl <sub>2</sub>	100



## Surface Water

- By providing economical, easy-to-use tests for ammonia, chlorine, pH, nitrate, dissolved oxygen, phosphorus, and temperature, this kit is an ideal tool for source water monitoring and wastewater treatment plants
- The rugged, lightweight kit includes everything needed for a full array of interesting tests
- Uses drop count titration and color disc methods

Prod. No.	Parameter	Ranges	# Tests
2559833	Ammonia	0.0-2.4 mg/L	100
	Chlorine, Free and Total	0-3.4 mg/L	100
	Nitrate	0-40 mg/L	100
	Dissolved Oxygen	0.2-4, 1-20 mg/L	100
	Pocket Pro pH Tester	0-14 pH units	
	Phosphate	0-4.4 mg/L	100
	Phosphorous	0.02-1, 0.1-5, 1-40 mg/L	100
	Temperature	-1 to 48°C	unlimited



## Wastewater Treatment Plant Laboratory

### Model STPL-WRT

- Designed as a complete, self-contained portable laboratory that provides simple measurements for wastewater treatment plant operators
- Includes necessary reagents/equipment to test for temperature, pH, sludge settleability, settleable matter, dissolved oxygen, and chlorine
- Uses drop count titration and color disc methods

Prod. No.	Parameter	Range*	# Tests
188703	Chlorine, Total	0-3.4 mg/L	100
	Dissolved Oxygen	1-10 mg/L	100
	Settleable Matter	0-1 L (Imhoff cones)	unlimited
	Sludge Settleability	0-500 mL (grad. cylinders)	unlimited
	pH	0-14 pH units	300
	Temperature (thermometer)	-10 to 110°C	unlimited



## Stormwater

### Model SW-1

- Designed for on-site or laboratory monitoring of storm sewer outflow or industrial discharge
- Use to screen for pollutants after rainfall or snow events to meet stormwater discharge monitoring requirements
- Uses drop count titration and color disc methods

Prod. No.	Parameter	Range*	# Tests
2481300	Chlorine, Total	0-3.4 mg/L	100
	Copper	0-4 mg/L	100
	Detergents	0-1.2 mg/L	32
	Pocket Pro pH Tester	0-14 pH units	
	Phenols	0-4 mg/L, 0.02-1 mg/L	50



\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

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## Professional Boiler and Cooling Test

### Model PBC-DT

- Includes everything needed for effective Boiler and Cooling testing
- Invaluable versatility and accuracy for both operators and chemical sales professionals
- Uses both digital titration and color disc testing methods



Prod. No.	Parameter	Range*	# Tests
2350700	Alkalinity as CaCO <sub>3</sub>	1-4000 mg/L in 6 ranges	50 - 100 (depending on the amount of titrant used)
	Chloride as Cl <sup>-</sup>	10-8000 mg/L in 7 ranges	
	Chlorine as Cl <sub>2</sub>	0-3.4 mg/L	
	Hardness as CaCO <sub>3</sub>	10-4000 mg/L in 6 ranges	
	Iron as Fe	0-.2, 0-2 mg/L	
	Nitrite as NO <sub>2</sub>	0-80, 40-2000 mg/L	
	pH	5.6-8.4, 7.4-9.6 pH units	
	Phosphate as PO <sub>4</sub>	0-4.4, 0-40 mg/L	
	Silica as SiO <sub>2</sub>	0-30 or 20-600 mg/L	
	Sulfite as SO <sub>3</sub> <sup>-</sup>	40-800 mg/L in 3 ranges	
	Pocket Pro Multi Tester	Auto-ranging	

## Phosphonate Test

### Model PN-10

- Simple, fast, color disc method
- UV lamp digestion converts phosphonates into reactive phosphate
- Control phosphonate concentration to save chemical costs
- Hach's reliable PhosVer 3 reagent provides results in under 15 minutes



Prod. No.	Model	Method	Parameter	Range*	# Tests
	PN-10	Color disc/ UV photolysis	Phosphonate - as PO <sub>4</sub> <sup>3-</sup>	1 - 5 mg/L	100

#### VERSIONS:

2113300	Color disc/UV photolysis (115 Vac, 60 Hz)
2113302	Color disc/UV photolysis (230 Vac, 50 Hz)
2113301	Color disc (Does not include UV lamp or power supply.)

## Hardness, Iron, and pH

### Models HA-62, HA-62A, and HA-62B

- Combines frequently measured parameters into one rugged kit
- Uses color disc and drop count titration methods



Prod. No.	Model	Parameter	Range*	# Tests
183700	Model HA-62	Hardness as CaCO <sub>3</sub>	1-20 gpg	100
		Iron	0-4 mg/L	
		pH	6.6-8.4 pH units	
183701	Model HA-62A	Hardness as CaCO <sub>3</sub>	1-20 gpg	100
		Iron	0-7 mg/L	
		pH	6.6-8.4 pH units	
183702	Model HA-62B	Hardness as CaCO <sub>3</sub>	1-20 gpg	100
		Iron	0-7 mg/L	
		pH	4-10 pH units	

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm



## Hardness and Iron

### Model HA-77 with Color Disc

- Uses both drop count titration and color disc methods

Prod. No.	Parameter	Range*	# Tests
202300	Hardness as CaCO <sub>3</sub> Iron	1-20 gpg 0-4 mg/L	100



## Iron and Manganese

### Model IR-20

- Use this color disc kit to identify underlying cause of stains
- Provides quick, on-the-spot tests for iron and manganese

Prod. No.	Parameter	Range*	# Tests
146300	Iron Manganese	0-4 mg/L 0.1-3 mg/L	100



## Iron and pH

### Model IR-23

- Easy to perform color disc method provides accurate measurements of two key parameters

Prod. No.	Parameter	Range*	# Tests
256200	Iron pH	0-7 mg/L 4-10 pH units	100 300



## Free & Total Chlorine and pH

(This product is not cleared for use in testing chlorine or chloramines in dialysis applications.)

### Model CN-67

- Includes color discs and a comparator for monitoring chlorine and pH
- Provides more accuracy than models using color cubes

Prod. No.	Parameter	Ranges*	# Tests
1411100	Chlorine, Free & Total pH	0-3.4 mg/L 6.6-8.4 pH units	100 free, 100 total 300



## Chlorine, Hardness, Iron and pH

### Model CN39-WR

- Includes frequently measured water quality parameters in one rugged test kit
- Uses color disc and drop count titration methods

Prod. No.	Parameter	Range*	# Tests
223002	Chlorine, Total Hardness as CaCO <sub>3</sub> Iron pH	0-3.4 mg/L 1-20 gpg† 0-4 mg/L 4-10 pH units	100 100 100 300



\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

†No upper limit.

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# MICROBIOLOGICAL ENVIRONMENTAL LABORATORIES



- *Platforms to Meet Any Need*—Most Probable Number, Membrane Filtration, or Presence/Absence formats
- *All Inclusive Apparatus/Equipment*—from sample collection through incubation, each MEL is designed for efficiency
- *Sterile Components*—selected for durability and sterile for accuracy
- *Portable Incubator*—battery powered with AC/DC conversion option. Easy to use, clean, and store.
- *Wide Choice of Media*—choose from over 30 options
- *Self Contained*—rugged carrying case for storage and rapid deployment
- *Illustrated Instruction*—Complete, easy-to-read instructions included

TEST KITS



## MEL/m-ColiBlue24® Field Filtration Lab

Prod. No.	Method	Sensitivity	# Tests
2586400	Membrane Filtration Total coliforms and <i>E. coli</i>	1 CFU/mL	Varies

Contents (Qty): 10 mL Sterile poly pipettes (50); Alcohol (100mL); Alcohol Burner (1); Sterile petri dish with pad (50); Whirlpak bags with thiosulfate (50); Forceps (1); Ampule breaker (1); 3x hand magnifier (1); Permanent marker (1); Microfil single-unit filtration stand (1); Manual vacuum device (1); m-ColiBlue24 media glass ampoules (2 packs of 20 ampoules); Millipore push-fit filter funnels (144); pipet filler (1)

Monitor with EPA-Approved m-ColiBlue24.



## MEL/MPN Lab

Consumables only. Choose media and order separately

Prod. No.	Method	Sensitivity	# Tests
2569800	Most Probable Number (Multiple Tube Fermentation)	<1.1 MPN/100	50

Contents (Qty): Poly pipets; 10 mL: sterile (50) • pipet bulb (1) • Batteries; AA; pk/4 (1) • UV Lamp (360 nm); Whirlpak bags w/thiosulfate (50) • Permanent marker (1) • Germicidal cloth (5) Portable Incubator and MPN rack (1 ea) • Inoculating loops; disposable; sterile (50) • Thermometer; -10 to 100°C (1)

Monitor bacteria in water samples with the flexibility to choose your own media.

## MEL/MF Total Coliform Lab

Prod. No.	Method	Sensitivity	# Tests
2569700	Membrane Filtration Total coliforms and <i>E. coli</i>	1 CFU/mL	200

Contents (Qty): Thermometer: -10 to 100°C (1); Alcohol (100mL); Alcohol Burner (1); Germicidal cloths (5); Whirlpack bags with thiosulfate (200); Forceps (1); Ampule breaker (1); 3x hand magnifier (1); Permanent marker (1); Manual vacuum device (1); Field vacuum manifold (1); Sterile filtration assemblies - funnel, membrane, dish, pad (200); Hand tally counter (1); Portable incubator(1); incubator rack (1).



Filtration and incubation consumables only.  
Order media separately.

## MEL/P-A Safe Drinking Water Lab

Prod. No.	Method	Sensitivity	# Tests
2569600	Total coliform and <i>E. coli</i>	1 CFU/mL	*
	Chlorine, Free and Total	0.1 - 3.5 Cl <sub>2</sub> (F&T)	100
	TDS Pocket Pro Tester	10 - 1990 mg/L	450 hrs battery life
	Nitrogen, Nitrate	1 - 50 mg/L NO <sub>3</sub> -N	100
	pH Pocket Pro Tester	0 - 14 pH units	450 hrs battery life

\*Select your media below, and order separately.

Contents (Qty): Apparatus: Clippers (1); 100 mL poly beaker (1); Color comparator box (1); Viewing tubes (4); Nitrate-Nitrogen color disc(1); DPD Chlorine color disc (1); Thermometer: -10 to 100°C; Dropper with 0.5/1.0 mL graduations (1); Permanent marker (1); Whirlpack bags with thiosulfate (50); AA batteries (4); Portable 360 nm UV lamp (1); Germicidal cloths (5); Portable incubator and P/A rack (1 of each); Pocket Pro pH tester (1); Pocket Pro TDS tester (1)

Reagents: 5 mL NitraVer powder pillows (100);  
5 mL Free and Total Chlorine powder pillows (100);  
4.00/7.00 pH buffer powder pillows (10 each)



This economical portable lab monitors key water quality parameters plus Total Coliforms and *E. coli* using presence-absence method. Filtration and incubation consumables only. Order media separately.

TEST KITS

## MEL Potable Water Lab

Prod. No.	Method	Sensitivity	# Tests
251242	Total coliform and <i>E. coli</i>		100
	Chlorine, Free and Total	0.02 - 2.00 mg/L	100
	Pocket Pro pH Tester	0 - 14 pH units	450 hrs battery life
	Nitrate	0.3-30.0 mg/L NO <sub>3</sub>	100
	Nitrite	0.002-0.350 mg/L NO <sub>2</sub> -N	100
	Nitrogen, Ammonia	0.01 - 0.50 mg/L	100
	Pocket Pro TDS Tester	10 - 1990 mg/L	450 hrs battery life
	Phosphorous, Reactive	0.02-2.50 mg/L PO <sub>4</sub>	100
	Sulfide	0 - 0.70 mg/L	100
	Temperature	10 - 110 °C	Unlimited

Contents (Qty): Apparatus: Clippers (1); 25 mL poly graduated cylinder (1); Thermometer: -10 to 100°C (1); 6 oz. Demineralizer bottle (1); Whirlpack bags with thiosulfate (100); 0.5 & 1.0 mL poly graduated droppers (60); 100 mL poly beakers (2); AA batteries (4); Portable 360 nm UV lamp (1); Portable incubator and P/A rack (1 of each); Pocket Pro pH Tester (1); Pocket Pro TDS tester (1); DR 900 colorimeter and accessories.

Reagents: 100 mL Sulfide 1&2 reagents (2 of each); PhosVer 3 powder pillows (100); NitraVer 5 powder pillows (100);NitraVer 3 powder pillows (100); 50 mL spec grade phenol red (2); Free and Total Chlorine powder pillows (100); 4.00/7.00 pH buffer powder pillows (10 each); Presence Absence with MUG (50); Ammonia, Salicylate and Cyanurate reagents (200 of each)



Monitor 8 parameters plus Total Coliforms and *E. coli* (using Presence Absence method). Consumables and P/A w/ MUG media included.

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# SINGLE PARAMETER TEST KITS

## Hach Single Parameter Test Kits make water analysis simpler.

- Premeasured Reagents Save Time and Money
- Easy-to-Follow Instructions
- Survives Outdoor Field-Testing Conditions
- Everything You Need for Testing Anywhere
- Spill-Resistant Storage

We have test kits available for the following parameters. For details, visit [www.hach.com](http://www.hach.com) or see the Parameters Section of this catalog, pages 145–216.

Acidity	Carbon Dioxide	Detergents	Hypochlorite	Orthophosphate	Silver
Alachlor	Chloramine	Dissolved Oxygen	Iron	Oxygen Scavengers	Sulfate
Alkalinity	Chloride	Fluoride	Lead	Ozone	Sulfide
Aluminum	Chlorine	Formaldehyde	Manganese	PCBs	Sulfite
Ammonia	Chlorine Dioxide	Glutaraldehyde	Molybdate	pH	Tannin Lignin
Arsenic	Chromium	Glycol	Monochloramine	Phenol	Total Hardness
Ascorbic Acid	Cobalt	Hardness	Nickel	Phosphate	TPH
Atrazine	Copper	Hydrazine	Nitrate	Phosphonate	Triazole
Bromine	Cyanide	Hydrogen Peroxide	Nitrite	Phosphorous	Water In Oil
Calcium Hardness	Cyanuric Acid	Hydrogen Sulfide	Nitrogen	Silica	Zinc



## Alkalinity

### Model AL-DT

- Wide range for use in drinking water, beverage and boiler applications
- Accurate and portable titration method using the Hach Digital Titrator

Prod. No.	Parameter	Model	Method Name	Range*	Smallest Inc. Steps	Case Style	# Tests	Ship Wt. (lbs)
2063700	Alkalinity - (P) & Total (MO) - as CaCO <sub>3</sub>	AL-DT	Digital Titrator/ Sulfuric acid	10 to 4,000 mg/L CaCO <sub>3</sub>	0.1-10	F	100	3.5
2444301	Alkalinity - (P) & Total (MO) - as CaCO <sub>3</sub>	AL-AP, MG-L	Drop count titration/Sulfuric acid	5 to 100 mg/L 20-400 mg/L	5 20	B	100	1

*Actual number of tests will vary depending on amount of titrant used.*



2064100 shown

## Carbon Dioxide

- Includes all apparatus you need for fast, easy, and accurate carbon dioxide test results

Prod. No.	Parameter	Model	Method Name	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
2064100	Carbon Dioxide - as CO <sub>2</sub>	CA-DT	Digital Titrator/ Sodium hydroxide Phenolphthalein	10 to 1,000 mg/L CO <sub>2</sub>	0.1, 2.0	F	50	3.5
143601	Carbon Dioxide - as CO <sub>2</sub>	CA-23	Drop count titration/ Sodium hydroxide Phenolphthalein	1.25 - 25 2 - 40 5 - 100 mg/L CO <sub>2</sub>	1.25 2 5	D	200	1.0

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

## Chloramine, Mono and Free Ammonia

(This product is not cleared for use in testing chlorine or chloramines in dialysis applications.)

### Pocket Colorimeter™ II

- Use Monochloramine as an alternative to free chlorine for disinfecting drinking water as it forms fewer disinfection by products (DBP)
- Based on the Hach Indophenol method for Mono Chloramine which involves adding one reagent to the sample, waiting a 5-minute reaction time, and measuring the concentration in a colorimeter or spectrophotometer
- Includes direct read colorimeter, required sample cells, reagents, battery and procedure manual - all enclosed within a rugged carrying case



Prod. No.	Parameter	Method	Range*	Smallest Increment	Case Style	# Tests	Ship Wt. (lbs)
5870026	Chloramine, Mono and Free Ammonia - as Cl <sub>2</sub>	Indophenol	Monochloramine 0.04-4.50 mg/L Cl <sub>2</sub> Free Ammonia 0.02-0.50 mg/L NH <sub>3</sub> N	0.01	D	100 Monochloramine or 50 Free Ammonia	2.5

## Chloride

### Drop Count Titration

- Low cost and easy to use drop count titration method using a silver nitrate titrant
- Ideal for quickly determining quantitative results



Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# Tests	Ship Wt. (lbs)
144001	Chloride - as Cl <sup>-</sup>	8-P	Drop count titration/Silver nitrate	5 - 100 mg/L Cl <sup>-</sup> 20 - 400 mg/L Cl <sup>-</sup>	5 20	B	100	1.0

## Chlorine, Free and Total (plus pH)

(This product is not cleared for use in testing chlorine or chloramines in dialysis applications.)

### Pocket Colorimeter II

- A top choice for swimming pool maintenance professionals seeking reliable, accurate measurements in monitoring programs
- Pocket Colorimeter II is waterproof, IP67 rated, and datalogs last 10 points with measurement time
- Kit includes sample cells, reagents, battery and procedure manual —all enclosed within a rugged carrying case



Prod. No.	Parameter	Method	Range	Smallest Increment	Case Style	# Tests	Ship Wt. (lbs)
5870012	pH, and high range Chlorine	Colorimetry Phenol Red	0.1 - 10.0 mg/L Cl <sub>2</sub> 6.0 - 8.5 pH	0.1	R	100	4.8

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

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# SINGLE PARAMETER TEST KITS



## Chlorine, Low Range

(This product is not cleared for use in testing chlorine or chloramines in dialysis applications.)

### Color Disc

- The most accurate visual test kit method
- Color wheel method provides fast, accurate comparisons
- Small case style offers maximum portability
- EPA-accepted for potable water. Approved by some states only under certain conditions. Check with your local regulatory agency.

Prod. No.	Parameter	Model	Method Name	Range*	Smallest Inc. (mg/L)	# Tests	Ship Wt. (lbs)
223102	Chlorine, low range - as free Cl <sub>2</sub>	CN-66F	Color disc/DPD	0 to 3.4 mg/L Cl <sub>2</sub>	0.1	100	1
223103	Chlorine, low range - as total Cl <sub>2</sub>	CN-66T	Color disc/DPD	0 to 3.4 mg/L Cl <sub>2</sub>	0.1	100	1
223101	Chlorine, low range - as free & total Cl <sub>2</sub>	CN-66	Color disc/DPD	0 to 3.4 mg/L Cl <sub>2</sub>	0.1	50 F, 50 T	1
1454200	Chlorine, low range - as free & total Cl <sub>2</sub>	CN-70	Color disc/DPD	0.02 to 0.68 mg/L Cl <sub>2</sub>	0.02	100 F, 100 T	2
2129000	Chlorine, low range - as free & total Cl <sub>2</sub>	CN-80	Color Disc/DPD	0 to 0.68 mg/L Cl <sub>2</sub> 0 to 3.4 mg/L Cl <sub>2</sub>	0.02 0.1 0.5	100	2.5

TEST KITS



## Chlorine, Mid and High Range

(This product is not cleared for use in testing chlorine or chloramines in dialysis applications.)

### Drop Count Titration

- Low cost and easy-to-use drop count method using a sodium thiosulfate titrant

Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
2444400	Chlorine, mid and high range - as Total Cl <sub>2</sub>	CN-21P	Drop count titration/ Thiosulfate	10 - 200 mg/L	10	B	100	1



## Copper, Free & Total

### Color disc

- Kit contains required reagents and apparatus - all in a rugged carrying case for analysis in the field

Prod. No.	Parameter	Model	Method Name	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
2194100	Copper - as free & total Cu <sup>†</sup>	CU-6	Color-disc/ Bicinchoninate, Hydrosulfite reduction	0 to 4 mg/L Cu	0.1	B	50 (Free), 50 (Total)	1

<sup>†</sup>Test gives total dissolved copper; true total copper requires digestion.

Requires Prod. No. 2118669 - Free Copper Powder Pillows; 2118869 - Hydrosulfite Powder Pillows; 2119040 - Graduated Cylinder.

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm





## Dissolved Oxygen

### Drop Count Titration

- Our most popular Dissolved Oxygen test kit
- Uses a Modified Winkler method for drop count titration



Prod. No.	Parameter	Model	Method	Range*	Smallest			
					Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
146900	Dissolved Oxygen - as DO	OX-2P	Drop count titration/ Modified Winkler	0.2 - 4 mg/L O <sub>2</sub> 1 - 20 mg/L O <sub>2</sub>	0.2	D	100	3

## Fluoride

### Pocket Colorimeter™ II

- Pocket Colorimeter II is waterproof, IP67 rated, and datalogs last 10 points with measurement time.
- USEPA-accepted for wastewater and potable water. Check with your regulatory agency.
- Greater sensitivity (0.01 mg/L) can be achieved by substituting bottled SPADNS solutions for AccuVac® Ampules supplied with kit.



Prod. No.	Parameter	Method	Range*	Smallest		
				Inc. (mg/L)	Case Style	# Tests
2513100	Fluoride - as F <sup>-</sup> (Arsenic Free)	Colorimeter/ SPADNS2	0.1 - 2.0 mg/L	0.1**	D	50
5870005	Fluoride - as F <sup>-</sup>	Colorimeter/ SPADNS	0.1 - 2.0 mg/L F <sup>-</sup>	0.1**	D	50

#### REPLACEMENT SETS:

2527025	Replenishment of SPADNS2 AccuVac Ampules	25
2506025	Replenishment of SPADNS AccuVac Ampules	25

\*\*Greater sensitivity (0.01 mg/L) can be achieved by substituting bottled SPADNS solutions for AccuVac® Ampules supplied with kit.

## Hardness

- Hardness determination with easy to use test kits from Hach
- Model HA-71A offers dual ranges to provide low and high range measurement
- Model 5-B is an excellent solution for homeowner testing



Prod. No.	Parameter	Model	Method Name	Range*	Smallest			
					Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
145201	Hardness, total - as CaCO <sub>3</sub>	HA-71A	Drop count titration/ EDTA- powder pillows	1 to 20 mg/L CaCO <sub>3</sub> 1 to 20 gpg CaCO <sub>3</sub>	1 mg/L 1 gpg	D	100	2.5 kg
145300		5-B	Drop count titration/ EDTA-bulk powder	1 to 30 gpg CaCO <sub>3</sub>	1 gpg	L		1
145401	Hardness, total - as CaCO <sub>3</sub>	5-EP MG-L	Drop count titration/ EDTA-powder pillows	20 to 400 mg/L CaCO <sub>3</sub>	20	B		

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

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# SINGLE PARAMETER TEST KITS



## Hydrogen Sulfide

### Color Disc

- Wide range measurement for maximum flexibility
- Includes a Pretreatment Kit for turbid or colored samples

Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# Tests	Ship Wt. (lbs)
223801	Hydrogen Sulfide - as S <sup>2-</sup>	HS-WR	Color disc/ Methylene blue	0.01 - 0.55 mg/L S <sup>2-</sup>	0.01	D	30 - 60	3.5
				0.05 - 2.25 mg/L S <sup>2-</sup>	0.05			
				0.25 - 11.25 mg/L S <sup>2-</sup>	0.25			



## Hydrogen Sulfide

### Color Chart

- Most economical method for determining hydrogen sulfide content in water samples
- Uses reliable, cost effective color comparison method
- Treated reagent papers are supplied for 100 tests, effervescence tablets are supplied for 18 tests

Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. Steps	Case Style	# Tests	Ship Wt. (lbs)
2537800	Hydrogen Sulfide - as H <sub>2</sub> S	HS-C	Color chart/ effervescence of H <sub>2</sub> S	0-5 mg/L	0.0, 0.1, 0.3, 0.5, 0.7, 1.0, 2.0, 5.0	M	18	0.5
2537733	Replenishment of 100 Treated Papers						100	
1453300	Replenishment of 36 foil-wrapped AlkaSeltzer® tablets						36	



## Iron, Medium Range

### Color Disc

- Dissolved Fe<sup>2+</sup> and Fe<sup>3+</sup> detected, digestion is required for total iron

Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
146400	Iron, medium range - as Fe	IR-18	Color disc/ 1,10 Phenanthroline	0-4 mg/L	0.1	B	100	1
146401	Iron, medium range - as Fe	IR-18B	Color disc/ 1,10 Phenanthroline	0-7 mg/L Fe	0.2	B	100	1
146500	Iron, medium range - as Fe	IR-18A	Color disc/ 1,10 Phenanthroline	0.02 - 1.00 mg/L Fe	0.02	B	100	2

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

## Manganese

### Color Disc

- Simple, low-cost color disc method is the most accurate visual test kit method
- Achieve fast results with an easy-to-carry test kit



Prod. No.	Parameter	Model	Method Name	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
146700	Manganese - as Mn	MN-5	Color disc/ Cold periodate	0 to 3.0 mg/L Mn	0.1	D	100	2
2350800		MN-PAN	Color disc/PAN	0 to 0.70 mg/L Mn	0.05		50	3

## Molybdate

### Color Disc

- Easy to use color disc method
- Effectively monitors corrosion inhibitors



Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
2359300	Molybdate - as Molybdenum	MO-LR	Color disc/ Ternary complex	0.25 - 3.0 mg/L Mo	0.25	D	100	2.0

## Nitrogen, Ammonia

### Color Disc

- Designed for testing ammonia in freshwater or seawater - for additional kits, see our Aquaculture Multiparameter Test Kits
- Simple, low-cost color disc method is the most accurate visual test kit method
- Achieve fast results with an easy-to-carry test kit



Prod. No.	Parameter	Model	Range*	Smallest Inc. (mg/L)	# of Tests	Ship Wt. (lbs)
2428700	Nitrogen, Ammonia, mid range - For freshwater or seawater	NI - SA	0 to 2.4 mg/L NH <sub>3</sub> -N	0.1	100	1

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

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TEST KITS

# SINGLE PARAMETER TEST KITS



## Nitrogen, Nitrate

### Color Disc

- One of Hach's most popular test kits
- Simple, low-cost color disc method is the most accurate visual test kit method
- Achieve fast results with an easy-to-carry test kit

Prod. No.	Parameter	Model	Method Name	Range*	Smallest Inc. (mg/L)	Case Style	# Tests	Ship Wt. (lbs)
1416100	Nitrogen, Nitrate - as NO <sub>3</sub> <sup>-</sup> -N	NI-14	Color disc/	0 to 1 mg/L NO <sub>3</sub> <sup>-</sup> -N	0.02	B	50	1
146803	Nitrogen, Nitrate - as NO <sub>3</sub> <sup>-</sup> -N	NI-11	Cadmium reduction Color disc/	0 to 10 mg/L NO <sub>3</sub> <sup>-</sup> -N 0 to 40 mg/L NO <sub>3</sub> <sup>-</sup> -N	0.2 1.0	B	100	1

TEST KITS



## pH, Mid Range

### Color Disc

- Simple, low-cost color disc method is the most accurate visual test kit method
- Achieve fast results with an easy-to-carry test kit

Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# Tests	Ship Wt. (lbs)
147006	pH, mid range	17F	Color disc/ Bromthymol blue	5.6 - 8.4 pH	0.1 pH	B	100	1
147008	pH, mid range	17H	Color disc/Phenol red	6.6 - 8.4 pH	0.1 pH	B	200	1
147009	pH, mid range	17J	Color disc/Thymol blue	7.4 - 9.6 pH	0.1 pH	B	200	1



## pH, Wide-Range

### Color Disc

- A wide range kit applicable to a variety of samples
- A great option for fast, reliable readings

Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
147011	pH, wide range	17N	Color disc/ Wide range indicator	4 - 10 pH	0.5 pH	B	300	1.0

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

## Orthophosphate (reactive)

### Color Disc

- Results in less than 5 minutes for clean water samples
- Utilizes simple color disc comparator for accurate measurements
- Model PO-19A contains filtration apparatus for turbid samples



Prod. No.	Parameter	Model	Range	Smallest Increment	Case Style	# Tests	Ship Wt. (lbs)
224800	Phosphorus, Orthophosphate (reactive) - as PO <sub>4</sub> <sup>3-</sup>	PO-19	0 - 0.8 mg/L PO <sub>4</sub> 0 - 4 mg/L PO <sub>4</sub>	0.02 0.10	R	100	2.5
224801	Phosphorus, Orthophosphate (reactive) - as PO <sub>4</sub> <sup>3-</sup>	PO-19A (Includes filtration for turbid samples.)	0 - 0.8 mg/L PO <sub>4</sub> 0 - 4 mg/L PO <sub>4</sub> 0 - 40 mg/L PO <sub>4</sub>	0.02 0.10 1	R	100	3

TEST KITS

## Silica, High Range

### Color Disc

- Popular in many industrial applications, such as boiler turbines that are susceptible to scale
- Provides fast results with an easy-to-carry test kit
- Simple, low-cost color disc method is the most accurate visual test kit method



Prod. No.	Parameter	Model	Method	Range*	Smallest Inc. (mg/L)	Case Style	# of Tests	Ship Wt. (lbs)
1455400	Silica, high range - as SiO <sub>2</sub>	SI-5	Color disc/Heteropoly blue amino acid	0 - 30 mg/L SiO <sub>2</sub> 20 - 800 mg/L SiO <sub>2</sub>	1 20 20	D	100	2.5

\*1 ppm = 1 mg/L; 1 ppb = 1 µg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm

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# HACH WATER QUALITY TEST STRIPS



## Convenient Water Testing Solutions

(These products are not cleared for use in testing chlorine or chloramines in dialysis applications.)

- Simplify testing and get results in less than 1 minute
- Eliminate chemical handling and clean-up

Reduce analytical guess work by using Hach test strips as a pre-test validation tool. Test strip bottle labels contain the color key for easy readings in the lab or in the field.

TEST KITS

Parameter	Range*	Steps	# Tests	Prod. No.
<b>5-in-1 Water Quality Test Strips</b>				
Free Chlorine	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0	50	2755250
Total Chlorine	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0		
Total Hardness as CaCO <sub>3</sub>	0-25 gpg	0, 1.5, 3, 7, 15, 25		
Total Alkalinity as CaCO <sub>3</sub>	0-425 mg/L	0, 25, 50, 120, 250, 425		
pH	0-240 mg/L 6.2-8.4	0, 40, 80, 120, 240 6.2, 6.8, 7.2, 7.8, 8.4 pH units		
Alkalinity, Total	0- 240 mg/L (ppm)	0, 40, 80, 120, 240	50	2744850
<b>Ammonia (see Nitrogen, Ammonia)</b>				
Arsenic, Low Range†	0- 500 ppb As	0, 10, 30, 50, 70, 300, 500	100	2800000
Arsenic, EZ, Dual Range†	0- 500 ppb As 0- 4,000 ppb As	0, 10, 25, 50, 100, 250, 500 0, 35, 75, 175, 1500, 4000	100	2822800
<b>Calcium (see Hardness)</b>				
Chloride - as Cl <sup>-</sup>	30 - 600 mg/L Cl <sup>-</sup>	10-20 mg/L increments	40	2744940
Chloride - as Cl <sup>-</sup>	300 - 6000 mg/L Cl <sup>-</sup>	100-200 mg/L increments	40	2751340
Chlorine, low range - as free & total Cl <sub>2</sub>	0- 10 mg/L Cl <sub>2</sub>	0, 0.5, 1, 2, 4, 10	250	2793944
			Ind. wrapped	
Chlorine, low range - as free & total Cl <sub>2</sub>	0- 10 mg/L Cl <sub>2</sub>	0, 0.5, 1, 2, 4, 10	50	2745050
Free Chlorine, High Range	0- 600 mg/L Cl <sub>2</sub>	Steps: 0, 25, 50, 100, 200, 400, 600	100	2890200
Copper (Free and Total)	0- 3 mg/L Cu	0,0,2,0.5,1,3	25	2745125
Hardness, Total - as CaCO <sub>3</sub>	0 - 425 ppm (0-25 gpg)	0, 25, 50, 120, 250, 425	1000	2793828
			Ind. wrapped	
Hardness, Total - as CaCO <sub>3</sub>	0 - 425 ppm (0-25 gpg)	0, 25, 50, 120, 250, 425	250	2793844
			Ind. wrapped	
Hardness, Total - as CaCO <sub>3</sub>	0 - 425 ppm (0-25 gpg)	0, 25, 50, 120, 250, 425	50	2745250
Iron, Total Dissolved	0- 5 ppm Fe	0, 0.15, 0.3, 0.6, 1, 2, 5	25	2745325
<b>Magnesium (see Hardness)</b>				
Nitrate and Nitrite	Nitrate: 0- 50 mg/L Nitrite: 0-3 mg/L	0, 1, 2, 5, 10, 20, 50 0, 0.15, 0.3, 1, 1.5, 3	25	2745425
Nitrogen, Ammonia	0- 6 mg/L NH <sub>3</sub> -N	0, 0.25, 0.5, 1, 3, 6	25	2755325
pH, mid range	4 - 9 pH	4,5,6,7,8,9 pH	50	2745650
pH	0 to 14 pH	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	100	2601300
Phosphorus, Orthophosphate (reactive) - as PO <sub>4</sub>	0- 50 mg/L PO <sub>4</sub>	0, 5, 15, 30, 50	50	2757150

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

†Cannot determine organic forms of arsenic; sulfide correction only available with purchase of additional reagents. ‡Individually wrapped.

# LABORATORY SUPPLIES

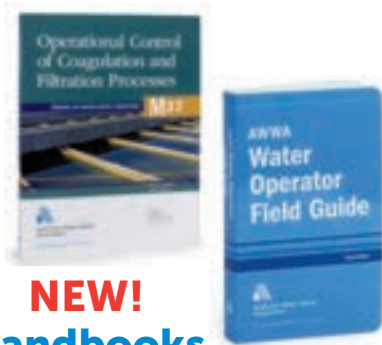


**NEW!**  
**Anemometers**

**NEW!**  
**Steam  
Autoclave**



**NEW!**  
**Digital Metals  
Refractometers**



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**NEW!**  
**BOD  
Incubator**



**Stirrer  
Hot Plate**



LAB SUPPLIES



Be Right™

# ALCOHOL PADS — BALANCES



## Alcohol Prep Pads

Individually wrapped, disposable pads measuring 1-1/8" x 2-3/8". 70% Isopropyl Alcohol.

Prod. No.	Unit
2938200	200 /box

## Anemometers

Anemometers monitor a variety of environmental parameters. All Models measure air flow and feature a min/max, hold, backlight and batteries that power the device for at least 40 hours of use. Choose from the Mini Anemometers, or the Datalogging Anemometers.



**NEW!**

The Basic Mini environmental quality meters are light weight small in size, allowing one-hand operation. The Datalogging Anemometers automatically record up to 99 datapoints internally or nearly unlimited with the included 2GB SD card. All models measure air speed as well as other environmental parameters in one instrument.

Prod. No.	Description
2850023	Datalogging Vane Anemometer
2850024	Datalogging Hot Wire Anemometer
2850025	Mini Basic Anemometer
2850027	Mini Advanced Anemometer

## Autoclave, Steam

The Tuttnauer® Model 2340E autoclave is designed for sterilizing laboratory equipment, media and even liquids. Manufactured with 316L stainless steel sterilization chambers which are highly corrosion-resistant. The autoclave features four adjustable, single push-button programs which provide reproducible sterilization cycles. Options to enter and store operating parameters of temperature (105 to 137°C, 221 to 279°F), sterilization time (0 to 59 minutes), pressure (0 to 40 psi), and drying time (0 to 99 minutes).



**NEW!**

Parameters can also be set and stored for temperature in °C or °F as well as pressure in either psi or bar. In-line filters protect all pressure valves. Diameter x Depth: 9 x 18-Inch. Capacity: 19-Liters. Includes three removable and adjustable stainless steel tray shelves.

Prod. No.	Description	Unit
25122020	Steam Autoclave	1 each
2178800	Autoclave Gloves, 10-Inch Large	1 pair
2463100	Autoclave Tape	1 roll
2463300	Contaminated Items Bag	200 /pk
2714700	Sterilization Indicators	100 /pk
2811115	Sterikon® Plus Bio Indicators	15 /pk



## Balance, Analytical, ScienTech— Zeta Series™

ScienTech Zeta Series balances feature a Patented unbreakable suspension system based on a direct-loading, electromagnetic cell, which differs dramatically from normal lever-configuration balance designs. The Zeta Analytical Balances deliver 0.1mg readabilities for weights up to 210g. All models feature a capacity tracker, which displays the used and unused portions of the weighing range, percent weighing, live animal weighing, parts counting, check weighing (used in process control), GLP/GMP/ISO compatibility, and five units of measure: g (grams), oz (ounces), ozt (troy ounces), dwt

(pennyweight), and ct (carats). Tare range of each model is 0 to full capacity. A selectable vibration filter adapts the balance to your working environment, and a stability indicator tells you when the reading is valid. Balances feature 5-year warranty, RS-232 interface and include an analytical windscreens. Calibration is via external weight, not included. Power supply: 100-240V, 50/60Hz.

Prod. No.	Capacity	Unit
2936701	80 g	1 each
2936801	120 g	1 each
2936901	210 g	1 each

## Balance, Hanging Pan, Ohaus®

Ohaus Cent-O-Gram: good, general purpose hanging pan balance with 300 gram weighing capacity, sensitive to 0.01 g. Readings are taken from four beams of balance. Smallest increment is 0.01 g. Unit has magnetic-damping, specific gravity stand, and zero adjustment knob. Stainless steel weighing pan with handle and two pouring spouts. Pan diameter: 9.25 cm (3.64"). Depth: 1.3 cm (0.5"). Shipping weight: 2.1 kg (4.8 lb).



Prod. No.	Capacity	Unit
1476000	311 g	1 each

## Balance, Laboratory, ScienTech— Zeta Series™



ScienTech Zeta Series balances feature a Patented unbreakable suspension system based on a direct-loading, electromagnetic cell, which differs dramatically from normal lever-configuration balance designs. The Zeta Laboratory Balance delivers 0.01g readability. Features include a capacity tracker which displays the used and unused

portions of the weighing range, percent weighing, live animal weighing, parts counting, check weighing (used in process control), GLP/GMP/ISO compatibility, and five units of measure: g (grams), oz (ounces), ozt (troy ounces), dwt (pennyweight), and ct (carats). Tare range is 0 to full capacity. A selectable vibration filter adapts the balance to your working environment, and a stability indicator tells you when the reading is valid. Balances feature 5-year warranty and RS-232 interface. Calibration is via external weight, not included. Power supply: 100-240V, 50/60Hz.

Prod. No.	Capacity	Unit
2937201	600 g	1 each



## Balance, Moisture Analyzer, Ohaus®

The Ohaus Moisture Analyzer incorporates state-of-the-art halogen heating with precision weighing technology to quickly, effectively and affordably measure moisture content. Powerful software facilitates ease of use, as well as data storage and management. 45g model displays % moisture, % solids, Time, Weight, Temperature, Test ID and Drying Curve. 35g model displays % Moisture, Time Weight, and Temperature. Both models feature a 2-year manufacturer warranty.

Ideal applications include wastewater treatment, food and beverage, chemical, industrial, farming, construction and research labs.

Visit our website for the full list of features and to download your copy of the Moisture Analyzer brochure.



Capacity	Timer	Temperature Range	Readability
35 g	1 - 120 min, 30 sec units	50 to 160°C, 5°C units	0.005 g
45 g	1 - 120 min, 10 sec units	50 to 200°C, 1°C units	0.001 g

Prod. No.	Description	Capacity	Unit
2946401	115 V, North American Plug	35 g	1 each
2946402	115 V, North American Plug	45 g	1 each
2946403	230 V, Euro Plug	35 g	1 each
2946404	230 V, Euro Plug	45 g	1 each

### Moisture Analyzer Accessories

Prod. No.	Description	Unit
2948600	Aluminum Sample Pans	50 /pk
2507600	Glass Fiber Pads	200 /pk

## Balance, Precision, ScienTech®— Zeta Series™

ScienTech Zeta Series balances feature a Patented unbreakable suspension system based on a direct-loading, electromagnetic cell, which differs dramatically from normal lever-configuration balance designs. The Zeta Precision Balances deliver 1mg readabilities for weights up to 500g. All models feature a capacity tracker which displays the used and unused portions of the weighing range,

percent weighing, live animal weighing, parts counting, check weighing (used in process control), GLP/GMP/ISO compatibility, and five units of measure: g (grams), oz (ounces), ozt (troy ounces), dwt (pennyweight), and ct (carats). Tare range is 0 to full capacity. A selectable vibration filter adapts the balance to your working environment, and a stability indicator tells you when the reading is valid. Balances feature 5-year warranty, RS-232 interface and include an analytical windscreen. Calibration is via external weight, not included. Power supply: 100-240V, 50/60Hz.



Prod. No.	Capacity	Unit
2937001	250 g	1 each
2937101	500 g	1 each

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## Balance, Portable, A&D®

Simple and easy to operate, this rugged field balance features a stability indicator, overload indicator, simple external calibration, large LCD display, auto power off, 2-year warranty, and four units of measure: g, oz, ct and tl. Includes convenient carrying case, stainless steel pan, AC power adaptor and 4 AA batteries. Overall dimensions: 5.1" x 7.6" x 2.0". Weight: 1.1 lb. Pan Size: 5.1" in diameter. 200 g model measures in 0.1 g increments, while the 2000 g model measures in 1.0 g increments.



Prod. No.	Capacity	Unit
2946801	200 g	1 each
2946802	2000 g	1 each

## Balance, Pocket

The YA Series Pocket Balance is smaller in size than most pocket scales and allows a comfortable fit in your pocket. The clamshell design case protects scale during transport. Bright blue backlight LCD display and four units of measure: g, oz, ct and grain. 500 g capacity scale measures in 0.1 g increments. Includes 2 AAA batteries.



**NEW!**

Prod. No.	Capacity	Unit
2796900	400 g	1 each

## Balance Sets

ASTM Class 1 weights made from polished, non-magnetic stainless steel ( $\geq 50$  mg) or aluminum ( $\leq 30$  mg). NIST traceable certificate included. Sets packaged in polypropylene case and come with contoured weight-handling forceps.

**NEW!**



Prod. No.	Unit
2617600	1 each

See page 314 for Class M-2 Weight Set.

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# BAROMETER — BLENDER

## Barometer

Dial Barometer features a large, clear, dual scale in hPa (hecto Pascal) and mm(mercury) on a 4-inch dial with wall mounts.



Prod. No.	Description	Unit
2694500	Dial Barometer	1 each

## Beakers, Polypropylene, Nalgene®

Griffin style (low form) beakers from Nalgene are the industry standard for a wide variety of lab applications. Graduations are high quality screen printing in sizes >250mL. Bull nose lip and molded pour spout minimize spillage in liquid transfer. Autoclavable, non-toxic and biologically inert. Volumes and graduations are approximate.



Prod. No.	Capacity	Unit
108041	50 mL	1 each
108071	50 mL	12 /pk
108042	100 mL	1 each
108072	100 mL	12 /pk
108044	150 mL	1 each
108074	150 mL	12 /pk
108046	250 mL	1 each
108076	250 mL	6 /pk
108048	400 mL	1 each
108078	400 mL	6 /pk
108052	600 mL	1 each
108082	600 mL	4 /pk
108053	1000 mL	1 each
108083	1000 mL	3 /pk



## Bath, Ultrasonic

Cleans small and medium sized parts, including spectrophotometer cells. Unit comes with heater, timer, and temperature control plus a 2.8 L (0.75-gal) capacity tank. Tank is resistant to most cleaning solutions. Dimensions: exterior (L x W x D) 33.8 x 30 x 29.5 cm (13.3 x 12 x 11.6)

Prod. No.	Description	Unit
2489500	115 Vac, 60 Hz North American Model	1 each
2489502	230 Vac, 50 Hz European Model	1 each

## Blender, Industrial



This blender is tough enough to handle homogenizing wastewater, sludge, soil or heavy weight food samples for superior analytical results. Both models have thick walled glass containment jars and durable, rust free stainless steel blades.

Prod. No.	Description	Unit
2616100	Two-speed, 1.2-L container; 120 Vac-50/60 Hz	1 each
2616102	Two-speed, 1.2-L container; 240 Vac-50/60 Hz	1 each
2616105	Optional stainless steel container	1 each

## Beakers, Glass

Griffin style (low form) beakers are the industry standard for a wide variety of lab applications. Graduations are high quality screen printing. Bull nose lip and molded pour spout minimize spillage in liquid transfer. Autoclavable, non-toxic and biologically inert. Volumes and graduations are approximate.



Prod. No.	Capacity	Unit
50041H	50 mL	1 each
50071H	50 mL	12 /pk
50042H	100 mL	1 each
50072H	100 mL	12 /pk
50044H	150 mL	1 each
50074	150 mL	12 /pk
50046H	250 mL	1 each
50076H	250 mL	12 /pk
50048	400 mL	1 each
50078	400 mL	12 /pk
50052	600 mL	1 each
50082	600 mL	6 /pk
50053	1000 mL	1 each
50083	1000 mL	6 /pk
50054	2000 mL	1 each
50084	2000 mL	4 /pk



## Boiling Chips



Carbon boiling chips are chemically inert to concentrated sulfuric acid, strong alkalis, and other chemicals. Carbon chips can be used for atmospheric or vacuum operations. Silicon carbide (carborundum) chips are random-sized pieces up to 2 mm long. Plain Hengar Granules for smooth boiling. High purity, amphoteric alundum granule. Hard porous surface. Will not crumble or powder. Four mesh granule size.

Prod. No.	Description	Unit
1483531	Carbon Boiling Chips	227 g
2055734	Silicon Carbide Boiling Chips	500 g
18501	Hengar Granules, Plain	250 g

## Bottle, BOD, Disposable

- Fresh bottle, ready for use
- No cleaning required
- Unbreakable and recyclable
- Oxygen will not diffuse in or out of sample
- EPA compliant



Prod. No.	Description	Unit
2943100	Disposable 300 mL BOD Bottle	100 cs
2943900	Unbreakable Acrylic Stopper for 300 mL BOD Bottle	25 /pk
190901	Ground glass stopper for 60 mL and 300 mL bottles	1 each

## Bottle, BOD Glass

The standard for BOD analysis. Borosilicate glass bottle with flared lip and ground-glass stopper to prevent air entrapment and for water seal. Frosted marking area. Stopper included. Serialized bottles have silk-screened, sequential numbers and include a bar code.



Prod. No.	Capacity	Description	Unit
190902	60 mL	Marked 30 mL Graduation Line	1 each
62100	300 mL	Unlabeled	1 each
62106	300 mL	Unlabeled	6 /pk
62124	300 mL	Glass BOD Bottles	24 /pk
2898700	300 mL	Serialized; 1-24	24 /pk
2898800	300 mL	Serialized; 25-48	24 /pk
2898900	300 mL	Serialized; 49-72	24 /pk
2086047	300 mL	Bottle with Black PVC Coating	1 each
2937906	473 mL	Replacement bottles for BODTrak	6 /pk
714421	473 mL	Replacement bottles for BODTrakII	6 /pk

## Accessories

Prod. No.	Description	Unit
190901	Ground glass stopper for 60 mL and 300 mL bottles	1 each
241906	Snap-caps, improves the integrity of a standard water seal	6 /pk
2985100	BOD bottle cleaning brush	1 each

## Bottle, Drop-Dispensing Assembly



Round polyethylene bottle complete with dropper plug and cap for easy and precise liquid dispensing. Separate glass or plastic dropper available for 59 mL bottle.

Prod. No.	Description	Unit
2938106	15 mL (0.5 oz) Bottle with Cap & Plug	6 /pk
2937506	29 mL (1.0 oz) Bottle with Cap & Plug	6 /pk
2937606	59 mL (2.0 oz) Bottle with Cap & Plug	6 /pk
<b>Dropper Only</b>		
2355237	Plastic Dropper Only, fits 59 mL Bottle	1 /pk

## Bottle, Drop-Dispensing

Low density polyethylene (LDPE) bottle with polypropylene screw cap. Bottle dispenses one drop at a time with easy, one-handed operation.



Prod. No.	Capacity	Unit
2086269	15 mL (0.5 oz)	12 /pk
2086250	30 mL (1.0 oz)	12 /pk
2086280	60 mL (2.0 oz)	12 /pk
2086273	125 mL (4.2 oz)	12 /pk
2086256	250 mL (8.5 oz)	6 /pk

## Bottle, Dropper

The Polystop™ Dropper Bottle provides a distinct advantage over other glass dropper bottles. The dropper section easily pulls free for use while the polypropylene stopper remains snugly in the neck of the bottle, which helps prevent chipping the glass dropper section.



Prod. No.	Capacity	Unit
2929902	60 mL (2.0 oz)	1 each
2929903	125 mL (4.2 oz)	1 each

## Bottle, Sampling, Round, HDPE

High-density polyethylene bottle with wide-mouth (89 mm) opening. Excellent sampling bottle for grab samples, storing dry chemicals, and shipping liquids.



Prod. No.	Capacity	Unit
2087117	2-L (2 qt)	1 each
2087154	4-L (1 gal)	1 each

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# BOTTLES

## Bottle, Sampling, Round, LDPE

Low-density polyethylene (LDPE) bottles feature wide-mouth opening for easy filling and leak-proof polypropylene closure. Great choice for grab samples, shipping liquids, soil sampling, and storing dry chemicals.



Prod. No.	Capacity	Unit
2087050	30 mL (1.0 oz)	12 /pk
2087073	125 mL (4.2 oz)	12 /pk
2087076	250 mL (8.5 oz)	12 /pk
2087079	500 mL (16.8 oz)	12 /pk
2087083	1000 mL (33.8 oz)	6 /pk

## Bottle, Storage, Autoclavable

Wide-Mouth, polyethylene bottles suitable for sample collection to chemical storage. Matched polypropylene caps have a valve-seal design for a perfect, leak-proof fit. A protruding ring under the cap holds shrink-wrapping securely in place. Autoclavable 121°C (Do not autoclave with caps in place).



Prod. No.	Capacity	Unit
2939103	125 mL (4.2 oz)	12 /pk
1472456	250 mL (8.5 oz)	12 /pk
1472459	500 mL (16.8 oz)	12 /pk
1472463	1-L (33.8 oz)	6 /pk

## Bottle, Storage, Amber, Glass

Amber glass protects contents from damaging effect of sunlight. Includes polypropylene cap for closure.



Prod. No.	Capacity	Unit
2937706	118 mL (4.0 oz)	6 /pk
2937806	237 mL (8.0 oz)	6 /pk
2937906	437 mL (16.0 oz)	6 /pk
2938006	1-L (33.8 oz)	6 /pk

## Bottle, Storage, Oblong

Capacity: 118 mL. Polyethylene oblong storage bottle with cap. Optional Child-Resistant cap and Glass Dropper sold separately.



Prod. No.	Description	Unit
2937406	118 mL (4 oz) Bottle with cap	6 /pk
2323006	Child-Resistant cap	6 /pk
2318506	Glass Dropper Assembly (fits 118 mL bottle 2937406)	6 /pk

## Bottle, Storage, Amber, Glass, Wide-Mouth

Protects contents from damaging effects of sunlight. Referenced in a variety of Standard Method water analysis procedures. Cap size is 53-400 with a PE Teflon face.



Prod. No.	Capacity	Unit
2951401	1-L (33.8 oz)	1 each

## Bottle, Storage, Rectangular

Heavy-walled, translucent, high-density polyethylene (HDPE) bottle features wide mouth for easy filling and leak-proof polypropylene cap. Rectangular shape for maximum space efficiency and less damage in shipping. Suitable for both aqueous solutions and solid samples.



Prod. No.	Capacity	Unit
2086773	125 mL (4.2 oz)	12 /pk
2086776	250 mL (8.5 oz)	12 /pk
2086779	500 mL (16.8 oz)	12 /pk
2086783	1000 mL (33.8 oz)	6 /pk
2086784	2000 mL (67.6 oz)	4 /pk

## Bottle, Storage, Amber, Polyethylene

High-density polyethylene bottle with leak-proof polypropylene cap. Ideal for storage of light sensitive materials, solid or liquid.



Prod. No.	Capacity	Unit
2085859	500 mL (16.8 oz)	6 /pk
2085863	1-L (33.8 oz)	3 /pk

## Bottle, Storage, Round

Low-density polyethylene (LDPE) round bottle for storing liquids and dry samples.



Prod. No.	Capacity	Unit
2511500	237 mL (8 oz)	6 /pk
2511600	473 mL (16 oz)	6 /pk

## Bottle, Storage, Square

High-density polyethylene bottle with leak-proof polypropylene cap. Square design saves space, while wide-mouth allows for easy fill and removal of contents.



Prod. No.	Capacity	Unit
2086871	60 mL (2.0 oz)	12 /pk
2086874	175 mL (6.0 oz)	12 /pk
2086879	500 mL (16.8 oz)	12 /pk
2086883	1000 mL (33.8 oz)	6 /pk

## Bottle, Storage, Write-On

Large dedicated labeling areas help to standardize the way bottle contents are identified. A separate area is provided for name and a larger area allows for detail of contents or safety information and includes a defined space for date information. Bottles are wide-mouth, and molded of rugged HDPE in 500 and 1000 mL sizes with leak proof polypropylene cap.



Prod. No.	Capacity	Unit
2930003	500 mL (16.8 oz)	12 /bag
2930004	1000 mL (33.8 oz)	6 /bag

## Bottle, Wash

Polyethylene bottle with polypropylene closure and stem molded in one piece for leak-proof service. Tip can be cut back to increase flow. Available in Narrow or Wide Mouth.



Prod. No.	Description	Capacity	Unit
2930101	Narrow Mouth	125 mL (4.2 oz)	12 /bag
2930102	Narrow Mouth	250 mL (8.4 oz)	12 /bag
2930103	Narrow Mouth	500 mL (16.8 oz)	12 /bag
2927202	Wide Mouth	250 mL (4.2 oz)	12 /bag
2927203	Wide Mouth	500 mL (16.8 oz)	6 /bag
2927204	Wide Mouth	1000 mL (33.8 oz)	3 /bag

## Bottle, Wash, Autoclavable

Polypropylene co-polymer bottle with specially molded polypropylene screw closure for leak-proof service. Autoclavable. Before autoclaving, set cap on top of bottle without engaging threads.



Prod. No.	Capacity	Unit
2930201	500 mL (16.8 oz)	6 /bag
2930202	1000 mL (33.8 oz)	4 /bag

## Bottle, Wash, Nalgene®

Narrow mouth polypropylene screw closure and stem feature one-piece construction to ensure a leak proof seal. Tip can be cut back to increase flow. 500mL (16.8 oz). Capacity, 28mm mouth). Choose from 4 cap/stem colors.



Prod. No.	Description	Unit
2928201	Nalgene LDPE Bottle, Yellow Cap/Stem	6 /pk
2928202	Nalgene LDPE Bottle, Blue Cap/Stem	6 /pk
2928203	Nalgene LDPE Bottle, Green Cap/Stem	6 /pk
2928204	Nalgene LDPE Bottle, Red Cap/Stem	6 /pk

## Bottle, Wash, Red

Color indicates flammable or dangerous contents. Bottle is polyethylene with polypropylene screw cap.



Prod. No.	Capacity	Unit
2086946	250 mL (8.4 oz)	1 each
2929101	250 mL (8.4 oz)	6 /pk
2086949	500 mL (16.8 oz)	1 each
2929103	500 mL (16.8 oz)	6 /pk

## Bottle, Wash, Symbol Alert

Wide-mouthed and color-coded wash bottles provide safe and positive identification of common laboratory solutions. Standard Diamond Alert symbols indicate type of hazard contents may represent. Polyethylene bottles with color-coded polypropylene screw caps and spray-tip assembly. Variety 6-pack includes one bottle each for water, acetone, methanol, isopropanol, toluene, and ethanol.



Prod. No.	Capacity	Unit
2613049	500 mL (16.8 oz)	6 /pk

## Bottle, Wash, Wide-Mouth

Low-density polyethylene bottle with polypropylene screw closure features tubulation molded into bottle to eliminate any possibility of leakage. Entire contents can be dispensed without tipping or shaking.



Prod. No.	Capacity	Unit
62014	125 mL (4.2 oz)	1 each
62031	250 mL (8.4 oz)	1 each
62011	500 mL (16.8 oz)	1 each
62075	750 mL (24.0 oz)	1 each
62016	1000 mL (33.8 oz)	1 each

# BOTTLES — BRUSHES

## Bottle Carrier, Nalgene®

Linear, low-density polyethylene. Securely holds up to six standard 0.5 L glass bottles, pint-size reagent bottles, and most other 500 mL glass or plastic bottles—making breakage almost impossible. Lightweight, chemical-resistant, and easy to clean. Dimensions: 34.9 x 24.8 x 27.6 cm (14 x 10 x 11").



Prod. No.	Unit
2094300	1 each

## Brush, BOD Bottle

Cleaning brush ideal for cleaning standard glass BOD bottles.

- Brush Diameter: 1- 3/8"
- Brush Length: 3-1/2"
- Overall Length: 12"



Prod. No.	Description	Unit
2985100	BOD bottle cleaning brush	1 each

## Brush, Bottle

The pivot head on this brush swivels, enabling you to thoroughly clean bottles and flasks, including difficult curves and corners. Natural bristles set in wood will not scratch glass. Uniquely designed head fits through a 29/26 standard taper neck or any neck with a diameter of 24mm (1") or more. The brush has a 45mm (1-1/4") wooden back and a 33cm (13") long hardwood handle.



Prod. No.	Unit
2929601	1 each

## Brush, Buret



Ideally shaped for quick and thorough cleaning of burets and other similarly shaped vessels. Unbleached white nylon bristles are supported by twisted galvanized steel wire. Brush portion measures 8 cm (3.1") in length. Fan style tip. 1.3cm (0.5") Dia. 76cm (30") L.

Prod. No.	Description	Brush Diameter	Total Length	Unit
68500	25 mL Buret Brush	1.3 cm (0.5)	76 cm (30)	1 each
68600	50 mL Buret Brush	2.0 cm (0.79)	91 cm (35.8)	1 each

## Brush, Cylinder



Brush part 13 cm (5) length, 5 cm (2) diameter. Total length: 33 cm (13). Heavily filled with black bristles on galvanized wire. Radial tufted end.

Prod. No.	Description	Unit
68700	Cylinder cleaning brush, size 2	1 each

## Brush, General Purpose



Ideal for general cleanup and minor spills of dry materials, brush features an ergonomically molded polymer handle with soft polymer bristles. Use on countertops, lab benches, tile floors and more.

Prod. No.	Unit
2241400	1 each

## Brush, Imhoff Cone



Brush part 25 cm (10") length, 10 cm (4") diameter tapering to 2 cm (0.79"). Wooden handle. Length: 38 cm (15"). Fan-style tip, perfect for cleaning your Imhoff Cone.

Prod. No.	Description	Unit
68800	Imhoff Cone Cleaning Brush	1 each

## Brush, Pipet



Brush part, 15 cm (6"); 2 cm (0.79") diameter tapering to 0.6 cm (0.24"). Total length of brush: 44 cm (17.3"). Soft gray hair on galvanized wire.

Prod. No.	Unit
68900	1 each



## Brush, Test Tube



Brush part, 9 cm (3.5") length; 2 cm (0.79") diameter. Total length: 24 cm (9.5"). Unbleached white bristles on galvanized wire. Radial tufted end.

Prod. No.	Unit
69000	1 each

## Bucket, Graduated

White high-density polyethylene. Handle and wide-lipped pour-spout. Liter and pint graduations.



Prod. No.	Capacity
2087300	10 L

## Buret, Acrylic



Durable, crystal-clear acrylic body is individually calibrated to meet the accuracy requirements of ASTM E287. Leak-proof stopcock with self-lubricating Teflon TFE plug. Excellent for general lab or field use in schools, industrial, municipal or food applications. Unaffected by dilute mineral acids and bases (except hydrofluoric acid and ammonium hydroxide). Can contain liquids within a pH range of 1-14 and up to 5% wt/wt of acids or 30% bases can be used. Not designed for exposure to alcohol or organic solvents.

Prod. No.	Resolution	Capacity	Tolerance	Unit
1405940	0.1 mL	25 mL	± 0.06 mL	1 each
1405941	0.1 mL	50 mL	± 0.1 mL	1 each

## Buret, Automatic, Glass



Glass reservoir and buret with PTFE stopcock create an easy to use workstation for standard solutions. Subdivisions of 1.0 mL and 0.1 mL.

Prod. No.	Buret Capacity	Reservoir Capacity	Unit
2261438	10 mL	500 mL	1 each
2261440	25 mL	1000 mL	1 each

## Replacement Components

Prod. No.	Description	Unit
2261432	10 mL Buret	1 each
2261442	25 mL Buret	1 each
50444	Glass T for Buret	1 each
50445	Bulb and connecting tube	1 each
50450	2-hole stopper for 500 mL Flask	1 each
50449	2-hole stopper for 1000 mL Flask	1 each
2261451	PTFE Stopcock	1 each
2489449	500 mL Flask	1 each
2489453	1000 mL Flask	1 each

## Buret, Automatic, Class A

Calibrated to ASTM E694 standard. NIST traceable, Class A buret with 70 mL reservoir. 5.0 mL buret capacity with 0.1 mL subdivision (tolerance ±0.01 mL). Reservoir stopper and #2 PTFE stopcocks included.



Prod. No.	Description	Unit
2055037	5 mL Automatic Buret	1 each
2095661	Replacement Stopcock	1 each

## Buret, Automatic, Self-Zeroing

Durable, crystal-clear acrylic buret is calibrated to meet ASTM E287 requirements. Leak-proof stopcock with self-lubricating Teflon TFE plug. Unaffected by dilute mineral acids and bases (except hydrofluoric acid and ammonium hydroxide). Handles liquids with a pH range of 1-14 and up to 5% wt/wt of acids or 30% bases can be used. Not designed for exposure to alcohol or organic solvents. Includes low density polyethylene squeeze bottle and 36" tubing for easy self-zeroing set up for titration work stations. Dust cover included.



Prod. No.	Capacity	Subdiv.'s	Reservoir Capacity	Unit
2087640	25 mL	0.1 mL	500 mL	1 each
2087641	50 mL	0.1 mL	1000 mL	1 each



# BURETS — CARRIER TRAY

## Buret, Glass, Class A



Glass, funnel-fill buret. Certified Class A (ASTM Specification E287) with permanent serial number and certificate for NIST traceability. PTFE stopcock does not require grease. Dust cap included. 10 mL buret meets requirements for potentiometric titrations (ASTM D664).

Prod. No.	Capacity	Subdiv.'s	Tolerance	Length	Unit
2636538	10 mL	0.5 mL	± 0.02 mL	66.4 cm	1 each
2636540	25 mL	0.1 mL	± 0.03 mL	61.4 cm	1 each
2636541	50 mL	0.1 mL	± 0.05 mL	74.5 cm	1 each
2636542	100 mL	0.2 mL	± 0.1 mL	79.1 cm	1 each

## Buret Kit, Self-Zeroing

Economical kit turns any 25 or 50 mL buret into an auto-filling, self-zeroing titration work station. Can be used with most aqueous titrants. Kit includes 1000 mL low-density polyethylene reservoir, 48" of tubing, connectors, reservoir tubing and extra closure without tubing hole for storing titrants or carrying to the field.



Prod. No.	Unit
2073900	1 each

## Carboy, Cylindrical

Low-density polyethylene with a leak-proof polypropylene screw closure. Molded in spigot provides strength and leak-proof operation. 10 L and 20 L sizes have wide shoulder handles.



Prod. No.	Description	Unit
1486817	4 L Capacity	1 each
1486858	10 L Capacity	1 each
1486860	20 L Capacity	1 each
2182700	Replacement Spigot	1 each

## Carboy, Lowboy



Made of high-density polyethylene. Low-profile design fits into narrow spaces, on shelves, and in refrigerators. Stacks up to three high to save space. Large, integral hand grip makes carrying easy. 8 L size can be stacked on 15 L size. For storage and dispensing of reagents, distilled water, titrants, and other liquid storage needs. Will tolerate strong acids and bases, alcohols, and ketones. Not recommended for use with other organic solvents. Leak-proof. Includes spigot.

Prod. No.	Description	Capacity	Unit
2075408	16.3 x 36.3 x 30 cm (6.4 x 14.3 x 11.8)	8 L (2 gal)	1 each
2075460	20.1 x 36.8 x 36.5 cm (7.9 x 14.5 x 14.4)	15 L (4 gal)	1 each

## Carboy, Rectangular

Space-saving rectangular shape. With molded graduations. High-density polyethylene ensures tough, rigid carboy 20 L (5 gal) size has molded-in hand grips. Quick action spigot gives easy fluid control; incorporates two Teflon o-rings for positive seal.



Prod. No.	Description	Capacity	Unit
2098061	22 x 15 x 34 cm (8.7 x 5.9 x 13.4)	9 L (2.38 gal)	1 each
2098080	32 x 22 x 38 cm (12.6 x 8.7 x 14.9)	20 L (5.28 gal)	1 each

## Carrier Tray

Steam autoclavable, polypropylene molded tray has built-in handle for easy carrying of reagents or laboratory ware using one hand.



Prod. No.	Unit
2938300	1 each

## Casserole

With lip and flat porcelain handle, glazed inside and out except for rim.



Prod. No.	Description	Capacity	Unit
62762	8.5 x 4.5 cm (3.4 x 8.1 in)	140 mL	1 each
62763	9.5 x 5.0 cm (3.7 x 1.9)	210 mL	1 each

## Clamp, Double Buret

Holds two burets from micro-size to 100 mL separately without slippage or obscured graduation lines and numbers. Built-in meniscus reader. Overall size, 24 x 13 cm (9.5 x 5.2") (W x L).



Prod. No.	Unit
32800	1 each

## Centrifuge

Versatile benchtop unit for sample preparation such as settleometer test. Stainless-steel motor shaft and permanently lubricated ball bearings provide long, trouble-free service life. Centrifuge accepts tubes with dimensions of 13 to 17mm diameter x 100 to 133mm long.



Capacity	Speed	Timing	Rotor
6 tubes x 15 mL	300 rpm - 6,500 rpm; 4,000 x g	0.5 - 30 min	Six-Place (fixed angle)

Prod. No.	Description	Unit
2676500	115 Vac, 60 Hz	1 each
2676502	230 Vac, 50 Hz	1 each

## Centrifuge Tubes

Prod. No.	Description	Unit
2278739	Polycarbonate, Round Bottom, 15 mL Tube, Non-Graduated	10 /pk
2115839	Polycarbonate, Conical Bottom, 15 mL Tube, Molded graduations	10 /pk
2585220	Friction-fit caps for tubes	10 /pk

## Clamp, Double Buret

Linear polyethylene. Non-corrosive clamp holds buret firmly in place without obscuring graduations. Center clamp tightens to a standard support rod. Includes 1.25 cm (0.5") and 0.95 cm (0.4") bushings.



Prod. No.	Unit
2087801	1 each

## Clamp, Rod and Pipe

For rods or pipes between 1.1 and 2.2 cm (0.43 to 0.87") diameter in any type of right-angle clamp setup (horizontal or vertical). Comes with two 45° angle ribbed thumb screws. Not recommended for use with support ring stands.



Prod. No.	Description	Unit
32600	Support Stand Clamp	1 each

## Clamp, Screw Compression

Nickel-plated brass. For rubber and plastic tubing.



Prod. No.	Description	Unit
63301	1.6 x 2.5 cm (0.63 x 0.98)	1 each
63317	1.3 x 1.9 cm (0.5 x 0.75)	1 each

## Clamp, Test Tube

Self-closing. Brass wire. For tubes up to 2.5 cm in diameter.



Prod. No.	Unit
63400	1 each

## Clamp, Three-Prong

Vinyl-covered jaws operate independently of solid aluminum extension rod, 1.1-cm (0.43") diameter. Jaw capacity: 8.9 cm (3.5"). Brass pivot pin. Total length: 27.9 cm (10.9").



Prod. No.	Unit
42200	1 each

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# CLAMPS – CYLINDERS

## Clamp, Tubing

Molded, white polycarbonate. Autoclavable. Will not distort, rust or corrode. Mini-clamp is a single position on/off clamp for use with thin-walled tubing under 4.7 mm (3/16") O.D. Larger clamp has 15 positions, stepped control to throttle flow from full open to complete closure. Fits tubing from 3.2 mm (1/8") to 11 mm (3/8") O.D.



Prod. No.	Unit
2087901	12 /pk

## Clamp, Two-Prong

Flat, vinyl-covered jaws hold firmly at any angle. One jaw is fixed; the other opens against a stainless steel compression spring. Clamps are nickel-plated zinc with seamless brass extension tube, compressing screw, and pivot pin. Jaw capacity: 3.8 cm (1.5"). Total length: 20 cm (7.8").



Prod. No.	Unit
2114500	1 each

## Clamp, Two-Prong Swivel

Perfect for cylinder shaped glassware. Swivel feature allows for complete circular adjustments. Clamp complete with both slip-on vinyl and fiber glass grip sleeves. Length 5 - 7/16" (138 mm). Open diameter is 3" (77 mm). Flask and Support Rod sold separately.



Prod. No.	Unit
2503400	1 each

## Cotton Balls

For use in a variety of laboratory applications.



Prod. No.	Description	Unit
257201	Ultra absorbent cotton balls	100 /pk

## Crucible, Gooch

Perforated bottom, glazed inside and out except for outside bottom surface. Filter for Gooch Crucible available and sold separately. 25-mL Gooch Crucible is recommended for use in Standard Methods 2540 C and 2540 D to determine Total Suspended Solids.



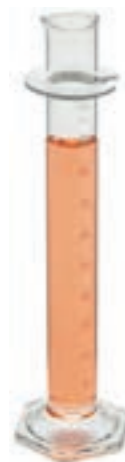
Prod. No.	Capacity	Unit
2098640	25 mL	1 each
2098641	40 mL	1 each

## Accessories

Prod. No.	Description	Diameter	Pore Size	Unit
2198720	Glass Fiber Disk for Gooch Crucible	0.8 in ( 20 mm )	1.5 µm	100 /pk
2198725	Glass Fiber Disk for Gooch Crucible	1 in ( 25 mm )	1.5 µm	100 /pk
2233200	Crucible Holder	Holds 25 mL crucible. Fits flasks with stopper sizes 6-8.		1 each

## Cylinder, Graduated, Glass

Calibrated to deliver glass cylinder. Single metric scale in durable white markings.



Prod. No.	Description	Capacity	Subdiv.'s	Tolerance	Unit
50837	To Deliver	5 mL	0.1 mL	± 0.1 mL	1 each
50838	To Deliver	10 mL	0.2 mL	± 0.2 mL	1 each
50840	To Contain	25 mL	0.5 mL	± 0.3 mL	1 each
50841	To Contain	50 mL	1.0 mL	± 0.4 mL	1 each
50842	To Contain	100 mL	1.0 mL	± 0.6 mL	1 each
50846	To Contain	250 mL	2.0 mL	± 1.4 mL	1 each
50849	To Contain	500 mL	5.0 mL	± 2.6 mL	1 each
50853	To Contain	1000 mL	10.0 mL	± 5.0 mL	1 each

## Cylinder, Graduated, Glass with Red Background, Low Form

Tuttle-type glass cylinder calibrated "to deliver". Features two pour spouts and a single white metric scale.



Prod. No.	Capacity	Height	Subdiv.'s	Tolerance	Unit
2064341	50 mL	140 mm	1.0 mL	± 1 mL	1 each
2064342	100 mL	156 mm	2.0 mL	± 2 mL	1 each

## Cylinder, Graduated, Glass Double Metric, Low Form

These graduated cylinders feature two sets of graduations for reading either up or down, and two pouring lips Calibrated "to deliver".



Prod. No.	Capacity	Height	Subdiv.'s	Tolerance	Unit
2928401	50 mL	145 mm	1.0 mL	± 1.5 mL	1 each
2928402	100 mL	150 mm	2.0 mL	± 1 mL	1 each

## Cylinder, Graduated, Glass Double Metric, Tall Form

These glass pyrex graduated cylinders feature two sets of graduations for reading either up or down Calibrated "to deliver".



Prod. No.	Capacity	Height	Subdiv.'s	Tolerance	Unit
2928301	50 mL	225 mm	1.0 mL	± 0.5 mL	1 each
2928302	100 mL	254 mm	1.0 mL	± 1 mL	1 each
2928303	250 mL	340 mm	2.0 mL	± 2 mL	1 each
2928304	500 mL	500 mm	5.0 mL	± 4 mL	1 each
2928305	1000 mL	465 mm	10.0 mL	± 6 mL	1 each

## Cylinder, Graduated, Polypropylene

Polypropylene construction of both cylinder and base. All sizes have generous pour spout, large molded-in, and easy-to-read graduations. Can be chemically sterilized without affecting accuracy. Autoclavable, but accuracy will be adversely affected. Cylinders meet accuracy requirements of ASTM Class B, E1272, ISO Standard 6706, and CFR 21, Part 177.1520.



Prod. No.	Capacity	Subdiv.'s	Tolerance	Unit
108138	10 mL	0.2 mL	± 0.20 mL	1 each
108140	25 mL	0.5 mL	± 0.34 mL	1 each
108141	50 mL	1.0 mL	± 0.50 mL	1 each
108142	100 mL	1.0 mL	± 1.00 mL	1 each
108146	250 mL	2.0 mL	± 2.00 mL	1 each
108149	500 mL	4.0 mL	± 4.00 mL	1 each
108153	1000 mL	10.0 mL	± 6.00 mL	1 each
108154	2000 mL	12.0 mL	± 12.00 mL	1 each

## Cylinder, Graduated, Glass, Class A

Certified Class A, this glass cylinder is calibrated "to deliver" according to ASTM E542 & E1272. Serialized and traceable to NIST standards (includes Certificate of Identification and Capacity). Single metric scale in white marking with funnel-top. Bumper guard included for all sizes greater than 10 mL.



Prod. No.	Capacity	Subdiv.'s	Tolerance	Unit
2636238	10 mL	0.1 mL	± 0.09 mL	1 each
2636240	25 mL	0.2 mL	± 0.17 mL	1 each
2636241	50 mL	1.0 mL	± 0.25 mL	1 each
2636242	100 mL	1.0 mL	± 0.4 mL	1 each
2636246	250 mL	2.0 mL	± 0.8 mL	1 each
2636249	500 mL	5.0 mL	± 1.3 mL	1 each
2636253	1000 mL	100.0 mL	± 2.5 mL	1 each

## Cylinder, Graduated, Polypropylene, HOLDFAST™

One-piece polypropylene construction with a molded in handle top ensure a secure, solid grip and superior control for safer, more convenient pouring. The "Total Contained, Total Delivered" double scale is accurate and easy to read (cylinder will not create a meniscus), while the hexagonal base prevents tipping or rolling. Hand opening is 89 x 29 mm (3 x 1-1/8"). Steam autoclavable up to 121°C (250°F).



Prod. No.	Capacity	Unit
2612953	1000 mL	1 each
2612954	2000 mL	1 each

## Cylinder, Graduated, Polymethylpentene

This cylinder features transparent, nontoxic, noncontaminating, and biologically inert material with excellent chemical resistance. Meets ASTM E1272 Class B accuracy requirements, ISO Standard 6706, and suitable for food and beverage use (PMP resin meets requirements of CFR 21, Part 177.1520). Calibrated "To Contain/To Deliver" at 20°C (68°F). Shatterproof and thermally resistant to 135°C (275°F). Absence of meniscus for easy-to-read levels on front-to-back raised graduations.



Prod. No.	Capacity	Subdiv.'s	Tolerance	Unit
217240	25 mL	0.5 mL	± 0.34 mL	1 each
217241	50 mL	1.0 mL	± 0.50 mL	1 each
217242	100 mL	1.0 mL	± 1.00 mL	1 each
217246	250 mL	2.0 mL	± 2.0 mL	1 each
217249	500 mL	5.0 mL	± 4.00 mL	1 each
217253	1000 mL	10.0 mL	± 6.00 mL	1 each

## Cylinder, Graduated, Mixing, Glass

This glass graduated cylinder is calibrated "to contain" with a molded in base. Each includes glass penny head stopper. Graduations are in durable white enamel bake.



Prod. No.	Capacity	Subdiv.'s	Tolerance	Stopper Size	Unit
2088638	10 mL	0.2 mL	± 0.1 mL	13	1 each
2088640	25 mL	0.1 mL	± 0.2 mL	13	1 each
2088641	50 mL	1.0 mL	± 0.5 mL	16	1 each
2088642	100 mL	1.0 mL	± 1 mL	16	1 each

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# CYLINDERS — DESICCATORS

## Cylinder, Graduated, Mixing, Class A

This certified, Class A glass mixing cylinder is calibrated "to contain" according to ASTM E542 & E1272. Serialized and traceable to NIST standards (includes Certificate of Identification and Capacity). Single metric scale in durable white markings with funnel-top. Glass penny head stopper included.



Prod. No.	Capacity	Subdiv.'s	Tolerance	Stopper	
				Size	Unit
2636340	25 mL	0.2 mL	± 0.14 mL	13	1 each
2636341	50 mL	1.0 mL	± 0.2 mL	16	1 each
2636342	100 mL	1.0 mL	± 0.35 mL	22	1 each
2636349	500 mL	5.0 mL	± 1.1 mL	32	1 each

## Cylinder, Graduated, Mixing, Class B

Scale is durable white ceramic enamel. Designed to meet ASTM Specification E1272, Style 2 (Class B). Includes glass stopper.



Prod. No.	Capacity	Subdiv.'s	Tolerance	Stopper	
				Size	Unit
189640	25 mL	0.5 mL	± 0.4 mL	13	1 each
189641	50 mL	1.0 mL	± 0.6 mL	16	1 each

## Cylinder, Graduated, Polycarbonate

Clear polycarbonate cylinder is autoclavable and withstands temperatures to 138°C (280°F). Features easy to read graduations in durable fused ink.



Prod. No.	Capacity	Subdiv.'s	Unit
2117940	25 mL	0.5 mL	1 each
2117941	50 mL	0.5 mL	1 each
2117942	100 mL	1.0 mL	1 each
2117946	250 mL	2.0 mL	1 each
2117949	500 mL	5.0 mL	1 each
2117953	1000 mL	10.0 mL	1 each

## Desiccant

Indicating Drierite changes from a blue color when dry to red upon absorption of moisture. Packaged in 454-g (1 lb) containers.



Prod. No.	Description	Unit
2285901	Drierite (without indicator)	1
2088701	Indicating Drierite	1

## Desiccator Cabinet, Non-Vacuum

Stackable, polystyrene, transparent from any side. Door has foam rubber gasket, two roller latches for airtight fit. Jar of silica gel included. Inside dimensions: 21 x 18 x 13 cm (8.25 x 7 x 5"). Door opening: 19 x 11 cm (7.5 x 4.4"). Desiccator Grease available and sold separately.



Prod. No.	Description	Unit
2618100	Polystyrene Desiccator	1 each
56275	Desiccator Grease	1 each

## Desiccator, Polycarbonate

Round polycarbonate cover and polypropylene base create implosion-proof chamber at full vacuum. Chamber is impervious to alkali and acidic conditions. Recessed rim prevents grease (not included) from contacting bench surfaces when removed and eliminates need for a separate gasket. Vacuum model features leak-proof stopcock. Dimensions (height x diam): 245 mm x 330 mm (9.7" x 13"). Holds 454 g (1 lb) of desiccant. Ceramic desiccator plate (sold separately) is inert, non-stick, and corrosion resistant. Quadrants crafted into plate for easy tracking of material locations. Plate diameter: 230 mm (9").



Prod. No.	Description	Unit
2088800	Vacuum Desiccator	1 each
1428400	Ceramic Desiccator Plate (Non-Vacuum)	1 each
1428500	Non-vacuum Desiccator	1 each
56275	Desiccator Grease	1 each



## Desiccator, Polycarbonate

Round polycarbonate top provides lightweight vessel with unmatched transparency. Polypropylene lower section creates support chamber at full vacuum. Stopcock for vacuum applications (1/4-3/8" OD vacuum tubing, sold separately). Holds 28 in Hg (711 mm) for 24 hrs. Silicone O-ring makes grease unnecessary. For room temperature, non-organic solvent, and non-autoclave uses only. Optional Ceramic Desiccator Plate available and sold separately. Ceramic Plate features marked, numbered quadrants for easy location of crucibles and other containers.



Prod. No.	Description	Unit
2238300	Polycarbonate Desiccator	1 each

## Detergent, Alcotabs®

Effervescent tablet. Recommended for glassware cleaning with siphon-tube rinsers. Contains phosphate.



Prod. No.	Description
2088200	100 tablets

## Detergent, Alconox® Powder

Anionic powder for general-to-critical cleaning. pH 9.0-9.5. Contains phosphate.



Prod. No.	Description
2088000	1.8 kg (4 lb)

## Detergent, Liqui-Nox®

Anionic and non-ionic detergents with wetting agents. pH 8.0-8.6.



Prod. No.	Description	Unit
2088117	3.78 L (1 gal)	3.78
2088153	946 mL (1 qt)	946

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## Dish, Glass, Evaporating

Glass flat bottom dish with straight sides. Reinforced and firepolished rims reduce chipping. Ideal for storage and crystallization.



Prod. No.	Description	Unit
2764700	740 mL, 125 x 65 mm Dia. x H	1 each

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# DISH — DISSOLVED OXYGEN METER

## Dish, Evaporating, Porcelain



Deep-form, round bottom with lip. Glazed except for rim. Temperatures to 1500°C (max change = ±200°C/hr).

Prod. No.	Description	Unit
52590	70 mL, 75 x 30 mm Dia. x H	1 each
52561	120 mL, 94 x 42 mm Dia. x H	1 each
52565	250 mL, 115 x 45 mm Dia. x H	1 each

## Dish, Disposable



Aluminum dish for evaporating and general utility use. Crimped sides for stability. Sturdy, with a flat bottom and slight taper for easy stacking. Dished include tabs for easy handling. Temperature range 0 to 426°C (800°F). Melting point 676°C (1250°F). Dish height approx. 3/4.

Prod. No.	Description	Unit
2164000	60 mL, 57 mm Dia.	100 pk

## Dish, Moisture, Determination



Prod. No.	Description	Unit
2551910	Dish, Moisture Determination	50 pk

## Dispenser, Digital, Adjustable-Volume

Attach dispenser directly to reagent bottle for adjustable dispensation with a single stroke. Inert hardware designed to handle alkaline, acidic and organic solutions. Autoclavable (121°C). Dispensers fits bottles with a 33 mm screw-neck finish (supplied with adapters to fit 28, 38 and 45 mm finishes). Dispenser rotates 360°.



Prod. No.	Description	Unit
2563140	1.0-10.0 mL	1 each
2563137	1.0-5.0 mL	1 each

## Dissolved Oxygen Meter

Meter measures Dissolved Oxygen (DO) to determine water quality in a variety of applications including wastewater, aquariums and fish hatcheries. Simultaneously displays DO and temperature readings. Unit holds and recalls minimum and maximum readings. Features automatic temperature compensation and calibration to air. Meter is ready for use and includes a soft carrying case with belt loop, two spare probe heads, electrolyte and 4 AAA batteries.



Description	Range	Resolution	Accuracy
Dissolved Oxygen	0 ~ 20.0 mg/L	0.1 mg/L	±0.4 mg/L
Oxygen % in Air	0 ~ 100.0%	0.1%	±0.7%
Temperature	0 ~ 50.0°C	0.1°C	±0.8°C

Prod. No.	Description	Unit
2968800	DO meter	1 each
2968810	Replacement Probe Head	1 each
2968820	Replacement Electrolyte	1 each

# DISTILLATION APPARATUS

## Distillation Apparatus

Fast set-up for sample pretreatment. Distillation sets include only EPA approved glassware. Easy to set up because you only receive the parts you need. Illustrated, step-by-step procedures simplify distillation.

Prod. No.	Description	Unit
2265300	General Purpose Distillation Apparatus Set (Heater and support apparatus also required)	1 each
2265400	Arsenic Set (Heater and support apparatus also required)	1 each
2265800	Cyanide Set (Heater and support apparatus also required)	1 each

## Accessories

Prod. No.	Description	Unit
2264806	Connector (20-400 to 20-400), J-tube, 6/pk	6 /pk
2274000	Connector (13-425), Thermometer	1 each
2274106	Connector (24-400 to 24-400), Cylinder, 6/pk	1 each
2265308	Distillation Procedures Manual	1 each
2274400	Heater and Support Apparatus, 115 Vac, 60 Hz	1 each
2274402	Heater and Support Apparatus, 230 Vac, 50 Hz	1 each
2274300	Laboratory Platform Jack	1 each
2635700	Thermometer, -10 to 225°C, 1 Divisions (°C), 405 mm (16)	1 each



Heater and Support sold separately

## Distillation Apparatus Replacement Parts

Prod. No.	Description	General Purpose Set	Arsenic Set	Cyanide Set	Unit
50048	Beaker, Low Form 400 mL	•	•	•	1 each
50547	Flask, Erlenmeyer 300 mL	•	•	•	1 each
2095351	Stir Bar, Octagonal 25.4 X 7.9mm	•	•	•	1 each
2635700	Thermometer	•	•	•	1 each
2264649	Flask, Distillation 500 mL	•	•	•	1 each
2264706	Cat, Blk Phen 20-400 PTFE PK/6	•	•	•	1 each
2264806	Connector (20400 to 20400), J-tube 6/pk	•	•	•	6 /pk
2264900	J-Tube, 20-400	•	•	•	1 each
2265000	Condenser, 20-400	•	•	•	1 each
2265100	Drip Tube, 20-400 Screw Thread	•	•	•	1 each
2273900	Cap, black-phenolic, 13-425	•	•	•	1 each
2274000	Connector, Thermometer, 13-425	•	•	•	1 each
2274106	Connector (24400 to 24400), Cylinder 6/pk	•	•	•	1 each
2264467	Funnel, Powder PP 65 mm		•		1 each
2265500	Gas Scrubber, 20-400		•		1 each
54649	Flask, Filtering 500 mL			•	1 each
56018	Tubing, Rbr Latex 6.4 X 2.4 mm, 3.6M Length	•		•	12 ft
213100	Aspirator, Vacuum			•	1 each
1787500	Flowmeter, Air			•	1 each
1787700	Stopper Assy			•	1 each
1810602	Tubing, Latex, 3/16 ID, 2FT			•	2 ft
2265600	Thistle Tube			•	1 each

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# FACE SHIELD — FILTERS

## Face Shield, Polycarbonate

Fully adjustable head straps with padded brow provides comfort, while 15 wide x 8-1/2 tall polycarbonate shield provides outstanding splash protection. Shield also provides 99.9% UV protection up to 380 nm. Forehead cover and ledge design prevents fluids from splashing inside the window. Removable, steam autoclavable face shield. Meets ANSI Z87+ and CSA Z94.3 standards. Some assembly required.



Prod. No.	Description	Unit
2928101	Polycarbonate Face Shield	1 each

## Filter, Groundwater, High Capacity, GWV

Compact, disposable in-line filters for dissolved metals analysis. Eliminate cleaning and autoclaving steps and reduce multiple filter changes when sampling silt and particulate-laden groundwater. Polypropylene Housing. Supor® Filters: 0.45 m pore size; 600 cm<sup>2</sup> effective filtration area; 6.8 cm diameter; 13.7 cm with fittings; tapered hose barb accepts 6.4 to 12.7 mm (1/4 to 1/2") tubing; continuous 60 psid at ambient temperature.



Prod. No.	Diameter	Pore Size	Unit
2670500	680 mm	0.45 µm	1 each

## Filters, Syringe, Non-Sterile

Syringe filters offer an efficient way to remove particulates from samples prior to analysis. Filters feature 20% more surface area than standard 25 mm filters, which increases flow rates and capacity. Choose PVDF filters for solutions containing proteins. Choose Nylon filters for broad chemical compatibility and organic solutions. Glass fiber filters are used primarily for prefiltration of dirty or difficult samples. Standard Female Luer-Lok inlet with standard male slip Luer outlet. Hydrophilic.



Prod. No.	Description	Diameter	Pore Size	Unit
2513605	Nylon	33 mm	0.20 µm	50 /pk
2513608	PVDF	33 mm	0.22 µm	50 /pk
2513603	PVDF	33 mm	0.45 µm	50 /pk
2599734	Glass Fiber	25 mm	1.2 µm	150 /pk
2599738	Glass Fiber	25 mm	1.5 µm	150 /pk

## PALL AcroDisc® Syringe Filters

For filtration of dilute biological fluids. Sterilized by gamma irradiation to eliminate potential contamination by EtO residuals. Inlet/Outlet connections: 13/25 mm: Female Luer-Lok inlet, standard male slip luer outlet. Pore size: 0.2 m. Diameter: 25mm.

Prod. No.	Diameter	Unit
2415600	25 mm	1 each

## PALL Easy Pressure Syringe Filter Holder

Accepts 25 mm filter discs for fast filtration of 1-10 mL of sample. Autoclavable. Fits most standard syringes with Luer inlet and outlets.



Prod. No.	Description	Unit
246800	Easy Pressure Syringe Filter Holder	1 each
2258700	60 cc Syringe	1 each



## Filter Discs

Glass fiber filter ideal for volatile suspended solids of water and wastewater. Also ideal for TCLP analysis. Filters can withstand temperatures of 550°C (1022°F).

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2513801	47 mm	0.7 µm	GF/F	100 /pk

For use in a wide-range of laboratory applications, these discs are composed of Mixed-Cellulose Esters and are the industry standard for particulate removal, particulate analysis and clarification of fluids.

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2514103	25 mm	0.45 µm	ME 25	100 /pk



## Filters, Glass Microfiber



Useful for high through-put prefiltration of viscous and heavily contaminated samples.

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2551400	47 mm	1.0 µm	GF/AE	100 /pk

Filtration of suspended solids in water, wastewater and as a prefilter for membranes.

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2215500	24 mm	1.0 µm	GF/B	100 /pk

Made from 100% borosilicate glass fibers. Filters the finest particles from HPLC solvents or TLCP extracts.

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2676600	47 mm	1 µm	GF/F	100 /pk

Standard filter for the clarification and monitoring of water and wastewater.

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2551600	21 mm	1.2 µm	GF/C	100 /pk

Made from 100% borosilicate glass fibers. Best used in general laboratory work and as a prefilter for membrane filtration.

Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2164300	70 mm	2.7 µm	GF/D	100 /pk

## Filters, Preweighed Glass Fiber

Individually preweighed filter papers, preweighed in compliance with Standard Methods Total Suspended Solids procedure. Each in 65 mm planchet with tare weight listed. Each tare weight meets Standard Methods specifications.

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Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2546110	42.5 mm	1.5 µm	934-AH <500°C	100 /pk
2546100	47 mm	1.5 µm	934-AH <500°C	100 /pk
2546200	47 mm	1.5 µm	934-AH <500°C	400 /pk
2546120	55 mm	1.5 µm	934-AH <500°C	100 /pk
2546135	70 mm	1.5 µm	934-AH <500°C	100 /pk
2546235	70 mm	1.5 µm	934-AH <500°C	400 /pk
2546130	76 mm	1.5 µm	934-AH <500°C	100 /pk
2546140	90 mm	1.5 µm	934-AH <500°C	100 /pk
2546240	90 mm	1.5 µm	934-AH <500°C	400 /pk
2546150	110 mm	1.5 µm	934-AH <500°C	100 /pk
2546250	110 mm	1.5 µm	934-AH <500°C	400 /pk

## Filters, Qualitative (QL)

QL Filters are recommended for use in various environmental and wet chemistry reference methods. Extremely pure cellulose filters of nearly 100% alpha content are specially processed to yield negligible extractable levels in the determination and identification of unknown sample materials.



Prod. No.	Diameter	Comparable Grade	Unit
50651	42.5 mm	1	100 /pk
50652	55 mm	1	100 /pk
50653	70 mm	1	100 /pk
50655	90 mm	1	100 /pk
50656	110 mm	1	100 /pk
50657	125 mm	1	100 /pk
50658	150 mm	1	100 /pk
50659	185 mm	1	100 /pk

## Filters, Quantitative (QT)

Hach QT Filters are recommended for use in various Hach Water Analysis Handbook Methods and other environmental reference methods.

Optimized ashless hardened circles provide an abrasion resistant smooth surface which is ideal for gravimetric procedures utilizing Büchner funnels and high vacuum. Pleated filters, increase flow rates by doubling the effective filtration area of the same diameter filter circle compared to quadrant folded filters. Available in a range of retention ratings, circle diameters, and pleated formats, Hach has a QT Filter that's right for your critical wet chemistry or environmental application.



### QT 40 Filters-Circular, Medium Retention (8-12 µm)

Prod. No.	Diameter	Comparable Grade	Unit
52651	42.5 mm	40	100 /pk
52652	55 mm	40	100 /pk
52653	70 mm	40	100 /pk
52655	90 mm	40	100 /pk
52656	110 mm	40	100 /pk
52657	125 mm	40	100 /pk
52658	150 mm	40	100 /pk

### QT 42 Filters-Circular, Fine Retention (2-3 µm)

Prod. No.	Diameter	Comparable Grade	Unit
55351	42.5 mm	42	100 /pk
55352H	55 mm	42	100 /pk
55353	70 mm	42	100 /pk
55355	90 mm	42	100 /pk
55356	110 mm	42	100 /pk
55357	125 mm	42	100 /pk
55358	150 mm	42	100 /pk
55359	185 mm	42	100 /pk

### QT 42P Filters-Pleated, Fine Retention (2-3 µm)

Prod. No.	Diameter	Comparable Grade	Unit
189457	125 mm	42	100 /pk
189458	150 mm	42	100 /pk
189459	185 mm	42	100 /pk
189460	240 mm	42	100 /pk

### QT 45P Filters-Pleated, Medium-Slow Retention (3-5 µm)

Prod. No.	Diameter	Comparable Grade	Unit
69257	125 mm	42	100 /pk
69258	150 mm	42	100 /pk
69259	185 mm	42	100 /pk

### QT 47 Filters-Circular, Fine-Slow Retention (1-2 µm)

Prod. No.	Diameter	Comparable Grade	Unit
2546259	185 mm	47	100 /pk



# FILTERS

## Filters, SPE Oil & Grease for Clean, NPDES-type Samples

Xenosep® SPE Filters for EPA Method 1664A are designed to provide high recovery and low blank values in Horizon® SPE-DEX® and SPE Manifold applications. Chemically treated with a proprietary reverse phase adsorbent, single layer borosilicate glass Xenosep SPE Filters (47mm) can filter the 40 mg/L EPA PAR standard in approximately 10 minutes with significantly faster filtration times for 1 L NPDES-type samples. Xenosep SPE Filters offer high recoveries and low blanks at a great price.



Prod. No.	Description	Diameter	Pore Size	Unit
2947820	Xenosep SPE Filter	47 mm	1.0 µm	50 /pk
2947822	Xenosep SPE Filter	100 mm	1.0 µm	50 /pk
2947824	Prefilter	50 mm	5.0 µm	50 /pk
2947826	Prefilter	100 mm	5.0 µm	50 /pk

## Filters, SPE Oil & Grease for Moderately Dirty Samples

Designed for moderately dirty samples, Xenomax™ Solid-Phase Extraction (SPE) Filters for EPA Method 1664A provide maximum recovery, speed and particulate loading capacity. Chemically treated with a proprietary reverse phase adsorbent, triple layer borosilicate glass Xenomax™ SPE Filters (47mm) can filter the 40 mg/L EPA PAR standard in approximately 20 seconds with similar filtration times for 1-L NPDES-type samples. Xenomax™ SPE Filters provide maximum analyte recovery, particulate loading capacity and processing speed when used with Xenosep SPE Glassware.



Prod. No.	Description	Diameter	Pore Size	Unit
2514200	Prefilter, Glass Micro Fiber	45 mm	5.0 µm	48 /pk
2514201	Prefilter, Glass Micro Fiber	83 mm	5.0 µm	12 /pk
2943300	Xenomax SPE Filter	47 mm	1.0 µm	48 /pk
2943301	Xenomax SPE Filter	47 mm	1.0 µm	24 /pk
2948201	Xenomax SPE Filter	90 mm	1.0 µm	12 /pk
2948202	Xenomax SPE Filter	95 mm	1.0 µm	12 /pk

## Filters, Soil Analysis (SA)

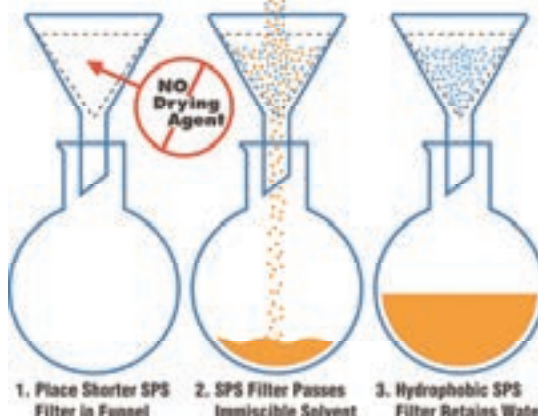
Designed for sandy soils, SA filters are conically folded and have been optimized for use with the common extraction solutions used in soil nutrient analysis (Mehlich 1, Mehlich 3, Morgan, Modified Morgan, Bray, and Olsen). SA Filters provide the best combination of retention rating, filtration speed and purity requirements for soil nutrient testing (P, K, Ca, Mg).



Prod. No.	Diameter	Comparable Grade	Unit
2263356	110 mm	SA 720F	500 /pk

## Filters, Solvent Phase Separator

Xenosep SPS™ (Solvent Phase Separator) Filter Makes Sample Drying Easy for any Density Solvent



FunnelFit SPS™ (Solvent Phase Separator) filters are designed to quickly and easily remove water from the immiscible solvents used in Solid Phase Extraction (SPE) and Liquid-Liquid Extraction (LLE). Sample drying agents like sodium sulfate, which can dissolve through traditional filters and contaminate solvent extracts or have their water binding capacity exceeded, are no longer needed when this new EPA compliant technology is employed. The stabilized silicone treatment renders the cellulose filter hydrophobic which prevents water from passing through the filter under gravity while allowing immiscible organic solvents of any density to pass through. FunnelFit SPS filters are pre-folded into the shape of a cone that fits the funnel perfectly every time and feature consistently low background extractable/leachable levels. For best results, choose a diameter according to the chart below so that the top of the filter will fit at least 6mm (1/4") below the rim of the funnel.

Prod. No.	Description	Diameter	Unit
2516610	Fits 55 mm I.D. Funnel	90 mm	100 /pk
2516620	Fits 65 mm I.D. Funnel	110 mm	100 /pk
2516630	Fits 75 mm I.D. Funnel	125 mm	100 /pk
2516640	Fits 90 mm I.D. Funnel	150 mm	100 /pk

## Filters, Thimbles, Soxhlet

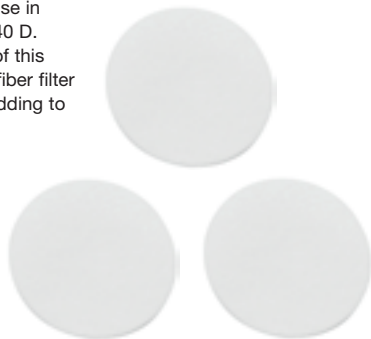
Xenosep extraction thimbles are ideal for determining the concentration of nonvolatile and semivolatiles organic compounds from environmental solid waste matrices, sludge, soil, air, and water. The thimbles are manufactured from high purity alpha cellulose cotton linters which provide excellent mechanical strength, stability, and retention with very low/no background extractables in a disposable, sample holder format.



Prod. No.	Description	Pore Size	Unit
2966500	25 x 80 mm	10 µm	25 /pk
2966600	22 x 100 mm	10 µm	25 /pk
2966700	33 x 80 mm	10 µm	25 /pk

## Filters, Total Suspended Solids (TSS)

TSS Filters are recommended for use in Standard Methods 2540 C and 2540 D. Optimized surface characteristics of this binderless borosilicate glass microfiber filter eliminates pin-holing and fiber-shedding to ensure consistent, accurate results comparable to 934-AH® brand filters. Fast flow rate, fine porosity and 1.5 µm particle retention makes the TSS Filter the preferred choice of environmental chemists for total suspended solids analysis of water and wastewater.



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Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2198720	20 mm	1.5 µm	934-AH <500°C	100 /pk
2198725	25 mm	1.5 µm	934-AH <500°C	100 /pk
2198730	30 mm	1.5 µm	934-AH <500°C	100 /pk
2198755	90 mm	1.5 µm	934-AH <500°C	100 /pk
253000	47 mm	1.5 µm	934-AH <500°C	100 /pk
253051	42.5 mm	1.5 µm	934-AH <500°C	100 /pk
253053	70 mm	1.5 µm	934-AH <500°C	100 /pk
2569100	110 mm	1.5 µm	934-AH <500°C	100 /pk
253055	55 mm	1.5 µm	934-AH <500°C	100 /pk

## Filters, Fixed and Volatile Suspended Solids - 934-AH®

Hach 934-AH Filters are specified for use in Standard methods 2540 C, 2540 D and 2540 E. Fast flow rate, fine porosity and 1.5 µm particle retention have made this binderless borosilicate glass microfiber filter the accepted industry standard for over 50 years. Hach 934-AH Filters can withstand temperatures over 500°C, which is a unique and especially important feature for laboratories performing Fixed and Volatile Suspended Solids analysis of water and wastewater.



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Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2511201	21 mm	1.5 µm	934-AH >500°C	100 /pk
2511202	24 mm	1.5 µm	934-AH >500°C	100 /pk
2511203	25 mm	1.5 µm	934-AH >500°C	100 /pk
2511204	35 mm	1.5 µm	934-AH >500°C	100 /pk
2511205	37 mm	1.5 µm	934-AH >500°C	100 /pk
2511206	42.5 mm	1.5 µm	934-AH >500°C	100 /pk
2511207	47 mm	1.5 µm	934-AH >500°C	100 /pk
2511208	55 mm	1.5 µm	934-AH >500°C	100 /pk
2511209	70 mm	1.5 µm	934-AH >500°C	100 /pk
2511210	90 mm	1.5 µm	934-AH >500°C	100 /pk
2511211	110 mm	1.5 µm	934-AH >500°C	100 /pk
2511212	125 mm	1.5 µm	934-AH >500°C	100 /pk
2511213	150 mm	1.5 µm	934-AH >500°C	100 /pk

## Filters, Total Suspended Solids (TSS) AE Grade

Hach Grade AE filters are comparable to Pall Type A/E filters and the 47mm diameter is compatible with the magnetic filter holder #1352900. Filters feature fast flow rates, fine porosity and particle retention of 1.0µm which make them ideal for many dissolved and suspended solids testing procedures including Standard Methods 2540 C, 2540 D and 2540 E. This binder-free, borosilicate glass microfiber filter has a DOP efficiency of 99.98% (0.3µm) and a maximum operating temperature of 550°C in air.



Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2551450	21 mm	1.0 µm	A/E	100 /pk
2551451	24 mm	1.0 µm	A/E	100 /pk
2551452	25 mm	1.0 µm	A/E	100 /pk
2551454	37 mm	1.0 µm	A/E	100 /pk
2551455	42.5 mm	1.0 µm	A/E	100 /pk
2551456	47 mm	1.0 µm	A/E	100 /pk
2551457	55 mm	1.0 µm	A/E	100 /pk
2551458	70 mm	1.0 µm	A/E	100 /pk
2551459	90 mm	1.0 µm	A/E	100 /pk
2551460	102 mm	1.0 µm	A/E	100 /pk
2551461	110 mm	1.0 µm	A/E	100 /pk
2551462	125 mm	1.0 µm	A/E	100 /pk
2551463	150 mm	1.0 µm	A/E	100 /pk

## Filters, Volatile Suspended Solids - FVS

Xenomax™ TSS-FVS Filters are specifically designed to ensure compliance with the filter preparation requirements of Standard Methods 2540 D and Standard Methods 2540 E (Fixed and Volatile Solids Ignited at 550°C). Independent 3rd party evaluation of Xenomax and 934-AH® filters in both methods give demonstrably equivalent results.

In addition, these 1.5 µm binder-free, fast flowing, fine porosity borosilicate glass microfiber filters have been optimized for better wet strength/ handleability and high temperature (550°C) blank stability. FVS Filters are available in popular diameter sizes and ready for use in a wide variety of labware including Buchner funnels and Gooch Crucibles.



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Prod. No.	Diameter	Pore Size	Comparable Grade	Unit
2511301	21 mm	1.5 µm	934-AH >500°C	100 /pk
2511302	24 mm	1.5 µm	934-AH >500°C	100 /pk
2511303	25 mm	1.5 µm	934-AH >500°C	100 /pk
2511304	35 mm	1.5 µm	934-AH >500°C	100 /pk
2511305	37 mm	1.5 µm	934-AH >500°C	100 /pk
2511306	42.5 mm	1.5 µm	934-AH >500°C	100 /pk
2511307	47 mm	1.5 µm	934-AH >500°C	100 /pk
2511308	55 mm	1.5 µm	934-AH >500°C	100 /pk
2511309	70 mm	1.5 µm	934-AH >500°C	100 /pk
2511310	90 mm	1.5 µm	934-AH >500°C	100 /pk
2511311	110 mm	1.5 µm	934-AH >500°C	100 /pk
2511312	125 mm	1.5 µm	934-AH >500°C	100 /pk

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## Non-Sterile Filters Quick Reference Guide

Diameter (mm)	Pore Size (µm)	Material	Type	Gridded	Comparable Grade	Product Number	Units
20	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	2198720	100/pack
21	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551450	100/pack
21	1.2	Glass Microfiber	Circular, Plain	N	GF/C	2551600	100/pack
21	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511201	100/pack
21	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511301	100/pack
24	1.0	Glass Microfiber	Circular, Plain	N	GF/B	2215500	100/pack
24	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551451	100/pack
24	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511202	100/pack
24	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511302	100/pack
25	0.2	Polycarbonate	Circular, Black	N	Cyclopore® - Nuclepore®	2387200	100/pack
25	0.45	Mixed-Cellulose Ester	Circular, Plain	N	ME 25	2209525	25/pack
25	0.45	Mixed-Cellulose Ester	Circular, Plain	N	ME 25	2514103	100/pack
25	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551452	100/pack
25	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	2198725	100/pack
25	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511203	100/pack
25	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511303	100/pack
30	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	2198730	100/pack
35	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511204	100/pack
35	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511304	100/pack
37	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551454	100/pack
37	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511205	100/pack
37	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511305	100/pack
42.5	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551455	100/pack
42.5	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	253051	100/pack
42.5	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511206	100/pack
42.5	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511306	100/pack
42.5	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546110	100/pack
42.5	2 - 5	Cellulose	Circular, Plain	N	42	55351	100/pack
42.5	8 - 12	Cellulose	Circular, Plain	N	1	50651	100/pack
42.5	8 - 12	Cellulose	Circular, Plain	N	40	52651	100/pack
47	0.45	Mixed-Cellulose Ester	Circular, Gridded	Y	WME	2618901	100/pack
47	0.45	Mixed-Cellulose Ester	Circular, Plain	N	WME	1353000	100/pack
47	1.0	Glass Microfiber	Circular, Plain	N	GF/F	2676600	100/pack
47	0.7	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2513801	100/pack
47	1.0	Glass Microfiber	Circular, Plain	N	GF/B	2551400	100/pack
47	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551456	100/pack
47	1.0	Glass Microfiber	Circular, Plain - Extra Thick	N	-	2842100	100/pack
47	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	253000	100/pack
47	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511207	100/pack
47	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511307	100/pack
47	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® <500°C	2546100	100/pack
47	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546200	400/pack
55	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551457	100/pack
55	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	253055	100/pack
55	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511208	100/pack
55	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511308	100/pack
55	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546120	100/pack
55	2 - 5	Cellulose	Circular, Plain	N	42	55352H	100/pack
55	8 - 12	Cellulose	Circular, Plain	N	1	50652	100/pack
55	8 - 12	Cellulose	Circular, Plain	N	40	52652	100/pack
70	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551458	100/pack
70	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	253053	100/pack
70	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511209	100/pack
70	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511309	100/pack
70	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546135	100/pack
70	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546235	400/pack

## Non-Sterile Filters Quick Reference Guide

Diameter (mm)	Pore Size (µm)	Material	Type	Gridded	Comparable Grade	Product Number	Units
70	2.7	Glass Microfiber	Circular, Plain	N	GF/D	2164300	100/pack
70	2 - 5	Cellulose	Circular, Plain	N	42	55353	100/pack
70	8 - 12	Cellulose	Circular, Plain	N	1	50653	100/pack
70	8 - 12	Cellulose	Circular, Plain	N	40	52653	100/pack
76	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546130	100/pack
90	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551459	100/pack
90	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	2198755	100/pack
90	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511210	100/pack
90	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511310	100/pack
90	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546140	100/pack
90	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546240	400/pack
90	2 - 5	Cellulose	Circular, Plain	N	42	55355	100/pack
90	8 - 12	Cellulose	Circular, Plain	N	1	50655	100/pack
90	8 - 12	Cellulose	Circular, Plain	N	40	52655	100/pack
102	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551460	100/pack
110	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551461	100/pack
110	1.5	Glass Microfiber	Circular, Plain	N	934-AH® <500°C	2569100	100/pack
110	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511211	100/pack
110	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511311	100/pack
110	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546150	100/pack
110	1.5	Glass Microfiber	Circular, Preweighed	N	934-AH® >500°C	2546250	400/pack
110	2 - 5	Cellulose	Circular, Plain	N	42	55356	100/pack
110	8 - 12	Cellulose	Circular, Plain	N	1	50656	100/pack
110	8 - 12	Cellulose	Circular, Plain	N	40	52656	100/pack
110	8 - 12	Cellulose	Cone, Prefolded	N	SA 720F	2263356	500/pack
125	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551462	100/pack
125	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511212	100/pack
125	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511312	100/pack
125	2 - 5	Cellulose	Circular, Plain	N	42	55357	100/pack
125	2 - 5	Cellulose	Pleated (Folded)	N	42	189457	100/pack
125	8 - 12	Cellulose	Circular, Plain	N	1	50657	100/pack
125	8 - 12	Cellulose	Circular, Plain	N	40	52657	100/pack
125	8 - 12	Cellulose	Pleated (Folded)	N	42	69257	100/pack
150	1.0	Glass Microfiber	Circular, Plain	N	A/E	2551463	100/pack
150	1.5	Glass Microfiber	Circular, Plain	N	934-AH® >500°C	2511213	100/pack
150	2 - 5	Cellulose	Circular, Plain	N	42	55358	100/pack
150	2 - 5	Cellulose	Pleated (Folded)	N	42	189458	100/pack
150	8 - 12	Cellulose	Circular, Plain	N	1	50658	100/pack
150	8 - 12	Cellulose	Circular, Plain	N	40	52658	100/pack
150	8 - 12	Cellulose	Pleated (Folded)	N	42	69258	100/pack
185	1.5	Cellulose	Circular, Plain	N	-	2546259	100/pack
185	2 - 5	Cellulose	Circular, Plain	N	42	55359	100/pack
185	2 - 5	Cellulose	Pleated (Folded)	N	42	189459	100/pack
185	8 - 12	Cellulose	Circular, Plain	N	1	50659	100/pack
185	8 - 12	Cellulose	Circular, Plain	N	40	52659	100/pack
185	8 - 12	Cellulose	Pleated (Folded)	N	42	69259	100/pack
240	2 - 5	Cellulose	Pleated (Folded)	N	42	189460	100/pack

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# FILTRATION ASSEMBLIES — FLASKS

## Filtration Assemblies, Graduated Glass

Beaker-style funnel (500 mL) with 47 mm membrane support for filtration of aqueous samples. Fritted borosilicate glass membrane support for even filtration across surface of membrane. Funnel attaches evenly to base via aluminum clamp. Filter flask sold separately.



Prod. No.	Description	Unit
234000	Glass Filtration Apparatus	1 each

## Filter, Holder, Magnetic, 47 mm

Fits standard manifold systems with 8 rubber stopper connections. Capacity 300 ml (10 oz). Measures 23 x 7 cm (9 x 2.75). Autoclavable.



Prod. No.	Description	Unit
1352900	Magnetic Polyphenylsulfone Filter Holder, 47 mm	1 each

## Flask, Erlenmeyer

Graduated glass flask with narrow mouth and heavy-duty rim. Durable graduations indicate approx. volume. Stopper not included.



Prod. No.	Capacity	Subdiv.'s	Stopper Size	Unit
50540	25 mL	5 mL	0	1 each
50547	300 mL	25 mL	6	1 each
50549	500 mL	50 mL	7	1 each
50553	1000 mL	50 mL	9	1 each
50554	2000 mL	100 mL	10	1 each
50541	50 mL	10 mL	1	1 /pk
50571	50 mL	10 mL	1	12 /pk
50543	125 mL	25 mL	5	1 each
50573	125 mL	25 mL	5	12 /pk
50546	250 mL	25 mL	6	1 /pk
50576	250 mL	25 mL	6	12 /pk

## Flask, Erlenmeyer, Wide-Mouth

Graduated glass flask with wide mouth for easier titrations. Reinforced tops with round finish provide maximum strength. Durable graduations indicate approx. volume. Stopper not included.



Prod. No.	Capacity	Subdiv.'s	Stopper Size	Unit
2489443	125 mL	50 mL	6	1 each
2489446	250 mL	50 mL	8	1 each
2489449	500 mL	500 mL	10	1 each
2489453	1000 mL	1000 mL	11	1 each
2489454	2000 mL	2000 mL	13	1 each

## Flask, Filtering, Glass

Glass filtering flask with side-arm at 90° angle. Heavy-walled with graduated capacity scale. Designed to ASTM E1406, Type II, Class I requirements. Hose connection accepts 5/16" I.D. flexible tubing.



Prod. No.	Capacity	Stopper Size	Unit
54643	125 mL	5	1 each
54649	500 mL	7	1 each
54679	500 mL	7	6 /pk
54653	1000 mL	8	1 each
54683	1000 mL	8	6 /pk

## Flask, Graduated Glass with Screw Cap Top

Graduated glass flask with plastic screw cap. Excellent choice for media preparation, mixing solutions, and culturing. Inert rubber liner cemented into cap and completely autoclavable. Durable graduations indicate approximate volume.



Prod. No.	Capacity	Subdiv.'s	Unit
2089641	50 mL	10 mL	1 each
2089671	50 mL	10 mL	6 /pk
2089643	125 mL	25 mL	1 each
2089673	125 mL	25 mL	6 /pk
2089646	250 mL	25 mL	1 each
2089676	250 mL	25 mL	6 /pk
2089649	500 mL	50 mL	1 each
2089679	500 mL	50 mL	6 /pk
2089653	1000 mL	50 mL	1 each
2089683	1000 mL	50 mL	6 /pk

## Flask, Filtering, Polypropylene

Polypropylene filtering flask with side-arm at 45° angle prevents tipping. Barbed side-arm accepts 1/4-3/8" I.D. tubing for application of vacuum.



Prod. No.	Capacity	Stopper Size	Unit
2089949	500 mL	7	1 each
2089953	1000 mL	8	1 each



## Flask, Polymethylpentene

Polymethylpentene flask with polypropylene screwcap features clarity, chemical resistance, strength, and autoclavability (Do not engage threads during cycle). Useful for titrations, preparation and storage of media.



Prod. No.	Capacity	Unit
2089843	125 mL	1 each
2089873	125 mL	6 /pk
2089876	250 mL	4 /pk
2089879	500 mL	4 /pk

## Flask, Polypropylene

Polypropylene flask for general laboratory use. Rugged, excellent chemical resistance, and autoclavable.



Prod. No.	Capacity	Stopper		Unit
		Size	Unit	
108243	125 mL	3	1 each	
108246	250 mL	6	1 each	
108273	125 mL	3	12 /pk	
108276	250 mL	6	6 /pk	

## Flask, Volumetric, Class A

Calibrated "To Contain" and manufactured to ASTM E438, "Glass in Laboratory Apparatus" requirements.



Prod. No.	Capacity	Tolerance	Stopper		Unit
			Size	Unit	
1457440	25 mL	± 0.03 mL	9	1 each	
1457441	50 mL	± 0.05 mL	9	1 each	
1457442	100 mL	± 0.08 mL	13	1 each	
1457445	200 mL	± 0.01 mL	16	1 each	
1457446	250 mL	± 0.12 mL	16	1 each	
1457449	500 mL	± 0.2 mL	19	1 each	
1457453	1000 mL	± 0.3 mL	22	1 each	

## Flask, Volumetric, Certified Class A

Individually serialized glass flask supplied with Certificate of Graduation Accuracy and traceable to NIST Standards. Class A tolerances meet requirements of ASTM E438 and ASTM E288. Graduation ring on neck of flask. Supplied with ground glass stopper.



Prod. No.	Capacity	Tolerance	Stopper		Unit
			Size	Unit	
2636642	100 mL	± 0.08 mL	13	1 each	
2636646	250 mL	± 0.12 mL	16	1 each	
2636649	500 mL	± 0.2 mL	19	1 each	
2636653	1000 mL	± 0.3 mL	22	1 each	
2636654	2000 mL	± 0.5 mL	27	1 each	

## Flask, Volumetric, Polymethylpentene

Durable polymethylpentene flask with polypropylene screw-top closure. Calibrated "to contain/deliver" at 20°C.



Prod. No.	Capacity	Tolerance	Unit
2099542	100 mL	± 0.16 mL	1 each
2099549	500 mL	± 0.40 mL	1 each
2099553	1000 mL	± 0.60 mL	1 each

## Flask, Volumetric, Polypropylene

Polypropylene flask and screw cap. Durable with excellent chemical resistance, with the same accuracy as glass. Permanent color graduation line with marking spot. Calibrated "to contain/deliver" at 20°C.



Prod. No.	Capacity	Tolerance	Unit
1406041	50 mL	± 0.10 mL	1 each
1406042	100 mL	± 0.16 mL	1 each
1406049	500 mL	± 0.40 mL	1 each
1406053	1000 mL	± 0.60 mL	1 each

## Floc Jar, Wagner Type

Clear plexiglass, square jar with sample delivery port for monitoring flocculation. Measures 21 x 12.7 x 12.7 cm (8.3 x 5 x 5), with a capacity of 2 L. Suitable for use with six-unit gang Phipps & Bird or similar floc testing apparatus. Includes tubing, stopper, clamp, and 50 mL graduated beakers.



Prod. No.	Description	Unit
4117000	Wagner Floc Jar, 2 L, Square	1 each
1480474	Stopper, Replacement, for Floc Jar	1 each
2087901	Clamp	12 /pk

# FUNNELS — GLOVES

## Funnel, Buchner, Polypropylene

Light weight and durable polypropylene construction with a removable filter plate for easy cleaning, chemical resistant. Fully autoclavable. Stopper sold separately.



Prod. No.	Top I.D. Filter Paper Dia.	Approx. Volume	Stem Length/ Stem O.D.	Unit
2090553	76 mm/ 70 mm	186 mL	65 mm/ 11 mm	1 each
2090556	130 mm/ 110 mm	919 mL	93 mm/ 22 mm	1 each

## Funnel, Buchner, Porcelain

Durable porcelain construction is tough, inert and highly chemical resistant. Molded-in perforated filter plate. Fully autoclavable.



Prod. No.	Top I.D. / Filter Paper Diam.	Capacity	Unit
55085	56 mm / 50-55 mm	87 mL	1 each
55068	83 mm / 70 mm	186 mL	1 each
55087	100 mm / 90 mm	320 mL	1 each
55095	126 mm / 110-124 mm	700 mL	1 each

## Funnel, Polypropylene, Analytical Long Stem

Standard long stem funnel meets the needs of a wide variety of applications. Mounded ribbing prevents air lock commonly occurring during funneling and filtrations. A steep, 58-degree cone slope makes for fast and easy flow of either liquids or small solids. Polypropylene construction is resistant to chemicals and makes this funnel fully autoclavable for sterilization.



Prod. No.	Description	Unit
108367	66 mm /110 mm Top I.D., 65 mL Vol, 65 mm Stem L/ 7 mm Stem O.D.	1 each
108368	77 mm / 125 mm Top I.D., 114 mL Vol, 80 mm Stem L/ 7 mm Stem O.D.	1 each
108370	104 mm / 185mm Top I.D., 254 mL Vol, 99 mm Stem L/ 9 mm Stem O.D.	1 each

## Funnel, Separatory, Glass

Pear-shaped (Squibb) separatory funnel with Teflon stopcock. Clear glass body allows for easy detection of layers between immiscible liquids, all the way to the stopcock. Highly chemical resistant and fully autoclavable. High density linear polyethylene stopper with closed bottom included. Accepts stopcock size 4 (included).



Prod. No.	Capacity	Height	Unit
52046	250 mL	311 mm	1 each
52049	500 mL	354 mm	1 each

## Furnace, Muffle

Digital temperature control. Insulation made of high-purity alumina-silica with a low thermal mass. Means faster heat-up time and reduced electrical consumption. Embedded heating elements for structural strength and longer life. Perforated bench case design keeps bench top cool. Accurate percentage input control. Chamber dimensions (W x H x D), 10 x 10 x 11 cm (3.9 x 3.9 x 4.3"). Outer dimensions, 20 x 32 x 22 cm (7.9 x 12.6 x 8.7"). 1050 W. Maximum operating temperature: 1093°C.



Muffle Furnace is recommended for use in **Standard Methods 2540 B, C, D and E** to determine Total Suspended Solids.

Prod. No.	Description	Unit
1429600	120 Vac, 50/60 Hz	1 each
1429610	Heating Element for 120 Vac	1 each
1429624	240 Vac, 50/60 Hz	1 each
1429625	Heating Element for 240 Vac	1 each

## Glasses, Safety, Full Wrap, Uvex®

Polycarbonate lens blocks > 99.9% of harmful UVA and UVB radiation and meets stringent military VO ballistic impact requirements (seven times the impact velocity of ANSI and GSA). Available with choice of Ultradura Hardcoat lens coating or Uvextreme lens coating, which provides additional antifog, antiscratch, and antistatic protection. Choice of lens tints include Clear, Espresso and Gold Mirror. Meets ANSI Z87.1-1989 and CSA Z94.3-1992 Standards.



Prod. No.	Description	Unit
2927701	Uvex Genesis with Clear Ultradura Lens	1 each
2927702	Uvex Genesis with Clear Uvextreme Lens	1 each
2927704	Uvex Genesis with Espresso Uvextreme Lens	1 each
2927705	Uvex Genesis with Gold Mirror Ultradura Lens	1 each

## Glasses, Safety, UV Protective

Protect eyes from extended or high-intensity ultraviolet energy while eliminating "blue haze" interference. Light weight and comfortable, even over prescription glasses.



Prod. No.	Unit
2113400	1 each

## Gloves, Chemical-Resistant

High-performance, nitrile protective gloves are resistant to degradation from most chemicals. Designed for comfort with soft, cotton-flock lining to absorb perspiration. Embossed finish makes wet handling easier and safer.



Prod. No.	Size	Unit
2410103	8 - 8 1/2	1 pair
2410104	9 - 9 1/2	1 pair
2410105	10	1 pair
2410106	11	1 pair

## Gloves, Disposable, Powder Free, Latex

Standard latex examination gloves for a wide variety of applications. Sold in dispenser boxes of 100 ambidextrous singlets.

Prod. No.	Size	Unit
2590401	Small	100 /box
2590402	Medium	100 /box
2590403	Large	100 /box



## Gloves, Disposable, Powder Free, Nitrile

Conform to hand better than most disposable gloves, yet exert less pressure—less hand fatigue and stress. 4 mil thickness.

Prod. No.	Size	Unit
2550501	Small	100 /box
2550502	Medium	100 /box
2550503	Large	100 /box
2550504	Extra-large	100 /box



## Gloves, Disposable, Powder Free, Nitrile with Neu-Thera®

Powder Free Nitrile gloves are coated with skin-protecting gel that soothes and moisturizes your skin. Unique synthetic formulation offers superior puncture and chemical resistance. Mint green color. Odor free, non-sterile, ambidextrous. Length: 9.5 in., 5-6 mil thick.

Prod. No.	Size	Unit
2927401	Small	100 /box
2927402	Medium	100 /box
2927403	Large	100 /box
2927404	Extra-large	100 /box



## Goggles, Safety, Standard

Indirect ventilation system to allow free air flow through the goggle body. Large, soft body ensures an excellent fit over most prescription eyewear. Clear polycarbonate lens treated with patented Uvextreme AF coating—protects against fogging, scratching, static and dust, and 99% of harmful ultraviolet rays up to 385nm. Absorbs 99.9% of UV up to 385nm and meets ANSI Z87+ and CSA Z94.3.

Prod. No.	Unit
2927902	1 each



## Goggles, Safety, Splash-Resistant

Full wrap design provides splash protection and allows for excellent peripheral vision. Lightweight body molds to the face for a firm seal with comfortable protection. Large size accommodates most prescription eyewear, yet adapts for use with respirators or hard hats without impeding fit. Indirect venting protects eye area against hazardous splashes and airborne particles while allowing ample air circulation for comfort. Clear polycarbonate lens treated with Uvextreme AF coating—protects against fogging, scratching, static and dust. Absorbs 99.9% of UV up to 385nm and meets ANSI Z87+ and CSA Z94.3.

Prod. No.	Unit
2927901	1 each



## Handbook, Disinfection By-Products and Human Health

For engineers, chemists, and public health professionals working on the front lines of drinking water issues, this book provides a pragmatic assessment of the current evidence and emerging issues concerning disinfection by-products (DBPs) and human health.

Prod. No.	Unit
2270802	1 each



**NEW!**

## Handbook, Environmental Compliance Guidebook: Beyond US Water Quality Regulations

Specially written for water and wastewater utilities, this book explains in clear, understandable language topics of air emissions, hazardous materials, hazardous wastes, pesticides, petroleum, solid wastes, storage tanks, toxic substances, and wastewater.

Prod. No.	Unit
2270801	1 each



**NEW!**

## Handbook, Guide to Chemical Hazards, NIOSH

Comprehensive guide uses a convenient tabular format to present key industrial hygiene and medical surveillance information on 397 chemicals and compounds. Topics: Chemical and physical properties, Permissible Exposure Limits (PEL), Immediately Dangerous to Life or Health (IDLH) levels, health hazards and chemical incompatibilities, personal protection recommendations and first aid procedures. Updated every four years.

Prod. No.	Unit
2239800	1 each

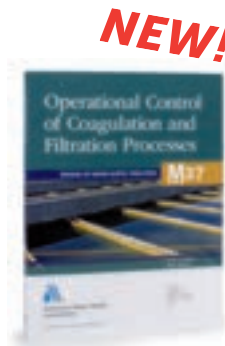


LAB SUPPLIES

## Handbook, M37 Operational Control of Coagulation and Filtration Processes

This AWWA Manual of Water Supply Practices is designed to help you keep your treatment plant's coagulation and filtration processes operating at optimum efficiency. The manual has all the information needed to design and operate jar tests, online monitoring and control, flocculation, clarification, filtration, and pilot tests.

Prod. No.	Unit
2270807	1 each



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# HANDBOOKS — HOT PLATE

## Handbook, Microbiology of Well Biofouling

A useful reference guide written with a direct, straight forward approach based upon the advances in the technology over the last twenty years. With this guide, you will understand the phenomena of biofouling, corrosivity, biodegradation, and shifts in hydraulic transmissivity that can be linked to microbial events. Practical approaches to the evaluation of these effects are introduced, including standard and novel methodologies.



**Prod. No.** 2617800  
**Unit** 1 each

## Handbook, Water Operator Field Guide

Specially designed for in-the-field use for small water and wastewater facilities, this indispensable book will pay for itself over and over in the time you save looking for chemical and mathematic formulas, chemical feed rates, MCLs, US/metric conversions, pipe and equipment data, operational parameters, construction and installation information, OSHA and USEPA regulations, and much more.



**Prod. No.** 2270805  
**Unit** 1 each

## Handbook, Standard Methods for the Examination of Water and Wastewater

The worldwide standard text for water analysis since 1905. The text provides hundreds of EPA-approved laboratory tests of water quality and properties. These methods represent the best current practice of water and wastewater analysis. Includes hundreds of tables, figures, and color plates of aquatic organisms. Co-published by American Public Health Association, Water Environment Federation, and American Water Works Association. Most current edition is supplied.



**Prod. No.** 2270800  
**Unit** 1 each

## Handbook, Water Treatment Operator

AWWA's most popular training handbook for water treatment operators, this handy guide provides a complete introduction to water treatment operations and equipment. It is excellent for certification exam study.



**Prod. No.** 2270804  
**Unit** 1 each

## Handbook, Wastewater Operator Field Guide

This handy field reference contains all the information, charts, graphs, formulas, and definitions that are needed by wastewater system operators in performing their daily duties. This guide compiles information from wastewater operations manuals, handbooks, standards, and many other information sources. Major sections include math, conversion factors, chemistry, safety, collection, pumps and motors, flow, wastewater treatment, biosolids, discharge, disinfection, abbreviations, and acronyms.



**Prod. No.** 2270806  
**Unit** 1 each

## Hand Soap, Antibacterial

Effective against a wide variety of gram-negative and gram-positive bacteria, as well as yeast and fungi.



**Prod. No.** 2617700

## Handbook, Wastewater Organisms: A Color Atlas

Contains 210 high-quality full-color micrographs to help you identify organisms found in sewage and sludge. These photos provide the maximum level of detail and will help you better understand the form and dimension of the organisms. Subjects depicted in the micrographs include bacteria, eggs, amoeba, parasitic protozoa, tardigrada (water bears), rotifers, ciliates, parasitic helminths, pollen grain, free-living nematodes, algae, flagellates, and more. The chapter on enumeration provides literature and techniques for fixing and staining, techniques often required for identification to the species level. Also contains a valuable glossary and index to make the book even easier to use.



**Prod. No.** 2615800  
**Unit** 1 each

## Hot Plate

Easy-to-read digital temperature settings features a flashing warning (CAUTION! HOT TOP) when the surface exceeds 50°C. Low-profile design to improve safety. Reflective, white ceramic top is smooth, seamless and resistant to alkali/acid solutions. Detachable cord. Built-in support rod holder (order support rod separately). Operating temperature range: 5 to 540°C (41 to 1004°F).



Prod. No.	Ceramic Top Dimensions	Electrical Specifications	
		Volts/Amps/Watts	Unit
2881400	4.25 x 4.25 (10.8 x 10.8 cm)	120 / 3.2 / 385	1 each
2881500	7.25 x 7.25 (18.4 x 18.4 cm)	120 / 8.8 / 1060	1 each
2705900	0.5 (1.3 cm) diameter support rod		1 each

# HOT PLATE, STIRRER – LEAD SCANNING ANALYZER

## Hot Plate, Stirrer

Easy-to-read digital temperature settings features a flashing warning (CAUTION! HOT TOP) when the surface exceeds 50°C. Stirring range of 60-1200 RPM. Low-profile design to improve safety. Reflective, white ceramic top is smooth, seamless and resistant to alkali/acid solutions. Detachable cord. Built-in support rod holder (order separately). Operating temperature range: 5 to 540°C (41 to 1004°F).



Prod. No.	Ceramic Top Dimensions	Electrical Specifications	Unit
2881600	7.25 x 7.25 (18.4 x 18.4 cm)	120 / 8.9 / 1070	1 each
2881602	7.25 x 7.25 (18.4 x 18.4 cm)	220-240 / 4.9 / 1170 CE Marked	1 each

## Humidity/ Temperature Monitor

Simultaneously monitors both temperature and humidity on a large digital display. For desiccators, incubators, refrigerators, fume hoods, labs, stock rooms, clean rooms, chemical storage areas, warehouses, factories, and greenhouses. Recalls min./max. temperature and min./max. humidity readings over any time period. Stand or wall mount. Comes with 2 AAA batteries which last a full year. Temperature range: 0 to 50°C and (32 to 122°F) in 0.1°C or 0.1°F resolution with accuracy of ± 1°C, 2°F (at 32 to 104°F). Humidity range: 20% to 99%. Humidity resolution is 1%. Humidity accuracy is ±4% f.s.



Prod. No.	Unit
2694400	1 each

## Incubator, BOD

The Model LI6P and HRI3P B.O.D. incubators are thermoelectric cooled, eliminating the need for a refrigeration compressor. The incubators include a mechanical convection system to ensure even air distribution, digital temperature set controller, over temperature limit control, and a temperature display. The LI6P features a one amp interior outlet to allow the use of shakers, stirrers, roller bottles or BODTrak apparatus. Two 75 pound capacity shelves are included. Exterior dimensions: 30 x 31.5 x 33.5 in (76.2 x 80.01 x 85.09 cm). The Hach HRI3P features two interior outlets and enough space for two BODTrak units. Two 35 pound capacity shelves are included. Exterior dimensions: 24.1 x 21.3 x 33.8 in (61.2 x 54.1 x 98.55 cm). Low Temperature Incubators are ideal for testing sewage and wastewater as well as other low room temperature applications. Temperature Range: 15-45°C (Accuracy: ±0.5°C @ 20°C)



Prod. No.	Description
2636200	LI6P BOD Incubator, 120Vac
2636202	LI6P-2 BOD Incubator, 220Vac
2636300	Hach HRI3P BOD Incubator, 120Vac
2636302	Hach HRI3P-2 BOD Incubator, 220Vac

## Lamp, UV for Field or Lab

Shortwave (254 nm) UV lamps for field or laboratory use. Either lamp can be used in the lab with power supply, while Portable Field Pack can only be used with the 1.75" lamp. Portable Field Pack requires a 9-Volt battery (not included) and has a belt clip for easy traveling. Both lamps are physically identical except for bulb and cord length (these are shorter in the 1.75" version).



NOTE: Not for use in microbiological applications. UV Lamp contains mercury. Dispose according to state, local or federal regulations.

Prod. No.	Description	Unit
2670600	Portable Field Pack Power Supply	1 each
2670700	Power Supply, 115 Vac, 60 Hz	1 each
2670702	Power Supply, 220 Vac, 50 Hz	1 each
2670800	UV Lamp, Shortwave, 254 nm, 1.75 bulb	1 each
2671000	UV Lamp, Shortwave, 254 nm, 2.125 bulb	1 each
2704502	Lamp Kit, 230 Vac, 50 Hz (includes 1 each of 2670702, 2671000)	1 each



LAB SUPPLIES

## Lead Scanning Analyzer, SA1100

The portable SA1100 is an easy-to-use, accurate, cost-effective instrument for monitoring lead concentrations. Using differential pulse anodic stripping voltammetry\*, a USEPA-approved methodology for determining total lead in drinking water, the SA1100 makes monitoring easy.

*\*Differential pulse anodic stripping voltammetry is approved by the USEPA for determining lead concentrations, and acid digestion is required for reporting purposes. Hach Method 1001, for use in Lead and Copper Rule compliance monitoring.*

Prod. No.	Description
5050000	SA1100 Analyzer for Lead Includes instrument, carrying case, instructions, sensor pack electrodes (Prod. No. 5050100), calibration chip, check standard, and 20 drying sticks.

## Replacement Consumables

5050100	Sensor Pack Electrodes for Lead (10 Tests) Includes electrodes (10), sample preparation tablets (10), graduated tubes (10), crushing rods and calibration chip.
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# METALS FLUORIMETER — MICROSCOPES

**NEW!**



## Metals Fluorimeter

The AND1100 Fluorimeter tests for metals in water in two steps and less than two minutes, significantly reducing the test expenditures, complexity and wait times experienced in traditional tests. Powered by DNA, it is a breakthrough in streamlining the water analysis and reporting processes. The AND1100 Fluorimeter is a platform centric portable device for heavy metals testing for drinking water and industrial water supplies. It uses an

extremely sensitive measurement technique in tandem with ANDalyze sensor kits to determine the toxicity levels of heavy metal contamination.

**Prod. No.**  
**AND002**

## Sensors, Accessories & Consumables

Prod. No.	Description	Unit
AND010	Lead Sensor Kit	25 /pk
AND011	Uranium Sensor Kit	25 /pk
AND012	Low Range Copper Sensor Kit	25 /pk
AND013	High Range Copper Sensor Kit	25 /pk
AND014	Mercury Sensor Kit	25 /pk
AND015	Zinc Sensor Kit	25 /pk
AND016	Cadmium Sensor Kit	25 /pk
AND900	Filtration Kit	25 /pk
AND901	Dilution kit	25 /pk
AND902	Iron Interference Kit	1 each
AND903	pH Adjustment Kit	1 each
AND918	Combo Car and AC Wall USB Adapter	1 each
AND920	Fluorimeter Case	1 each
AND922	Mercury Chelator Pellets	10 /pk
AND923	15mL Dropper Bottle with NaOH	1 each

## Microscope, Compound, Leica®, DM500

This brightfield achromatic model offers 4x, 10x, 40x, and 100x oil objectives. Includes led illumination that offers minimum of 25,000 hours of daylight color temperature illumination (the bulbs do not burn out at 25,000 hours but dim in brightness), and many other Leica unique features such as AgTreat™, which helps prevent the spread of surface bacteria. The universal power source allows easy conversion when used with the local country power cord.

Power supply: 100-240V, 50/60 Hz with standard U.S. power cord. Standard Euro power cord available and sold separately.



Prod. No.	Description	Unit
2947050	DM500 with Plan Achromatic Objectives	1 each
2945041	Leica EU Power Cord Only	1 each

## Microscopes, Stereo, Leica® E-Series

Renowned for quality, the E-Series microscopes are affordable, rugged and dependable. All models feature plug and play design, no removable parts, "tool free" tension adjustment, 100 mm working distance, Leica exclusive 50-75 mm Interpupillary distance, student-proof design, built-in 25,000 hour 6500 K, sealed stage plate, true daylight, constant-color temperature power LED illumination for BOTH reflected and transmitted light, built-in universal stabilizing power supply 100-240V and dust cover.



### Leica EZ4 with 10x Eyepiece

Includes 10x eyepieces, 4.4:1 Zoom Stereo Microscope with 8x - 35x zoom range and 10x/20 mm high eyepoint. Features include the Leica exclusive 3 directional reflected illumination, auto-shutoff after 60 minutes and a sealed light control panel.

Prod. No.	Description	Unit
2942700	Leica EZ4 with 10x Eyepiece	1 each

### Leica EZ4 with 16X Eyepiece

Includes 16x eyepieces, 4.4:1 Zoom Stereo Microscope with 12.8x - 56x zoom range and 16x/15 mm high eyepoint. Features include the Leica exclusive 3 directional reflected illumination, auto-shutoff after 60 minutes and a sealed light control panel.

Prod. No.	Description	Unit
2942800	Leica EZ4 with 16x Eyepiece	1 each

### Leica EZ4 D with Built-in Digital Camera

Includes 10x eyepieces, 4.4:1 Zoom Stereo Microscope with built-in 3 MPixel digital camera and 8x - 35x zoom range, and 10x/20 mm high eyepoint. Also includes Leica LAS EZ software (for PC) for image capture and simple measuring and annotation applications, built-in Secure Digital card slot (card included) for image capture without the need of a computer, live composite analog video output (selectable PAL or NTSC) and USB 2.0 output.

Features include the Leica exclusive 3 directional reflected illumination, auto-shutoff after 60 minutes and a sealed light control panel.

Prod. No.	Description	Unit
2942900	Leica EZ4 HD with Built-in Digital Camera	1 each

# OIL & GREASE SYSTEMS – PIPET CONTROLLER

## Oil and Grease Systems, SPE Xenosep®

Xenosep Solid-Phase Extraction (SPE) Systems offer the easiest and most cost effective way to test for Oil and Grease using EPA Method 1664A. Fast, in-house results enable you to maintain control over your plant discharges in real time without the complications of hexane LLE procedure. Xenosep SPE filters feature a unique triple layer that prevents premature clogging and flows 10 times faster than typical SPE filters.

It is now possible to easily achieve reliable, consistent Oil and Grease results and decrease your sample turnaround time. A free training video on CD is included with each Starter Kit to show your lab how to perform EPA Method 1664A by SPE. For more information on Xenosep SPE Systems, visit our website at [www.hach.com/xenosep](http://www.hach.com/xenosep).

Xenosep SPE Systems are available in convenient kits, which include the components for 24 tests and all the glassware required to process them, one at a time. Replacement components are also available.

Lab Stand and Clamp sold separately.



**Take a video tour of this system. Just visit the Hach Company channel on YouTube.**

Prod. No.	Description	Unit
2943231	Xenosep SPE Starter Kit without Solvent Recovery	1 each

### Select Replacement Components (Others available upon request)

Prod. No.	Description	Unit
2943800	Xenomax™ SPE Consumables Kit (includes 24 SPE Filters, Pipets, and Sodium Sulfate Columns)	1 each
2943300	Xenomax SPE Filter	48 /pk
2943400	Pipets, Transfer, Polyethylene, 15 mL	48 /pk
2943500	Inline Column with Sodium Sulfate, 10g, 48/pk	48 /pk
2943600	Glass Wool Fibers 50 g	1 each
2943701	EPA 1664A Standard, 1x30 mL, 4mg/mL	1 each
2943702	EPA 1664A Standard, 1x10 mL, 4mg/mL	1 each
2943226	Aluminum Pans, 105 mm, 100/pk	100 /pk
2943227	Hi-Loft GFM Prefilters, 42 mm, 48/pk	48 /pk

## Oven, General Purpose

General-purpose ovens for drying, sterilizing, baking, annealing, conditioning, evaporating, and dehydrating. Natural convection oven provides fast, electronically controlled drying. Has adjustable exhaust port for venting, independent safety controller, stainless steel interior, digital temperature display, and two chrome plated shelves.



- Temperature range: 5°C (9°F) above ambient to 300°C (572°F) ±1.5°C
- Integrated timer: 0-99 hours
- External dimensions: 32.8 x 25.4 x 27.6". Internal dimension: 23.6 x 15.8 x 18".

Prod. No.	Description	Unit
2615500	115 Vac, 50/60 Hz	1 each
2615503	230 Vac, 50/60 Hz	1 each

## Oven, Laboratory

For drying, baking, annealing, conditioning, sterilizing, evaporating and dehydrating. Factory tested. Sturdy welded steel construction. Ample insulation. Two nickel-plated shelves adjustable at 12.7 mm (0.5") increments. Thermostatically controlled with damper-controlled, gravity convection air circulation. Red pilot light indicates heater action. Gray-green, hammerloid, baked enamel finish. Three-wire cord and plug standard. Inside dimensions:

30w x 25d x 25h cm (11.8 x 9.8 x 9.8"). Outer dimensions:(19h x 14w x 12d"). Temperature range is ambient to 200°C Control is ±15°C.



Prod. No.	Description	Unit
1428900	120 Vac, 60 Hz	1 each
1428902	240 Vac, 50 Hz	1 each

## Parafilm M Laboratory Film

Seals labware quickly, effectively. Film prevents sample evaporation and contamination; protects anhydrous materials. Can be folded repeatedly and twisted around sharp surfaces without rupturing. Stretched lengthwise at 21°C (71°F), Parafilm M increases approximately 200%. Becomes more flexible, softer, stronger as temperature increases. Resistant to alcohol, medium concentration acid, and alkalies. Width: 10 cm (4"); 38-m (125') roll.



Prod. No.	Unit
251764	1 each

## pH Paper Rolls

Provides simple, fast, economical method of pH measurement. Sharp color change for each 0.5 pH unit. Convenient for sample pH adjustments. Recommended for sewage water, not finished water. Five 4.6-meter (15') rolls per package.



Prod. No.	Description	Unit
37333	3.0-5.5 pH	1 each
37633	4.5-7.5 pH	1 each
37933	6.0-8.0 pH	1 each
38533	9.0-12.0 pH	1 each
39133	1.0-11.0 pH	1 each

## pH Paper Strips

Provides a simple, fast, economical method of pH measurement. Obtain accurate results in weakly buffered, turbid and lightly colored samples.



Prod. No.	Unit
2601300	100 /pk

## Pipet Controller, Brinkmann

Features one handed operation to aspirate/dispense with most pipets from 0.1-100 mL. Added safety from contamination with in-line filter (changeable).



Prod. No.	Description	Unit
2489200	Brinkmann Pipet Helper	1 each
2489300	Replacement Filters	10 /pk

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# PIPET CONTROLLER — PIPETS

## Pipet Controller, Powerpette Plus

Lightweight, rechargeable pipet controller offers finger tip control in an easy-to-hold pistol grip shape. Eight hours of use on a single charge and can be charged while in use. Programmed with three aspirate & dispense modes (including gravity dispense for "to deliver" pipets). Low battery warning light. Suitable for most pipets from 1.0-100 mL. Complete set includes rechargeable nickel metal hydride battery. AC adapter, autoclavable pipet stand, three hydrophobic filters (two 0.45 µm; one 0.2 µm), and instruction manual. CE marked.



Prod. No.	Description	Unit
2799500	Powerpette Plus Pipet Controller	1 each
2799401	Replacement Filters (0.45µm)	5 /pk
2799403	Replacement pipet holder (nose cone), silicone	1 each

## Pipet Controller, Safetypetter

Simple, controllable pipet filler provides easy aspiration and dispensation at variable speeds. Fits most 1-100 mL pipets. Includes a built-in filter for contamination control (can be replaced).



Prod. No.	Description	Unit
2799400	Safetypetter Pipet Filler	1 each
2799401	Replacement Filters (0.45µm)	5 /pk
2799403	Replacement pipet holder (nose cone), silicone	1 each

## Pipet Filler, Safety

Easy "1-2-3" operation. Squeeze the "1" valve to discharge air in top bulb. Squeeze valve "2" to draw up sample. Squeeze valve "3" to dispense. Fits all standard-sized pipets. Durable silicone with glass ball valves for long life. Meets OSHA requirements.



Prod. No.	Unit
1218900	1 each

## Pipet Filler, Safety Bulb

Unique cone adapter allows universal pipet filling. Squeeze bulb to charge for filling and place cone adapter onto pipet in sample. Release the bulb to fill. Remove bulb and cover pipet end with finger for dispensing. Easy and safe.



Prod. No.	Unit
1465100	1 each

## Pipet Filler, Small Volume

Dropper bulb slips over the end of Pasteur and other small volume pipets (approximately 1 mL). Latex.



Prod. No.	Unit
2676800	12 /pk

## Pipets



### Fixed Volume, Micropipette

Micropipette features a two-stage plunger dispenser, which ensures high accuracy and precision in pipetting techniques and facilitates last drop dispensing. Unique tip cone accepts both micro and ultra micro pipet tips. Each micropipette is fully autoclavable and color-coded for easy identification. Includes one pipet tip. Additional pipet tips sold separately.

Prod. No.	Capacity	Accuracy	Unit
2946001	5 µL	1.5 %	1 each
2946002	10 µL	1.0 %	1 each
2946003	20 µL	0.5 %	1 each
2946005	50 µL	0.4 %	1 each
2946006	100 µL	0.3 %	1 each
2946007	200 µL	0.5 %	1 each
2946008	250 µL	0.5 %	1 each
2946009	500 µL	0.5 %	1 each
2946010	1000 µL	0.5 %	1 each

### Pipet Tips for Micropipette

Pipet Tips for Micropipette - Disposable polypropylene pipet tips.

Prod. No.	Description	Unit
2948700	5 to 200 L Tips	1000 /pk
2511900	250 to 1000 L Tips	1000 /pk

### Mohr (Measuring) Pipet, Glass



Class B pipets calibrated "To Deliver". Permanent brown, graduated scale fused into body. Color coded for volume. Tips hardened for durability. Designed from ASTM E1293, Class B Style 1 requirements.

Prod. No.	Resolution	Capacity	Tolerance	Color Code	Unit
2093400	0.01 mL	0.1 mL	± 0.005 mL	White	1 each
2093635	0.01 mL	1.0 mL	± 0.02 mL	Red	1 each
2093636	0.1 mL	2.0 mL	± 0.02 mL	Green	1 each
2093437	0.1 mL	5.0 mL	± 0.04 mL	Blue	1 each
2093438	0.1 mL	10.0 mL	± 0.06 mL	Orange	1 each
2093440	0.1 mL	25.0 mL	± 0.05 mL	White	1 each

### Mohr (Measuring) Pipet, Polypropylene



Graduated, translucent polypropylene pipets. Ideal for silica analysis. Autoclavable (Temperatures above 60°C can cause changes to volumes).

Prod. No.	Resolution	Capacity	Tolerance	Unit
210635	0.1 mL	1 mL	± 0.02 mL	1 each
210637	0.1 mL	5 mL	± 0.04 mL	1 each
210638	0.1 mL	10 mL	± 0.06 mL	1 each
210665	0.1 mL	1 mL	± 0.02 mL	12 /pk
210667	0.1 mL	5 mL	± 0.04 mL	12 /pk
210668	0.1 mL	10 mL	± 0.06 mL	12 /pk

## Pipets, continued

### Serological Pipet, Glass



Graduated glass pipets. Calibrated "To Deliver". Designed to ASTM E1044 specifications.

Prod. No.	Resolution	Capacity	Tolerance	Unit
919002	0.01 mL	1 mL	± 0.02 mL	1 each
206670	0.1 mL	25 mL	± 0.2 mL	12 /pk
53236	0.1 mL	2 mL	± 0.02 mL	1 each
53237	0.1 mL	5 mL	± 0.04 mL	1 each
53238	0.1 mL	10 mL	± 0.06 mL	1 each
206640	0.1 mL	25 mL	± 0.2 mL	1 each

### Serological Pipet, Sterile, Glass



Sterile, glass pipet with blue graduation scale. Calibrated "To Deliver". Complies with ASTM E438, Class B requirements and designed from ASTM Specification E714.

Prod. No.	Resolution	Capacity	Tolerance	Negative Graduations (mL)	Unit
2093135	0.01 mL	1 mL	± 0.02 mL	0.2	50 /pk
2093165	0.01 mL	1 mL	± 0.02 mL	0.2	500 /pk
2093136	0.01 mL	2 mL	± 0.04 mL	0.2	35 /pk
2093166	0.01 mL	2 mL	± 0.04 mL	0.2	175 /pk
2093127	0.1 mL	5 mL	± 0.15 mL	1	25 /pk
2093157	0.1 mL	5 mL	± 0.15 mL	1	400 /pk
2093128	0.1 mL	10 mL	± 0.3 mL	2	25 /pk
2093158	0.1 mL	10 mL	± 0.04 mL	2	400 /pk

### Serological Pipet, Sterile, Polystyrene



Sterile, disposable plastic pipet. Individually wrapped. Color coded. Calibrated "To Deliver". Complies with ASTM E934.

Prod. No.	Resolution	Capacity	Negative Graduations (mL)	Color Code	Unit
2092655	0.01 mL	1 mL	0.3	Yellow	1000 /pk
2092656	0.01 mL	2 mL	0.3	White	1000 /pk
2092626	0.01 mL	2 mL	0.3	White	50 /pk
2092667	0.10 mL	5 mL	2	Blue	200 /pk
2092627	0.10 mL	5 mL	2	Blue	50 /pk
2092668	0.10 mL	10 mL	3	Orange	200 /pk

### Serological Pipet, Sterile, Polystyrene with Plug



Sterile, disposable plastic pipet with plug. Bulk packaged in 25/pack. Color coded. Black ascending/descending graduations. Calibrated "To Deliver". Accuracy ±2%.

Prod. No.	Resolution	Capacity	Unit
2092826	0.01 mL	2 mL	50 /pk
2092828	0.10 mL	10 mL	50 /pk
2092835	0.01 mL	1 mL	50 /pk
2092868	0.10 mL	10 mL	500 /pk
2092855	0.01 mL	1 mL	1000 /pk

### Single Channel Pipet



Hach's new variable volume single-channel, air-displacement pipets feature robust design, comfortable ergonomics, slim-line tip ejection, and single-handed operation. Outstanding accuracy with adjustments in 50 µL increments (0.05 mL). Ideal to use with Hach TNTplus reagents. Supplied with calibration tool.

Product Number	Volume (mL)	Accuracy
BBP078	0.2-0.4	0.8-0.65%
BBP065	0.5-1.0	0.60%
BBP065	1.0-5.0	0.05%

Prod. No.	Description	Unit
BBP065	Pipet, Variable Volume, 1.0-5.0 mL	1 each
BBP078	Pipet, Variable Volume, 0.2-1.0 mL	1 each
LZP320	Pipet set BBP065 & BBP078	1 each
BBP079	Pipette tips for 0.2-1.0 mL pipet	100 /pk
BBP068	Pipette tips for 1.0-5.0 mL Pipet	75 /pk

### TenSette® Single Channel Pipet



Perform accurate, economical pipetting with Hach's TenSette pipets. Single-channel, air-displacement pipets come in two models: 0.1-1.0 mL volumes (0.1 mL increments) or 1.0-10.0 mL (1.0 mL increments). Volume selection with a simple twist of the turret.

Prod. No.	Description	Unit
1970001	TenSette Pipette: 0.1 - 1.0 mL: incl. 50 tips	1 each
2185628	Pipet Tips: 0.1- 1.0 mL; non-sterile	1000 /pk
2185696	Pipet Tips: 0.1- 1.0 mL; non-sterile	50 /pk
1970010	TenSette Pipette: 1.0 - 10.0 mL: incl. 50 tips	1 each
2199725	Pipet Tips: 1.0-10.0 mL; non-sterile	250 /pk
2199796	Pipet Tips: 1.0-10.0 mL; non-sterile	50 /pk
2558996	Pipet Tips: 1.0-10.0 mL; sterile (indiv. wrapped)	50 /pk

### Transfer Pipet, Sterile



LDPE 0.5 & 1.0 mL marks 3mL capacity.

Prod. No.
2232512

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# PIPETS — REFRACTOMETER

## Pipets, continued

### Volumetric Pipet, Class A, Glass



Glass Class A pipets unserialized and calibrated "To Deliver". Designed to ASTM E969 specification for accuracy and ASTM E1273 for color coding.

Prod. No.	Capacity	Tolerance	Color Code	Unit
1451534	0.5 mL	± 0.01 mL	2 Black	1 each
1451535	1 mL	± 0.01 mL	Blue	1 each
1451536	2 mL	± 0.01 mL	Orange	1 each
1451503	3 mL	± 0.01 mL	Black	1 each
1451504	4 mL	± 0.01 mL	2 Red	1 each
1451537	5 mL	± 0.01 mL	White	1 each
1451538	10 mL	± 0.02 mL	Red	1 each
1451539	15 mL	± 0.03 mL	Green	1 each
1451520	20 mL	± 0.03 mL	Yellow	1 each
1451550	20 mL	± 0.03 mL	Yellow	6 /pk
1451540	25 mL	± 0.03 mL	Blue	1 each
1451570	25 mL	± 0.03 mL	Blue	6 /pk
1451541	50 mL	± 0.05 mL	Red	1 each
1451571	50 mL	± 0.05 mL	Red	6 /pk
1451542	100 mL	± 0.06 mL	Yellow	1 each

### Volumetric Pipet, Class A, Certified, Glass



Glass Class A pipets serialized and calibrated "To Deliver". Each comes with Certificate of Identification and Capacity. Marked with an "A" to designate compliance to ASTM E969.

Prod. No.	Capacity	Tolerance	Unit
2636150	20 mL	± 0.03 mL	6 /pk
2636166	2 mL	± 0.01 mL	6 /pk
2636167	5 mL	± 0.01 mL	6 /pk
2636168	10 mL	± 0.02 mL	6 /pk
2636171	50 mL	± 0.05 mL	6 /pk

### Pump, Vacuum, Hand-Operated

This unit is ideal for field use and is a real convenience in the lab. Pumping rate is 15 cc (0.50 oz) per stroke. Entire unit is corrosion-resistant, sealed, and self-lubricating. Nozzle fits standard 6 mm (1/4") I.D. tubing. Supplied with 61 cm (2') of clear plastic tubing. Choose with or without vacuum gauge.



Prod. No.	Description	Unit
1428300	Economy Hand Pump	1 each
2094100	Hand Pump with Vacuum Gauge	1 each

### Pump, Vacuum Pressure, No-Oil

Provides up to 68.6 cm (27") Hg vacuum for applications in laboratory, office or industrial plant—vacuum distillation, filtration, and air pollution studies employing membrane filters. Quiet, pulse less air delivery and vacuum. Compact dimensions (WxDxH) 15 x 39 x 20 cm (6 x 15.4 x 8 inches). Complete with vacuum and pressure gauges and regulators, hose nipples, outlet filter, switch, cord, and plug. Capacity: 0.6 liters/sec (1.3 cfm) at 0 mm Hg. 124 W (1/6 HP).



Prod. No.	Description	Unit
2824800	115V, 60 Hz, 1.2 CFV, 1725 RPM w/ N. American Plug	1 each
2824801	220V, 60 Hz, 1.2 CFV, 1725 RPM w/ N. American Plug	1 each
2824900	Pump maintenance kit for 115V Model	1 each
2824901	Pump maintenance kit for 220V Model	1 each

### Pump, Vacuum Pressure, Large, No-Oil

Provides up to 27.6" Hg vacuum for applications in laboratory, office or industrial plant—vacuum distillation, filtration, and air pollution studies employing membrane filters. Quiet, pulse less air delivery and vacuum. Complete with vacuum and pressure gauges and regulators, hose nipples, outlet filter, switch, cord, and plug. Capacity: 100 liters/min (3.5 CFM). 1/3 HP. Dimensions (LxWxH): 1 5x 10 x 10 inches. Weight: 16.5 lbs. Tubing needed: 3/8".



Prod. No.	Description	Unit
2947000	115V, 60 Hz, 3.5 CFM	1 each

### Rack, Drying

Epoxy-coated, steel-wire drying rack for test tubes, vials, flasks, cylinders, beakers and other laboratory glassware. Rack can be used standing up, lying down or mounted to the wall. Incorporated drain pan design keeps your counter dry. Choose small capacity rack to hold 26 pieces of glassware, or the large capacity rack to hold 90 pieces of glassware.



Prod. No.	Description	Unit
2089000	Small	1 each
2089010	Large	1 each

### Rack, COD and Test Tube

Stainless steel rack for holding hot COD vials or test tubes prior to reading. Fit Hach COD vials and Test 'N Tube vials. Vials not included.



Prod. No.	Description
1864100	COD Rack

**NEW!**

### Refractometers, Digital

Small, light weight and as simple to use as a traditional handheld optical refractometer, but with the accuracy of a digital readout. Sample size can be as small as 1mL. The temperature is initially displayed followed by the measurement results. Provides automatic calibration, automatic temperature compensation and automatic shutoff. A sturdy soft-sided water resistant case protects the electronics from wet environments and makes for easy clean up.



Prod. No.	Refractometer Scale
2300050	Honey
2300051	Brix 0-65%
2300052	Brix 40-95%
2300053	Brix 0-95%
2300054	Salinity
2300055	Automotive



# REFRACTOMETER — STAND, SUPPORT

## Refractometer, Handheld Optical

**NEW!**

This handheld salinity refractometer is designed for accurate measurement of salinity and specific gravity for a wide variety of aqueous solutions. Use in laboratories, seawater treatment, aquaculture, food processing, hydroponics monitoring, salt production, ballast water, or anywhere an accurate measurement is essential. Read with only a few drops of test solution. Dual scale salinity/specific gravity. Scale range: 0.0-100.0 ppt salinity or 1.000-1.070 specific gravity.



**Prod. No.**  
25128000

## Ring, Support

Cast-iron construction with zinc-plated finish. Distance from center of ring to center of clamp is 108 mm (4.25").



Prod. No.	Description	Unit
58000	67 I.D., 83 O.D. (mm)	1 each
58001	92 I.D., 108 I.D. (mm)	1 each
2656300	102 I.D., 118 O.D. (mm)	1 each

## Sample Transport Kit

Contains everything needed for collecting field samples, keeping them cold during transport. Includes Rubbermaid Cooler, plastic-coated rack with 15 compartments for sampling bags, 100 Whirl-Pak sampling bags (177 mL) with dechlorinating agent, one leak-proof refrigerant pack. Dimensions: 42.4 x 28.4 x 58.6 cm (16.7 x 11.2 x 23.1)



**Prod. No.**  
2568700

## Sampler, Water Core, Sludge Judge®



Accurate readings can be obtained on suspended solids up to a depth of 4.5 m (15'). Comes in three 1.5 m (5') sections with screw-type fittings. Designed for sampling solids in wastewater and food processing applications. Standard Sludge Judge features 3/4" diameter plastic tubing, while the large capacity Sludge Judge features 1-1/4" diameter plastic tubing for double the capacity.

Prod. No.	Description	Unit
2194300	3/4 Standard Sampler	1 each
2506102	1-1/4 Large Capacity Sampler	1 each

## Sludge Judge Accessories

Prod. No.	Description	Unit
2194301	Carrying Case - Fits both models	1 each
2506101	Cleaning Brush - Standard Sampler	1 each
2506103	Cleaning Brush - Large Sampler	1 each
2506104	Grease Trap Cleaning Rod	1 each
2506105	Cotton Cleaning Strips	50 /pk

## Sampler, Economy

For convenient sampling from tanks, vats, streams, ponds, lakes, etc., these economy dippers are light, easy to use and portable. The polypropylene cups have threaded fittings that screw onto the handle. Two pouring spouts on the 500 mL (16 oz) dipper make it useful for left or right-handed people to pour from either side. Ends are sealed for easy cleaning and include a hook for hanging.



Prod. No.	Description	Unit
2929301	Sampler Dipper 3ft Handle	1 each
2929302	Sampler Dipper 6ft Handle	1 each
2929401	Extra screw-on cup 500 mL (3 ft. and 6 ft. only)	1 each
2943000	Sampler Dipper 12ft Handle	1 each

## Sampler, Ultra

For taking samples of water, sewage, wastes and effluents from lakes, streams, tanks, or ponds, the water sample dipper provides a long reach for otherwise inaccessible spots. A 1000 mL graduated polypropylene pitcher is mounted on an aluminum tube handle. The handle has 3 parts, a 91cm (36") lower section, a 112cm (44") telescoping section, and an additional 91cm (36") upper section. Connections are made with spring buttons with adjusting steps, 15cm (72") apart. Minimum handle length is 91cm (36"), maximum length is 274cm (108"). Handle diameter is 25mm (1") with 22mm (7/8") telescoping tube.



Prod. No.	Unit
2929501	1 each

## Settleometer Kit

Complete kit for analyzing activated sludge process. Includes a transparent, polycarbonate 1-L jar with cover. Jar has easy-to-read white graduations and is impact-resistant. Custom polypropylene paddle allows agitation of sample without scratching the jar. Also includes 10 polycarbonate centrifuge tubes (15 mL; graduated). All components chemically resistant at pH range 3-10.



Prod. No.	Description	Capacity	Unit
2115700	Settleometer Kit	2 Liter Jar	1 each
2764400	Timer for Settleometer		1 each
2115839	Replacement Tubes, Graduated	15 mL	10 /pk

## Stand, Buret Support

Cast iron, white enamel base provides favorable background for observing end points. Also acts as a steady support for buret. Base is 178 x 330 mm (7 x 13") furnished with a 13 x 610 mm (0.5 x 24") aluminum rod with a threaded nut.

Prod. No.	Description	Unit
32900	Support Stand	1 each



## Stand, Support

Heavy black enamel, cast iron base and zinc-plated rod. Base is 127 x 203 mm (5 x 8") with an 8 x 508 mm (0.3 x 20") rod.

Prod. No.	Unit
56300	1 each



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LAB SUPPLIES

# STIR BAR MAGNETIC ARRESTER — STIRRERS

## Stir Bar Magnetic Arrester



Use the Magnetic Stirring Bar Arrester to hold your stirring bar in place when pouring from a beaker or flask.



Prod. No.	Description	Unit
2928501	9.4 mm thick x 51 mm dia	1 each

## Stir Bar Magnetic Retriever



Polyethylene pickup rod with powerful magnet sealed in one end and hang-up grip on other; 31 cm (12") long.

Prod. No.	Unit
1523200	1 each

## Stir Bar, Cuvette

Teflon magnetic centrifugal stirrer fits into standard 10 mm light path spectral cell and provides rapid vertical and horizontal mixing with a minimum of vortexing when placed on a magnetic stirrer. This one-piece molded unit will not scratch cuvettes. May also be used in test tubes.



Prod. No.	Description	Unit
2140800	9 mm dia x 8 mm ht	1 each

## Stir Bar, Egg Shaped

Designed specifically for round bottom flasks and vessels. The Teflon coated, egg-shaped, magnetic stir bar fits the round bottom for uniform stirring without restriction. Recommended for the following round bottom flask sizes: 10, 25, 50, and 100 mL.



Prod. No.	Description	Unit
2753200	19.0 L x 9.52 mm dia (3/4 x 3/8)	1 each

## Stir Bar, Micro

Use micro stir bar for mixing in vials, test tubes, spectrophotometer cells and other small-volume containers. Usable at temperatures up to 260°C. Alnico V magnet encapsulated in Teflon.



Prod. No.	Description	Unit
2054959	3 mm dia x 10 mm L	1 each
2054960	2 mm dia x 7 mm L	1 each

## Stir Bar, Octagonal

Teflon coated with molded pivot ring.



Prod. No.	Description	Unit
2095348	12.7 x 7.9 mm (0.5 x 0.3)	1 each
2095349	15.9 x 7.9 mm (0.63 x 0.3)	1 each
2095350	22.2 x 7.9 mm (0.87 x 0.3)	1 each
2095351	25.4 x 7.9 mm (1.0 x 0.3)	1 each
2095352	28.6 x 7.9 mm (1.12 x 0.3)	1 each
2095355	50.8 x 7.9 mm (2.0 x 0.3)	1 each

## Stir Bar, Plus-Shaped

This magnetic stir bar adds speed and efficiency to your mixing requirements. The "+" shape creates a deep vortex and provides stable, quiet operation.



Prod. No.	Description	Unit
2928601	9.5 mm (3/8)	1 each
2928602	19 mm (3/4)	1 each
2928603	25.4 mm (1)	1 each
2928604	31.8 mm (1-1/4)	1 each
2928605	38 mm (1-1/2)	1 each

## Stir Bar, Polygon

Teflon coated stir bar.



Prod. No.	Description	Unit
4531500	22.2 x 4.8 mm (0.8 x 0.2)	1 each

## Stirrer, Hand-Held

Hand-held mini-mixer used with test tubes, micro centrifuge tubes and containers too narrow for conventional mixers. Stirring rod flares out for use in larger spaces. Clear vinyl carrying case, 11.4 x 6 cm (4.5 x 2.4") stirring rod, 2 AA batteries included. Dimensions including rod 20.3 x 3.2 x 2.5 cm (8 x 1.25 x 1"). Weight 3 oz.



Prod. No.	Description	Unit
2496400	Stirrer, Hand-Held	1 each
2496510	Disposable nylon stirring rods for use with Stirrer (2496400)	10 /pk

## Stirrer, Lab, Programmable



Jar Testers allow you to replicate actual plant conditions and operations. All stirrers run in both standard and programmable modes. Memory banks can each be set for paddle speeds from 1 to 300 RPM in one-RPM increments, with run times from 1 second to 59 minutes, 59 seconds in one-second increments. The stirrer can run sequentially through all memory banks, independently in any one memory mode, or manually at a selected speed. To allow work elsewhere in the lab, audio signals can be programmed in each memory bank. Programmed information is retained even with power-off, permitting day-to-day test reproducibility.

Features include: digital readout, stainless steel paddles placed 6 inches apart, regulated variable speeds of all paddles simultaneously, from 1-300 rpm, powder-coated steel uniframe chassis, built-in L.E.D. illuminator, anti-glare curtain, and dust cover. Choose from a 4-paddle or 6-paddle model. Order with or without beakers. Each unit holds either round 1000 mL mixing beakers or square 2 L Wagner Floc Jars.

Unit Dimensions, 6-Paddle : 119 x 41 x 51 cm (47 x 16 x 20 inches)

Unit Dimensions, 4-Paddle: 89 x 41 x 51 cm (35 x 16 x 20 inches)

Prod. No.	Description	Unit
2631710	6-Paddle Jar Tester with 1L Beakers	1 each
2631720	6-Paddle Jar Tester with 2L Beakers	1 each
2703810	6-Paddle Jar Tester, no Beakers	1 each
2631730	4-Paddle Jar Tester with 1L Beakers	1 each
2631740	4-Paddle Jar Tester with 2L Beakers	1 each
2703910	4-Paddle Jar Tester, no Beakers	1 each

### Accessories and Replacement Components

Prod. No.	Description	Unit
4117000	Wagner Floc Jar, 2 L, Square	1 each
1480474	Stopper, Replacement, for Floc Jar	1 each
50083	Beakers, 1000 mL, Round	6 /pk
2692500	Paddle Assembly, Replacement	1 each
2692600	Knob Replacement	1 each
2692700	Collar Assembly Replacement	1 each
2692800	Shaft Replacement	1 each
2692940	Carrying Case, 4-Paddle Tester	1 each
2692960	Carrying Case, 6-Paddle Tester	1 each

## Stirrer, Magnetic

Cimarec ceramic top stirrer features a reflective, white ceramic that is seamless, easy to clean, and resistant to alkali/acid solutions. Low profile increases efficiency and reduces spill risk. StirTrac™ technology offers improved slow speed stirring, consistent speed control, adjustable speed range from 50-1200 RPM, and rapid braking. Detachable cord. Integral ringstand/support rod holder (order rod separately).



Prod. No.	Ceramic Top	Electrical Specifications	Unit
	Dimensions	Volts/Amps/Watts	
2881200	4.25 x 4.25	120 Vac, 50/60 Hz	1 each
2881300	7.0 x 7.0	120 Vac, 50/60 Hz	1 each
<b>Support Rod</b>			
2705900	1.3 cm (0.5) diameter support rod		1 each

## Stirrer, Magnetic, Battery-Powered



Portable, light-weight stirring ideal for field use where no electricity is available. It can be used for up to 24 hours of continuous operation, mixing up to 1 liter with a maximum stirring speed of 900 rpm using one "D" sized battery. Continuous operation time greatly extended if two "D" sized batteries are used. Dimensions: 9 1/4" x 5" x 3 1/2"H.

Prod. No.	Unit
2163600	1 each

## Stopcock Grease

For lubricating ground glass joints, glass stopcocks and valves, and for sealing desiccators. Lubricant has a low vapor pressure and resists attack by acidic and alkaline solutions.



Prod. No.	Description	Unit
56275	Tube of 150g	1 each

## Stopcock Plug, Teflon

Teflon stopcock for your buret, separatory funnel, or other labware.



Prod. No.	Description	Unit
2095661	Bore size approx. 2 mm	1 each

## Stopper, Neoprene, One Hole

Made of synthetic rubber that resists petroleum products, fats, oils, and organic chemicals. Recommended where natural rubber would deteriorate or be attacked.



Prod. No.	Description	Stopper	Unit
		Size	
1480407	12 mm Hole Dia.	7	6 /pk
1480477	8 mm Hole Dia.	8	1 each

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# STOPPERS — THERMOMETERS

## Stopper, Neoprene, Solid

Recommended where natural rubber would deteriorate or be attacked.



Prod. No.	Stopper Size	Unit
1480801	1	12 /pk
1480802	2	12 /pk
1480803	3	12 /pk
1480806	6	6 /pk
1480807	7	6 /pk
1480808	8	6 /pk

## Stopper, Rubber, One Hole

Pliable and non-corrosive.



Prod. No.	Description	Stopper Size	Unit
211904	5 mm Hole Dia.	4	6 /pk
211906	5 mm Hole Dia.	6	6 /pk
211907	5 mm Hole Dia.	7	6 /pk
211908	5 mm Hole Dia.	8	6 /pk

## Stopper, Rubber, Solid

Black. Soft and resilient.



Prod. No.	Stopper Size	Unit
211801	1	12 /pk
211802	2	12 /pk
211803	3	12 /pk
211804	4	12 /pk
211806	6	12 /pk
211808	8	12 /pk
211810	10	6 /pk

## Stopwatch, Water Resistant

Counts up to 24 hours with resolution of 1/100 second for first 30 minutes, 1 second thereafter. Features lap function, alarm clock, and calendar. Button cell battery included. Dimensions: 5.4 x 6 cm. (2.4 oz). NIST-certified.



Prod. No.	Unit
2630200	1 each

## Swabs, Cotton, Sterilized



Swabs (cotton tip, hardwood stick) used to transfer colonies from positive membrane filtration plates to confirmation broth. Length: 6 inches.

Prod. No.	Unit
2554300	100 /pk

## Syringe, Luer-Lock Tip



Prod. No.	Description	Capacity	Unit
1226300	1 cc	1 mL	1 each
2228725	2 cc	2 mL	25 /pk
4321300	3 cc	3 mL	1 each
2343333	5 cc	5 mL	125 /pk
2202400	10 cc	10 mL	1 each

## Syringe Filters

Prod. No.	Description	Unit
2513605	Nylon	50 /pk
2513608	PVDF	50 /pk
2513603	PVDF	50 /pk
2599734	Glass Fiber	150 /pk
2599737	Glass Fiber	150 /pk

## Thermometer, COD

Bi-metallic. Dial gauge 0 to 200°C ±1%. Two degree divisions. Probe diameter is .15 inches.



Prod. No.	Unit
4565500	1 each



## Thermometers, Digital

### Thermometer, Digital, Acorn® RTD

Rugged and dependable, this RTD style thermometer offers a wide measuring range and a large LCD screen for a clear reading at a glance. Compact size, hold functionality and splash-proof keypad offer peace of mind and ease of use. Features °C or °F, min & max temperature display and offset temperature calibration. Protective rubber armor features built-in stand for easy benchtop use.

Order the certified meter with probe to receive NIST-traceable calibration. Your specific meter and probe will be tested and calibrated to NIST-traceable standards by an accredited laboratory prior to shipment. Calibration report includes detailed results of your system identified by product serial number.

#### Specifications

Meter Range: -320 to 1562°F (-200 to 850°C)

Probe Range: -58 to 932°F (-50 to 500°C)

Resolution: 0.1°F (0.1°C)

Accuracy: ±0.4°F (±0.2°C)



Prod. No.	Description
2630610	Acorn RTD Temp 6 Meter w/ General Probe
2630620	Certified RTD Temp 6 meter w/ Probe System
2630614	Replacement General Purpose Probe

### Thermometer, Digital, Acorn® Thermocouple

Thermocouple style thermometers offer the greatest measuring range compared to other style thermometers. Compact size, hold functionality and splash-proof keypad offer peace of mind and ease of use. Features °C or °F, min & max temperature display and offset temperature calibration. Protective rubber armor features built-in stand for easy benchtop use.

Order the certified meter with probe to receive NIST-traceable calibration. Your specific meter and probe will be tested and calibrated to NIST-traceable standards by an accredited laboratory prior to shipment. Calibration report includes detailed results of your system identified by product serial number.

#### Specifications

Meter Range: -418 to 2501°F (-250 to 1372°C)

Probe Range: -418 to 1650 °F (-250 to 899°C)

Resolution: 0.1°F/°C from -146°F to 572°F

(-99.9°C to 299.9°C), 1°F/°C outside this range

Accuracy: ±0.25% of reading plus 0.9°F (0.5°C) above -99.9°F/°C



Prod. No.	Description
2630650	Acorn Thermocouple Meter w/ General Probe
2630660	Certified Thermocouple Meter w/ Probe System
2630654	Replacement K-type Probe

### Thermometer, Digital, Acorn® Thermistor

Thermistor style thermometers have excellent accuracy over biological or ambient temperature ranges compared to other thermometer styles. The Acorn Thermistor is perfect for routine temperature measurement, as well as crucial biological measurements. Compact size, hold functionality and splash-proof keypad offer peace of mind and ease of use. Features °C or °F, min & max temperature display and offset temperature calibration. Protective rubber armor features built-in stand for easy benchtop use.

Order the certified meter with probe to receive NIST-traceable calibration. Your specific meter and probe will be tested and calibrated to NIST-traceable standards by an accredited laboratory prior to shipment. Calibration report includes detailed results of your system identified by product serial number.

#### Specifications

Meter Range: -40 to 257°F (-40 to 125°C)

Probe Range: -40 to 302°F (-40.0 to 150.0°C)

Resolution: 0.1°F (0.1°C)

Accuracy: ±0.4°F (±0.2°C)



Prod. No.	Description
2630630	Acorn Temp 5 Meter w/ General Probe
2630640	Certified Temp 5 Meter w/ Probe System
2630632	Replacement Probe

### Thermometer, Digital Sper® Thermocouple

Light weight and inexpensive, this K & J type thermometer provides extremely accurate and reliable temperature measurement. Features relative minimum and maximum temperature, hold, auto power off, and touch tone buttons. This instrument comes with NIST certification for one year and includes one K-type probe. The certification will state an expiration date for NIST certification. Dimensions: 5 1/4" x 2 1/4" x 1 1/4" Weight: 6 oz.

#### Specifications

Meter Range: -328 to 2498°F (-200 to 1370°C)

Probe Range: -150 to 932°F (-65 to 500°C)

Resolution: 0.1°F (0.1°C)

Accuracy: ±0.05% of reading +0.7°C, 1.4°F



Prod. No.	Description	Unit
2630600	Thermometer, Digital	1 each
2630601	Stainless Steel Replacement K-type Probe	1 each



# THERMOMETERS — TIMERS

## Thermometer, Non-Mercury



Enviro-Safe non-Mercury thermometers feature an exclusive biodegradable liquid and dye. Easy to read, aesthetically distinctive due to dark green liquid and permanently fused markings. Each thermometer is individually calibrated against NIST traceable equipment and identified by a unique serial number for ISO 9000 or other quality systems.

Prod. No.	Description	Unit
2635700	-10 to 225°C, 1 Divisions (°C), 405 mm (16)	1 each
2635702	-20 to 110°C, 1 Divisions (°C), 305 mm (12)	1 each
2635701	-10 to 260°C, 1 Divisions (°C), 405 mm (16)	1 each
2635703	0 to 230°F, 2 Divisions (°F), 305 mm (12)	1 each

## Thermometer, Non-Mercury



Safety coated. Blue fill solution on white background provides excellent visibility. Dual scale, partial immersion.

Prod. No.	Description	Unit
2999200	-30 to 50°C and -20 to -120 °F 0.1 Divisions (°C), 250 mm (10)	1 each

## Thermometer, Non-Mercury, Compact



Compact and durable, non-mercury thermometers enclosed in a protective nylon case. These thermometers are designed for ruggedness and come in many standard ranges. Suitable for all field and portable uses where an unprotected thermometer may break.

Prod. No.	Description	Unit
2676100	-30 to 120°F, 2 Divisions (°F), 160 mm (6.3)	1 each
2676200	0 to 220°F, 2 Divisions (°F), 160 mm (6.3)	1 each
2676300	-5 to 45°C, 0.5 Divisions (°C), 160 mm (6.3)	1 each
2676400	-10 to 110°C and 0 to 220°F 1 Divisions (°C/F), 160 mm (6.3)	1 each

**NEW!**



## Thermometer, Wireless

Read the temperature inside an environmental chamber or clean room without opening the door. Mount the weatherproof sensor outdoors, in green houses, warehouses, air ducts and other hard to reach places to continuously monitor their ambient temperature from a remote location. The wireless sensor broadcasts the temperature to the monitor from up to 100 ft (30M)

away without obstructions via a wireless Radio Frequency signal. Displays either °C or °F, has min/max recall, audible and visual alarms, and indicates when batteries are low. Each monitor comes with 1 temperature sensor with bench stand and wall mount, batteries (2 x AA + 2 x AAA).

Prod. No.	Unit
2800025	1 each

## Timer, Counts Up or Down

Counts up or down for 99 minutes, one-second intervals. Fast programming with numeric keypad. Includes built-in stand, pocket clip, magnet, button cell battery. Dimensions: 6.35 x 6.67 x 1.90 cm (2.50 x 2.625 x 0.75). Weight: 0.64 (1.4 oz).



Prod. No.	Unit
2630300	1 each

## Timer, Five-Channel

Four independent channels count up or down for any interval from one second to 100 hours; fifth channel is clock. Large display, one-minute alarm, memory, clock mode. Includes stand, pocket clip, magnet. Dimensions: 7.10 x 6.35 x 1.43 cm (2.875 x 2.50 x 0.56"). Weight: 0.08 kg (2.9 oz). Traceable to NIST.



Prod. No.	Unit
2630400	1 each

## Timer, Talking

Features a clear human voice. Large 3/4 display with icons to indicate the various modes: voice off/on, count-down/count-up, etc. Also features a built-in stand for benchtop use, pocket clip, and magnetic back. Button cell batteries included. Dimensions: 3.25 x 2.5 x 1. Weight: 2.2 oz.



Prod. No.	Unit
2764400	1 each

# TIMERS — VIAL, SPECIMEN

## Timer, Three-Channel

Audible and visual alarm, manual and automatic off. All three channels visible at same time. Outstanding quartz-crystal accuracy of 0.006 sec. Dimensions: 76 x 76 x 36 mm (3 x 3 x 1.4"). One second to 10 hours. Weight: 113 g (4 oz).



Prod. No.	Unit
2348000	1 each

## Timer, Min/Max with Alarm

Set min/max temperature alarms for both the internal and external sensors. The external sensor, mounted on a 9ft long cord, is waterproof and can be used outdoors or in liquid. When the temperature exceeds the preset parameters, an audible alarm will sound. View ambient interior or exterior temperatures with min/max readings on both. User selectable °C or °F read outs. Useful in labs, incubators, refrigerators, water baths, drying chambers, and fume hoods. Stands or wall mounts and comes with 1 AAA battery. Dimensions: 105 x 70 x 20 mm (4-1/8 x 2-3/4 x 3/4) Weight: 85 g (3 oz)



Prod. No.	Unit
2800040	1 each

## Tongs, Crucible

Nickel-plated steel. Length: 230 mm (9"). Wire size: 5 mm.



Prod. No.	Unit
56900	1 each

## Tube, Culture, with Screw Cap

Cap has a firmly bonded rubber liner, providing a sure and highly inert sealing surface.



Prod. No.	O.D. x L	Capacity	Unit
2096208	13 x 100 mm	Capacity to Neck 8 mL	10 /pk
1436120	16 x 150 mm	Capacity to Neck 20 mL	10 /pk
2096230	20 x 150 mm	Capacity to Neck 30 mL	10 /pk
2096250	25 x 150 mm	Capacity to Neck 50 mL	10 /pk
2275800	16 x 100 mm	Capacity to Neck 11 mL	1 each
	(Cap not included)		
2275806	16 x 100 mm	Capacity to Neck 11 mL	6 /pk
	(Cap not included)		
2899300	16 x 100 mm	Capacity to Neck 11 mL	250 /pk
	(Cap not included)		

## Tube Caps

White cap for Culture Tubes (16 x 100mm). Screw cap has a firmly bonded fluoropolymer liner, providing a sure and highly inert sealing surface.

Prod. No.	Description
2241106	Fits 16 x 100 mm tubes above, 6/pk

## Tubing, Tygon® R-3603®

Chemical-resistant, Formula R-3603 Tygon tubing with flex strength greater than rubber. Unaffected by oxidizing agents and compatible with virtually any laboratory chemical. Bends readily to sharp radius curves and will maintain strong grip on glass or metal. Highly polished bore prevents interior build-up while facilitating cleaning.



Prod. No.	I.D.	O.D.	Wall Thickness	Unit
2074037	1/4 in	3/8 in	1/16 in	50 ft
2074038	1/8 in	3/16 in	1/32 in	50 ft
2074039	3/8 in	1/2 in	1/16 in	50 ft
2074040	1/2 in	5/8 in	1/16 in	50 ft
2074041	5/16 in	7/16 in	1/16 in	50 ft
2074042	1/8 in	1/4 in	1/16 in	50 ft
2074043	3/16 in	5/16 in	1/16 in	50 ft

## Vial, Specimen

Borosilicate glass. Autoclavable. Cap included.



Prod. No.	O.D.	Capacity	Height	Unit
1497038	17 mm	8 mL	63 mm	10 /pk
1497046	21 mm	16 mL	73 mm	10 /pk
1497054	23 mm	24 mL	88 mm	10 /pk

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# WATER PURIFICATION – WATER PURIFICATION SYSTEMS

## Water Purification, Demineralizers

### Demineralizer Bottle

Narrow mouth, polyethylene bottle. Contains monobed resin. Flip spout. Great way to deionize small volumes of water. Used with Hach Portable Laboratories.



Prod. No.	Description	Unit
1429900	177 mL (6 oz) capacity	1 each
2184600	473 mL (16 oz)	1 each
31101H	Demineralizer Resin, 380g	1 each
591200	Cap only for 177 mL bottle, sprinkler w/screen	1 each
2187201	Cap only for 473 mL Bottle, sprinkler w/screen	1 each

### Barnstead® Cartridge Filtration System



Cartridge Filtration System is an economical and easy-to-use system to create Type III and IV general purpose lab water. Operates on city water pressure and no electricity required. Choose from three different cartridges:

- **Ultra Pure:** No dye in resin. Largely free of silica and carbon dioxide. 6.8 - 7.2.
- **Organic Removal:** Activated carbon removes organic and chlorines from feed water. Place ahead of Ultra Pure or High Capacity cartridge. Replace after second demineralizer cartridge replacement.
- **High Capacity:** Lower purity than Ultra Pure.

Prod. No.	Type	Finished Water Resistance	Specifications Capacity	Unit
2079100	Ultra Pure	1 meg ohm/cm endpoint	13,000 mg ionized solids	1 each
2074200	Organic Removal		5500 L	1 each
2079200	High Capacity	175,000 ohm/cm	29,500 mg ionized solids	1 each
2079400	Required Wall Bracket, 18 Tall			1 each

### Siemens® IWT Cartridge Filtration System

Convenient, economical, high quality modular water filtration system that operates on city water pressure and can easily be expanded to fit most needs. No electricity required. Up to 18 Megohm water quality can be achieved with this system. Choose from two cartridges:



**Adsorber:** For pretreatment of water containing organics, free chlorine, phosphate complexes and turbidity.

**Universal:** Produces water quality comparable to a level obtained by single distillation. Removes all constituents except free carbon and silica.

Features:

- No instruments needed
- Substantial cost savings compared to distilled water
- Convenient color change indicates end of life

Prod. No.	Description
2967000	Adsorber Cartridge
2967100	Universal Cartridge
2967200	Single Cartridge Wall Bracket
2967300	Duplex Cartridge Wall Bracket

## Water System, Ultrapure, Millipore® Direct-Q 3 System



Designed for laboratories that do not have access to pretreated water and need between 1 and 10L of ultrapure water per day, the Direct-Q system delivers ultrapure (type I) and pure (type III) water on demand directly from tap water.

Direct-Q offers superior ultrapure water for BOD applications and effectively eliminates source water as a cause of high blanks in BOD analysis. Other applications include TOC analysis, general laboratory use, and creation of Standard Solutions for Turbidity and Metals testing. DQ3 Purification pack also required and sold separately. Dimensions: 16.5 x 11.4 x 21.3 (LxWxH). 90–255V, 50–60 Hz.

Features:

- Easy installation, intuitive operation
- Maintenance offers simple cartridge change twice a year
- Easily accommodates different sizes of common lab glassware

### Ultrapure (Type I) Water Quality - Regular Operation Conditions

Resistivity, MΩ cm at 25°C	18.2
Particulates (Size > 0.22µm) (w/ Millipak® Express 20 filter or BioPak™ cartridge)	<1 Particulate / mL
TOC (Direct-Q 3 System)	<10 ppb
TOC (Direct-Q 3 System with UV Lamp)	<5 ppb
Flow rate (w/ Millipak® Express 20 filter or BioPak™ cartridge)	>0.5 L / min

### Pure (Type III) Water Quality - Regular Operation Conditions

Ionic Rejection	>94%
Organic Rejection for MW > 200	>99%
Bacteria and Particulates	>99%
Flow Rate	2.4 L / hr at 15°C (typical)
Volume	Up to 10 L/day

Prod. No.	Description	Unit
2512100	Direct-Q 3 System (DQ3 Smart Pack Required)	1 each
2512200	Direct-Q 3 System with UV Lamp <sup>1</sup> (DQ3 Smart Pack Required)	1 each

### Consumables and Accessories

Prod. No.	Description	Unit
2512201	DQ3 Smart Pack	1 each
2512800	BioPak Ultra-filtration Cartridge	1 each
2512204	Wall Bracket	1 each
2512900	30L Reservoir	1 each
251901	Tank Connector Kit for 30L Reservoir	1 each
251902	Wall Bracket for 30L Reservoir	1 each
2512202	Millipak-20 Filter Unit	1 each
2512700	UV Lamp 185nm <sup>1</sup>	1 each
2512203	Vent Filter	1 each

<sup>1</sup>Cannot be shipped to CT, IL, IN, LA, MA, ME, NC, NH, VT, WA, RI.

UV Lamp contains mercury. Dispose according to state, local or federal regulations.

## Water System, Ultrapure, Millipore® Simplicity System



The Simplicity system delivers ultrapure (type 1) water from pretreated water (distilled, deionized or reverse osmosis) to laboratories requiring < 5 liters of ultrapure water per day. Simplicity is lightweight and optimal for your portable ultrapure water needs.

Applications include preparation of blanks and standard solutions for a variety of analytical procedures. Choose with or without built-in UV lamp. Purification pack required and sold separately. Choose the Purification Pack right for your laboratory. Dimensions: 14.2 x 11.4 x 20.1 (LxWxH). Operating weight: 18 to 20 lbs. 100 -230V, 50/60Hz.

### Features:

- Easy installation, intuitive operation
- Maintenance offers simple cartridge change twice a year
- Automatic notification to change your purification cartridge
- Lightweight and portable

Ultrapure (Type I) Water Quality - Regular Operation Conditions	
Resistivity, MΩ cm at 25°C	18.2
TOC (Simplicity System)	<15 ppb
TOC (Simplicity System with UV Lamp)	<5 ppb
Flow rate	>0.5 L / min
Volume	Up to 5 L/day

Prod. No.	Description	Unit
2512300	Simplicity System (Purification Pack Required)	1 each
2512400	Simplicity System with UV Lamp <sup>1</sup> (Purification Pack Required)	1 each

### Consumables and Accessories

Prod. No.	Description	Unit
2512402	Purification Pack	1 each
2512403	Simplicity Final Filter, 0.05µm	1 each
2512404	Wall Mount Bracket	1 each
2512700	UV Lamp 185nm <sup>1</sup>	1 each
2512800	BioPak Ultra-filtration Cartridge	1 each

<sup>1</sup>Cannot be shipped to CT, IL, IN, LA, MA, ME, NC, NH, VT, WA, RI.  
UV Lamp contains mercury. Dispose according to state, local or federal regulations.

## Water System, Ultrapure, Millipore® Synergy System



The Synergy system delivers ultrapure (type 1) water from pretreated water (distilled, deionized or reverse osmosis) to laboratories requiring < 50 liters of ultrapure water per day. The compact design assures easy installation anywhere in your lab, on the bench or wall-mounted. The Synergy system allows delivery of a fixed volume of Type I water and automatically shuts off once the selected volume has been delivered. Available with or without built-in UV lamp.

Applications include HPLC isocratic and gradient solution preparation, Sample dilution, Preparation of chemical solutions used with titrators, spectrophotometers and general laboratory use. Purification pack required and sold separately. Choose the Purification Pack right for your laboratory. Dimensions: 15 x 11.4 x 21.3 (LxWxH). 100 -230V, 50/60Hz.

### Features:

- Easy installation, intuitive operation
- Maintenance offers simple cartridge change twice a year
- Automatic notification to change your purification cartridge
- Time saving, fixed-volume dispensation

Ultrapure (Type I) Water Quality - Regular Operation Conditions	
Resistivity, MΩ cm at 25°C	18.2
TOC (Synergy System)	<10 ppb
TOC (Synergy System with UV Lamp)	<5 ppb
Flow rate	Up to 1.5 L /min
Volume	Up to 50 L/day

Prod. No.	Description	Unit
2512500	Synergy System (Purification Pack Required)	1 each
2512600	Synergy System with UV Lamp <sup>1</sup> (Purification Pack Required)	1 each

### Consumables and Accessories

Prod. No.	Description	Unit
2512602	Purification Pack	1 each
2512604	Pressure Regulator	1 each
2512202	Millipak-20 Filter Unit	1 each
2512404	Wall Mount Bracket	1 each
2512700	UV Lamp 185nm <sup>1</sup>	1 each
2512800	BioPak Ultra-filtration Cartridge	1 each
2512203	Vent Filter	1 each

<sup>1</sup>Cannot be shipped to CT, IL, IN, LA, MA, ME, NC, NH, VT, WA, RI.  
UV Lamp contains mercury. Dispose according to state, local or federal regulations.



# WEIGHING BOAT – WIPES, DISPOSABLE

## Weighing Boat

Flexible plastic receptacles for handling liquids or solids during weighing. These flexible polystyrene boats bend easily into a pouring spout to ensure non-spill transfer after weighing sample. Stiff lip provides sure-grip surface for handling; won't react to most weighing sample materials.



Prod. No.	Description	Unit
2179000	67/46 mm I.D. Top/Base	500 /pk
2179100	110/85 mm I.D. Top/Base	500 /pk

## Weight Set, Class M-2

Standard weight set. 16-piece, with stainless steel forceps. Eight fractional weights: 10, 20, 50, 100, 200, 200, 200, and 500 mg. (Two fractional weights, 200 mg and 500mg, are stainless steel, the rest are aluminum) Eight brass gram weights: 1, 2, 2, 5, 10, 10, 20, and 50 grams. Polypropylene case.



Prod. No.	Unit
2101100	1 each

See page 273 for ASTM Class 1 Balance Weight Set.

## Weighing Paper

Smooth surface for efficient sample recovery.



Prod. No.	Description	Unit
1473885	102 x 102 mm (4 x 4)	500 pk

## Wipes, Disposable

For wiping critical surfaces. Ideal for use with spectrophotometer cells and other optically sensitive glasses.



Prod. No.	Description	Unit
2096900	38 x 43 cm	70 /pk
2097000	11 x 22 cm	280 /pk
2097060	11 x 22 cm	60 pkgs





**sc200 Universal Controller...**  
**one controller platform for the broadest range of sensors.**

# DIGITAL CONTROLLERS

## Choosing Your Controller



**sc1000**



**sc200**

	Multi-Parameter, Modular, Digital Controller w/ Touch Screen Interface	Multi-Parameter Digital and Analog Controller
<b>Parameters</b>	Multi-parameter: See pages 326-391 for details.	Multi-parameter: See pages 326-391 for details.
<b>Display</b>	Graphic Backlit LCD	Graphic dot matrix LCD with LED backlighting. Transflective.
<b>User Interface</b>	Glass / Glass-Touchscreen / Ethernet / Wireless	Keypad
<b>Number of Plug-and-Play Digital Sensor Inputs</b>	2 to 8 Sensors or up to 2 Analyzers; maximum of 8 digital sensor/analyzer combinations per sc1000 probe Module*	2 digital sensors* or 2 analog GLI sensors, or any combination
<b>Number of 0/4-20 mA Analog Inputs</b>	Expandable to 12	Expandable to 2
<b>0/4-20 mA Isolated Outputs</b>	Expandable to 12	2 standard, expandable to 5
<b>Relays</b>	Expandable to 4	4
<b>PID Outputs</b>	Expandable to 8	2 standard expandable to 5
<b>Available Communication Protocols</b>	MODBUS® RS-485, PROFIBUS DP, MODBUS TCP/IP	MODBUS® RS-232 / RS-485, PROFIBUS DP, HART®, EDD and DTM support
<b>Wireless Telecommunications</b>	GPRS, GSM, Where Available	None
<b>Available Mounting</b>	Wall, Pole, or Panel Mounting	Wall, Pole, or Panel Mounting
<b>External Dimensions (W x H x D)</b>	31.5 x 24.2 x 15.0 cm (12.4 x 10.1 x 4.8 in)	14.4 x 14.4 x 18.1 cm (5.67 x 5.67 x 7.10 in)
<b>Weight</b>	6.5 kg (14.3 lbs)	1.7 kg (3.75 lbs)
<b>Environmental Ratings</b>	IP 65	NEMA 4X / IP66
<b>Ambient Operational Temperature Range</b>	-20 to 55°C (-4 to 131°F)	-20.0 to 60.0°C (-4.0 to 140.0°F)
<b>Power Requirements</b>	100 - 230 Vac, 50/60 Hz or 24 Vdc	100 - 240 Vac ±10%, 50/60 Hz 24 Vdc -15% + 20%
<b>Compliance Ratings</b>	TUV Listed (cTUVus Marked) to UL and CSA General Safety Standards; CE Marked; FCC/IC Approved	ETL Listed (cETLus Marked) to Canadian and US General Safety Standards and Hazardous Locations; CE Marked
<b>Hazardous Ratings</b>	None	Class I, Div. 2
<b>Event Logging Capability</b>	Yes	Yes
<b>Data Logging Capability</b>	Yes	Yes
<b>Diagnostics</b>	Yes	Yes
<b>Network Capability</b>	sc1000 internal network TCP/IP Ethernet with built-in web server	None
<b>Warranty</b>	1 Year	2 Years
<b>To order, see:</b>	pages 318-319	pages 320-321

\*Analyzers: AMTAX sc and PHOSPHAX sc. Sensors: Digital sensors exist for numerous parameters. See pages 326-391 for details. All specifications subject to change without notice.

# ANALOG CONTROLLERS



**si792**

Full-featured, 2-wire  
Analog Transmitter

pH, conductivity

LCD

Keypad

None

None

1

None

None

HART®, PROFIBUS PA,  
FOUNDATION™ FIELDBUS

None

Wall, Pole or Panel Mounting

14.4 x 14.4 x 10.5 cm  
(5.67 x 5.67 x 4.13 in)  
1 kg (2.2 lbs)

IP65

-20.0 to 55.0°C  
(-4.0 to 130.0°F)

24 Vdc (14 to 30 Vdc)

FM, CSA, ATEX, CE marked

FM, CSA: Class I, Div 2 or  
Class I, Div. 1; ATEX: Zone 1

Yes (with HART interface only)

None

Yes

None

2 Years

pages 322-323



**Pro Transmitter**

2, 3, or 4-Wire  
Analog Transmitter

pH, conductivity, DO, Flow

LCD

Keypad

None

None

1

None

None

None

None

Wall, Pole or Panel Mounting,  
or Integral Sensor

9.5 x 9.5 x 6.0 cm  
(3.75 x 3.75 x 2.32 in)  
280 g (10 oz)

NEMA 4X

-20.0 to 60.0°C  
(-4.0 to 140.0° F)

16-30 Vdc  
(2-, 3-, or 4-Wire)

ETL Listed (cETLus Marked) to  
Canadian and US General Safety  
Standards and Hazardous  
Locations; CE Marked

Class I, Div. 2

None

None

Status check only

None

2 Years

page 324



CONTROLLERS

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# sc1000 DIGITAL CONTROLLER



## Modular System

### Display Module

The sc1000 Display Module is a full-featured controller with a large color touch-screen display. The intuitive, easy to use interface can be used for any number of parameters. One Display Module controls either a single Probe Module or a number of Probe Modules connected by a digital network. The Display Module is fully portable and can be disconnected and moved anywhere within the network.

### Probe Module

Each sc1000 Probe Module provides power to the system and can accept up to 8 digital sensors. Probe Modules can be networked together to accommodate many more sensors attached to the same network.

### Plug-and-Play Operation

There's no complicated wiring or set up procedures with the sc1000 controller. Just plug the sensor into a Probe Module and it's ready for use without special ordering or software configuration.

### Mix and Match Digital Sensors/Analyzers

The sensors and analyzers that can be plugged into the Probe Module can be any from Hach's line of digital sensors: dissolved oxygen, pH, ORP, conductivity, turbidity, suspended solids, nitrate, etc.—and analyzers: ammonium, phosphate, etc. Use them in any combination.\*

### Flexible Communication Options

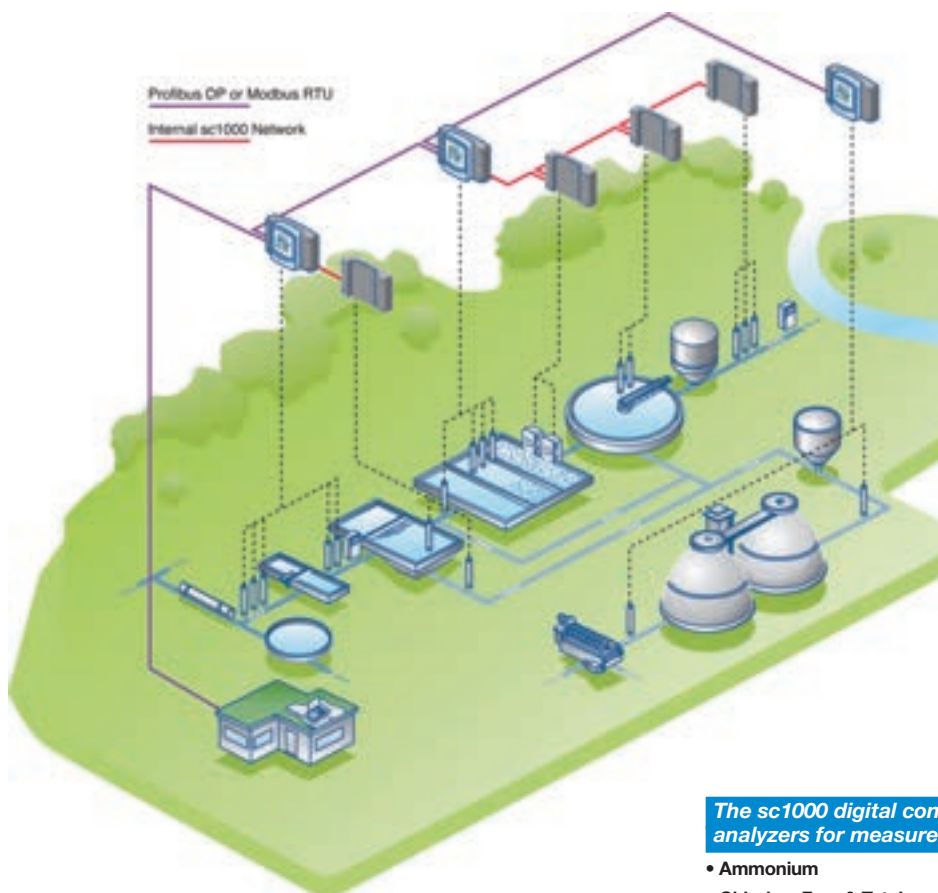
Communication and relay options for the sc1000 controller can be configured to suit any situation. Standard configurations for a single Probe Module include:

- Up to 4 potential free relay contacts for alarm and control functions
- Up to 12 analog outputs for measured values
- Up to 12 digital or analog inputs from instruments (e.g., flow or pressure measurements)
- Digital communication card to integrate with an external network (MODBUS® and PROFIBUS DP are currently available)

Modbus TCP/IP, Built-in webserver and VPN capabilities are available on the Display Module. Either wired via Ethernet LAN port or wireless via GPRS cellular.

Additional relays and analog inputs and outputs can be added by networking a second Probe Module or optional DIN-rail communication modules.

\*Per sc1000 probe Module: 2 to 8 Sensors or up to 2 Analyzers—maximum of 8 digital sensor/analyzer combinations.



**The sc1000 digital controller is compatible with digital sensors/analyzers for measurement of the following parameters:**

- |                          |                                |                    |
|--------------------------|--------------------------------|--------------------|
| • Ammonium               | • Luminescent Dissolved Oxygen | • Phosphate        |
| • Chlorine, Free & Total | • Nitrate                      | • Sludge Level     |
| • Chlorine Dioxide       | • Ozone                        | • Suspended Solids |
| • Conductivity           | • pH/ORP                       | • Turbidity        |
| • Dissolved Oxygen       |                                | • UV Absorbance    |



## Trending

The sc1000 Display Module allows the user not only to list a measurement value but also to show a trendline of the measurement by day or week. Additionally, the Display Module has an interactive chart page for analyzing any number of trendlines.

## Mathematics

The sc1000 is capable of advanced mathematical calculations. The result of these calculations can be used as a virtual sensor on the mA output board and carries the full set of capabilities that any other sensor can have, including being used as an input in another equation.

## Process Control

The sc1000 provides a high level of control via programmable relays and outputs. Specific features include PID, PWM, and others. Combining the mathematical capabilities with the network and control features, the sc1000 becomes an extremely powerful tool to run portions or even entire processes of a plant.

## Expandable and Upgradeable

The sc1000 controller can adapt to your needs. Change probes without changing the controller. Probe Modules can be added or removed depending on operational needs. Fully upgradeable software ensures that this system will not be obsolete.

Prod. No.	Description
-----------	-------------

### Probe Modules\*

<b>LXV400.99.10082</b>	sc1000 Probe Module, 6 Sensors, 100-240 Vac
<b>LXV400.99.1B572</b>	sc1000 Probe Module, 4 Sensors, 4 mA IN, 4 mA Out, 4 Relays, RS-485 MODBUS, 100-240 Vac
<b>LXV400.99.1F572</b>	sc1000 Probe Module, 4 Sensors, 4 mA IN, 4 mA Out, 4 Relays, PROFIBUS DP, 100-240 Vac
<b>LXV400.99.Z0042</b>	sc1000 Probe Module, 8 Sensors, 24 Vdc
<b>LXV400.99.ZB532</b>	sc1000 Probe Module, 6 Sensors, 4 mA IN, 4 mA Out, 4 Relays, RS-485 MODBUS, 24 Vdc

### Display Modules

<b>LXV402.99.00002</b>	sc1000 Display Module
<b>LXV402.99.02002</b>	sc1000 Display Module w/ GSM GPRS, US
<b>LXV402.99.01002</b>	sc1000 Display Module w/ GSM GPRS, outside US
<b>LXV402.99.10002</b>	sc1000 Display Module w/ MODBUS TCP/IP

### Accessories

<b>LZX958</b>	sc1000 Sun Shield, Includes Hardware
<b>6169900</b>	sc1000 Panel Mount Kit
<b>LZY598</b>	MODBUS TCP/IP License Kit for field upgrade
<b>LZY553</b>	Outdoor Ethernet Kit

### Hach WarrantyPlus

**WRTUPGSC1000**

\*Many more combinations and components are available, please contact Technical Support at 800-227-4224.

For more information, request LIT2403.

**The sc1000 digital controller is compatible with digital sensors for measurement of a wide variety of parameters. See pages 326-391 for Hach sc digital sensors.**

## BUS/Ethernet/Remote Connection

There are a number of ways to access the information from an sc1000 Network. The standard 0/4-20 mA and BUS networks are available through the sc1000 Probe Module. The sc1000 Display Module has a dedicated Ethernet LAN port for remote access or access via PC, laptop or smart phone, using any kind of internet browser. Wireless GSM GPRS communication capability is optional.

## Wireless GSM GPRS Telecommunications

Remote GSM GPRS Telecommunications are available where GSM is available. Both the Ethernet and GSM GPRS connections allow access to the readings, most of the menus, data logs, and event logs. Additionally, the Display Module with GSM can send out an e-mail or SMS text message for any Errors, Warning, or Events. Call 866-450-4248 and speak with Technical Support to determine if GSM is available at your location.

## Remote Access Partnership

By adding a Remote Access Partnership to your order, Hach can provide continuous Remote Monitoring of your sc1000 network and can provide technical support by communicating directly with your instrumentation.



## Specifications\*

### Operating Conditions

-20 to 55°C (-4 to 131°F); 0 to 95% relative humidity, non-condensing

### Storage Temperature

-20 to 70°C (-4 to 158°F); 0 to 95% relative humidity, non-condensing

### Power Requirements

100 to 240 Vac, 50/60 Hz; Power: 75W Optional 24 Vdc

### Display

1/4 VGA Graphical Backlit TFT Color touch screen, Resolution 320x240 pixels

### Relays

Four SPDT, user-configurable contacts rated 100 to 250 Vac, 5 Amp resistive maximum. Additional relays available via digital network connection

### Outputs

Up to twelve analog 0/4-20 mA, maximum impedance 500 Ohms. Additional analog outputs available via digital network connection.

### Inputs

Up to twelve analog 0/4-20 mA, maximum impedance 500 Ohms, Additional inputs available via digital network connection

### Control

PID, PWM, High/low phasing, setpoint, deadband, overfeed timer, off delay, and on delay

### Alarm

Low alarm point, low alarm point deadband, high alarm point, high alarm point deadband, off delay, and on delay

### Communication

RS-485 (MODBUS/PROFIBUS DPV1), LAN and GPRS (Modbus TCP/IP, webserver): Advanced communications/ networking with PLC or SCADA system directly from analyzer. GSM GPRS cellular module

### Memory Backup

All user settings are retained indefinitely in memory (non-volatile) (EEPROM) SD memory card slot (1 GB)

### Mounting Configurations

Surface, and pipe (horizontal and vertical)

### Enclosure

IP65; ABS (Display Module) and metal (Probe Module) enclosure with corrosion-resistant finish

### Dimensions (H x W x D)

315(w) x 250(h) x 142(d) mm (12.4 x 9.8 x 5.6 in.)

### Weight

Approx. 6.5 kg (14.3 lbs.) (varies with options)

### Certifications

ETL to UL 61010A-1 and CSA C22.2 No. 1010.1 FCC/IC Approved

\*Subject to change without notice.

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# sc200 UNIVERSAL CONTROLLER

## One controller platform for the broadest range of sensors!



- Replaces sc100 and GLI53
- Now combine Hach Digital Sensors with GLI Analog Sensors
- Improved user interface
- Easy data download

Hach offers the broadest range of sensors to meet your measurement needs. Choose from up to 29 digital or analog sensors for up to 15 different parameters.

### Maximum Versatility

- Standardized controller eliminates the need for a variety of dedicated controllers
- Multi-channel controller operates either 1 or 2 sensors reducing inventory holding costs and providing an inexpensive option to add a second sensor at a later time
- “Plug and Play” operation with all Hach digital sensors
- True dual sensor controller provides 4-20 mA outputs to transmit primary and secondary measurement values

### Ease of Use and Confidence in Results

- New display and guided calibration procedures reduce operator error
- Password protected SD card reader offers a simple solution for data download and transfer
- Visual warning system provides critical alerts

### One Controller, Numerous Communication Options

- MODBUS RS232
- MODBUS RS485
- Profibus® DP
- HART®

The sc200 digital controller is compatible with digital sensors/analyzers for measurement of the following parameters:

- |                          |                                |                |                    |
|--------------------------|--------------------------------|----------------|--------------------|
| • Ammonium               | • Dissolved Oxygen             | • Ozone        | • Sludge Level     |
| • Chlorine, Free & Total | • Luminescent Dissolved Oxygen | • Oil in Water | • Suspended Solids |
| • Chlorine Dioxide       | • Nitrate                      | • pH/ORP       | • Turbidity        |
| • Conductivity           |                                | • Phosphate    | • UV Absorbance    |

CONTROLLERS



Password protected SD card reader offers a simple solution for data download and transfer.



The Hach sc200 digital controller and the Hach family of digital and analog sensors/analyzers combine to give you reliable and accurate measurements for the widest variety of parameters.



**Prod. No. Description**

**sc200 for Hach Digital Sensors**

- LXV404.99.00552** sc200 controller, 2 channel, digital
- LXV404.99.00502** sc200 controller, 1 channel, digital
- LXV404.99.00512** sc200 controller, 2 channel, digital & pH/DO
- LXV404.99.00522** sc200 controller, 2 channel, digital & Conductivity

**sc200 for Hach Analog Sensors**

- LXV404.99.00102** sc200 controller, 1 channel, pH/DO
- LXV404.99.00202** sc200 controller, 1 channel, Conductivity
- LXV404.99.00112** sc200 controller, 2 channel, pH/DO
- LXV404.99.00222** sc200 controller, 2 channel, Conductivity
- LXV404.99.00212** sc200 controller, 2 channel, pH/DO & Conductivity

**Note: Other Sensor combinations are available. Please contact Hach Technical Support or your Hach representative**  
**Note: Communication options (MODBUS and Profibus DPV1) are available. Please contact Hach Technical Support or your Hach Representative**  
**Note: Pre-installed power cords are available. Please contact Hach Technical Support or your Hach Representative**

**Accessories**

- 9220600** sc200 Weather and Sun Shield with UV Protection Screen
- 9218200** SD card reader (USB) for connection to PC
- 8809200** sc200 UV Protection Screen
- 9218100** 4 GB SD card

**Hach WarrantyPlus**

- WRTUPGSC200** sc200 Controller WarrantyPlus™ Instrument Protection and Service

**Sensor and Communication Modules**

- 9012900** pH and DO module
- 9013000** Conductivity module
- 9012700** Flow module
- 9012800** 4-20 mA input module
- 9013100** 4-20mA output module
- 9013200** MODBUS network module
- YAB104** Profibus network module

**Power Cords**

- 9202900** sc200 power cord strain relief, 125 Vac
- 9203000** sc200 power cord with strain relief, 230 Vac, European-style plug

For more information, request LIT2665.

**The sc200 digital controller is compatible with digital sensors for measurement of a wide variety of parameters. See pages 326-391 for Hach sc digital sensors.**

**Specifications\***

**Relays**

Four electromechanical SPDT (Form C) contacts, 1200W, 5 A, 250 Vac  
 Operational Mode  
 Primary or secondary measurement, calculated value (dual channel only)  
 Functional Mode  
 Alarm, Timer, Feeder Control, PWM or FM Control, System Alarm

**Digital Communication**

MODBUS RS232/RS485, Profibus DPV1 HART optional

**Analog Output Signal**

Two 0/4 to 20 mA isolated current outputs, max 500  
 Operational Mode  
 Primary or secondary measurement or calculated value (dual channel only)  
 Functional Mode  
 Linear, Logarithmic, Bi-linear, PID  
 Optional 3 additional 4/20 mA isolated current outputs

**Operating Conditions**

-20 to 60°C (-4 to 140°F), 0 to 95% RH non-condensing

**Storage Temperature**

-20 to 70°C (-4 to 158°F), 0 to 95% RH non-condensing

**Enclosure Materials**

Polycarbonate, Aluminum (powder coated), Stainless Steel

**Mounting Configurations**

Wall, pole and panel mounting

**Meter Enclosure Rating**

NEMA4X / IP66

**Conduit openings**

1/2" NPT Conduit

**Power Requirements**

100 - 240 Vac ±10%, 50/60 Hz  
 24 Vdc - 15% + 20%

**Safety**

cETLus safety mark for:  
 - General Locations per ANSI/UL 61010-1 & CAN/CSA C22.2 No. 61010-1  
 - Hazardous Location Class I, Division 2, Groups A,B,C & D (Zone 2, Group LLC) per FM 3600 / FM 3611 & CSA C22.2 No. 213 M1987 with approved options and appropriately rated Class I, Division 2 or Zone sensors

**Electrical Certifications**

EMC  
 CE compliant for conducted and radiated emissions:  
 - CISPR 11 (Class A limits)  
 - EMC Immunity EN 61326-1 (Industrial limits)

**Display**

Graphic dot matrix LCD with LED backlighting  
 Transflective

**Display size**

48 x 68 mm (1.89 x 2.67 in.)

**Display Resolution**

240 x 160 pixels

**Dimensions (H x W x D)**

144 x 144 x 181 mm (5.7 x 5.7 x 7.1 in.)

**Weight**

1.70 kg (3.75 lb)

**Warranty**

2 Years

\*Subject to change without notice.

CONTROLLERS

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# si792 2-WIRE TRANSMITTER



## pH/ORP, Contacting Conductivity, and Inductive Conductivity—available for hazardous (EX) applications.

The Hach si792 2-wire electrochemistry transmitters are full-featured, intuitive to operate, and work with Hach's world-class pH and Conductivity sensors.\* Rugged construction is designed for Class I, Division 2 (CI, D2) and Class I, Division 1 (CI, D1) hazardous locations. Digital communication capabilities are available.

### The Right Sensors

The Hach si792 2-wire Transmitters are designed to operate with Hach's world-class electrochemistry sensors.\*

- Differential pH and ORP (pHD and LCP sensors)
- Contacting conductivity (3400 series)
- Inductive (Electrodeless) conductivity (3700 series)

Beyond the Hach sensors other sensors can be connected to the si792 as well. For a complete list of approved sensor/transmitter combinations, please contact Hach.

### Multiple Communications Protocols

The si792 transmitter is available with digital communication functionality to easily connect to a communication network of choice including HART®, PROFIBUS PA, or Foundation® Fieldbus.

### Area Rated to Suit Your Needs

The si792 transmitters are available as Class I, Division 2 (CI, D2) with HART communications only or Class I, Division 1 (CI, D1) with HART, PROFIBUS PA, or Foundation Fieldbus. FM, CSA, and ATEX certified.

### Easy-to-use Intuitive Interface

A logical menu structure, combined with icon based messages allows for intuitive operation. The large, clear liquid crystal display shows the measurement value, process temperature, and sensor and transmitter status. A transmitter or sensor error is indicated by a bright red LED and a message is displayed.

### Sensor Diagnostics

The Hach si792 2-wire Transmitter performs self-diagnostics and sensor monitoring. Predictive diagnostics indicate end of sensor life. Reactive diagnostics alert operators to sensor failure such as glass breakage or coating, clogged junction, polarization of contacting conductivity electrodes, or integrity of inductive conductivity coils.

*\*Hach Digital Sensors are not compatible with the si792 transmitter series.*

CONTROLLERS



### Sensor Diagnostics Icons as Shown on Display Screen





# si792 2-WIRE TRANSMITTER

## Password-Protected Access

Separate passwords can be set for:

- Sensor calibration
- Transmitter configuration
- Administrator functions

## Simple Installation

The transmitter's electronics are attached to a hinged door and are protected against aggressive environments. All terminals are easy to access and clearly described to ensure comfortable and error-free wiring.

The empty rear enclosure can be pre-mounted, and the hinged front door with the electronics can be easily attached afterwards. Plug-in terminals make wiring easy. Versatile mounting options include panel-pipe- or wallmount.



Easy-access, clearly-described terminals ensure comfortable and error-free wiring



## Specifications\*

### Measurements

#### pH/(ORP)

-2.00 to +16.00 pH/ (-1500 to +1500 mV)

#### Contacting Conductivity

µS/cm: 0.000 to 9.999 or 00.00 to 99.99 or 000.0 to 999.9 mS/cm: 0.000 to 9.999 or 00.00 to 99.99 or 000.0 to 999.9 Resistivity: 00.00 to 99.99 Mohms \* cm Salinity: 0.0 to 45.0‰ (0 to 35°C)

#### Inductive Conductivity

mS/cm: 00.00 to 99.99 or 000.0 to 999.9 or 0000 to 1999 Concentration: 0.00 to 9.99% 10.0 to 100.0% Salinity: 0.0 to 45.0‰ (0 to 35°C)

### Accuracy

#### pH/(ORP)

<0.02 TC: 0.002 pH/K) (<1 mV TC: 0.1 mV/K)

#### Contacting Conductivity

< 1% measured value + 0.4 µS \* c

#### Inductive Conductivity

<1 % measured value ±0.02 mS/cm

### Ambient Temperature

-20 to 55°C (-4.0 to 131.0°F)

### Storage Temperature

ETL to UL 61010A-1 and CSA C22.2 No. 1010.1 FCC/IC Approved

### Power Requirements

PID, PWM, High/low phasing, setpoint, deadband, overfeed timer, off delay, and on delay

### Display

LC display, 7-segment Measured value display: pH or Conductivity measurement value, temperature. Main display: Character height 17 mm, unit symbols 10 mm

### Outputs

4-20 mA output / bus connection galvanically separated

### Alarm

Red LED with alarm or HOLD

### Communication

Loop HART (standard) Foundation Fieldbus H1 (option) PROFIBUS PA (option)

### Memory Backup

Parameters and calibration data >10 years (EEPROM)

### Mounting Configurations

Wall, Panel or Pipe (horizontal and vertical)

### Enclosure

IP 65, PBT (polybutylene terephthalate)

### Dimensions (H x W X D)

1/2 DIN 144 x 144 x 105 mm (5.7 x 5.7 x 4.1 in.)

### Weight

Approx. 1 kg (2.2 lbs.)

### Certifications

FM, CSA, ATEX

\*Subject to change without notice.

## Prod. No. Description

### pH/ORP Transmitters

- LXV500.99.70012** si792 P; Class I, Division 2; HART  
**LXV500.99.70112** si792x P; Class I, Division 1; HART  
**LXV500.99.76112** si792x P-PA; Class I, Division 1; PROFIBUS PA  
**LXV500.99.77112** si792x P-FF; Class I, Division 1; Foundation Fieldbus

### Inductive Conductivity Transmitters

- LXV503.99.70002** si792 E; Class I, Division 2; HART  
**LXV503.99.70102** si792x E; Class I, Division 1; HART  
**LXV503.99.76102** si792x E-PA; Class I, Division 1; PROFIBUS PA  
**LXV503.99.77102** si792x E-FF; Class I, Division 1; Foundation Fieldbus

### Contacting Conductivity Transmitters

- LXV501.99.70012** si792 C; Class I, Division 2; HART  
**LXV501.99.70112** si792x C; Class I, Division 1; HART  
**LXV501.99.76112** si792x C-PA; Class I, Division 1; PROFIBUS PA  
**LXV501.99.77112** si792x C-FF; Class I, Division 1; Foundation Fieldbus

### Accessories

- LZY483** Pipe-Mount Installation Kit  
**LZY484** Panel-Mount Installation Kit  
**LZY485** Protective Hood/Sunshield

For more information, request LIT2480, LIT2605, or LIT2606.

**The si792 transmitter is compatible with Hach analog pH, ORP, and conductivity sensors. See pages 334-337 and pages 362-367 for details.**

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U.S. customers only.

# PRO-SERIES 2-WIRE TRANSMITTER

## pH/ORP, Conductivity, Dissolved Oxygen, Flow



- LCD with multiple language capabilities
- Menu-guided operation
- Sensor and transmitter status check
- Password-protected access
- Universal mounted, 1/4 DIN, NEMA 4X enclosure
- Versatile 2-, 3-, or 4-wire hookup
- (1) 0/4-20 mA output

The Pro-Series Transmitters are best suited in applications where a minimal interface, only one 0/4-20 mA output, and no control functions are desired. The Pro-Series Transmitters are Class I Division 2 certified dependent on the selected probes. The Pro-Series Transmitter is a 1/4 DIN design allowing for numerous mounting options.

Prod. No.	Description
PRO-P3A1N	pH/ORP analyzer
PRO-C3A1N	Contacting conductivity/resistivity analyzer
PRO-E3A1N	Electrodeless conductivity analyzer (also measures % concentration or TDS)
PRO-D3A1N	Dissolved Oxygen analyzer for use with Hach/GLI membrane D.O. sensors
PRO-F3A1N	Flow monitor/ totalizer

Popular models shown. For other model configurations, call 800-227-4224 or visit: [hach.com](http://hach.com).

### Specifications\*

#### Ambient Conditions

Operational: -4 to 140°F (-20 to 60°C);  
0 to 95% relative humidity, non-condensing  
Storage: -22 to 158°F (-30 to 70°C);  
0 to 95% relative humidity, non-condensing

#### Power Requirements

Two-wire hook-up: 16-30 Vdc  
Three-wire hook-up: 14-30 Vdc  
(16 Vdc minimum with RS-485 serial communication)  
Four-wire hook-up: 12-30 Vdc  
(16 Vdc minimum with RS-485 serial communication)

#### Display

Two-line by 16 character backlit LCD

#### Outputs

Isolated 4 – 20 mA output with 0.004 mA  
(12 bit) resolution

#### Memory Backup (non-volatile)

All user settings are retained indefinitely in memory without battery backup

#### Mounting Configurations

Wall, pipe, panel, or integral mounted sensor

#### Enclosure

Polycarbonate, NEMA 4X general purpose

#### Dimensions

With Back Cover:  
3.75 in. W x 3.75 in. H x 2.32 in. D  
(95 mm W x 95 mm H x 60 mm D)  
Without Back Cover for Panel Mount:  
3.75 in. W x 3.75 in. H x 0.75 in. D  
(95 mm W x 95 mm H x 19 mm D)

#### Weight

10 oz. (280 g) approximately

#### Certifications

CE, Class I Div II Class A, B, C, D  
Hazardous locations

#### Measurement

pH (ORP), PRO-P3  
-2.0 to 14.0 pH/(-2100 to +2100 mV)  
Contacting Conductivity, PRO-C3  
µS/cm: 0-2.000 or 0-20.0, 0-200.0 or 0-2000;  
mS/cm: 0-2.000, 0-20.00, 0-200.0  
Resistivity: 0-19.99 MΩ-cm or 0-999.9 K Ω-cm  
TDS: 0-9999 ppm or 0-9999 ppb  
Inductive Conductivity, PRO-E3  
µS/cm: 0-200.0 or 0-2000; mS/cm: 0-2.000,  
0-20.00, or 0-2000; S/cm: 0-2.000  
% Concentration: 0-99.99% or 0-200.0%  
TDS: 0-9999 ppm

#### Dissolved Oxygen, PRO-D3

0-99.99 ppm, 0-99.99 mg/L  
or 0-999.9% saturation

#### Paddle Wheel Flow, PRO-F3

Flow rate: 0-9999, 0-999.9 or 0-99.99 with  
selectable flow rate units and multiplier  
Volume: 0-999,999,999 with selectable volume units

#### Accuracy (Transmitter)

PRO-P3, PRO-C3, PRO-F3: 0.1% of span  
PRO-D3: ±0.1% of span  
PRO-E3: 0.5% of span

#### Stability

PRO-P3, PRO-C3:  
0.05% of span per 24 hours., non-cumulative  
PRO-E3:  
0.2% of span per 24 hours., non-cumulative

#### Repeatability

PRO-P3, PRO-C3, PRO-E3:  
0.1% of span or better  
PRO-D3, PRO-F3:  
±0.05% of span

#### Temperature Drift

PRO-P3, PRO-C3:  
Zero & Span: < 0.03% of span per ° C  
PRO-E3:  
Zero & Span: 0.02% of span per ° C  
PRO-F3:  
Zero & Span: ±0.02% of span per ° C

*Subject to change without notice.*



# DISSOLVED OXYGEN: 5740 sc SENSOR

## Replaceable membrane cartridge simplifies the task of installing new membranes.

- Pre-installed, easy-to-replace membrane cartridge
- Rugged, foul-resistant, hydrophobic membrane withstands harsh environments
- Unique galvanic measurement technique
- Full-featured plug-and-play with sc200 or sc1000 Digital Controllers
- Self-cleaning air blast accessories available with or without an air compressor
- Versatile mounting hardware



For more information, call to request LIT2469.

Prod. No.	Description
5740D0B	5740 sc Galvanic DO Sensor with 10 m (32.8 ft.) integral cable

### Specifications\*

<b>Measuring Range</b> 0.0 to 40.00 ppm (0 to 40 mg/L) or 200% saturation	<b>Resolution</b> Below 10 ppm: ±0.01 ppm or mg/L, ±0.1% saturation Above 10 ppm: ±0.1 ppm or mg/L, ±0.1% saturation	<b>Transmission Distance</b> 100 m (328 ft.) maximum 1000 m (3280 ft.) maximum when used with a termination box
<b>Sensitivity</b> ±0.5% of span	<b>Operating Temperature</b> -5 to 50°C (23 to 122°F)	<b>Sensor Cable (integral)</b> 10 m (33 ft.) terminated with quick-disconnect plug
<b>Accuracy</b> Measurement: ±2% of span Temperature: ±0.2°C	<b>Flow Rate</b> 0.5 cm/s (0.016 ft./s), minimum	<b>Dimensions</b> 43.7 x 203.2 mm (1.72 x 8.00 in.)
<b>Repeatability</b> ± 0.5% of span	<b>Probe Immersion Depth and Pressure Limits</b> 107 m (350 ft.), 1000 kPa (145 psi), maximum	<b>Weight</b> 0.26 kg (0.6 lbs.)
<b>Response Time at 20°C</b> To 90% in 120 seconds		<i>*Subject to change without notice.</i>

# DISSOLVED OZONE: C1100 SENSOR

## The C1100 Ozone Sensor for bottled water, UPW pharmaceutical, and drinking water applications.

- Installs in-line to eliminate continual product loss
- Sensor refurbishment in under 5 minutes with pre-filled recharge cartridge
- Quick and easy air calibration
- Stainless steel body extends sensor life



Controller sold separately.

Prod. No.	Description
C1100-T00	Electrochemical ozone sensor, Titanium version, Maximum pressure 100 bar, with Smart capability
C1100-S00	Electrochemical ozone sensor Stainless Steel version, Maximum pressure 40 bar, with Smart capability
2956A-C	Recharge kit of 4 pre-filled cartridges with premounted 2956A membranes for C1100 ozone sensors. Includes o-rings, cotton filters, cleaning tools and dacrons
WRTUPGC1100	C1100 Sensor WarrantyPlus™ Instrument Protection and Service

Contact your RSM.

For more information, call to request LIT2680.

### Primary Applications

- Bottled Water
- Ultrapure Water Pharmaceutical
- Drinking Water

### Specifications\*

<b>Measuring Range</b> 0 ppb-50 ppm O <sub>3</sub>	<b>Response Time</b> 30 s
<b>Accuracy</b> ±0.4 ppb or ±5% whichever is the greater	<b>Working Operating Range</b> -5 to 45°C
<b>Repeatability</b> ±0.4 ppb or ±5% whichever is the greater	<b>Maximum Operating Range</b> -5 to 100°C
<b>Pressure Rating</b> (Stainless Steel/Titanium) 40 bars / 100 bars 580 psi / 1450 psi	<b>Membrane</b> 2956A-C
<b>Limit of Detection</b> 0.6 ppb	<b>Typical Flow Rate</b> 350 mL/min
	<i>*Subject to change without notice.</i>

See page 196 for reagents, test kits, and accessories for measuring ozone in the lab or field.

Find it here... Buy it today on [hach.com](http://hach.com)

U.S. customers only.



# DISSOLVED OZONE: 9185sc ANALYZER



## Repeatable dissolved ozone measurements

- Great for readings in low conductivity water with no interferences from oxidants or pH
- Reagentless analysis of ozone—ion-selective membrane separates electrolyte from sample water
- Plug-and-play with digital controllers simplifies setup
- Integral temperature sensor provides more accurate readings
- Includes 2 years of typical maintenance parts



Optional acidification (for cleaning) and intermittent flow accessories link in series so they only take up one sensor port in the controller.

sc200 or sc1000 digital controller required and sold separately. sc200 controller shown above.

PROCESS INSTRUMENTS

### Primary Applications

- Drinking Water
- Wastewater
- Pure Water/Power
- Industrial Water

### Specifications\*

**Range**  
0.005 ppm to 2 ppm (0.005 mg/L to 2 mg/L)

**Accuracy**  
±3% or ±10 ppb O<sub>3</sub> whichever is greater

**Cycle Time**  
90% in T<90sec

\*Subject to change without notice.

### Prod. No. Description

#### Sensor Only

**LXV433.99.00001** 9185 sc Ozone Sensor

#### Controllers Only

**LXV404.99.00552** sc200 Dual Channel Controller  
**LXV404.99.01552** sc200 Dual Channel Controller with Modbus RS232/RS485

#### Accessories

**LZY051** 9180 sc Acidification Unit (Also used for cleaning)

This sensor requires a Hach sc200 or sc1000 Digital Controller.

For more information, call to request LIT2407.



## Real-time analysis of water quality data.

- Alarms when water quality deviates from baseline
- Trigger signal shows current deviation from water quality baseline
- View trigger signal and all parameter measurements from the main screen
- Touch screen interface
- Patented technology
- Real-time, on-line analysis of sensor data
- Designed to be hooked up to the CityGuard system for centralized surveillance
- Easily communicates with your SCADA system for data recording



The Event Monitor contains Hach's patented water security algorithms and plays a central role in the GuardianBlue Event Detection System. It integrates multiple sensor outputs from GuardianBlue's Water Panel and TOC Analyzer. Every 60 seconds, the system's patented algorithm analyzes deviations in five water quality parameters and uses the measurements to calculate a site's water quality baseline. The system alarms when the trigger signal exceeds a user-set threshold, indicating a water quality deviation from the system's normal operating baseline parameters.

Prod. No.	Description
6840200	Event Monitor Trigger System Includes industrial computer with touchscreen interface mounted in a stainless steel enclosure, 115 Vac power, RS-485 terminals for TOC analyzer and either WDMP sc or SWMP sc, and manual

Accessories	
120161	Free-Standing Rack, wheeled

Service Warranties	
WRTUPGGUARDIANB12	GuardianBlue WarrantyPlus Monthly Instrument Protection and Service

For Water Distribution Monitoring Instrumentation, see *Water Distribution Monitoring Panel* pages 348-349, *Automatic Samplers* page 123, and *astroTOC UV On-line TOC Analyzer* page 385.

The Event Monitor Trigger System can be easily upgraded to the GuardianBlue Early Warning System, visit [hach.com](http://hach.com) for details.

For more information, call to request LIT2477.

### Specifications\*

<b>Alarms</b> Trigger Signal Alarm High/Low Parameter Alarm Frozen Parameter Alarm Sensor Off-line Alarm Agent Alarm Plant Alarm Missing Sensor; Invalid Data	<b>Weight</b> 50 lbs (23 kg)
<b>Power Requirements</b> 100 - 230 Vac	<b>Enclosure Material</b> 316 stainless steel
<b>Operating Temperature</b> 5 to 40°C	<b>Mounting</b> Wall mount or rack mount
<b>Storage Temperature</b> -20 to 65°C	<b>Display</b> 15" touch screen
<b>Humidity</b> 90% at 40°C max	<b>Certification</b> Listed to UL 1010 by ETS, CSA, CE
<b>Environmental</b> Industrial grade, meets NEMA 4 and IP65 for indoor use	<b>Instrumentation</b> Interfaces with: Hach Water Distribution Monitoring Panel; Hach Source Water Monitoring Panel; astroTOC UV On-line TOC Analyzer; Hach 900MAX Sigma Portable, Refrigerated, or All-Weather Autosamplers
<b>Communications</b> RS-485 MODBUS®	*Subject to change without notice.
<b>Dimensions</b> 21" (w) x 19.5" (h) x 7" (d) (53 cm x 50 cm x 18 cm)	

# DISTRIBUTION MONITORING: WDMP <sup>sc</sup> WATER PANEL

## The right tool to establish your distribution system's water quality baseline.

- Field-proven instruments you can count on
- Multi-parameter on-line panel includes pH, conductivity, chlorine (free or total), turbidity, temperature, and sample pressure
- Single sample inlet, outlet, and power hook-ups for ready-to-install convenience
- Available as standard (with the CL17 chlorine analyzer) or reagentless (using the CL10 chlorine analyzer)
- Reagentless water panel is available with or without the UVAS sensor for measuring organics

### The Right Tool to Establish Your Distribution System's Baseline

The initial step in knowing the health of your water distribution system is taking system vitals to establish a normal baseline at critical nodes, storage reservoirs, booster stations, pump stations, and other key monitoring points. The Water Distribution Monitoring Panel monitors the right combination of "indicator" parameters chosen by industry experts and recommended by the USEPA. In combination with the Hach Event Monitor™ Trigger System, you can now detect deviations from the baseline.

### Instruments You Can Count On, Each Ranked Top in Category

Reliability is critical for continuous, uninterrupted surveillance of your distribution system. Each instrument in the Water Distribution Monitoring Panel utilizes proven technology and provides readings with little or no time lag. All data is logged to the network controller and sent to the Event Monitor and SCADA or other remote locations.

## What's on each WDMP <sup>sc</sup>?

Hach HST scientists chose commonly tested parameters and robust instrumentation.

### CHLORINE – Your Choice of Chlorine Analyzers

#### Chlorine- CL17 Chlorine Analyzer

Every 2.5 minutes, the instrument obtains and analyzes a sample using a DPD colorimetric, USEPA-approved method and provides either a free or total chlorine reading, depending on the instrument's configuration. Adequate chlorine residuals are essential to provide a first defense against microorganism contamination, yet excess chlorine can form DBPs in the network.

#### CLF10 or CLT10 Reagentless Chlorine Analyzer (Free Chlorine or Total Chlorine)

Chlorine measurement with this amperometric analyzer does not require reagents, eliminating the need for routine reagent replacement and waste stream management. The method used in the CLF10/CLT10 analyzer is USEPA compliant according to Method 334.0 and can be used for reporting chlorine residual measurements.

#### Turbidity - 1720E Turbidimeter

The 1720E Turbidimeter uses the sc200 Controller to receive data from up to two sensors. A built-in data logger collects turbidity



Standard Water Panel



Reagentless Water Panel

measurement at user selectable intervals (1-15 minutes), along with calibration and verification points, alarm history, and instrument setup changes. Communication is achieved through MODBUS®/RS485 or MODBUS®/RS232..

### pH and Conductivity Probes from Hach/GLI

A patented differential pH sensor provides information on the acid/base nature of the water. A two-electrode conductivity sensor measures the total ionic concentration in the water.

### Temperature

Temperature is measured to ensure the probes are operating properly as well as other generic water quality information.

### Sample Pressure

The sample pressure is measured to ensure it is being introduced to the panel within the specified range.



# DISTRIBUTION MONITORING: WDMP sc WATER PANEL

## Specifications\*

<p><b>Hach Distribution Monitoring Panel</b>  <b>sc1000 CONTROLLER</b>  <b>Dimensions</b>                  22 x 51.5"</p> <p><b>SAMPLE REQUIREMENTS</b>  <b>Sample Inlet</b>                  1/2" OD Tube Connection  <b>Sample Flow</b>                  400 - 600 mL/min  <b>Sample Pressure</b>                  20 - 100 psig  <b>Sample Operating Temperature</b>                  5 to 40°C  <b>Waste/Drain</b>                  3/4" NPT Hose Barb Connection  <b>Waste/Drain Pressure</b>                  ambient, free flowing  <b>Sampler Connection</b>                  1/4" NPT on inlet manifold</p> <p><b>ELECTRICAL REQUIREMENTS</b>  <b>Line Voltage</b>                  115 Vac / 60 Hz  <b>Power Consumption</b>                  90 VA maximum for CL17; 30 VA for others  <b>Digital Output</b>                  RS-485 MODBUS®</p> <p><b>Hach CL17 Chlorine Analyzer</b>  <b>Range</b>                  0 to 5 mg/L free or total residual chlorine  <b>Accuracy</b>                  ±5% or 0.035 mg/L as Cl<sub>2</sub>, whichever is greater</p>	<p><b>Precision</b>                  ±5% or 0.005 mg/L as Cl<sub>2</sub>, whichever is greater  <b>Minimum Detection Limit</b>                  0.035 mg/L</p> <p><b>Hach CL10 Analyzer</b>  <b>Range (Chlorine Sensor)</b>                  0 to 10 mg/L free or total residual chlorine  <b>Accuracy</b>  <i>Free Chlorine</i>                  ±3% at constant pH less than 7.2 (±0.2 pH unit)                  ±10% at stable pH less than 8.5 (±0.5 pH unit from pH at calibration)  <i>Total Chlorine</i>                  ±10% at stable pH less than 8.5 (±0.5 pH unit from pH at calibration)                  ±20% at stable pH greater than 8.5  <b>Repeatability</b>                  3% or 0.03 mg/L, whichever is greater  <b>Minimum Detection Limit</b>                  0.030 mg/L or lower</p> <p><b>Hach 1720E Turbidimeter</b>  <b>Range</b>                  0.01-100 Nephelometric Turbidity Units (NTU)  <b>Accuracy</b>                  ±2% of reading or ±0.015 NTU (whichever is greater) from 0 to 40 NTU; ±5% of reading from 40 to 100 NTU  <b>Displayed Resolution</b>                  0.0001 NTU up to 9.9999 NTU; 0.001 NTU from 10.000 to 99.999 NTU</p>	<p><b>Repeatability</b>                  Better than ±1.0% of reading or ±0.002 NTU, whichever is greater  <b>Sample Flow Required</b>                  200 to 750 mL/minute (3.1 to 11.9 gal/hour)</p> <p><b>Hach On-line pH Monitor</b>  <b>Range</b>                  0-14 pH  <b>Sensitivity</b>                  Less than 0.005 pH  <b>Stability</b>                  0.03 pH per 24 hours, non-cumulative</p> <p><b>Hach On-line Conductivity Monitor</b>  <b>Range</b>                  0 to 2000 µS/cm  <b>Accuracy</b>                  ±0.01% of reading  <b>Stability</b>                  0.05% of span per 24 hours, non-cumulative  <b>Repeatability</b>                  0.1% of span or better  <b>Temperature</b>                  20 to 200°C</p> <p><b>Pressure Sensor (Gems)</b>  <b>Range</b>                  0 - 150 psig</p> <p><i>*Subject to change without notice.</i></p>
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Hach's Water Distribution Monitoring Panels are shipped fully tested on a panel for wall or rack mounting with a start-up kit and manual. The start-up kit includes applicable reagents, and calibration standards for chlorine, turbidity, pH, and conductivity instruments. All panels include flow meter, Y-strainer, and pressure sensor. Optional sample pressure regulator with gauge is recommended for systems where the pressure may exceed 120 psi.

Prod. No.	Description
6846000	Water Distribution Monitoring Panel sc (WDMP sc) Includes CL17 Chlorine Analyzer (Free or Total Chlorine)
6846050	Reagentless Water Distribution Monitoring Panel sc (R-WDMP sc) CLF10 or CLT10 Chlorine Analyzer (Free or Total Chlorine) <i>Available with optional UVAS sensor, to monitor for organics</i>

Prod. No.	Description
2556900	Free Chlorine Reagent Set Set includes: CL17 DPD Indicator, CL17 Free Chlorine Indicator Solution, and CL17 Free Chlorine Buffer Solution.
2557000	Total Chlorine Reagent Set Set includes: CL17 DPD Indicator, CL17 Total Chlorine Indicator Solution, and CL17 Total Chlorine Buffer Solution.

Prod. No.	Description
6846200	WDMP sc Start-Up Kit (Included with PN 6846000; can be ordered separately if you require additional kits.) Includes: CL17 reagents, calibrations, standards, and accessories for first month of operation.

Prod. No.	Description
6846300	WDMP sc Maintenance Kit Includes: all necessary items to perform routine maintenance for the first six months. NOTE: Reagents are not included and must be ordered separately. Be sure to specify Free (2556900) or Total (2557000) Chlorine. Reagent sets last one month.
6846400	ORP Accessory Kit Includes ORP sensor; 200mV buffer, 500 mL
6846600	Sample Pressure Regulator
6844600	WDMP sc Mounting Rack, Wheeled
6846700	sc1000 Rack Mounting Kit, WDMP sc Allows sc1000 controller to be attached to WDMP sc wheeled rack.
6840000	Probe Plug (extra)

Service Warranties	Description
WRTUPGWDMPScFull	WDMP sc Water Panel WarrantyPlus Quarterly Instrument Protection and Service

For Hach Event Monitor Trigger System see page 347.  
For astroTOC UV On-line TOC Analyzer see page 385.

For more information, call to request LIT2566.

PROCESS INSTRUMENTS

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# DISTRIBUTION MONITORING: astroTOC™ ANALYZER

**Increases system sensitivity to organic chemicals in the distribution system.**



- Greatly enhances the detection and classification capabilities of GuardianBlue Early Warning System
- When combined with the Water Panel, the TOC Analyzer exponentially increases the system's sensitivity to organic chemicals, creating one of the industry's most unique and innovative early warning systems. Total organic carbon is a crucial part of the fingerprint structure.
- Combines chemical and ultraviolet oxidation techniques in a low-temperature reactor to deliver direct TOC measurements
- Uses a multi-staged UV oxidation reactor and a chemically impervious non-dispersive infrared (NDIR) CO<sub>2</sub> detector system, assuring full compliance with Standard Methods 5310 C and EPA method 415.1

## One of Hach's most sophisticated water quality sensors

In the first analysis step, the sample is mixed with acid, converting the total inorganic carbon (TIC) into CO<sub>2</sub>. The TIC sparger removes all the CO<sub>2</sub> from the sample solution. Subsequently, the TIC-free sample is mixed with sodium persulfate and routed through the UV reactor, oxidizing the TOC into CO<sub>2</sub>.

The gas/liquid mixture is transported by the carrier gas into the gas-liquid separator (GLS), where the sample gas is separated and diverted into the NDIR detector for the direct, interference-free CO<sub>2</sub> measurement. The resulting CO<sub>2</sub> concentration measurement is directly proportional to the original TOC concentration found in the sample. The front panel displays the TOC concentration in mg/L.

TOC Analyzers include a one-month's supply of reagents, 2 UV lamps, view window, drain, and reagent level indicators.

Prod. No.	Description
<b>H-6195-1030DS</b>	WDM astroTOC UV CRS enclosure, 0-25 mg/L Recommended for use with the Event Monitor.
<b>8814000K</b>	Nitrogen Gas for TOC Analyzer, 103L, 99.998% N
<b>8814100K</b>	Carbon Dioxide for TOC Analyzer, 103L, 1000 ppm
<b>8814300</b>	Adjustable Regulator and Flowmeter Combo for 103L gases

### Accessories

<b>4300-0008</b>	Purge Gas Generator with compressor, 110V
<b>4300-0009</b>	Purge Gas Generator with compressor, 230V
<b>120161</b>	Free Standing Rack, wheeled

### Service Warranties

<b>FSP1950+</b>	Field Service Partnership for 1 year
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For more information, call to request LIT2573.

## Specifications\*

<b>Range</b>	0-25 mg/L
<b>Accuracy</b>	±2% of full scale at 25°C
<b>Repeatability</b>	±2% of reading at 25°C
<b>Minimum Detection Limit</b>	≤0.015 mg/L for 0-5 mg/L
<b>Response Time</b>	T90 ≤8 min.
<b>Serial Communication</b>	Multi-function RS-232 or RS-485 serial port (MODBUS®, CSV)
<b>Mounting</b>	Wall mount or optional rack mount

\*Subject to change without notice.

## Accurate flow measurement at an economical price.

- For pipe sizes from 1/2 to 4 inches
- Non-magnetic sensing technique
- Variable frequency square wave signal
- Wide range
- Superior low-velocity performance
- FDA-approved wetted materials
- For use with sc200, F33 or PRO-F3 controllers/ transmitters

### Principal of Operation

Hach's Impeller Flow sensors unique non-magnetic sensing technique is impervious to fouling from metal particles. The non-magnetic sensing technique reduces drag for superior low-flow and low-volume measurement accuracy.

The forward-swept, six-bladed impeller has significantly better low-flow, low-velocity characteristics than conventional four-bladed impellers to provide higher measuring accuracy.

### Economical and Practical

An F53 or F33 controller can independently monitor four sensors, making this system both economical and convenient to use.



Prod. No.	Description
F1A11A1T	Polypropylene Sensor
F1A11B2T	PVDF Sensor

For more information, call to request LITG501.

### Specifications\*

MODEL F1A11A1T POLYPROPYLENE SENSOR		MODEL F1A11B2T PVDF SENSOR	
<b>Maximum Temperature</b>		<b>Maximum Temperature</b>	
In PVC Tee	140°F at 40 psi (60°C at 2.75 bar)	In PVC Tee	140°F at 40 psi (60°C at 2.75 bar)
In PVDF Tee	140°F at 40 psi (60°C at 2.75 bar)	In PVDF Tee	176°F at 40 psi (60°C at 2.75 bar)
<b>Maximum Pressure</b>		<b>Maximum Pressure</b>	
In PVC Tee	100 psi at 77°F (6.9 bar at 25°C)	In PVC Tee	100 psi at 77°F (6.9 bar at 25°C)
In PVDF Tee	100 psi at 77°F (6.9 bar at 25°C)	In PVDF Tee	230 psi at 77°F (6.9 bar at 25°C)
Repeatability (in any tee)	±0.5% of full scale	Repeatability (in any tee)	±0.5% of full scale
Linearity (in any tee)	±1% of full scale	Linearity (in any tee)	±1% of full scale
<b>Accuracy**</b>		<b>Accuracy**</b>	
In PVC Tee	±1% of full scale from 1 to 30 ft./sec. (0.3 to 9.0 m/sec.)	In PVC Tee	±1% of full scale from 1 to 30 ft./sec. (0.3 to 9.0 m/sec.)
In PVDF Tee	±1% of full scale from 1 to 30 ft./sec. (0.3 to 9.0 m/sec.)	In PVDF Tee	±1% of full scale from 1 to 30 ft./sec. (0.3 to 9.0 m/sec.)
<b>Sensor Cable</b>		<b>Sensor Cable</b>	
2 conductor (plus shield), 20 ft. (6 m)		2 conductor (plus shield), 20 ft. (6 m)	
<b>Wetted Materials</b>		<b>Wetted Materials</b>	
Polypropylene body, Polypropylene impeller, TTZ (transformation toughened zirconia), ceramic shaft and EPR O-rings		PVDF body, PVDF impeller, TTZ (transformation toughened zirconia), ceramic shaft and Viton O-rings	

\*Subject to change without notice.

\*\*Accuracy is attained with at least 10 diameters of straight pipe upstream of sensor and at least 5 diameters of straight pipe downstream from sensor, and with full pipe flow.

PROCESS INSTRUMENTS

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# FLUORIDE: CA610 ANALYZER

## Accurate, cost-effective fluoride analysis.



† U.S. Patent #5,393,402

- Ion-selective electrode with patented,<sup>†</sup> replaceable tip
- Automatic calibration
- Temperature-controlled flow cell
- Rugged, lightweight enclosure
- Ultra-low reagent consumption
- Virtually immune to interferences

### Full-Time Assurance. Long-Term Affordability.

Using proven ion-selective electrode technology, Hach's CA610 Fluoride Analyzer provides continuous assurance that the fluoride concentration in your drinking water is correct. The CA610 also offers unmatched cost-efficiency and versatility. Reagent consumption is ultra-low. With a compact, self-contained design, the analyzer is ideal for monitoring in your plant or in remote locations.

### Dependable Technology. Practical Design.

The CA610 delivers accurate fluoride readings regardless of changes in a sample's ionic strength, pH, or temperature. It is virtually immune to interference. Hach's unique electrode—with a patented, replaceable tip—makes maintenance simple, infrequent, and inexpensive.



A patented electrode—with a molded replaceable lanthanum fluoride crystal tip—delivers an exceptionally long working life.

Hach CA610 Fluoride Analyzers are shipped with a one-month supply of reagents, installation kit, annual maintenance kit, and manual. The power cord is ordered separately.

### Primary Applications

- Drinking Water
- Industrial Water

### Specifications\*

#### Range

0.1 - 10 mg/L Fluoride

#### Accuracy

±10% or ±0.10 mg/L, whichever is greater

#### Detection Limit

0.10 ppm

#### Cycle Time

4.2 minutes

#### Recorder Outputs

One 4-20 mA, with output span programmable over any portion of the 0.1 to 10 mg/L range. 130 V isolation from earth ground

#### Alarms

Two alarms, selectable for sample concentration, system warning or system shutdown. Each alarm equipped with an SPDT relay with contacts rated for 5 A resistive load at 230 Vac.

#### Optional External Outputs

AquaTrend® Network interface

\*Subject to change without notice.

### Prod. No.

5740001  
5740002

### Description

CA610 Fluoride Analyzer  
CA610 Fluoride Analyzer with  
AquaTrend® Network Capability

### Accessories

5448800 North American Power Cord Kit with  
Strain Relief, 125V  
5448900 European Power Cord Kit with  
Strain Relief, 230V

### Replacement Parts

2816900 Reagent Set, CA610 Fluoride Analyzer  
Includes Reagent 1 TISAB, Standard 1,  
and Standard 2  
5742100 Maintenance Kit\*\*  
5744400 Pump Tubing Set  
5742700 Instrument Tubing Set  
5744800 Electrode Kit\*\*\*

### Hach WarrantyPlus

WRTUPGCA610 CA610 Analyzer WarrantyPlus™  
Instrument Protection and Service

\*\*Kit includes instrument and pump tubing sets (1-year supply), replacement filter screen, and spare fittings.

\*\*\*Kit includes ISE and pH electrodes, electrode tips, syringe, and inner fill solution.

For more information, call to request LIT4540.

See page 177 for reagents, test kits, and accessories for measuring fluoride in the lab or field.

# HARDNESS: APA 6000 ANALYZER

## Accurate, continuous hardness measurement.

- Measures low-range hardness using EPA-approved calmagite chemistry
- Accurately and continuously measures up to two sample streams (requires sample sequencing kit)
- Operates unattended for one month
- Self-calibrating, self diagnostics
- Makes your water softening system more efficient and less costly

### Industrial and Ultrapure Water Applications

The APA 6000 Hardness Analyzer can be used to monitor both influent and effluent in industrial applications and water treatment processes including demineralizer effluent, boiler feed-water, boiler water, and process water. It is also appropriate for monitoring hardness in ultrapure processes used by pharmaceutical, electronic chip, and cosmetics manufacturers.



### Primary Applications

- Drinking Water
- Pure Water/Power
- Industrial Water

Each analyzer includes an installation kit, one month's supply of reagents, a maintenance kit, a sample conditioning kit, an illustrated manual, and a quick reference card. Power cords must be ordered separately.

Prod. No.	Description
5100210	APA 6000 Low-Range Hardness Analyzer 50 to 10,000 µg/L, with AquaTrend®
6200010	APA 6000 High-Range Hardness Analyzer 10 to 1,000 mg/L, with AquaTrend®

### Accessories

*Low-Range Hardness NOTE: both sets are required for operation.*

6001900	Low-Range Hardness Reagent Set
6002000	Low-Range Hardness Standards Set

*High-Range Hardness NOTE: both sets are required for operation.*

6002100	High-Range Hardness Reagent Set
6002200	High-Range Hardness Standards Set
5133901	APA 6000 Micro Filter System, 230 V
5133900	APA 6000 Micro Filter System, 115 V
4630600	Power cord kit, 120 Vac
4630800	Power cord kit, 240 Vac
6200900	Sample Sequencing Kit

### Hach WarrantyPlus

**WRTUPGAPA6000** APA 6000 Analyzer WarrantyPlus™ Instrument Protection and Service

For more information, call to request LIT1584.

### Specifications\*

#### LOW-RANGE ANALYZER

##### Range

0.05 to 10 mg/L for hardness as calcium carbonate

##### Accuracy

±5 % of reading or ± 0.05 mg/L whichever is greater

##### Repeatability

±3% of reading or ± 0.03mg/L whichever is greater

##### Response Time

Less than 5 minutes for 90% response

##### Cycle Time

4 minutes

#### HIGH-RANGE ANALYZER

##### Range

10 to 1000 mg/l as CaCO<sub>3</sub>

##### Accuracy

±5 % of reading or ± 2 mg/L CaCO<sub>3</sub> whichever is greater

##### Repeatability

±5% of reading or ±2 mg/L as CaCO<sub>3</sub>, whichever is greater

##### Response Time

Less than 17 minutes for 90% response

##### Cycle Time

8.2 minutes

#### APPLY TO BOTH ANALYZERS

##### Sample Temperature Range

5 to 50°C (41 to 122°F)

##### Sample Flow

100 to 2000 mL/min. max.

##### Inlet Pressure

0.5 to 30.0 psig (0.03 to 2.04 bar)

##### Drain Fitting

3/4" NPT barbed hose fitting

##### Outputs

Two 4-20 mA outputs suitable for recorders or PID control. Output span programmable over any portion of the measuring range (130 Vac isolation from earth ground).

##### Alarms

Two SPDT relays with contacts rated for 5A resistive load at 230 Vac. Additional relays available with optional Signal Output Modules.

##### Network Connectivity

AquaTrend™ network, using the Lonworks® protocol

##### Certification

CE compliant  
NRTL certified to UL and CSA standards

##### Power Requirements

95-240 Vac, 50/60 Hz ± 2 Hz

##### Enclosure

NEMA-4X(indoor)/IEC 529 (IP66) with provision for air purge. Reagent enclosure is drip-proof.

##### Dimensions

21 x 25 x 21" (522 x 627 x 526 mm)

##### Weight

56 lbs (25.5 kg)

\*Subject to change without notice.

See pages 179-181 for reagents, test kits, and accessories for measuring hardness in the lab or field.

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# HARDNESS: SP 510 MONITOR

Maximize your softener cycle time and minimize your regeneration cost.



- Low Maintenance—operates unattended for two months
- Low reagent consumption
- Rugged, lightweight, and self-contained
- Operates unattended for two months
- Immediately signals hardness breakthrough to activate regeneration
- Makes your water softening system more efficient and less costly
- Reliable, simple, and accurate—with automated calibration
- Continuous monitoring in “real time”

### Continuous Hardness Detection

The SP 510 detects hardness breakthrough when the capacity of the water softener is exhausted, immediately signaling the need for regeneration. Alarm points 0.3, 1, 2, 5, 10, 20, 50 and 100 ppm (expressed as mg/L of CaCO<sub>3</sub>) are selected by choosing the corresponding Hach model. Easy-to-read LED indicators show a simple “HARD” or “SOFT” sample status. You can also use the SP 510's built-in alarm relay to actuate an external annunciator

### Low Maintenance Requirements

The SP 510 samples water every two minutes, operating automatically for up to 60 days. Spend only about 15 minutes of your time every two months to replenish and standardize the reagents. Replace tubing in the pump system every six months.

### Convenient, Trouble-Free Operation

The SP 510 eliminates the guesswork, so your softener is regenerated only when needed. Regeneration based on calculation or set times can be replaced with continuous monitoring and automatic control

### Primary Applications

- Drinking Water
- Pure Water/Power
- Industrial Water

### Specifications\*

#### Repeatability

± 10% of set point value in 0.3-2 mg/L ranges  
± 4% of set point value in 5-100 mg/L ranges

#### Cycle Time

2.0 minutes, average

#### Output

One SPDT relay

#### Power

115/230 Vac, 50/60 Hz, selectable

#### Certification

NRTL certified to UL and CSA standards, and CE approved

#### Reagent Requirements

1 each of indicator and buffer. Replenish every two months for continuous operation.

#### Alarm Delay

2 consecutive cycles above set point activate alarm.  
1 cycle below set point cancels alarm.

*\*Subject to change without notice.*

Includes a two-month supply of reagents, an installation kit, a maintenance kit, and an instruction manual. (Recorder output capabilities not available.) Note: Select the model with the alarm trip point 40 to 50 percent higher than your normal effluent hardness.

Prod. No.	Alarm Trip Point
5410002	2 mg/L
5410003	0.3 mg/L
5410001	1 mg/L
5410010	10 mg/L
5410005	5 mg/L
5410020	20 mg/L
5410050	50 mg/L
5410099	100 mg/L
5448800	Power cord kit with strain relief, 120 Vac
5448900	Power cord kit with strain relief, 230 Vac

### Hach WarrantyPlus

**WRTUPGSP510** SP 510 Monitor WarrantyPlus™ Instrument Protection and Service

**A customized SP 510 is available that activates the alarm after one cycle instead of two. Contact your Hach representative for details.**

*This product is no longer available in Europe or Canada.*

*For more information, call to request LIT1457.*

**See pages 179-181 for reagents, test kits, and accessories for measuring hardness in the lab or field.**



# MONOCHLORAMINE: APA 6000 ANALYZER

## Total chloramination control.

- Automatic operation—the system auto-calibrates, cleans, primes, and displays alarms on the front panel
- Two-stream operation—optionally monitor up to two separate sample streams. The system completes one measurement per stream every 5 minutes
- Flexible alarms and outputs—user-configured outputs include two 4-20mA analog outputs and two alarm relays. The analyzer can be expanded to 14 analog and/or relay outputs by adding additional Signal Output Modules
- Analyzer measures monochloramine and free ammonia, allowing user to understand if there is excess free ammonia or free chlorine in the water

### Complete Confidence

The APA 6000 Ammonia/ Monochloramine Analyzer was developed to meet the strict monitoring requirements of the Metropolitan Water District of Southern California—one of the largest water districts in the USA.



Each analyzer includes an installation kit, one month's supply of reagents, a maintenance kit, a sample conditioning kit, an illustrated manual, and a quick reference card. Power cords must be ordered separately.

Prod. No.	Description
5500610	APA 6000 Ammonia and Monochloramine Analyzer with AquaTrend®

#### Accessories

6001400	Ammonia/Monochloramine Reagent Set
6001500	Ammonia/Monochloramine Standards Set

**NOTE: both sets are required for operation.**

5133900	APA 6000 Micro Filter System, 115 V
5133901	APA 6000 Micro Filter System, 230 V
4630600	Power cord kit, 120 Vac
4630800	Power cord kit, 240 Vac
6200900	Sample Sequencing Kit
WRTUPGAPA6000	APA 6000 Analyzer WarrantyPlus™ Instrument Protection and Service

For more information, call to request LIT1607.

See pages 154-155 and 189-190 for reagents, test kits, and accessories for measuring ammonia/monochloramine in the lab or field.

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### Primary Applications

- Drinking Water

### Specifications\*

#### Speciation

Free and Total Ammonia (NH<sub>3</sub>) and Monochloramine (NH<sub>2</sub>Cl) as N. Also menu selectable to display as Cl<sub>2</sub>

#### Range

0.02 to 2 mg/L as N  
(0.1 to 10.0 mg/L as Cl<sub>2</sub>)

#### Accuracy

± 5% of reading or ± 0.02 mg/L as N (0.1 mg/L as Cl<sub>2</sub>), whichever is greater

#### Repeatability

± 3% of reading or ± 0.01 mg/L as N (0.05 mg/L as Cl<sub>2</sub>), whichever is greater

#### Cycle Time

5.0 minutes per analysis for 1 sample stream (Optionally capable of sampling 2 streams—requires sample sequencing kit)

#### Alarms

Two SPDT alarm relays included; total of up to 14 programmable alarm relays (with optional Signal Output Modules)

#### Outputs

Two 4-20 mA outputs included; total of up to 14 programmable 4-20 mA outputs (with optional Signal Output Modules)

#### Network Connectivity

AquaTrend network using the LonWorks protocol

#### Compliance/Certification

UL, CSA and IEC safety standards, FCC & European RFI standards and European EMI standards

#### Dimensions

Approximately 522 x 627 x 527 mm (21" tall, 25" wide, 21" deep)

#### Enclosure

NEMA 4X (indoor)/IEC529 (IP66) with provision for air purge Reagent enclosure is drip-proof

#### Weight

25.5 kg (56 lbs.)

#### Power

95-240 Vac, 50/60 Hz

\*Subject to change without notice.

# NITRATE: NITRATAX™ sc UV SENSORS



## UV analysis—the reagent-free alternative.

- UV absorption method—proven, continuous, and precise
- Eliminates reagents, sampling, and sample conditioning
- Self-cleaning sensor using built-in wiper
- Life-long factory calibration
- Full-featured plug-and-play with sc200 or sc1000 Digital Controllers

### UV Analysis—Eliminates Reagents, Sampling, and Sample Conditioning

Using advanced ultraviolet (UV) absorption technology, Hach NITRATAX UV Nitrate Sensors offer unprecedented simplicity, accuracy, and economy in nitrate analysis.

### UV Absorption Method—Proven, Continuous, Precise

NITRATAX sensors rely on the principle that molecular bonds can absorb ultraviolet (UV) light—in this case, nitrate (NO<sub>3</sub>) and nitrite (NO<sub>2</sub>) absorb UV light. As the concentration of nitrate or nitrite increases, UV absorption also increases. A built-in photometer measures the absorbance, while a second beam of UV light provides a reference standard and corrects for interference caused by turbidity and organic matter.

### Specifications\*

	NITRATAX plus sc	NITRATAX eco sc	NITRATAX clear sc
Measuring Principal	Reagent-free UV absorption with patented 2-beam technique (applies to all)		
Measuring Gap/Path Length	1, 2 and 5 mm	1 mm	5 mm
Measuring Range NO <sub>2+3</sub> -N	0.1 to 100.0 mg/L (1 mm) 0.1 to 50.0 mg/L (2 mm) 0.1 to 25.0 mg/L (5 mm)	1.0 to 20.0 mg/L (1 mm)	0.5 to 20.0 mg/L (5 mm)
Detection Limits NO <sub>3</sub> -N	0.1 to 100 mg/L	1.0 to 20 mg/L	0.5 to 20 mg/L
Accuracy	± 3% of the mean MV ± 0.5	± 5% of the mean MV ± 1.0	± 5% of the mean MV ± 0.5
Resolution	0.1 mg/L	0.5 mg/L	0.1 mg/L

\*Subject to change without notice.

### Primary Applications

- Drinking Water
- Industrial Water
- Wastewater
- Environmental

For more information, call to request LIT2464.

Prod. No.	Description
<b>NITRATAX sc UV Nitrate Analyzer Systems</b>	
2984000	NITRATAX plus sc System includes sensor with 2 mm path length, mounting hardware, and sc200 controller
2984100	NITRATAX plus sc System includes flow-through cell sensor with 2 mm path length, mounting hardware, and sc200 controller
2984200	NITRATAX eco sc System includes sensor with 1 mm path length, mounting hardware, and sc200 controller
2984300	NITRATAX clear sc System includes sensor with 5 mm path length, mounting hardware, and sc200 controller
2984400	NITRATAX clear sc System includes flow through cell sensor with 5 mm path length, mounting hardware, and sc200 controller

### Individual NITRATAX sc UV Nitrate Sensors

All sensors are equipped with 10 m (32.8 ft.) cable.

LXV417.99.20002	NITRATAX plus sc Sensor 2 mm path length
LXV417.99.10002	NITRATAX plus sc Sensor 1 mm path length
LXV417.99.50002	NITRATAX plus sc Sensor 5 mm path length
LXV420.99.50002	NITRATAX clear sc Sensor 5 mm path length
LXV415.99.10002	NITRATAX eco sc Sensor 1 mm path length

Prod. No.	Description
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### Controller

This sensor requires a Hach sc200 or sc1000 Digital Controller. See pages 318-321 for details.

### Mounting Hardware

LZY714.99.53220	Tank Rim Mount Kit (SS) for NITRATAX sc sensor
LZX869	Flow-through cell for sc-sensors, 2 mm path length
LZX867	Flow-through cell for sc-sensors, 5 mm path length
LZX866	Flow-through cell for NITRATAX clear sc-sensors, 5 mm path length
LZX450	Sedimenter for NITRATAX sc sensor

### Accessories

LCW825	Calibration standard 50 mg/L NO <sub>3</sub> (11.3 mg/L NO <sub>3</sub> -N)
LZX148	Spare wiper blades for 1 mm sc sensor, pk/5
LZX012	Spare wiper blades for 2 mm sc sensor, pk/5
LZX117	Spare wiper blades for 5 mm Nitratex, pk/5

### Cable Accessories

5867000	Digital Termination Box
5796000	Digital Extension Cable, 7.7 m (25 ft.)
5796100	Digital Extension Cable, 15 m (50 ft.)
5796200	Digital Extension Cable, 31 m (100 ft.)

### Hach WarrantyPlus

WRTUPGNITRATAX NITRATAX™ sc Sensor WarrantyPlus™ Instrument Protection and Service

See pages 191-192 for reagents, test kits, and accessories for measuring nitrate in the lab or field.



# NEW!

ISE probes for the on-line measurement of nitrate provide trending information and minimal maintenance, at an affordable price point.

### Cost-Effective Trending Information

The NISE sc Sensor utilizes ion selective electrode (ISE) technology to provide your plant with high level trending information while saving money by eliminating the need for reagents and sample preparation.

### Minimal Maintenance with Simple Cartridge Replacement

The sensor operates with a CARTRICAL™ cartridge that comes factory calibrated. Cartridge replacement is simple: unscrew the old cartridge, plug in the new one, and the sensor is ready for measurement. Using RFID\* technology, the factory calibration is automatically identified after replacing the cartridge. Overall, little maintenance is necessary.

### Simple, Accurate Calibration

Easy to perform, fail-safe calibration corrections compensate for natural calibration drift of ISE instruments. An advanced menu structure allows you to perform corrections without manual entry of values via Ethernet, SD card or Bluetooth®.



This sensor requires a Hach sc200 or sc1000 Digital Controller.

Prod. No.	Description
LXV440.99.20002	NISE sc ISE Nitrate Probe with RFID Technology
LXV440.99.20012	NISE sc ISE Nitrate Probe without RFID Technology

### Mounting Hardware

6184900	Rail Mount Kit (PVC) for ISE sensors
LZY714.99.32220	Tank rim mount kit (SS) for NISE sc sensors
LZX914.99.12400	Chain mounting for ISE sensors (PVC)
LZY771	Sedimenter with mounting panel

### Cartridge

LZY694	CARTRICAL sensor cartridge for AN-ISE sc / AISE sc / NISE sc
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### Air Cleaning Systems (Optional)

LZY706	Cleaning unit for AN-ISE sc / AISE sc / NISE sc
6860000	High Output Air Blast Cleaning System, 115 Vac
6860100	High Output Air Blast Cleaning System, 230 Vac

### Controllers

LXV404.99.00552	sc200 controller, 2 channels, digital
LXV400.99.10082	sc1000 Probe Module, 6 Sensors, 100-240 Vac
LXV402.99.00002	sc1000 Display Module

### Hach WarrantyPlus

WRTUPGNISE	NISE WarrantyPlus™ Instrument Protection and Service
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\*RFID = Radio-Frequency Identification. RFID version available only in US, EU, Canada, Australia, New Zealand, Croatia, Cyprus and Turkey.

For more information, request LIT2808.

### Specifications\*

<b>Measurement Method</b>	Potentiometric measurement using ion-selective electrodes (ISE) Nitrate and chloride, reference system
<b>Measuring Range</b>	0 to 1000mg/L NO <sub>3</sub> -N 0 to 1000mg/L Cl <sup>-</sup>
<b>Reproducibility</b>	5% of the measured value + 0.2 mg/L (with standard solutions)
<b>Response Time</b>	< 3 minutes (5 to 50 mg/L) (T90)
<b>pH Range</b>	pH 5 to pH 9
<b>Calibration</b>	Sensor code for sensor cartridge, 1 and 2-point value correction or matrix correction
<b>Sample Temperature</b>	2 to 40°C (35 to 104°F)
<b>Pressure Range</b>	0.3 bar (4.4psi)
<b>Dimensions</b>	320 mm x 84.5 mm (12.6 x 3.3 in.) (length x Ø)
<b>Weight</b>	Approximately 2380 g (83.95 oz)

\*Subject to change without notice.

See pages 191-192 for reagents, test kits, and accessories for measuring Nitrate in the lab or field.

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# OIL-IN-WATER: FP 360 sc SENSOR

## Continuous oil-in-water monitoring for the right price.

- Probe design makes it the low price solution among competitive UV fluorescence instruments
- No tubes, pumps, or valves that can foul or require frequent maintenance
- Accurate online measurement reduces time-consuming laboratory testing
- Can detect polycyclic aromatic hydrocarbons (PAHs) from 1.2 ppb to up to 5000 ppb ( $\mu\text{g/L}$ ) or mineral oils from 0.1 to 150 ppm ( $\text{mg/L}$ )
- UV fluorescence method makes it impervious to interferences by turbid water or natural organic matter (NOM)

### Principle of Operation

The FP 360 sc measures intensity of fluorescence light at a wavelength of 360 nm emitted by polycyclic aromatic hydrocarbons (PAH) after UV irradiation of the sample at 254 nm. Since PAHs are components of most mineral oils, the FP 360 sc can detect the presence of oil contamination in surface, process, or industrial waters. In addition, since the intensity of the emitted light is proportional to the PAHs concentration, the FP 360 sc can be calibrated to measure oil concentration in stable matrices.

*The FP 360 sc is the only online oil-in-water instrument that delivers the highest sensitivity and selectivity with the lowest total cost of ownership*

### Primary Applications

- Drinking Water
- Wastewater
- Pure Water/Power
- Industrial Water

### Specifications\*

<b>Measurement Method</b> UV fluorescence method for polycyclic aromatic hydrocarbons (PAH)	<b>Reproducibility</b> 2.5% of measured value at constant temperature
<b>Light Source</b> Miniature xenon flashlamp with interference filter	<b>Response Time</b> 10 s (T90)
<b>Detector</b> UV photodiode with interference filter; Compensation of daylight and flashlamp intensity fluctuations	<b>Calibration</b> Factory calibrated with UV fluorescence standard or process calibration with results of a grab sample analysis.
<b>Excitation Wavelength</b> 254 nm	<b>Sample Temperature</b> 33.8 to 104°F or 1 to 40°C
<b>Measurement Wavelength</b> 360 nm	<b>Pressure Range</b> Max. 30 bar or 435 psia (measurement probe)
<b>Measuring Range</b> <i>Low Measuring Range:</i> 0 to 50 ppb ( $\mu\text{g/L}$ ) and 0 to 500 ppb ( $\mu\text{g/L}$ ) (PAH)** 0.1 to 1.5 ppm ( $\text{mg/L}$ ) and 0.1 to 15 ppm ( $\text{mg/L}$ ) (oil)** <i>High Measuring Range:</i> 0 to 500 ppb ( $\mu\text{g/L}$ ) and 0 to 5,000 ppb ( $\mu\text{g/L}$ ) (PAH)** 0.1 to 15 ppm ( $\text{mg/L}$ ) and 0.1 to 150 ppm ( $\text{mg/L}$ ) (oil)**	<b>Housing</b> Stainless steel 316Ti (1.4571) or titanium
<b>Resolution</b> 0.1 ppb ( $\mu\text{g/L}$ ) (PAH) in the lowest measuring range Limit of Detection (LOD) is 1.2 ppb (PAH)	<b>Dimensions</b> 2.68" x 12.05" or 68 x 306 mm (D x H; without connector and suspension pin)
	<b>Weight</b> Stainless Steel: 6.2 lbs or 2.8 kg Titanium: 4 lbs or 1.8 kg
	<b>Weight</b> Stainless Steel: 6.2 lbs or 2.8 kg Titanium: 4 lbs or 1.8 kg

\*\*With Calibration Standard.

\*Subject to change without notice.

### Prod. No. Description

#### Stainless Steel without Cleaning Unit

- LXV441.99.11102** 0-500  $\mu\text{g/L}$ , 32.8 ft (10 m) cable
- LXV441.99.21102** 0-5,000 g/L, 32.8 ft (10 m) cable

#### Stainless Steel with Cleaning Unit

- LXV441.99.11202** 0-500 g/L, 32.8 ft (10 m) cable
- LXV441.99.21202** 0-5,000 g/L, 32.8 ft (10 m) cable

#### Titanium without Cleaning Unit

- LXV441.99.11301** 0-500 g/L, 32.8 ft (10 m) cable
- LXV441.99.22102** 0-5,000 g/L, 32.8 ft (10 m) cable

#### Titanium with Cleaning Unit

- LXV441.99.12202** 0-500 g/L, 32.8 ft (10 m) cable
- LXV441.99.22202** 0-5,000 g/L, 32.8 ft (10 m) cable

Note: Probes with cleaning unit cannot be operated in combination with the flow cell, Prod. No. LZY669.

### Controller

This sensor requires a Hach sc200 or sc1000 Digital Controller.

### Mounting Hardware

- LZX914.99.11110** Chain Mount Kit (SS) for FP360 sc
- LZY669** Flow cell with mounting panel
- LZY630.00.30000** Safety Ball Valve Armature (SS) Inline for FP360 sc sensor with flange (SS)
- LZY630.00.31000** Safety Ball Valve Armature (SS) Inline for FP360 sc sensor with flange (CS)
- LZY630.00.32000** Safety Ball Valve Armature (SS) Inline for FP360 sc sensor without flange

### Hach WarrantyPlus

- WRTUPGFP360SC** FP360 sc Sensor WarrantyPlus™ Instrument Protection and Service

For more information, call to request LIT2668.



## Continuously protect plant treatment processes from high influent organic loads.

- Continuous, automatic early warning systems
- Control activated sludge processes
- Self-cleaning wiper system
- Monitor efficiency of UV disinfection process
- Self diagnostics and easy maintenance
- This sensor requires a Hach sc200 or sc1000 Digital Controller



### Principal of Operation

The Hach UVAS sc UV Absorbance / %Transmittance Sensor determines the Spectral Absorption Coefficient (SAC) at a wavelength of 254 nm. Measurements can be expressed in absorption units ( $m^{-1}$ ), mE, AU, %T, %T/cm, mg/L, or ppm.

### Prod. No. Description

UVAS sc UV Absorbance/Transmittance System  
The following systems include the Hach sc200 controller.

<b>2976700</b>	1 mm UVAS sc sensor
<b>2976400</b>	2 mm UVAS sc sensor
<b>2976600</b>	5 mm UVAS sc sensor
<b>2976500</b>	50 mm UVAS sc sensor

### UVAS sc Sensor Only

<b>LXV418.99.10002</b>	1 mm UVAS sc sensor only
<b>LXV418.99.20002</b>	2 mm UVAS sc sensor only
<b>LXV418.99.50002</b>	5 mm UVAS sc sensor only
<b>LXV418.99.90002</b>	50 mm UVAS sc sensor only

### Controllers

This sensor requires a Hach sc200 or sc1000 Digital Controller.

### Mounting Hardware

<b>LZY714.99.53520</b>	Tank Rim Mount Kit (SS) for UVAS sc sensor
<b>LZX869</b>	Flow-through cell for sc-sensors, 2 mm path length
<b>LZX867</b>	Flow-through cell for sc-sensors, 5 mm path length
<b>LZX866</b>	Flow-through cell for NITRATAX clear sc-sensors, 5 mm path length
<b>LZX450</b>	Sedimenter for NITRATAX sc sensor

### Accessories

<b>LZX148</b>	Spare wiper blades for 1 mm sc sensor, pk/5
<b>LZX012</b>	Spare wiper blades for 2 mm sc sensor, pk/5
<b>LZX117</b>	Spare wiper blades for 5 mm Nitratax, pk/5
<b>LZX119</b>	Spare wiper blades for 50 mm UVAS sc, pk/5
<b>LZX396</b>	Calibration Verification filter

### Hach WarrantyPlus

<b>WRTUPGUVAS</b>	UVAS sc Sensor WarrantyPlus™ Instrument Protection and Service
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For more information, call to request LIT2485.

### Primary Applications

- Drinking Water
- Wastewater
- Industrial Water

### Specifications\*

<b>Measurement Technique</b> UV absorption measurement (2-beam technique), reagent-free	<b>Probe Pressure Limit at Inlet</b> UVAS sc Tank Sensors 0.5 bar (7.25 psi) maximum UVAS sc Bypass Sensors n/a
<b>Measurement Method</b> SAC 254 in accordance with DIN 38404 C3	<b>Sample Flow Rate</b> UVAS sc Tank Sensors n/a UVAS sc Bypass Sensors 0.5 L/hour minimum
<b>Measurement Path Length</b> UVAS sc Tank Sensors 1, 2, 5 and 50 mm UVAS sc Bypass Sensors 2, 5, and 50 mm	<b>Sample Connection</b> UVAS sc Tank Sensors n/a UVAS sc Bypass Sensors 4 mm ID / 6 mm OD hose
<b>Measurement Range</b> UVAS sc Tank Sensors Choice of: 0.01 to 60 $m^{-1}$ at 50 mm 0.1 to 600 $m^{-1}$ at 5 mm 0 to 1500 $m^{-1}$ at 2 mm 2 to 3000 $m^{-1}$ at 1 mm UVAS sc Bypass Sensors Choice of: 0.01 to 60 $m^{-1}$ at 50 mm 0.1 to 600 $m^{-1}$ at 5 mm 0 to 1500 $m^{-1}$ at 2 mm	<b>Cable Length</b> 10 to 70 m (32.8 to 229.7 ft.)
<b>Compensation</b> 550 nm	<b>Control Function</b> PID, time control, 2-point controller (with sc200 or sc1000)
<b>Measurement Interval</b> ≥ 1 minute	<b>Inspection Interval</b> 6 months
<b>Sample Temperature</b> 2 to 40°C (35.6 to 104°F)	<b>User Maintenance</b> 1 h / month, typical
<b>Sample pH</b> 4.5 to 9 pH	<b>Dimensions</b> 70 x 333 mm (2.75 x 13.11 in.) approximate
	<b>Weight</b> 3.6 kg (7.9 lb.) approximate

\*Subject to change without notice.

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# OXYGEN SCAVENGER: 9586sc ANALYZER

**NEW!**



**Simple to Integrate.  
Simple to Operate.**

### Save Time on Design

The Hach 9586 Oxygen Scavenger analyzer uses a three-electrode amperometric cell that offers an excellent zero stability. The working electrode, counter electrode, and reference electrode allow this stability. The working electrode self-cleans by turning Teflon® beads. Calibrations are done via comparison method.

### Accelerate Your Installation

No moving parts or pumps and insignificant signal drift commonly make maintenance time less than 15 minutes per month.

### Reduce Training Complexity

Teflon® beads driven by sample flow circulate on the surface of the platinum electrode to prevent deposits. This reduces maintenance costs and analyzer downtime.

The Hach 9586 Oxygen Scavenger Analyzer is shipped on a panel complete with controller, probe, cable, flow cell and all hardware necessary for installation.

### Prod. No. Description

#### Complete Analyzer

<b>9586.99.00P2</b>	Hach 9586sc Oxygen Scavenger Analyzer, AC-DC
<b>9586.99.01P2</b>	Hach 9586sc Oxygen Scavenger Analyzer, Modbus, AC-DC
<b>9586.99.03P2</b>	Hach 9586sc Oxygen Scavenger Analyzer, Profibus, AC-DC

#### Communication and Module Options

<b>9334600</b>	4-20 mA Output Module (Provides 3 additional mA Outputs)
<b>9013200</b>	Modbus 232/485 Module
<b>9173900</b>	Profibus DP Module
<b>9525700</b>	Analog pH/ORP Module for Polymetron Sensors
<b>9525800</b>	Analog Conductivity Module for Polymetron Sensors

#### Accessories and Consumables

<b>2834453</b>	Diisopropylamine, 99%, 1L
<b>09186=C=0360</b>	Oxygen Scavenger Reagents Cap Adapter
<b>09186=A=8000</b>	Spare Parts Kit for 9586sc Analyzer

*Spare Parts Kit includes 6 filters, 1 reference electrode, 1 Venturi injection nozzle, 7 plastic beads, 2 meters of 4 x 6 mm PE tubing.*

*For more information, call to request LIT2817.*

### Primary Applications

- Pure Water/Power
- Industrial Water

### Specifications\*

<b>Range</b>
5 - 500 µg/L Hydrazine
2 - 100 µg/L Carbohydrazide
<b>Repeatability</b>
< ± 2% of reading or < ± 1 µg/L N <sub>2</sub> H <sub>4</sub> whichever is greater
<b>Response Time</b>
T90 approximately 60 seconds
<b>Service Intervals</b>
Every 4-5 weeks
<b>Analog Output</b>
Two 0/4-20 mA outputs, max. impedance 500 Ohms
<b>Operating Temperature Range</b>
5 to 45°C (41 to 113°F)
<b>Weight</b>
9.2 kg (20 lbs.)

*\*Subject to change without notice.*

**See pages 182 and 196 for reagents, test kits, and accessories for measuring oxygen scavenger/hydrazine in the lab or field.**



## Optimize your filter analysis.

- Supports up to 32 size channels and 8 analog inputs (turbidity, pH, etc.) with optional Analog I/O card
- Operates stand-alone or as part of a networked system
- Volumetric—all particles pass through the sensing area

### Hach Universal Data Gateway 1000

Hach UDG1000 Software automatically collects process data from multiple sources and stores the raw data in a secure database. The data can be consolidated for efficient export to convenient and cost-effective viewing tools like Hach UDG Online Viewer, Hach WIMS solutions, SCADA systems or Excel. The data is immediately available for troubleshooting, compliance and analysis. The solution is scalable so that additional collectors can be purchased as needed.



#### Prod. No. Description

##### Model 2200 PCX Particle Counter - 115V Version

**5705000** 2200 PCX Particle Counter with ANALOG with WATER WEIR

**5704000** 2200 PCX Particle Counter with WATER WEIR

##### Model 2200 PCX Particle Counter - 230 Version

**5705001** 2200 PCX Particle Counter with ANALOG with WATER WEIR

**5704001** 2200 Particle Counter with WATER WEIR

##### Universal Data Gateway Software

**WS-UDG** UDG1000 Software

#### Primary Applications

- Drinking Water
- Pure Water/Power

#### Specifications\*

##### Counting Range

2-750 microns

##### Flow Rate

100 mL/minute

##### Maximum Pressure

65 psig, not more than 1 minute; 55 psig continuous

##### Sample Time

1 second to 24 hours

##### Fluid Connections Inlet

Barbed fitting with self-sealing quick disconnect for 1/4" O.D. tubing

##### Fluid Connections Outlet

Quick disconnect for 1/4" O.D. tubing

##### Power

100- 230 Vac; 50-60 Hz

##### Dimensions

13.8"H x 8.3"W x 7"D

*\*Subject to change without notice.*

For more information, call to request LIT4599.

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# pH/ORP: DIFFERENTIAL SENSORS

The smart choice for accurate, reliable, and dependable pH/ORP measurement.



Hach Digital pH/ORP sensors are available in convertible (PEEK® or Ryton®), insertion, and sanitary body styles. Three electrodes are used in these sensors to increase measurement accuracy and eliminate sensor ground loops.



Wide range pH glass (HF resistant glass also available)

## Primary Applications

- Drinking Water
- Industrial Water
- Wastewater
- Environmental
- Pure Water/Power
- Food and Beverage

## Specifications\*

**pH Range**  
-2 to 14 pH

**Operating Temperature Range**  
Analog Sensor: -5 to 105°C (23 to 221°F)  
Digital Sensor: -5 to 70°C (23 to 158°F)

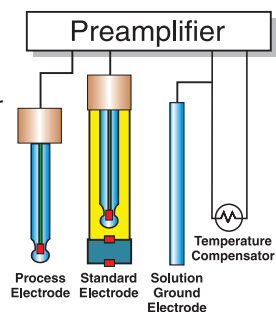
**Pressure Range**  
0 to 6.9 bar (100 psi)

**ORP Range**  
-1500 to +1500 mV

**Pressure Range**  
0 to 6.9 bar (100 psi)

\*Dependent on specific sensor and mounting.

- Differential electrode technique
- Patented technology
- Replaceable salt bridge/protector
- Built-in encapsulated preamp



## Differential Electrode Measurement Technique

This field-proven technique uses three electrodes instead of the two used in conventional pH sensors. Process and reference electrodes measure the pH differentially with respect to a third ground electrode. The result is unsurpassed measurement accuracy, reduced reference junction potential, and elimination of sensor ground loops. These sensors provide greater reliability, resulting in less downtime and maintenance.

## Patented Technology

The former GLI, now a Hach Company brand, invented the Differential Electrode Technique for pH measurement in 1970. The pH<sup>D</sup>™ sensor series (U.S. Patent Number 6395158B1, dated May 28, 2002) takes this field-proven technology to a new level.

## Replaceable Salt Bridge/Protector

The unique, replaceable salt bridge holds an extraordinary volume of buffer to extend the working life of the sensor by protecting the reference electrode from harsh process conditions.

## Built-in Encapsulated Preamp

Encapsulated construction protects the sensor's built-in preamp from moisture and humidity, ensuring reliable sensor operation. The preamp in the pH<sup>D</sup> analog sensor produces a strong signal, enabling the sensor to be located up to 1000 m (3280 ft.) from the analyzer.

## Durable Body Materials

Both the digital and analog pH and ORP differential sensors feature a durable PEEK® body for chemical compatibility with most process solutions. For less aggressive solutions, Hach offers a Ryton® sensor in a convertible style for pH and ORP measurement. A sensor with a stainless steel body is available for immersion applications.

## Versatile Mounting Styles

Sensors are available in four mounting styles—convertible, insertion, immersion, and sanitary.

## Differential Sensor Warranty

Hach Company offers the best sensor warranty in the industry on its Differential Sensors. We will replace any Differential Sensor that fails due to defects in materials or workmanship within one year from the date of shipment—and up to 30 months on a prorated basis for any failure.

**Available in analog or digital versions.**

For more information, request LIT2467 and LIT2467Appendix.

See pages 197-199 for reagents, test kits, and accessories for measuring pH in the lab or field.

**Prod. No.**

**Controller Required**

For information about Hach digital and analog controllers, see pages 316-324.

**pHD sc Digital Differential pH/ORP Sensors**

All digital sensors include built-in digital electronics and integral 10 m (33 ft.) cable terminated with connector for a digital controller. Body styles:

- Convertible – 1-inch NPT threads at both ends, designed for tee-mounting or other flow through mountings, and pipe mounting for immersion
- Insertion – no threads on the electrode end, designed for use with insertion valve assembly or flow-through cell
- Sanitary – 2-inch flange for a tri-clover style fitting
- Immersion – used with chain mounting or pipe mounting

*pH Sensors*

	<i>Body Material</i>	<i>Body Style</i>
<b>DPD1P1</b>	PEEK <sup>1</sup>	Convertible
<b>DPD1P3<sup>3</sup></b>	PEEK <sup>1</sup>	Convertible
<b>DPD2P1</b>	PEEK <sup>1</sup>	Insertion
<b>DPD3P1</b>	PEEK <sup>1</sup>	Sanitary
<b>DPD1R1</b>	Ryton <sup>2</sup>	Convertible
<b>DPD1R3<sup>3</sup></b>	Ryton <sup>2</sup>	Convertible
<b>DPS1</b>	Stainless Steel	Immersion

*ORP Sensors*

<b>DRD1P5</b>	PEEK <sup>1</sup>	Convertible
<b>DRD1P6</b>	PEEK <sup>1</sup>	Convertible
<b>DRD2P5</b>	PEEK <sup>1</sup>	Insertion
<b>DRD1R5</b>	Ryton <sup>2</sup>	Convertible
<b>DRD1R6</b>	Ryton <sup>2</sup>	Convertible
<b>DRS5</b>	Stainless Steel	Immersion

**pHD sc Analog Sensors**

*pH Sensors*

	<i>Body Material</i>	<i>Body Style</i>
<b>PD1P1</b>	PEEK <sup>1</sup>	Convertible
<b>PD1P3<sup>3</sup></b>	PEEK <sup>1</sup>	Convertible
<b>PD2P1</b>	PEEK <sup>1</sup>	Insertion
<b>PD3P1</b>	PEEK <sup>1</sup>	Sanitary
<b>PD1R1</b>	Ryton <sup>2</sup>	Convertible
<b>PD1R3<sup>3</sup></b>	Ryton <sup>2</sup>	Convertible

*ORP Sensors*

<b>RD1P5</b>	PEEK <sup>1</sup>	Convertible
<b>RD1P6</b>	PEEK <sup>1</sup>	Convertible
<b>RD2P5</b>	PEEK <sup>1</sup>	Insertion
<b>RD1R5</b>	Ryton <sup>2</sup>	Convertible
<b>RD1R6</b>	Ryton <sup>2</sup>	Convertible

<sup>1</sup>Polyetheretherketone; <sup>2</sup>Polyphenylene Sulfide; <sup>3</sup>HF resistant glass

**sc200 Controller for Analog Sensors**

<b>LXV404.99.00102</b>	sc200 controller, 1 channel, pH/DO
<b>LXV404.99.00112</b>	sc200 controller, 2 channel, pH/DO

**pHD sc Digital and pHD Analog Sensor Accessories**

*Cables*

Extension cables are used only with digital sensors or digital gateways when connecting to a digital controller.

<b>6122400</b>	Digital Extension Cable, 1 m (3.3 ft.)
<b>5796000</b>	Digital Extension Cable, 7.7 m (25 ft.)
<b>5796100</b>	Digital Extension Cable, 15 m (50 ft.)
<b>5796200</b>	Digital Extension Cable, 31 m (100 ft.)

Interconnect cables are used only with analog sensors, junction box, and controller

<b>1W1100</b>	Analog Interconnect Cable, order per foot
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**Prod. No.**

*Digital Termination Box*

Required when the length of cable between the digital sensor/digital gateway and a digital controller is between 100 m (328 ft.) and 1000 m (3280 ft.)

<b>5867000</b>	Digital Termination Box
----------------	-------------------------

*Analog Junction Box*

Required when the length of cable between the analog sensor and analog controller is greater than standard length of sensor cable. Each junction box includes terminal strip and gasket.

<b>60A2053</b>	Junction Box, Surface-mount, aluminum (includes mounting hardware)
<b>60A9944</b>	Junction Box, Pipe-mount, PVC (for 1/2-inch diameter pipe, includes mounting hardware)
<b>60G2052</b>	Junction Box, Pipe-mount, PVC (for 1-inch diameter pipe, includes mounting hardware)
<b>76A4010-001</b>	Junction Box, NEMA 4X (no mounting hardware included)

*pHD sc Digital and pHD Analog Sensor Reagents, Standards and Replacements*

<b>SB-P1SV</b>	PEEK Salt Bridge, Kynar (PVDF) Outer junction for use with Regenerateable Differential pH and ORP Sensor-1 inch
<b>SB-P1SV-005</b>	PEEK Salt Bridge, Kynar (PVDF) Outer junction for use with Regenerateable Differential pH and ORP Sensor-1 inch (5 Pack)
<b>SB-R1SV</b>	Ryton Salt Bridge, Kynar (PVDF) Outer-Junction for use with Regenerateable Differential pH and ORP Sensor-1 inch
<b>SB-R1SV-005</b>	Ryton Salt Bridge, Kynar (PVDF) Outer-Junction for use with Regenerateable Differential pH and ORP Sensor-1 inch (5 pack)
<b>25M1A1025-115</b>	Standard Cell Solution, Concentrated pH 7.0 Buffer (equi-transferrant), 500 mL. For replenishing standard cell chamber while replacing salt bridges for Regenerateable Differential pH and ORP Sensors-1 inch
<b>25M8A1002-101</b>	Proprietary Gel Powder for pHD sc and pHD Sensors for high temperature applications

*pH Buffers*

	<i>Description</i>	<i>Volume</i>
<b>2283549</b>	pH 7	500 mL (1 pint)
<b>2283449</b>	pH 4	500 mL (1 pint)
<b>2283649</b>	pH 10	500 mL (1 pint)

*ORP Reference Solutions (in resealable plastic bottles)*

	<i>Description</i>	<i>Volume</i>
<b>25M2A1001-115</b>	200 mV	500 mL (1 pint)
<b>25M2A1002-115</b>	600 mV	500 mL (1 pint)

**pH/ORP systems with Class I Division II safety classification are available— please contact your Hach representative.**

*For additional information and available mounting hardware options, call Hach or download product data sheet (LIT2467)*

See pages 197-199 for reagents, test kits, and accessories for measuring pH in the lab or field.

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# pH/ORP: DIFFERENTIAL SENSORS, 1-1/2 INCH

## Regeneratable Encapsulated LCP or Ryton® Differential pH and ORP Sensors—ideal for aggressive applications.



These field-proven differential electrodes are available in LCP (foreground) or Ryton® body materials. They provide greater reliability and reduced maintenance

- Unsurpassed accuracy and reliability with differential measurement technique—three electrodes instead of the normal two in conventional pH sensors
- Greater reliability results in less downtime and maintenance
- Built-in preamp or two-wire transmitter
- Versatile mounting styles
- 3,000 ft. (914 m) transmission distance
- Also available with flat glass electrodes

### Complete Encapsulation

Complete encapsulated construction protects the sensor's built-in electronics from moisture and humidity problems, extending the working life of the sensor.

### Built-in Preamp or Two-wire Transmitter

The built-in preamp produces a strong signal, enabling you to locate the analyzer up to 3000 ft. (914 m) from the sensor. An optional built-in two-wire transmitter is available for applications requiring a 4-20 mA sensor signal. This option requires that the indicating instrument of the measuring system be capable of providing 24 Vdc to power the sensor, and have adjustment means to calibrate for zero offset and span.

### Versatile Mounting Styles

Threads are provided on both ends of the convertible mounting style sensor for either mounting into a pipe tee or attaching to the end of a pipe for immersion. The convertible style enables you to consolidate inventory, and thereby reduce associated costs. A union-mount style sensor and mounting tee are also available to conveniently install and remove the sensor for in-line service.

### LCP Sensor

#### Chemically-resistant LCP Body

The exceptional chemical resistance and mechanical strength of the LCP (liquid crystal polymer) sensor body makes it ideal for most applications. These sensors can be used in aggressive process solutions such as acids, bases, alcohols, hydrocarbons, aromatics, chlorinated hydrocarbons, esters, ketones, and most other chemicals.

#### Low Heat Distortion

LCP sensors are physically stable and will not expand or contract when subjected to the heating and cooling cycles of a process. Furthermore, these sensors may be installed in metal fittings without fear of leakage, normally a problem when dissimilar materials are threaded together.

### Ryton® Sensor

#### Excellent, Strong Base Chemical Compatibility

The Ryton sensor is best suited for measuring strong base solutions of more than 12 pH at elevated temperatures. It can also be used in acidic solutions, but is not recommended when aromatic hydrocarbons are present.



Platinum ORP  
(Gold ORP also available)



Antimony Sensor

### Primary Applications

- Drinking Water
- Environmental
- Wastewater
- Industrial Water

### Specifications\*

<b>Measuring Range</b> pH: 0 to 14 pH ORP: -2000 to +2000 mV	<b>Wetted Materials</b> LCP body, PVDF junction, Viton O-rings, glass electrode, and titanium ground rod
<b>Temperature Range</b> -5 to 95°C (23 to 203°F)	<b>Weight</b> ~1.3 lbs. (0.6 kg)
<b>Max. Pressure</b> 100 psig	
<b>Sensitivity</b> pH: < 0.005 pH ORP: < 0.5 mV	

*\*Subject to change without notice.*

See pages 15-70 for information on Hach laboratory and field pH instruments and chemistries.



# pH/ORP: DIFFERENTIAL SENSORS, 1-1/2 INCH

## Principal of Operation

Hach's unique Differential Sensor Technology uses three measuring electrodes instead of the two in conventional pH sensors. The process electrode and standard electrode measure the pH differentially with respect to a third ground electrode.

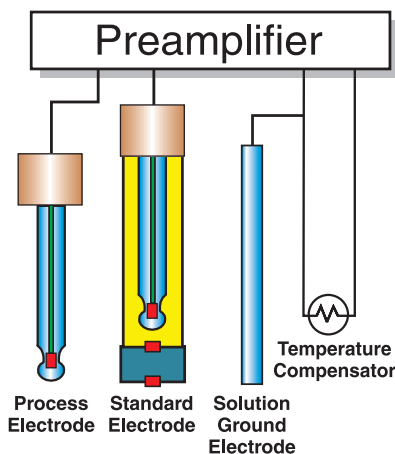
This technique is proven to provide unsurpassed accuracy, reduce reference junction fouling, and virtually eliminate ground loops. The benefit is greater reliability with less downtime and maintenance.

## Differential Sensor Warranty

Hach Company offers the best sensor warranty in the industry on its Differential Sensors. We will replace any Differential Sensor that fails due to defects in materials or workmanship within one year from the date of shipment—and up to 30 months on a prorated basis for any failure



*By replacing the salt bridge and standard cell solution, Hach Differential Sensors can be regenerated for repeated use. For salt bridges and standard cell solution, see page 460.*



*The Differential Sensor, with its built-in preamplifier, boosts the high impedance mV signals of the electrodes, providing a strong signal which can be transmitted up to 3,000 feet.*

## Popular pH/ORP Differential Sensor, 1-1/2 inch models

Prod. No.	Type	Body Material	Body Style	Electrode Material
6028P0	5-wire	LCP	Convertible	General purpose glass
6028P1	5-wire	LCP	Convertible	Antimony
6058P0	5-wire	LCP	Union-mount	General purpose glass
6022P0	5-wire	Ryton	Convertible	General purpose glass
6422P0	2-wire	Ryton	Convertible	General purpose glass
6458P0	2-wire	LCP	Union-mount	General purpose glass
6428P0	2-wire	LCP	Convertible	General purpose glass
2028R0	5-wire	Ryton	Convertible	Platinum ORP
2028R1	5-wire	Ryton	Convertible	Gold ORP
2058R0	5-wire	LCP	Union-mount	Platinum ORP

### Sensor Accessories (order separately)

#### Interconnect Cables\*

- 1W1055 For use with 5-wire sensors
- 1W0980 For use with 2-wire sensors

\*Price/foot. Specify required length in whole feet.

#### Spare Union Adapters\*\*

- 60G9753-101 LCP adapter
- 60G9753-301 Ryton adapter

\*\*Each adapter includes two Viton O-rings and a retaining ring.

*For additional accessories and mounting hardware options, visit: [hach.com/ProcessPHSensors](http://hach.com/ProcessPHSensors)*

**See pages 15-70 for information on Hach laboratory and field pH instruments and chemistries.**

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# pH/ORP: COMBINATION SENSOR KITS, 3/4 INCH

Especially suited for highly aggressive processes that may require frequent replacement.



Digital combination pH and ORP sensors are available in convertible, insertion, and sanitary mounting styles. Choose from rugged dome electrodes or “easy-to-clean” flat glass electrodes

- Low price
- Special electrode configurations
- Temperature compensation element option
- Versatile mounting styles

## Low Price—High Performance

These combination sensors are designed for specialty applications for immersion or in-line mounting. The reference cell features a double-junction design for extended service life, and a built-in solution ground. The body is molded from chemically-resistant Ryton® or PVDF, and the reference junction is coaxial porous Teflon®. All sensors are rated 0 to 105°C up to 100 psig, and have integral 4.5 m (15 ft.) cables with tinned leads. The PC-series (for pH) and RC-series (for ORP) combination sensors are ideal for measuring mild and aggressive media

## Special Electrode Configurations

Sensors with rugged dome electrodes, “easy-to-clean” flat glass electrodes, and even HF (hydrofluoric acid) resistant glass electrodes are available for a wide variety of process solutions.

## Temperature Compensation Element Option

The PC-series combination pH sensors are available with or without a Pt 1000 ohm RTD temperature element. The RC-series combination ORP sensors are supplied without a temperature element.

## Versatile Mounting Styles

Sensors are available in three mounting styles—convertible, insertion, and sanitary

### Primary Applications

- Drinking Water
- Wastewater
- Industrial Water
- Environmental

### Specifications\*

**pH Range**  
0 to 14 pH

**Operating Temperature Range**  
0 to 105°C (32 to 221°F)

**Pressure Range**  
0 to 6.9 bar (100 psi)

**ORP Range**  
-2000 to +2000 mV

**Operating Temperature Range**  
0 to 105°C (32 to 221°F)

**Pressure Range**  
0 to 6.9 bar (100 psi)

\*Dependent on specific sensor and mounting.

See pages 15-70 for information on Hach laboratory and field pH instruments and chemistries.

# pH/ORP: COMBINATION SENSOR KITS, 3/4 INCH

## Controller Required

For information about Hach digital and analog controllers, see pages 316-324.

## Prod. No.

### Digital PC sc and RC sc 3/4-inch Combination

All PC sc and RC sc 3/4-inch combination sensors come complete with an integral 4.5 m (15 ft.) sensor cable, Digital Gateway, and 1 m (3.3 ft.) digital extension cable.

	Measurement	Sensor Style	Body Material
DPC1R1N	pH	Convertible	Ryton
DPC1R1A	pH	Convertible	Ryton
DPC1R2N	pH	Convertible	Ryton
DPC1R2A	pH	Convertible	Ryton
DPC1R3A	pH	Convertible	Ryton
DPC2K1A	pH	Insertion	PVDF
DPC2K2A	pH	Insertion	PVDF
DPC3K2A	pH	Sanitary	316 SS/PVDF
DRC1R5N	ORP	Convertible	Ryton
DRC2K5N	ORP	Insertion	PVDF

### Analog PC and RC 3/4-inch Combination pH/ORP Sensors

All PC and RC 3/4-inch combination sensors come with an integral 4.5 m (15 ft.) standard length sensor cable.

	Measurement	Sensor Style	Body Material
PC1R1N	pH	Convertible	Ryton
PC1R1A	pH	Convertible	Ryton
PC1R2N	pH	Convertible	Ryton
PC1R2A	pH	Convertible	Ryton
PC1R3A	pH	Convertible	Ryton
PC2K1A	pH	Insertion	PVDF
PC2K2A	pH	Insertion	PVDF
PC3K2A	pH	Sanitary	316 SS/PVDF
RC1R5N	ORP	Convertible	Ryton
RC2K5N	ORP	Insertion	PVDF

### sc200 Controller for Analog Sensors

LXV404.99.00102 sc200 controller, 1 channel, pH/DO

LXV404.99.00112 sc200 controller, 2 channel, pH/DO

For more information, request LIT2470.

## Prod. No.

### Accessories for Digital and Analog 3/4-inch Combination pH/ORP Sensors

#### Cables

Digital cables are used only with digital sensors or gateways when connecting to a digital controller.

6122400	Digital Extension Cable, 1 m (3.3 ft.)
5796000	Digital Extension Cable, 7.7 m (25 ft.)
5796100	Digital Extension Cable, 15 m (50 ft.)
5796200	Digital Extension Cable, 31 m (100 ft.)
6120600	External digital gateway

Analog cables are used only with analog sensors, junction box, and controller.

1W1125	Analog Interconnect Cable, order per foot, order alone for PC/RC combination sensors without temperature compensation
1W0980	Analog Interconnect Cable, order per foot, order with 1W1125 for PC/RC combination sensors with temperature compensation

#### Digital Termination Box

Used with digital extension cables when the desired cable length between the digital sensor/digital gateway and a digital controller is between 100 m (328 ft) and 1000 m (3280 ft).

5867000	Digital Termination Box
---------	-------------------------

#### Analog Junction Box

Used with analog interconnect cable when the desired cable length between analog sensor and analog controller is greater than the standard length of sensor cable. Each junction box includes terminal strip and gasket.

60A2053	Junction Box, Surface-mount, aluminum (includes mounting hardware)
60A9944	Junction Box, Pipe-mount, PVC (for 1/2-inch diameter pipe, includes mounting hardware)
60G2052	Junction Box, Pipe-mount, PVC (for 1-inch diameter pipe, includes mounting hardware)

Sensors with Class I Division II safety classification are available —please contact your Hach representative.

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# pH/ORP: 8362sc HIGH PURITY WATER SYSTEM

## The ultimate in accurate and stable pH/ORP measurement.



- Self-pressurizing electrodes
- Accurate temperature measurement
- Stainless steel construction

### Complete System for Simple and Fast Operation

Pre-plumbed sample panel includes the electrode system, digital electronics junction box, flow meter, and mounting assembly. Simply attach the sample line, drain, and digital interconnect cable to the Hach sc200 or sc1000 Digital Controller, turn on the sample flow, and the system is in operation.

### Self-Pressurizing Electrodes

Self-pressurizing electrodes require no maintenance or refilling of electrolyte reservoirs between normal electrode replacements. Replace the electrode once a year for optimal performance.

### Accurate Temperature Measurement

The 100 ohm Platinum RDT is accurate to 0.1°C. Accuracy of temperature is critical for high purity water algorithms for measuring pH/ORP. Also, the stainless steel sheath of the temperature measuring device provides grounding of the sample at the electrode to reduce the effects of streaming currents.

### Stainless Steel Construction

All stainless steel construction for long life and maximum measurement integrity. Stainless steel does not corrode in aggressive high purity water. The entire system is grounded and shields the measuring electrode from EMI and RFI interference.

### Primary Applications

- Pure Water/Power
- Industrial Water

### Specifications\*

**pH Range**  
-2 to 12 pH

**Operating Temperature Range**  
0 to 80°C (32 to 176°F)

**ORP Range**  
-1500 to +1500 mV

**Pressure Range**  
0 to 4 bar (58 psi)

\*Dependent on specific sensor and mounting.

Prod. No.	Description
<b>8362sc High Purity Water pH/ORP Probe Systems</b>	
6178000	pH 8362sc System Includes sensor and 7.6 m (35 ft.) extension cable
6178001	ORP 8362sc System includes sensor and 7.6 m (25 ft.) extension cable

For more information about the sc200 and sc1000 controllers, please see pages 318-321.

### Accessories

08362=A=2000 Spare pH electrode  
08362=A=2100 Spare ORP electrode

### Cables

Extension cables are used only with digital sensors or digital gateways when connecting to a digital controller.

6122400	Digital Extension Cable, 1 m (3.3 ft.)
5796000	Digital Extension Cable, 7.7 m (25 ft.)
5796100	Digital Extension Cable, 15 m (50 ft.)
5796200	Digital Extension Cable, 31 m (100 ft.)

For more information, call to request LIT2409.

See pages 15-70 for information on Hach laboratory and field pH instruments and chemistries.

# pH/ORP: SALT BRIDGE & STANDARD CELL SOLUTION

## For regenerating Hach Differential pH/ORP sensors.

Prod. No.	Description
SB-P1SV <sup>1</sup>	PEEK Salt Bridge, Kynar (PVDF) Outer junction for use with Regeneratable Differential pH and ORP Sensor-1 inch Standard Cell Solution, Concentrated pH 7.0 Buffer (equi-transferrant), 500 mL. For replenishing standard cell chamber while replacing salt bridges for Regeneratable Differential pH and ORP Sensors-1 inch
25M1A1025-115	LCP Salt Bridge, Kynar (PVDF) Outer junction For use with Regeneratable LCP or Ryton Differential pH and ORP Sensor-1-1/2 inch
60-9765-000-001 <sup>2</sup>	Standard Cell Solution, Concentrated pH 7.0 Buffer (equi-transferrant), 500 mL. For replenishing standard cell chamber while replacing salt bridges for for Regeneratable Encapsulated LCP or Ryton Differential pH and ORP Sensors-1-1/2 inch

<sup>1</sup>PEEK body material salt bridges must be used with PEEK body material sensor.

<sup>2</sup>LCP body material salt bridges must be used with LCP body material sensor.

*Salt Bridges are available in a variety of materials and pre-packaged quantities. Please consult Hach for the correct Salt Bridge for your sensor.*

**View the Salt Bridge Replacement Video.  
Just visit the Hach Company channel on YouTube.**



## pH BUFFERS & ORP REFERENCE SOLUTIONS



Prod. No.	Description
2283549	Buffer Solution, pH 7.00 (NIST), Color-coded yellow, 500 mL
2283449	Buffer Solution, pH 4.01 (NIST), Color-coded red, 500 mL
2283649	Buffer Solution, pH 10.01 (NIST), Color-coded blue, 500 mL
2283556	pH 7 buffer 4 L (approx. 1gal)
2283456	pH 4 buffer 4 L (approx. 1gal)
2283656	pH 10 buffer 4 L (approx. 1gal)
25M2A1001-115	200 mV reference sol. 500 mL (1 pt)
25M2A1002-115	600 mV reference sol. 500 mL (1 pt)
25M2A1001-123	200 mV reference sol. 4 L (approx. 1 gal)
25M2A1002-123	600 mV reference sol. 4 L (approx. 1 gal)

See pages 15-70 for information on Hach laboratory and field pH instruments and chemistries.

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# PHOSPHATE: PHOSPHAX™ sc ANALYZER

## Accurate measurements over a broad measurement range.



Indoor version of PHOSPHAX sc is also available.

- Wide detection range from 0.05 mg/L to 50 mg/L
- Low cost of operation with proven analysis method
- Plug-and-play with the sc1000 controller and sc200 controller with optional power box
- Fast response time of 5 minutes, including sample preparation†
- Easy installation at the measurement point
- Optional Filterprobe sc available for insitu membrane filtration
- Low maintenance

†In combination with Filterprobe.

### Primary Applications

- Wastewater
- Industrial Water

### Specifications\*

Measurement Method		
Photometric method using vanado-molydan		
	Low Range	High Range
Measurement Range (PO <sub>4</sub> -P)	0.05 to 15 mg/L	1 to 50 mg/L
Lower Detection Limit	0.05 mg/L	1 mg/L
Accuracy	2%, +0.05 mg/L	2%, +1 mg/L
Reproducibility	2%, +0.05 mg/L	2%, +1 mg/L

<p>PHOSPHAX sc Phosphate Analyzer</p> <p><b>Response time (T90)</b> Less than 5 minutes, including sample preparation with Filterprobe</p> <p><b>Measurement Interval</b> 5 to 120 minutes, adjustable</p> <p><b>Outputs</b> Relay, current outputs, and bus interface via sc200 (with power box) or sc1000 Multi-parameter Universal Controller</p> <p><b>Special Features</b></p> <ul style="list-style-type: none"> <li>• ASA UV-resistant, lockable housing, rated to IP55</li> <li>• Automatic cleaning and calibration</li> <li>• Extensive self-diagnostics</li> <li>• Optional 2-channel version for continuous sample preparation</li> </ul> <p><b>Sample Preparation</b> Filterprobe sc (see specifications below) or continuous sample preparation (approximately 500 to 1000 mL/h) with FILTRAX, ultrafiltration, etc.</p>	<p>Filterprobe sc</p> <p><b>Operation</b></p> <ul style="list-style-type: none"> <li>• In-situ membrane filtration</li> <li>• Filter modules are exchangeable</li> <li>• Continuous self-cleaning with air bubbles</li> <li>• Particles larger than 0.15 µm are separated from sample stream</li> </ul> <p><b>Immersion Depth</b> 3 m (9.8 ft.), maximum</p> <p><b>Sample Flow Rate</b> 3 m/s, maximum</p> <p><b>Filtrate Flow Rate</b> 5 mL/minute, minimum, 4 out of 5 minutes</p> <p><i>*Subject to change without notice.</i></p>
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Prod. No.	Description
<b>6159000</b>	<b>PHOSPHAX sc Phosphate Analyzer With Filterprobe sc</b> PHOSPHAX sc Phosphate Analyzer 0.05 to 15 mg/L, 115 Vac; includes filtration probe with 5 m heated hose
<b>6159400</b>	PHOSPHAX sc Phosphate Analyzer 1 to 50 mg/L, 115 Vac; includes filtration probe with 5 m heated hose
<b>6159100</b>	PHOSPHAX sc Phosphate Analyzer 0.05 to 15 mg/L, 115 Vac; includes filtration probe with 10 m heated hose
<b>6159500</b>	PHOSPHAX sc Phosphate Analyzer 1 to 50 mg/L, 115 Vac; includes filtration probe with 10 m heated hose

For two-channel version of the PHOSPHAX sc Phosphate Analyzer, please contact your Hach representative or call 1-800-227-4224.

### Controllers

This sensor requires a Hach sc200 (with power box) or sc1000 Digital Controller. See pages 318-321 for details.

### Mounting Hardware

<b>LZY286</b>	Stand Mount (SS) for sc analyzer with sc1000 controller
<b>LZY287</b>	Stand Mount (SS) for sc analyzer without sc1000 controller
<b>LZY285</b>	Rail Mount Kit (SS) for sc analyzer with sc1000 controller
<b>LZY316</b>	Rail Mount Kit (SS) for sc analyzer without sc1000 controller
<b>LZY714.99.42020</b>	Tank Rim Mount Kit (SS) for Filterprobe sc
<b>LZX414.00.60000</b>	Rail Mount Kit (SS) for Filterprobe sc

### Reagents

<b>2825254</b>	PHOSPHAX Reagent, 2000 mL
<b>2825352</b>	PHOSPHAX Cleaning Solution, 1000 mL

### Hach WarrantyPlus

<b>WRTUPGPHOSPHAXSC</b>	PHOSPHAX™ sc Analyzer WarrantyPlus™ Instrument Protection and Service
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For two-channel, instruments with alternative filtration systems or indoor version of the PHOSPHAX sc Phosphate Analyzer, please contact your Hach representative or call 1-800-227-4224.

For more information, call to request LIT2488.

## Lower Maintenance, Less Downtime.

### 90 Days of Continuous Run Time

Only two liters of reagent are required for the analyzer to perform unattended for up to 90 days; twice as long as the Series 5000.

### Save Time on Maintenance

The industry's only pressurized reagent delivery system eliminates the frequent maintenance associated with pumps.

### Avoid Downtime

Predictive diagnostic tools, including Hach's proprietary Prognosys technology, warning LEDs, and high-visibility notification screens let you avoid unplanned downtime.

### Clean, Fast and Easy Reagent Change

No more dripping reagents on the instrument, the floor, or your clothing while fumbling with tubes and straws. Simply match the color-coded cap to the sealed reagent bottle and twist gently.

Prod. No.	Description
5500.KTO.PH.A1U	Hach 5500sc Phosphate High Range Analyzer, Proprietary chemistry only, AC, 1 channel, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.PH.A2U	Hach 5500sc Phosphate High Range Analyzer, Proprietary chemistry only, AC, 2 channels, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.PH.A4U	Hach 5500sc Phosphate High Range Analyzer, Proprietary chemistry only, AC, 4 channels, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.PL.A1U	Hach 5500sc Phosphate Low Range Analyzer, Proprietary chemistry only, AC, 1 channel, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.PL.A2U	Hach 5500sc Phosphate Low Range Analyzer, Proprietary chemistry only, AC, 2 channels, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.PL.A4U	Hach 5500sc Phosphate Low Range Analyzer, Proprietary chemistry only, AC, 4 channels, includes Hach reagents set for start up and up to 90 days of use

### Reagents

6776100	5500sc Phosphate High Range Reagent Set
2035400	5500sc Phosphate Low Range Reagent Set

### Accessories/Options

6787000	Kit, Retrofit Panel, S5000 to 5500sc
9179700	Power Cord, North American
6786600	Stainless Steel Sample Adapter Kit
1757700	Sample Cooler
6792500	Module Kit, ModBus (sc200)
6792600	Module Kit, Profibus (sc200)

For more information, call to request LIT2811.

See pages 201-202 for reagents, test kits, and accessories for measuring phosphate in the lab or field.

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# NEW!



### Specifications\*

#### Measuring Principle

Colorimetric

#### Range

LR model: 0-3000 µg/L as PO<sub>4</sub>;  
HR model: 200-50,000 µg/L as PO<sub>4</sub>

#### Accuracy

LR model: ±4 µg/L or ±4% of reading, whichever is greater;  
HR model: ±500 µg/L or ±5% of reading, whichever is greater

#### Repeatability

LR model: ±1%  
HR model: ±500 µg/L or ±5% of reading, whichever is greater

#### Lower Limit of Detection (LOD)

LR model: 4 µg/L  
HR model: 200 µg/L

#### Response Time

Typically, 9.5 minutes at 25 °C (77 °F); changes with temperature

\*Subject to change without notice.

# SAMPLE CONDITIONING: FILTRAX™ SYSTEM

## Simple, reliable, self-cleaning micro filtration.



- High permeate quality
- Low operating costs
- Continuous air cleaning minimizes cleaning required
- No need for an expensive, high maintenance submersible pump
- Works reliably, even with a high sludge volume index or floating sludge

### Filtrax—Filtration Technology for More Reliable Operation

Hach's Filtrax sample filtration system continuously extracts sample directly from the aeration basin or final settling tank and cleans its built-in filter membranes automatically.

The Filtrax prepares sample through two ultra-filtration membranes (0.15µm) that are immersed in the process tank. Two small, peristaltic pumps pull the sample through one filter at a time, allowing for optimal cleaning of the other. The Filtrax automatically cleans both filter membranes, while immersed, by forcing a vigorous stream of air bubbles against the sides of the filter modules.

The Filtrax System is ideal for outdoor use in any climate. Virtually maintenance free, all tubing is completely accessible and easy to replace. Moving parts never come into contact with the sample. The system self-monitors flow rate across the filter media. One programmable alarm relay can be used to alert operators to inspect the Filtrax system when flow decreases, and a second relay can shut the unit down if flow decreases further.

For more information, call to request LIT2424.

### Primary Applications

- Wastewater
- Industrial Water

### Specifications\*

<b>Sample Flow</b>	Approx. 900 mL/h
<b>Power Supply</b>	115V or 230 V ± 10 % AC, 50-60 Hz
<b>Outputs</b>	Two programmable potential free contact (115V or 230V, max. 3 A)
<b>Sample Temperature Range</b>	41°F to 104°F (5°C to 40°C)
<b>Ambient Temperature Range</b>	-4°F to 104°F (-20°C to 40°C)
<b>Enclosure Class</b>	IP 55 (outdoor installation)
<b>Certification</b>	CE, UL, CSA
<b>Dimensions</b>	Control unit (W x H x D): 16.9" x 20.9" x 8.7" (430 x 530 x 220 mm) Module holder (W x H x D): 3.6" x 19.7" x 13.4" (92 x 500 x 340 mm)
<b>Shipping Weight</b>	Up to 90 lbs (41kg) depending on delivery hose option
<b>Sample Suction Hose</b>	5 m (heated)
<b>Sample Delivery Hose Options</b>	2 m (unheated) 2m (heated) 10 m (heated) 20 m (heated)

\*Subject to change without notice.

Prod. No.	Description
5738900	Filtrax System 2 m unheated sample delivery hose, 115 Vac
5739200	Filtrax System 2 m heated sample delivery hose, 115 Vac
5739000	Filtrax System 10 m heated sample delivery hose, 115 Vac
5739100	Filtrax System 20 m heated sample delivery hose, 115 Vac
5738901	Filtrax System 2 m unheated sample delivery hose, 230 Vac
5739001	Filtrax System 10 m heated sample delivery hose, 230 Vac
5739101	Filtrax System 20 m heated sample delivery hose, 230 Vac

### Accessories

LZX216	Cleaning container for FILTRAX Filter Modules
LZX217	Cleaning Set for FILTRAX Sample Line
LZY303	Drain Hose 2m (heated) 115Vac
LZY302	Drain Hose 2m (heated) 230Vac
4696400	Power cord, 115 Vac, 6ft.
4743900	Power cord, 230 Vac, 6ft.

### Replacement Items

LZX667	Filtrax maintenance kit
LZX677	Filter Module

### Mounting Hardware

LZY714.99.43050	Tank Rim Mount Kit (SS) for FILTRAX Module Holder
LZX676	Stand Mount Kit (SS) for FILTRAX control unit

### Hach WarrantyPlus

WRTUPGFILTRAX FILTRAX WarrantyPlus™ Instrument Protection and Service

**NEW!**

## Lower Maintenance, Less Downtime.

### 90 Days of Continuous Run Time

Only two liters of reagent are required for the analyzer to perform unattended for up to 90 days; twice as long as the Series 5000.

### Save Time on Maintenance

The industry's only pressurized reagent delivery system eliminates the frequent maintenance associated with pumps.

### Avoid Downtime

Predictive diagnostic tools, including Hach's proprietary Prognosys technology, warning LEDs, and high-visibility notification screens let you avoid unplanned downtime.

### Clean, Fast and Easy Reagent Change

No more dripping reagents on the instrument, the floor, or your clothing while fumbling with tubes and straws. Simply match the color-coded cap to the sealed reagent bottle and twist gently.



Prod. No.	Description
5500.KTO.S0.A1U	Hach 5500sc Silica Analyzer, Proprietary chemistry only, AC, 1 channel, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.S0.A2U	Hach 5500sc Silica Analyzer, Proprietary chemistry only, AC, 2 channels, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.S0.A4U	Hach 5500sc Silica Analyzer, Proprietary chemistry only, AC, 4 channels, includes Hach reagents set for start up and up to 90 days of use
5500.KTO.S0.A6U	Hach 5500sc Silica Analyzer, Proprietary chemistry only, AC, 6 channels, includes Hach reagents set for start up and up to 90 days of use

### Reagents

6783600	5500sc Silica Reagent set
6774802	5500sc Reagent 1 Silica 2L
6774902	5500sc Reagent 2 Silica 2L
6775102	5500sc Reagent 3 Silica Pkg
6775002	5500sc Standard 1 Silica 2L

### Accessories/Options

6787000	Kit, Retrofit Panel, S5000 to 5500sc
9179700	Power Cord, North American
6786600	Stainless Steel Sample Adapter Kit
1757700	Sample Cooler
6792500	Module Kit, ModBus (sc200)
6792600	Module Kit, Profibus (sc200)

For more information, call to request LIT2809.

See pages 205-206 for reagents, test kits, and accessories for measuring silica in the lab or field.

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### Specifications\*

#### Measuring Principle

Colorimetric

#### Range

0 to 5000 µg/L as SiO<sub>2</sub>

#### Accuracy

0–500 µg/L: ±1% or ±1 µg/L of reading, whichever is greater;  
500–5000 µg/L: ±5%

#### Repeatability

± 0.5 µg/L or ± 1 % of reading, whichever is greater

#### Lower Limit of Detection (LOD)

0.5 µg/L

#### Response Time

Typically, 9.5 minutes at 25 °C (77 °F); changes with temperature

\*Subject to change without notice.



# SLUDGE LEVEL: SONATAx sc PROBE

Low-maintenance sludge level monitor delivers superior accuracy.

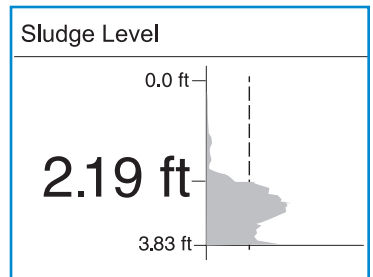


- For a continuous ultrasonic measurement of sludge blanket level
- Reduced maintenance with innovative wiper design
- Superior accuracy with automatic frequency adjustment
- Digitized probe, temperature compensation, and position sensor ensure reliability
- Visual performance indicator enhances troubleshooting

## Principle of Operation

The Hach SONATAx sc Sludge Level Probe uses an ultrasonic pulse to accurately measure the sludge level. An ultrasonic signal sent from the probe is directed towards the sludge blanket in the tank. Height and depth measurements are based on the time it takes for the ultrasonic echo to return to the probe and are displayed on the controller (figure below).

*SONATAx sc probes can be connected to an sc1000 or sc200 controller. Graphical display of the sludge profile is available only with the sc1000 controller.*



## Primary Applications

- Wastewater
- Industrial Water

## Prod. No. Description

### Probe Systems

**2976300** SONATAx sc System includes one SONATAx sc probe, pivot mount hardware, and sc200 standard controller

*(Note: Power cords 9202900 must be ordered separately)*

### SONATAx sc Probe

**LXV431.99.00002** SONATAx sc Sludge Level Probe  
**5773000** One SONATAx sc Sludge Level probe with pivot mount hardware

### Mounting Accessories

**LZY714.99.42120** Fixed Point Mount for probe (For mounting probe at a fixed location)

**LZY714.99.00030** Extension pipe 1m (3.3ft.) (For fixed point mount LZY714.99.42120)

**LZY714.99.00040** Extension pipe 2m (6.6ft.) (For fixed point mount LZY714.99.42120)

**LZY714.99.62160** Pivot Mount for probe (0.35m (1.15 ft.) extension pipe) (For mounting probe on a pivot assembly for clarifier with skimmer)

**LZY714.99.72160** Pivot Mount for probe (1 m (3.3 ft.) extension pipe) (For mounting probe on a pivot assembly for clarifier with skimmer)

**LZX414.00.73000** SONATAx sc Rail Mounting Assembly (Rail Mount must be ordered with either LZY714.99.42120 or LZY714.99.72160 or LZY714.99.72160)

**LZX914.99.11300** Chain Mount Assembly for SONATAx sc

### Replacement Parts

**LZX328** Wiper Blades for Probe, replacement only, pkg. of 5

For more information, call to request LIT2548.

## Specifications\*

<b>Measuring Principle</b> Ultrasonic measurement	<b>Calibration</b> Factory calibrated
<b>Range</b> 0.2 to 12 m (0.6 to 40 ft.)	<b>Probe Construction</b> Wiper: Silicon Body: Stainless steel Face: Polyoxymethylene
<b>Resolution</b> 0.03 m (0.09 ft.)	<b>Certifications</b> CE
<b>Accuracy</b> ±0.1 m (±0.33 ft.)	<b>Protection Type</b> IP68 (<= 1 bar (14.5 psi))
<b>Operating Temperature</b> >0 to 50°C (>32 to 122°F)	<b>Dimensions</b> 130 x 185 mm (5 x 7.3 in.)
<b>Power Requirement</b> 12V, 2.4W, provided by sc controller	<b>Weight</b> 3.5 kg (7.7 lbs.)
<b>Measurement Interval</b> 10 to 1,800 seconds (adjustable)	<i>*Subject to change without notice.</i>
<b>Measurement Parameter</b> Sludge level or sludge height	
<b>Probe Mounting</b> Fixed location or pivot assembly	



# SODIUM: 9245 / 9240 ANALYZER

- Detection limit of 0.01 ppb (0 to 10,000 ppb)
- 100 days between reagent changes
- Automatic reactivation ensures optimum response time and performance; no acid etching required
- Easy to operate and maintain with automatic calibration
- Save money (and footprint) by choosing a multi-stream 9240 sodium analyzer.

## Principle of Operation

The 9245/9240 Sodium Analyzer uses ion selective electrode measurement after pH conditioning. Sample pH conditioning is essential for limiting interference of temperature or other ions on sodium measurement. Constant, temperature compensated buffering is assured using regulated reagent addition.

## Hach 9245/9240 Sodium Analyzer includes reagents, US fittings, and user's manual.

Prod. No.	Description
6849400	9245 Sodium Analyzer with enclosure
6849500	9245 Sodium Analyzer panel mount
6858000	9245 Sodium Analyzer with Cation Kit Option, panel mount
6858010	9245 Sodium Analyzer with Cation Kit Option, with enclosure

## Panel-Mount Kit

9001600	9240 Sodium Analyzer, 1-channel
9000200	9240 Sodium Analyzer, 3-channel
9001700	9240 Sodium Analyzer, 2-channel
9000800	9240 Sodium Analyzer, 1-channel with Cation Kit
9000300	9240 Sodium Analyzer, 4-channel
9000900	9240 Sodium Analyzer, 2-channel with Cation Kit
9001000	9240 Sodium Analyzer, 3-channel with Cation Kit
9001900	9240 Sodium Analyzer, 4-channel with Cation Kit

## Unit With Enclosure

9000400	9240 Sodium Analyzer, 1-channel
9000500	9240 Sodium Analyzer, 2-channel
9001200	9240 Sodium Analyzer, 1-channel with Cation Kit
9000600	9240 Sodium Analyzer, 3-channel
9000700	9240 Sodium Analyzer, 4-channel
9001300	9240 Sodium Analyzer, 2-channel with Cation Kit
9001400	9240 Sodium Analyzer, 3-channel with Cation Kit
9001500	9240 Sodium Analyzer, 4-channel with Cation Kit

## Upgrade Options

09125=A=1485	Profibus DP, with board
09125=A=2485	RS485 JBUS/MODBUS, with board

## Accessories

595=010=000	Sample Filter; 100 micron, metric fittings
595=010=005	Sample Filter; 100 micron, imperial fittings
09240=A=8405	Static Heat Exchanger System, imperial fittings

## Consumables

363140,00500	Reference Electrolyte, KCl, 3 M, 500 mL
2835153	Sodium Standard, 10 ppm, 1 L
2834453	Di-isopropylamine (DIPA), 1 L
2834253	Sodium Standard, 100 ppm, 1 L
2507149	Sodium Nitrate, 0.5M, 500 mL

## Hach WarrantyPlus

WRTUPG9240	9240 Analyzer WarrantyPlus™ Instrument Protection and Service
WRTUPG9245	9245 Analyzer WarrantyPlus™ Instrument Protection and Service

Only available in US and Canada.

For more information, request LIT2572.

Visit pages 15-70 for information on Hach laboratory and field sodium instruments and chemistries.

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## Low-level sodium measurement in high purity water.



## Primary Applications

- Pure Water/Power
- Industrial Water

## Specifications\*

### Measuring Range

0 to 10,000 ppb, freely programmable  
0 to 200 ppm with Cation-kit option

### Accuracy

±0.1 ppb or ±5% of reading, whichever is greater  
Cationic application: ±2 ppb or 5% reading, whichever is greater

### Repeatability

< 0.02 ppb or 1.5% reading, whichever is greater, within 10°C variation

### Detection Limit

0.01 ppb

### Response Time

1 cycle, minimum 10 minutes (t=90%)

### Ambient Temperature

5 to 50°C (41 to 122°F)

\*Subject to change without notice.

# STREAMING CURRENT: AF7000 MONITOR

## NEW!

### Toughness that won't quit, means you'll know when to respond.

#### Heavy Duty Construction with Serious Durability In Mind

Built with 316 Stainless Steel, the AF7000 is made for 24/7 monitoring of your source water.

#### Industrial Sized Motor for the Long Haul

With a typical motor going over 130 million revolutions in a single year, the all metal design provides confidence that your monitor can go the distance.

#### An Open and Uncomplicated Design Saves You Time

A simple and straightforward design allows for easy routine maintenance, saving you time so you can focus on other parts of your facility.



*The AF7000's rugged construction, industrial motor and design features ensure accurate 24/7 monitoring of your source water. Being able to immediately react to any changes which may occur keeps the control in your hands.*



PROCESS INSTRUMENTS

#### Specifications\*

##### Wetted Materials

Stainless Steel, UHMW, Epoxy

##### Speed of Response

1 sec to 1 min adjustable average

##### Weight

47.4 lbs. (21.5 kg)

*\*Subject to change without notice.*

#### Prod. No.

LXV510.99.10000

LXV510.99.11000

LXV510.99.11010

LXV510.99.20000

LXV510.99.22000

LXV510.99.22010

#### Description

AF7000 Streaming Current Monitor, 110 VAC

AF7000 SCM w/Auto Flush, 110V

AF7000 SCM, AutoFlush, Water Weir & Grit Filter, 110V

AF7000 Streaming Current Monitor, 230 VAC

AF7000 SCM w/Auto Flush, 230V

AF7000 SCM, AutoFlush, Water Weir & Grit Filter, 230V

#### Accessories and Expansion Options

LZY763

AF7000 SCM Relay Output

LZY764

AF7000 SCM, 4-20mA PID Controller

LZY765

AF7000 Wtr Connections w/Autoflush

LZY766

AF7000 Wtr Conn. w/o Autoflush

#### Maintenance Parts

LZY755

AF7000 Cam Rod to Piston Linkage

LZY757

AF7000 Piston

LZY756

AF7000 Replacement Streaming Current Sensor

LZY758

AF7000 Sensor Bearing/ Washer Kit

*For more information, request LIT2497.*



## Accurate color-independent suspended solids and turbidity measurements.

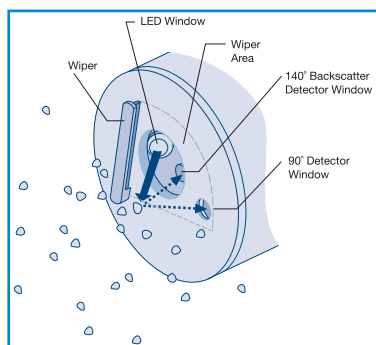
- Self-cleaning device prevents erroneous values
- Excellent correlation to laboratory analysis
- Fully serviceable sensors extend lifetime
- Easy one-point calibration
- Any two SOLITAX® sc sensors can be installed using one Hach sc200 Controller

### Greater Accuracy, Less Maintenance

Hach SOLITAX sc sensors provide accurate, color-independent measurement of turbidity and suspended solids in drinking water, wastewater, and industrial process applications. A self-cleaning device prevents measurement error due to fouling. This system's reliable performance and full data communication capability help improve process control and reduce treatment costs associated with polymer use, digester volume, and sludge handling.

### Principle of Operation

With a dual-beam infrared/scattered light photometer, the SOLITAX sc sensors are capable of measuring either turbidity or, on certain models, both turbidity and suspended solids. A backscatter photoreceptor enables the instrument to accurately measure suspended solids. (Included on all models except the SOLITAX sc t-line.)



See next page for ordering information.

For more information, call to request LIT2472.

### Primary Applications

- Drinking Water
- Wastewater
- Industrial Water

### Specifications\*

<p><b>Measuring Principle</b> Dual beam infrared/scattered light photometer to measure turbidity. A backscatter photoreceptor to measure suspended solids.</p> <p><b>Range</b> t-line sc sensor† Turbidity only 0.001 to 4000 NTU ts-line sc sensor† Turbidity 0.001 to 4000 NTU Suspended Solids 0.001 mg/L to 50 g/L** hs-line sc sensor† Turbidity 0.001 to 4000 NTU Suspended Solids 0.001 mg/L to 500 g/L** inline sc sensors†† Turbidity 0.001 to 4000 NTU Suspended Solids 0.001 mg/L to 50 g/L** highline sc sensors†† Turbidity 0.001 to 4000 NTU Suspended Solids 0.001 mg/L to 500 g/L**</p>	<p><b>Accuracy</b> <i>Turbidity</i> Without calibration &lt; 5% of the measured value ±0.01 FNU/NTU with calibration &lt; 1% of the measured value ±0.01 FNU/NTU</p> <p><b>Repeatability</b> <i>Turbidity</i> Less than 1% of reading <i>Suspended Solids</i> Less than 3% of reading (depends on the homogeneity of municipal activated sludge)</p> <p><b>Response Time</b> 1s ≤T90 ≤300s (adjustable)</p>	<p><b>Calibration</b> <i>Turbidity</i> Formazin or 800 NTU StablCal® Standard <i>Suspended Solids</i> Based on gravimetric SS analysis with a correction factor procedure</p> <p><b>Operating Temperature</b> &gt;0 to 40°C (&gt;32 to 104°F)</p> <p><b>Weight</b> Insertion stainless steel: 2.4 kg (5.3 lb.) Immersion, stainless steel: 1.38 kg (3.0 lb.) Immersion, PVC: 0.52 kg (1.2 lb.)</p>
		<p>*Subject to change without notice. **Upper range depending on sample characteristics. †Sensors for immersion in open tanks. ††Sensors for insertion in pipes.</p>

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U.S. customers only.

# SUSPENDED SOLIDS & TURBIDITY: SOLITAX® sc

## Quick Reference Guide

Product Name	t-line sc	ts-line sc	hs-line sc	inline sc	highline sc
Product Description	Turbidity sensor for immersion in open tanks	Solids and Turbidity sensor for immersion in open tanks	Solids and Turbidity sensor for immersion in open tanks	Solids and Turbidity sensor for insertion in pipes	Solids and Turbidity sensor for insertion in pipes
Range	Turbidity: 0.001-4000 NTU	Turbidity: 0.001 to 4000 NTU Suspended Solids: 0.001 mg/L to 50 g/L*	Turbidity: 0.001 to 4000 NTU Suspended Solids: 0.001 mg/L to 500 g/L*	Turbidity: 0.001 to 4000 NTU Suspended Solids: 0.001 mg/L to 50 g/L*	Turbidity: 0.001 to 4000 NTU Suspended Solids: 0.001 mg/L to 500 g/L*
Material of Construction	PVC	Stainless Steel or PVC	Stainless Steel or PVC	Stainless Steel	Stainless Steel
Product Number	<b>LXV423.99.10000</b>	<b>LXV423.99.10100 (PVC)</b> <b>LXV423.99.00100 (SS)</b>	<b>LXV423.99.10200 (PVC)</b> <b>LXV423.99.00200 (SS)</b>	<b>LXV424.99.00100</b>	<b>LXV424.99.00200</b>

\*Upper range depending on sample characteristics.

### Prod. No. Description

#### SOLITAX sc Turbidity and Suspended Solids Analyzer Systems (common controller and sensor configurations) with sc200 Controller

##### Immersion in Open Tanks Applications

- 2983400** Turbidity Analyzer –stainless steel ts-line sc (0.001 to 4000 NTU) with wiper
- 2983500** Turbidity and Suspended Solids Analyzer –stainless steel ts-line sc (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L \*) with wiper
- 2983600** Turbidity and High Range Suspended Solids Analyzer –stainless steel hs-line sc (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L \*) with wiper

##### Insertion in Pipes Applications (includes insertion mounting kit)

- 2983700** Turbidity and Suspended Solids Analyzer includes –stainless steel inline sc (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L \*) with wiper
- 2983900** Turbidity and High Range Suspended Solids Analyzer –stainless steel highline sc (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L\*) with wiper

NOTE 1. Power cords must be ordered separately. 2. Fixed point installation kit or handrail mount kit must be ordered separately for all immersion analyzers.

#### Individual SOLITAX sc Sensors

##### Immersion Sensors

- LXV423.99.10000** Turbidity, t-line sc, PVC with wiper (0.001 to 4000 NTU)
- LXV423.99.10100** Turbidity and Suspended Solids, ts-line sc, PVC with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L\*)
- LXV423.99.00100** Turbidity and Suspended Solids, ts-line sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L\*)
- LXV423.99.10200** Turbidity and Suspended Solids, hs-line sc, PVC with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L\*)
- LXV423.99.00200** Turbidity and Suspended Solids, hs-line sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L\*)

##### Insertion Sensors

- LXV424.99.00100** Turbidity and Suspended Solids, inline sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 50 g/L\*)
- LXV424.99.00200** Turbidity and Suspended Solids, highline sc, stainless steel with wiper (0.001 to 4000 NTU, 0.001 mg/L to 500 g/L\*)

### Prod. No.

#### Accessories

- 5733000** Calibration Kit, includes calibration cylinder, two 500-mL 800 NTU StablCal®, and a sensor bracket
- 2660549** StablCal® Turbidity Standard, 800 NTU, 500 mL (two required per calibration)
- LZX050** Wiper Blades, replacement only, pkg. of 5
- 9220600** Sun Shield for sc200 controller

#### Cable Accessories

- 5796000** Digital Extension Cable, 7.7 m (25 ft.)
- 5796100** Digital Extension Cable, 15 m (50 ft.)
- 5796200** Digital Extension Cable, 31 m (100 ft.)
- \*Maximum total length 100 m (328 ft.)

#### Installation Accessories

- LZY714.99.53120** Stainless Steel pole mount kit for SOLITAX t-line, ts-line, and hs-line immersion sensors, including 10cm base and 2 m pole with sensor adapter.
- 5738400** Insertion Mounting Kit for inline and highline insertion sensors (ball valve safety armature and extraction system). Kit includes a 4 inch pre-coped Carbon Steel Flange. Non-coped flanges are available. See below.
- MH236B00Z** Handrail Mounting Kit (for sensor to be used with either adapter above) includes 1.5-inch diameter by 7.5-ft long CPVC pipe and swivel/pivot/ pipe clamp assembly
- AHA033NPT** Sensor Adapter, straight 1-1/2 FNPT
- AHA034NPT** Sensor Adapter, elbow 1-1/2 FNPT 90°
- LZX660** Non-coped stainless steel welding flange for insertion kit
- LZX661** Non-coped carbon steel welding flange for insertion kit

#### Hach WarrantyPlus

- WRTUPGSOLITAX** SOLITAX sc Analyzer WarrantyPlus™ Instrument Protection and Service

\*Upper range depending on sample characteristics.

For more information, call to request LIT2472.



## Measures on-line suspended solids in virtually all applications under the strictest regulatory conditions.

- Redundant optical system and self-cleaning wiper version for high solid environments
- High temperature sensor that withstands temperatures of up to 90°C
- Specially designed sensors for measurement in high hygienic regulatory conditions
- The only titanium suspended solids sensor in the market designed for the most difficult environments
- Two parameters in one instrument—Suspended Solids and Turbidity

### Primary Applications

- Industrial Water
- Food & Beverage

Prod. No.	Description
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#### TSS sc Turbidity and Suspended Solids Sensor

##### Immersion in Open Tanks Applications

**LXV323.99.10002** TSS sc Turbidity & Suspended Solids

**LXV324.99.10002** TSS W sc

**LXV325.99.10002** TSS HT sc w/o wiper

**LXV329.99.10002** TSS TITANIUM2 sc w/o wiper

**LXV330.99.10002** TSS TITANIUM7 sc w/o wiper

**LXV328.99.10002** TSS EX1 sc (Class I Div 2)

##### Insertion in Pipes Applications TriClamp Connection

**LXV323.99.20002** TSS sc TriClamp w/o wiper

**LXV324.99.20002** TSS W sc TriClamp w/wiper

**LXV325.99.20002** TSS HT sc TriClamp w/o wiper

**LXV329.99.20002** TSS TITANIUM2 sc TriClamp w/o wiper

**LXV330.99.20002** TSS TITANIUM7 sc TriClamp w/o wiper

**LXV326.99.10002** TSS VARI sc w/o wiper

**LXV327.99.10002** TSS XL sc w/o wiper

**LXV328.99.20002** TSS EX1 sc TriClamp (Class I Div 2) w/o wiper

##### InLine Applications

**LXV323.99.30002** TSS sc InLine w/o wiper

**LXV324.99.30002** TSS W sc InLine with wiper

**LXV325.99.30002** TSS HT sc InLine w/o wiper

**LXV328.99.30002** TSS EX1 sc InLine (Class I Div 2) w/o wiper

### Controller

This sensor requires a Hach sc200 or sc1000 Digital Controller.

### Accessories

**LZY634** Wiper set TSS sc (for 5 changes with screws and screwdriver)

### Accessories for InLine Probes

**LZY630.00.10000** Ball valve safety armature with SS flange

**LZY630.00.11000** Ball valve safety armature with carbon steel flange

**LZY630.00.12000** Ball valve safety armature for TSS sc without flange

**LZY630.00.20000** Ball valve safety armature for TSS EX1 sc InLine probe including non-coped stainless steel welding flange LZX660

### Hach WarrantyPlus

**WRTUPGTSSSC** TSS sc Sensor WarrantyPlus™ Instrument Protection and Service



The TSS sc probes family is digital and can be connected to an sc1000 or sc200 Controller. See pages 318-321 for more information on Hach sc Controllers.

### Principle of Operation

The Hach TSS sc probes have double optical systems with two pulsating infrared LEDs and four receivers. As the transmitted light is scattered, the receivers pick up the incident light at 90° and 120° angles effectively doubling the accuracy of the instrument. This eight channel measurement system, with an integrated bubble and temperature compensating software, enables the instrument to have a wide measuring range that effectively cover most applications, from the darkest pre-treated water to the freshest of spring waters, with one instrument. TSS EX1 sc probes have been designed for measurement in hazardous locations with Class I Div 2 requirements. Depending on the application it is possible to select either an immersion style or insertion style probe.

### Specifications\*

#### Measurement Method

Combined multiple beam alternating light method with infrared diode system and beam focusing

**Turbidity (TRB):** 2-channel 90° scattered light measurement in accordance with DIN/EN 27027/ISO 7027, wavelength = 860 nm  
**Solids (TS):** 90° and 120° scattered light measurement, wavelength = 860 nm

#### Measuring Range

**Turbidity (TRB):** 0.001 to 9,999 FNU  
**Solids (TS):** 0.001 to 500 g/L With SiO<sub>2</sub> standard solution

#### Measurement Accuracy

**Turbidity (TRB):** Up to 1,000 FNU/NTU: 5% of measured value ±0.01 FNU/NTU

#### Reproducibility

**Turbidity (TRB):** <3%  
**Solids (TS):** <4%

#### Response Time

1 s < T90 < 300 s (adjustable)

#### Calibration

**Turbidity (TRB):** Factory calibrated  
**Solids (TS):** To be calibrated by customer on site  
**Zero point:** Permanently calibrated in the factory

#### Pressure Range

<6 bar: TSS W sc  
 <10 bar: TSS sc, TSS HT sc, TSS EX1 sc, TSS TITANIUM2 sc, TSS TITANIUM7 sc  
 <16 bar: TSS VARI sc, TSS XL sc

#### Flow Rate

3 m/s maximum

#### Ambient Temperature

0 to 50°C: TSS W sc, TSS EX1 sc  
 0 to 60°C: TSS sc, TSS TITANIUM2 sc, TSS TITANIUM7 sc  
 0 to 80°C: TSS VARI sc, TSS XL sc  
 0 to 90°C: TSS HT sc

#### Dimensions

**Tank sensor and InLine sensor TSS sc, W sc, HT sc:**  
 D x L 40 mm x 330 mm  
**TSS EX1 sc:**  
 D x L 48.5 mm x 385 mm  
**InLine sensor (TriClamp):**  
 D x L 40 mm x 332 mm  
**TSS EX1 sc InLine, TriClamp:**  
 D x L 48.5 mm x 448 mm  
**TSS VARI sc, TSS XL sc:**  
 D x L 40 mm x 232 mm

#### Weight

**Tank sensor, inLine sensor (TriClamp):**  
 Approx. 1.6 kg  
**TSS VARI sc, TSS XL sc:**  
 Approx. 1.5 kg  
**TSS EX1 sc:**  
 Approx. 2.7 kg

\*Subject to change without notice.

For more information, call to request LIT2657.

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# SUSPENDED SOLIDS & TURBIDITY: TSS PORTABLE

## Hand-held turbidity, suspended solids and sludge blanket level instrument.



- Three parameters in one instrument
- Air bubble compensation for accuracy
- Easy sludge blanket levels
- Durable materials for long life
- Rechargeable battery power

The Hach TSS Portable Hand-held Turbidity, Suspended Solids, and Sludge Blanket Level Instrument is ideal for remote monitoring in municipal and industrial wastewater, drinking water, and river monitoring. This instrument can be used as an optimization tool for monitoring processes or as an easy way to calibrate or validate online sensors.

<b>Prod. No.</b> <b>LXV322.99.00002</b>	<b>Description</b> TSS Portable Hand-held Turbidity, Suspended Solids, and Sludge Blanket Level System; includes meter, probe, rechargeable batteries, charger for rechargeable batteries with four plug adapters, manual, quick start guide and carrying case.
<b>WRTUPGTSSPORT</b>	TSS Portable WarrantyPlus™ Instrument Protection and Service

For more information, request LIT2634.

### Specifications\*

#### Measuring Principle

Combined multi-beam alternating light method with infrared diode system Turbidity: 2-channel 90° scattered light measurement in accordance with DIN EN 27027/ISO 7027; additional measured value verification by six-channel multiple angle measurement Suspended Solids: modified absorbance measurement, six-channel multiple angle measurement

#### Range

Turbidity: 0.001 to 9999 NTU  
Suspended Solids: 0.0001 to 400 g/L (1 to 400,000 mg/L) (upper range depending on sample characteristics)

#### Accuracy

Turbidity: less than 3 % or ± 0.02 NTU whichever is greater

#### Resolution

Turbidity: 0.001 at 0 to 0.999 NTU  
Turbidity: 0.01 at 1 to 9.99 NTU  
Turbidity: 0.1 at 10 to 99.9 NTU  
Turbidity: 1 at greater than 100 NTU  
Suspended Solids: 0.001 at 0 to 0.999 g/L  
Suspended Solids: 0.01 at 1 to 9.999 g/L  
Suspended Solids: 0.1 at 10 to 99.9 g/L  
Suspended Solids: 1 at greater than 100 g/L

#### Unit

Units of Measure Turbidity: NTU, FNU, EBC  
Units of Measure Suspended Solids: ppm, mg/L, g/L, %

#### Display

(0.95 in.) high LCD graphic display; alphanumeric 4 lines of 16 characters each

#### Operating Conditions

0 to 60 °C (32 to 140 °F)

#### Relative Humidity

0 to 95 %

#### Power Requirements

Meter: 6 rechargeable NiMH batteries (recommended 1.2 V/min. 1800 mAh) or 6 "AA" standard batteries. Plug-in Charger: 115/230 Vac. 50/60 Hz

#### Sensor Cable

Length 10 m (32.8 ft.)

#### Meter Enclosure Rating

Meter Enclosure Rating: IP55

#### Probe Enclosure Rating

Probe Enclosure Rating: IP68

#### Current Input

Approx. 60 mA

#### Wetted Materials

Probe: stainless steel  
Sensor Window: sapphire

#### Internal Memory

For up to 290 measured values

#### Weight

Meter: 0.6 kg (1.2 lb)  
Probe: 1.6 kg (3.5 lb.)

#### Dimensions

Probe: 290 x 40 mm (11.4 x 9.1 x 1.6")  
Meter: 110 x 230 x 40 mm (4.3 x 9.1 x 1.6")  
Case: 320 x 450 x 110 mm (12.6 x 17.7 x 4.3")

#### Warranty

2 years

*\*Subject to change without notice.*

## Designed to provide low maintenance, online TOC monitoring even in the most difficult sample applications.

- Low maintenance—6 month service intervals
- High reliability—99.7% uptime
- Self-cleaning technology—prevents clogging and sample contamination and ensures measurement accuracy
- Measure clean and dirty water—analysis without filtering (including fats, oils, greases, chlorides, sludge, and particulates)
- Ability to handle up to 30% chlorides
- Very low cost of ownership—lowest of any TOC analyzer on the market
- Guaranteed to handle the most demanding applications

### Patented Self-Cleaning Oxidation

The BioTector's patented self-cleaning oxidation technology can reliably and continuously measure TOC in samples containing salts, particulates, fats, oils and greases. Through the use of Two-Stage Advance Oxidation process (TSAO), the BioTector TOC Analyzer fully oxidizes unfiltered samples providing accurate, reliable and continuous measurement. The entire system is automatically self-cleaned by the reaction process during every cycle, preventing clogging and dirt build up, resulting in extremely low maintenance.

### Built for Purpose

The BioTector is designed to analyze everything—from clean water to the most corrosive and polluted samples, without sample filtering. Constructed using robust materials such as stainless steel, hastelloy, teflon, neoprene and kalrez, providing long term durability suitable to withstand a wide variety of corrosive and toxic process fluids, often encountered in the online environment.

### How To Order

Contact your local Hach sales representative to configure a TOC analyzer for your application.

### Available Accessories

- Total Nitrogen Measurement Option
- Total Phosphorus Measurement Option
- Vacuum Samplers
- Multi-stream (up to 6 streams)
- Outdoor Weatherproof Model
- Outdoor Weatherproof Analyzer Shelters
- Hazardous Area Certified Model

### Specifications\*

<b>Oxidation Method</b> Patented Two-Stage Advanced Oxidation Process using Hydroxyl Radicals.	<b>Exceedence Tracking</b> Records Full Tracking to Maximum Range	<b>Drain Pressure</b> Typically ambient (for applications with high drain pressure, optional systems are available)
<b>TOC Measurement</b> NDIR measurement of CO <sub>2</sub> after oxidation.	<b>Repeatability</b> Ultra Low: ±3% of reading or ±5 µg C/L All Others: ±3% of reading or ±0.3 mg C/L, with automatic range selection	<b>Sample Inlet Temperature</b> 2 to 60°C (36 to 140°F)
<b>Measured Components</b> TOC, TIC, TC, VOC/POC, TOC as TC-TIC After Correlation: COD, BOD	<b>Detection Limit</b> Ultra Low: 10 µg C/L All Others: 0.6 mg C/L, with automatic range selection	<b>Sample Flow Rate</b> Minimum 100 mL/min per sample
<b>Cycle Time</b> TOC < 6.5 minutes	<b>Sample Volume</b> Up to 14.0 mL	<b>Sample Particle Size</b> Up to 2 mm, soft particulates
<b>Monitoring Ranges</b> Ultra Low: 0-500 µg C/L up to 0-5000 µg C/L Low:** 0-5 mg C/L up to 0-1,250 mg C/L Standard:** 0-10 mg C/L up to 0-10,000 mg C/L High:** 0-15 mg C/L up to 0-15,000 mg C/L Ultra High:** 0-20 mg C/L up to 0-100,000 mg C/L **3 ranges configurable	<b>Sample Inlet Pressure</b> Typically ambient (for applications with high sample pressure, sampling systems are available)	<b>Ambient Temperature</b> 5 to 40°C (41 to 104°F)
		<b>Humidity</b> 5% - 85%, non-condensing

### Primary Applications

- Industrial Water
- Food & Beverage
- Pharmaceutical
- Airports
- Chemical / Petrochemical / Refining
- Wastewater
- Pulp & Paper
- Mining

For more information, call to request LIT2681.

\*Subject to change without notice

See page 211 for reagents, test kits, and accessories for measuring TOC in the lab or field.

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# TOC: BIOTECTOR TOC/TN/TP ANALYZERS

## Reliable TOC/TN/TP measurements for online applications.



- Online TOC, TN, TP measurements combined in one instrument eliminating the need for individual analyzers
- Configurable as TOC/TN, TOC/TP or TOC/TN/TP
- Low maintenance—6 month service interval
- High reliability—99.7% uptime
- Available with up to 6 streams
- Configurable for real online COD/BOD measurement

### Combined TOC/TN/TP Operation

The BioTector TOC/TN/TP analyzer utilizes the unique, self cleaning benefits of its patented Two Stage Advanced Oxidation (TSAO) process to extend the measured parameters to include Total Nitrogen and/or Total Phosphorous. The powerful TSAO process provides complete oxidation of all sample constituents and produces an oxidized liquid sample ready for further analyses. The TOC measurement process (infrared measurement of CO<sub>2</sub> gas) liberates all carbonates, which are known interferences in TN & TP analysis, allowing for reliable and accurate measurements of Total Nitrogen and Total Phosphorous using standard Direct UV and Colorimetric methods respectively.

### Advantage of a Combined Measurement

While combining TOC, TN, and TP measurements in one analyzer provides obvious cost saving benefits in relation to installation, sampling and maintenance, it is the use of the BioTector's single oxidation process for all measurements that truly sets this analyzer apart. The powerful Two Stage Advanced Oxidation process actually cleans the liquid sample and removes any contaminants before it is passed into the more delicate TN and TP analysis sections. This process, along with the build quality and natural self cleaning properties of TSAO, provides long term durability suitable to withstand a wide range of applications and environments.

### How To Order

Contact your local Hach sales representative to configure a TOC analyzer for your application.

### Available Accessories/Options

- Vacuum Samplers
- Multi Stream (up to 6 Streams)
- Outdoor Weatherproof Model
- Hazardous Area Certified Model
- Oxygen Concentrators and Generators

### Primary Applications

- Industrial Water
- Wastewater
- Pulp & Paper
- Pharmaceutical
- Chemical / Petrochemical / Refining

### Specifications\*

<p><b>Parameters</b> TOC, TIC, TC, VOC/POC TOC as TC-TIC, COD<sup>†</sup>, BOD<sup>†</sup></p> <p><b>Measurement Method</b> TOC—Infrared measurement of CO<sub>2</sub> after oxidation by TSAO</p> <p><b>Measuring Range</b> Low: 0-5 mg C/L up to 0-1,250 mg C/L Standard: 0-10 mg C/L up to 0-10,000 mg C/L High: 0-15 mg C/L up to 0-15,000 mg C/L Ultra High: 0-20 mg C/L up to 0-100,000 mg C/L 3 ranges configurable</p> <p><b>Response Time</b> TOC 6.5 minutes</p> <p><b>Repeatability</b> ±3% of reading or ±0.3 mg C/L, with automatic range selection</p> <p><small>†COD &amp; BOD by correlation algorithm incorporating TOC, TN and/or TP measured results</small></p>	<p><b>Parameter</b> TN</p> <p><b>Measurement Method</b> Direct UV measurement of Nitrate after oxidation</p> <p><b>Measuring Range</b> Low: 0-5 mg N/L up to 0-1,250 mg N/L Standard: 0-10 mg N/L up to 0-10,000 mg N/L High: 0-15 mg N/L up to 0-15,000 mg N/L Ultra High: 0-20 mg N/L up to 0-100,000 mg N/L 3 ranges configurable</p> <p><b>Response Time</b> TOC + TN Typically 7 minutes</p> <p><b>Repeatability</b> ±3% of reading or ±0.3 mg N/L, with automatic range selection</p>	<p><b>Parameter</b> TP<sub>R</sub> (Total Reactive &amp; Organic Phosphorous) TP</p> <p><b>Measurement Method</b> Colorimetric Measurement of Phosphate using Standard Vanadomolybdophosphoricacid Method after oxidation</p> <p><b>Measuring Range</b> Low: 0-5 mg P/L up to 0-1,250 mg P/L Standard: 0-10 mg P/L up to 0-10,000 mg P/L High: 0-15 mg P/L up to 0-15,000 mg P/L Ultra High: 0-20 mg P/L up to 0-100,000 mg P/L 3 ranges configurable</p> <p><b>Response Time</b> TOC + TN + TP<sub>R</sub> Typically 8 minutes TOC + TN + TP Typically 20 minutes</p> <p><b>Repeatability</b> ±3% of reading or ±0.3 mg P/L, with automatic range selection</p> <p><small>*Subject to change without notice.</small></p>
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See page 211 for reagents, test kits, and accessories for measuring TOC in the lab or field.

## On-line TOC for drinking water application.

- Intelligent software reports pass/fail status for TOC removal percentage
- Complies with Standard Methods 5310 C and EPA Method 415.1
- Dual stream sample system for source and distribution water
- Grab sample analysis capability for immediate manual TOC measurements
- Available in ranges of 0-5, 0-10, and 0-25 mg/L
- Tolerant to changes in sample composition, pH, and temperature

### Principle of Operation

The 1950plus TOC analyzer uses a multi-staged UV oxidation reactor and a chemically impervious non-dispersive infrared (NDIR) CO<sub>2</sub> detector system assuring full compliance with Standard Methods 5310 C and EPA method 415.1.

### How To Order

Contact your local Hach sales representative to configure a TOC analyzer for your application.

For more information, call to request LIT4372.



Source Water Total Organic Carbon (mg/L)	Source Water Alkalinity		
	0-60 mg/L as CaCO <sub>3</sub>	> 60-120 mg/L as CaCO <sub>3</sub>	> 120 mg/L as CaCO <sub>3</sub>
	Percent Removal Required		
> 2.0 – 4.0	35	25	15
> 4.0 – 8.0	45	35	25
> 8.0	50	40	30

### Primary Applications

- Drinking Water

### Specifications\*

<b>Range</b> Note: Must specify range at time of order. 0-5 / 10 / 25 mg/L TOC	<b>Sample Temperature Range</b> 2 to 70°C (36 to 158°F)	<b>Power</b> 115/230 Vac 50/60 Hz (switch selectable), 500 VA maximum
<b>Process Control Range</b> 0-100% TOC Removal	<b>Operating Temperature Range</b> 5 to 40°C (41 to 104°F)	<b>Sample Inlet/Outlet Connection</b> 1/4-inch OD tube, compression fitting
<b>Accuracy</b> ± 2% of full scale at 25°C (77°F)	<b>Recorder Outputs</b> Two 4-20 mA with an output span based on the selected measurement range and the TOC removal percentage process control range	<b>Drain Connection</b> 1 1/2-inch OD standard drain pipe
<b>Repeatability</b> ± 2% of reading at 25°C (77°F)	<b>Alarms</b> Five alarms selectable for sample concentration alarm, analyzer system warning or analyzer system shutdown alarm.	<b>Carrier Gas</b> 1/8-inch OD tube, compression fitting Clean, CO <sub>2</sub> free air or Nitrogen at 2.8-6.2 bar (40-90 psig)
<b>Minimum Detection Limit</b> ≤ 0.015 mg/L for range 0-5 mg/L at 25°C (77°F)	Each is equipped with an SPDT relay with contacts rated for 3A resistive load at 250 Vac	<b>Compliance/Certification</b> UL/CSA, CE approved Standard Methods 5310 C EPA 415.1
<b>Response Time</b> T90 ≤ 8 minutes	<b>Serial Communication</b> One multi-function RS232 serial port (ANSI 3.28 MODBUS®, CSV)	*Subject to change without notice.
<b>Inlet Pressure</b> 0.15-6 bar (2-87 psig)		
<b>Flow Rate</b> 20-200 mL per minute		

See page 211 for reagents, test kits, and accessories for measuring TOC in the lab or field.

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# TOC: astroTOC™ UV TOC ANALYZER

## On-line TOC fit for industrial process water and wastewater.



- Industrial design withstands severe conditions
- Advanced diagnostics
- Flexible analysis system allows analysis of high salt and hard-to-oxidize samples
- Based on proven Astro process TOC analyzer platform
- Drift and interference-free NDIR detector

### Automatic Calibration, Validation, and Cleaning

Set up the astroTOC UV for automatic zero, and span calibration, single-point validation (system check), and analyzer cleaning. A system validation references the calibration against a known standard assuring an accurate measurement of the samples. Automatic cleaning simplifies analyzer maintenance.

### Principle of Operation

The astroTOC UV is a rugged, ultra-low maintenance analyzer for continuous monitoring of TOC in industrial process control monitoring and municipal/industrial wastewater treatment applications. The analyzer combines chemical and ultraviolet oxidation techniques in a low temperature reactor to deliver direct TOC measurements.

### How To Order

Contact your local Hach sales representative to configure a TOC analyzer for your application.

### Primary Applications

- Wastewater
- Industrial Water

For more information, call to request LIT2432.

### Specifications\*

<b>Range</b> Note: Must specify range at time of order. 0-5 up to 20,000 mg/L TOC	<b>Sample Temperature Range</b> 2 to 70°C (36 to 158°F)	<b>Power</b> 115/230 Vac 50/60 Hz (switch selectable), 300 VA maximum
<b>Accuracy</b> ± 2% of full scale, non-diluted ranges at 25°C (77°F) ± 4% of full scale, diluted ranges at 25°C (77°F)	<b>Operating Temperature Range</b> 5 to 40°C (41 to 104°F)	<b>Sample Inlet/Outlet Connection</b> 1/4-inch OD tube, compression fitting
<b>Repeatability</b> ± 2% of reading, non-diluted ranges at 25°C (77°F) ± 4% of reading, diluted ranges at 25°C (77°F)	<b>Recorder Outputs</b> Two 4-20 mA analog outputs selectable for sample concentration, analyzer system warning or auto range indication	<b>Drain Connection</b> 1 1/2-inch OD standard drain pipe
<b>Minimum Detection Limit</b> ≤ 0.015 mg/L for range 0-5 mg/L at 25° C (77° F)	<b>Alarms</b> Five alarms selectable for sample concentration alarm, analyzer system warning or analyzer system shutdown alarm	<b>Carrier Gas</b> 1/8-inch OD tube, compression fitting Clean, CO <sub>2</sub> free air or Nitrogen at 2.8-6.2 bar (40-90 psig)
<b>Response Time</b> T90 ≤ 8 minutes (includes TIC sparging)	Each is equipped with an SPDT relay with contacts rated for 3A resistive load at 250 Vac or 0.5A at 30V	<b>Compliance/Certification</b> UL/CSA, CE approved Standard Methods 5310 C, EPA 415.1
<b>Inlet Pressure</b> 0.15-6 bar (2-87 psig)	<b>Serial Communication</b> One multi-function RS-232 or RS-485 optional serial port (MODBUS®, CSV)	
<b>Flow Rate</b> 20-200 mL per minute		

\*Subject to change without notice.

See page 211 for reagents, test kits, and accessories for measuring TOC in the lab or field.



# TOC: astroTOC™ UV TURBO TOC ANALYZER

## Fast and accurate low level TOC analysis without interferences.

- Response time less than 5 minutes with 100% oxidation
- Sample composition and oxidation by-products do not interfere
- Uses proven NDIR technology with supreme accuracy at low levels
- Advanced diagnostics and features designed for ease of use

### TOC Analysis for Chemical/Petrochemical and Power Generation Condensate Water (Cogeneration)

The astroTOC UV TURBO removes the TIC from the sample, so it only measures true TOC as described by ASTM, EPA, ISO, and Standard Methods.

The astroTOC UV TURBO Analyzer combines chemical and ultraviolet oxidation techniques in a low-temperature reactor to deliver direct TOC measurements. It uses a multi-staged UV oxidation reactor and a chemically impervious non-dispersive infrared (NDIR) CO<sub>2</sub> detector system, assuring full compliance with Standard Methods 5310 C and EPA method 415.1.

### How To Order

Contact your local Hach sales representative, to configure a TOC analyzer for your application.



For more information, call to request LIT2439.

### Primary Applications

- Industrial Water
- Pure Water/Power

### Specifications\*

#### Range

0–2000 µg/l (0–2.000 mg/L),  
0–5000 µg/l (0–5.000 mg/L),  
0–10,000 µg/l (0–10.000 mg/L),  
0–25,000 µg/l (0–25.000 mg/L),  
0–50,000 µg/l (0–50.000 mg/L)

#### Accuracy/Repeatability/Linearity

≤ ± 4 % of reading or 8 µg/L (whichever is greater) at 25° C (77° F)\*\*

\*\*Performance specifications established with range configuration 0–5000 µg/L (0–5 mg/L)

#### Minimum Detection Limit

≤ 5 µg/L for range 0–5000 µg/L at 25°C (77°F)\*\*\*

\*\*\*MDL established per EPA Appendix B to part 136

#### Response Time

T90 ≤ 5 minutes  
T20 ≤ 3 minutes  
(includes TIC sparging)

#### Inlet Pressure

0.15–6 bar (2–87 psig)

#### Flow Rate

25–200 mL/minute

#### Sample Temperature Range

2° to 70°C (36° to 158°F)

#### Extended Inlet Temperature

2–100°C (212°F) with a 3000 mm (120 in) long, 6 mm (1/4 in) O.D. stainless steel sample inlet tube at a flow rate of 25–60 mL/minute.

#### Operating Temperature Range

5° to 40°C (41° to 104°F)

#### Recorder Outputs

Two 4–20 mA analog outputs selectable for sample concentration, analyzer system warning or auto range indication

#### Alarms

Five relays selectable for sample concentration alarm, analyzer system warning or analyzer system shutdown alarm. Each is equipped with an SPDT relay with contacts rated for 3A resistive load at 250 Vac or 0.5A at 30V.

#### Optional Serial Communication

One multi-function RS232 or RS485 optional serial port (MODBUS®, CSV)

#### Power

115/230 Vac 50/60 Hz (switch selectable)  
300 VA maximum

#### Sample Inlet/Outlet Connection

1/4-inch OD tube, compression fitting

#### Samples

Single stream, fast loop inlet (optional: Dual-stream)

#### Drain Connection

1 1/2-inch OD standard drain pipe

#### Drain Pressure

ambient

#### Carrier Gas

1/8-inch OD tube, compression fitting Clean, CO<sub>2</sub>-free air or Nitrogen at 2.8–6.2 bar (40–90 psig)

#### Compliance/Certification

CE certified, listed to UL and CSA safety standards by ETL Standard Methods 5310 C, EPA 415.1

#### Enclosure

Cold Rolled Steel epoxy powder coated, IP66/NEMA 4  
Optional Stainless Steel, IP66/NEMA 4

#### Dimensions

Approximately 981 mm (38.6 inches) tall, 675 mm (26.6 inches) wide, 220 mm (8.7 inches) deep

#### Mounting

Wall mount

#### Shipping Weight

120 lbs. (54 kg)

\*Subject to change without notice.

See page 211 for reagents, test kits, and accessories for measuring TOC in the lab or field.

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# TOC: astroTOC™ HT TOC ANALYZER

Reliable high temperature TOC analysis with superior uptime and a lower cost of ownership.



- Large-volume furnace extends maintenance intervals preventing plugging and failing
- Simplified sample delivery system
- Passive cooling system avoids complex heat management
- Utilizes proven, patented high temperature reactor system
- Industrial design withstands the most severe conditions
- Analyzer-protecting advanced diagnostics

## Reduced Cost of Ownership and Maintenance

The patented large-volume furnace prevents severe-duty samples from plugging or failing prematurely consequently extending routine maintenance intervals. A platinum catalyst provides an enlarged surface area for the oxidation reaction in the furnace. This increases the lifecycle of the catalyst reducing cost of ownership.

## Simplified Sample Delivery System

Innovative sample delivery system avoids inherent mechanical breakdown of complicated sample injection mechanisms. Customarily high temperature analyzers use an injection valve mechanism, which is prone to fail due to its narrow passages, small parts and exposed seals.

The astroTOC HT has a continuous sample feed by a peristaltic pump providing a robust, easy-to-maintain sample injection into the furnace. This dramatically reduces maintenance cost.

## Primary Applications

- Industrial Water
- Wastewater

## How To Order

Contact your local Hach sales representative to configure a TOC analyzer for your application.

## Specifications\*

### Range

Note: Must specify range at time of order.  
0-25 up to 0-20,000 mg/L TOC

### Accuracy

± 5% of reading at ranges less than 1000 mg/L with and without dilution at 25°C (77°F)  
± 2% of reading in the range of 2000 to 20,000 mg/L with dilution at 25°C (77°F)

### Repeatability

± 5% of reading at ranges less than 1000 mg/L with and without dilution at 25°C (77°F)  
± 2% of reading in the range of 2000 to 20,000 mg/L with dilution at 25°C (77°F)

### Minimum Detection Limit

< 0.1 mg/L for the range 0-25 mg/L at 25°C (77°F)

### Response Time

T90 ≤ 8 minutes (includes TIC sparging)

### Inlet Pressure

0.15-6 bar (2-87 psig)

### Flow Rate

20-200 mL per minute

### Sample Temperature Range

2° to 70°C (36° to 158°F)

### Operating Temperature Range

5° to 40°C (41° to 104°F)

### Recorder Outputs

Two 4-20 mA analog outputs selectable for sample concentration, analyzer system warning or auto range indication

### Alarms

Five alarms selectable for sample concentration alarm, analyzer system warning or analyzer system shutdown alarm.

### Optional Serial Communication

One multi-function RS232 or RS485 optional serial port (MODBUS®, CSV)

### Power

115/230 Vac 50/60 Hz (switch selectable), 1500 VA maximum

### Sample Inlet/Outlet Connection

1/4-inch OD tube, compression fitting

### Drain Connection

1 1/2-inch OD standard drain pipe

### Carrier Gas

Clean, CO<sub>2</sub> free air or Nitrogen at 2.8-6.2 bar (40-90 psig)

### Compliance/Certification

CE certified, listed to UL and CSA safety standards by ETL  
Standard Methods 5310 B, EPA 415.1

### Enclosure

Cold Rolled Steel epoxy powder coated, IP54/NEMA 12  
Optional Stainless Steel IP54/NEMA 12

### Dimensions

Approximately 983 mm (38.7 inches) tall, 973 mm (38.3 inches) wide, 244 mm (9.6 inches) deep

### Mounting

Wall mount

### Shipping Weight

212 lbs. (97 kg)

*\*Subject to change without notice.*

See page 211 for reagents, test kits, and accessories for measuring TOC in the lab or field.

# TURBIDITY: FilterTrak™ 660 sc NEPHELOMETER

## EPA-approved method, ultra low range turbidity measurement.

- Highest sensitivity available at the lowest levels of turbidity
- Optimize your filtration process
- EPA approved method for drinking water compliance monitoring

### New Technology for Filtration Optimization

With unprecedented sensitivity and quick response, the FilterTrak 660 sc is capable of providing all the data needed to monitor and control filter and membrane performance. FilterTrak technology is not hindered by any theoretical particle size detection limit. This instrument readily detects the presence of sub-micron particles unseen by other instruments.

### Laser Turbidity Method, Approved for Drinking Water Compliance Monitoring

Hach's FilterTrak™ 660 sc Nephelometer is approved for measuring turbidity for drinking water compliance monitoring. This approval provides utilities the opportunity to both monitor and optimize their filtration processes using a single technology.



**EPA  
APPROVED**

Prod. No.	Description
-----------	-------------

#### FT660 sc Laser Nephelometer System

##### Single-Sensor System

2978300	FilterTrak 660 sc with sc200 Controller, CH 1
---------	---

##### System with Digital Communication

2977000	FilterTrak 660 sc with sc200 Controller, CH 2
---------	---

2978400	FilterTrak 660 sc with sc200 Controller 24VDC, CH 1
---------	---

2977100	FilterTrak 660 sc with sc200 Controller 24VDC
---------	---

Does not include power cords.

#### Individual FilterTrak FT660 sc Laser Nephelometer

6016000	FilterTrak 660sc sensor assembly only
---------	---------------------------------------

#### Controller

This sensor requires a Hach sc200 or sc1000 Digital Controller. See pages 318-321 for details.

#### Optional Accessories

9142000	Drain Assembly/Grab Sample Funnel
---------	-----------------------------------

5448800	North American Power Cord Kit with Strain Relief, 125V
---------	--

5448900	European Power Cord Kit with Strain Relief, 230V
---------	--

#### Dry Verification Module

6735500	Verification Quick Check, secondary standard
---------	--

#### Extension Cables

To be used only between sensor and controller.

5796100	Digital Extension Cable, 15 m (50 ft.)
---------	--

5796000	Digital Extension Cable, 7.7 m (25 ft.)
---------	---

5796200	Digital Extension Cable, 31 m (100 ft.)
---------	---

Standard cable length 10 m (33 ft.)

Maximum total length 100 m (328 ft.)

#### Hach WarrantyPlus

WRTUPGFT660SC	FilterTrak 660sc WarrantyPlus™ Instrument Protection and Service
---------------	--

For more information, call to request LIT1627.

#### Primary Applications

- Drinking Water
- Industrial Water

#### Specifications\*

##### Range

0.0 to 5000 mNTU (0.0 to 5.0 NTU) 5000 mNTU = 5.000 NTU

##### Accuracy

± 5% of reading

##### Resolution

0.001 mNTU (0.000005 NTU)

##### Repeatability

+ 3.6% at 30 mNTU (0.03 NTU) / + 1.7% at 800 mNTU (0.8 NTU)

##### Flow Rate

100 - 750 mL / min (1.6 to 11.9 gal/hour)

##### Light Source

660 nm Laser Diode

##### Recorder Output

Selectable for 0-20 mA or 4-20 mA

##### Alarms

Two nephelometric set-point alarms (SOM required)

##### Power Requirements

10 to 28 Volts DC at 1.5 Watts

\*Subject to change without notice.

See pages 91-98 for information on Hach laboratory and portable turbidimeters.

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# TURBIDITY: 1720E LOW RANGE TURBIDIMETER



**Ideal for  
filter effluent  
applications  
and equivalent  
water  
sources.**

## Primary Applications

- Drinking Water
- Industrial Water

## Specifications\*

<b>Range</b>	0.001-100 Nephelometric Turbidity Units (NTU)
<b>Accuracy</b>	±2% of reading or ±0.015 NTU (whichever is greater) from 0 to 40 NTU; ±5% of reading from 40 to 100 NTU (Defined according to ISO 15839.)
<b>Displayed Resolution</b>	0.0001 NTU up to 9.9999 NTU; 0.001 NTU from 10.000 to 99.999 NTU
<b>Repeatability</b>	Better than ±1.0% of reading or ±0.002 NTU, whichever is greater (Defined according to ISO 15839.)
<b>Sample Flow Required</b>	200 to 750 mL/minute (3.1 to 11.9 gal/hour)
<b>Power Requirements</b>	100-230 Vac, 50/60 Hz, auto selecting; 40 VA
<b>Recorder Outputs</b>	Two selectable for 0-20 mA or 4-20 mA; output span programmable over any portion of the 0-100 NTU range; built into the sc200 Controller
<b>Alarms</b>	Three set-point alarms, each equipped with an SPDT relay with unpowered contacts rated 5A resistive load at 230 Vac; built into the sc200 Controller

\*Subject to change without notice.

## The low range turbidimeter.

### Accuracy

Continuously flowing sample flows through the patented bubble removal system, which vents entrained air from the sample stream and eliminates the most significant interference in low level turbidity measurement. The 1720E Turbidimeter is also not affected by variations in flow and pressure.

### Simplicity

A simplified two-module design includes the sensor and the controller interface. The sc200 digital controller systems accept up to two turbidity sensors—adding a second 1720E sensor makes a system with two complete turbidimeters or any other digital sensor. Connections are simple plug-and-play.

### Data Collection and Display

A built-in data logger collects turbidity measurement at user selectable intervals (1-15 minutes), along with calibration and verification points, alarm history, and instrument setup changes for 6 months. Communications using multiple digital protocols are available.

Prod. No.	Description
<b>1720E Low Range Turbidity Systems</b>	
2978100	1720E with sc200 Controller, CH 1
2976800	1720E with sc200 Controller, CH 2
2978200	1720E with sc200 Controller 24VDC, CH 1
2976900	1720E with sc200 Controller, 24VDC, CH 2

Does not include power cords.

### Individual 1720E Turbidimeter

6010101	1720E Turbidimeter, sensor only
---------	---------------------------------

### Controller

This sensor requires a Hach sc200 or sc1000 Digital Controller. See pages 318-321 for details.

### Cables

5796000	Digital Extension Cable, 7.7 m (25 ft.)
9202900	Power cord kit, 120 Vac
9203000	Power cord kit, 240 Vac

### Accessories

5743200	Floor Stand
---------	-------------

### Calibration Supplies

ICE-PIC Calibration/Verification Module / 1720E

5221500	1 NTU ICE-PIC™
5225000	20 NTU ICE-PIC™

StabCal Comparative Calibration Standards

2660153	StabCal®, 20 NTU, 1 L (Calibration Cylinder, Prod. No. 4415300, must be ordered separately.)
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Formazin Calibration Standards

4415600	Formazin Calibration Kit for user-prepared calibration (includes 500 mL of 4000 NTU Formazin, TenSette® Pipet, and calibration cylinder)
---------	--

246149	Formazin Primary Standard, 4000 NTU, 500 mL
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4415300	Calibration Cylinder, 1 L
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### Hach WarrantyPlus

WRTUPG1720E	1720E Turbidimeter WarrantyPlus™ Instrument Protection and Service
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For more information, call to request LIT2457.

See pages 91-98 for information on Hach laboratory and portable turbidimeters.



# TURBIDITY: ULTRATURB plus sc

## Suitable for low to medium turbidity applications.

- Large measuring range—0 to 1,000 NTU
- Self-cleaning sample chamber option
- Stable/long lasting light source with IR ratio technology
- Updated for desalination applications  
—corrosion resistant to salinity up to 65 g/L



sc200 Controller sold separately.

### Primary Applications

- Drinking Water
- Wastewater
- Industrial Water

Prod. No.	Description
<b>Sensor Options</b>	
LPV415.52.11002	ULTRATURB sc .35 m Sensor Cable
LPV415.52.21002	ULTRATURB sc 5 m Cable
LPV415.52.10002	ULTRATURB plus sc .35 m Cable & Autoclean
LPV415.52.20002	ULTRATURB plus sc 5 m Cable & Autoclean
LPV415.52.12002	ULTRATURB plus Seawater sc .35 m Cable & Autoclean
LPV415.99.22002	ULTRATURB plus Seawater sc 5 m Cable & Autoclean
<b>Controller</b>	
This sensor requires a Hach sc200 or sc1000 Digital Controller. See pages 318-321 for details.	
<b>Dry Verification Modules</b>	
LZV414.00.00000	CVM Module, 0.6 NTU
LZV414.00.10000	CVM Module, 1.5 NTU
LZV414.00.20000	CVM Module, 6 NTU
LZV414.00.30000	CVM Module, 15 NTU
LZV414.00.40000	CVM Module, 25 NTU
<b>Calibration Tools</b>	
246142	Formazin Turbidity Standard, 4000 NTU, 100 mL
LZV451	Calibration/Cleaning Kit
<b>Wiper Assembly for Seawater Applications</b>	
LZV842	Wiper Assembly for Seawater
<b>Hach WarrantyPlus</b>	
WRTUPGULTRATURB	ULTRATURB sc WarrantyPlus™ Instrument Protection and Service

### Specifications\*

<b>Measuring Method</b>	90° scattered light in accordance with DIN EN ISO 7027 infrared light 860 nm
<b>Measuring Range</b>	0.0001-1000 NTU (TE/F, NTU, FNU) can be programmed as required (0.0001-250 EBC = 2500 ppm SiO <sub>2</sub> )
<b>Displayed Resolution</b>	0.0001-0.9999 / 1.000-9.999 / 10.00-99.99 / 100-1000 FNU
<b>Limit of Detection (LOD)</b>	±0.008 FNU or ±1 % (0-10 FNU))
<b>Reproducibility</b>	±0.003 FNU or ±0.5 % (0-2 FNU)
<b>Verification</b>	With StabiCal or dry standard CVM
<b>Sample Size Required</b>	Min. 0.2 L/min, max. 1 L/min, max. 6 bar (20°C) (87 psi, 68°F)
<b>Sample Temperature</b>	Max. 50°C (122°F)
<b>Sample Connection</b>	Hose ID 13 mm or fixed connection with G+F system parts
<b>Automatic Cleaning (optional)</b>	Cleaning with wiper
<b>Enclosure Rating</b>	IP 65
<b>Weight</b>	Approx. 1.5 kg (3.3 lbs.)

\*Subject to change without notice.

For more information, visit: [www.hach.com](http://www.hach.com)

See pages 91-98 for information on Hach laboratory and portable turbidimeters.

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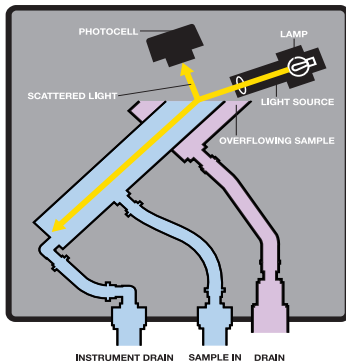


# TURBIDITY: SURFACE SCATTER® 7 sc TURBIDIMETER



## Measures high range turbidity levels.

- Optical components never touch the sample—less fouling for easy maintenance
- Wide measurement range—measures turbidity from 0 to 9999 NTU
- Durable—manufactured with corrosion/heat-resistant materials for extended life



As the sample overflows the top of the turbidimeter body, a photocell measures the light scattered by suspended particles.

### Prod. No. Description

Surface Scatter 7 sc Turbidimeter Systems	
2978500	Surface Scatter 7 sc Turbidimeter with sc200 Controller, CH1
2977200	Surface Scatter 7 sc Turbidimeter with sc200 Controller
2978600	Surface Scatter 7 sc High Sample Temperature Turbidimeter with sc200 Controller, CH1
2977300	Surface Scatter 7 sc High Sample Temperature Turbidimeter with sc200 Controller

### Sensor Only

LPV431.99.00002	Surface Scatter 7 sc Turbidimeter
LPV432.99.00002	Surface Scatter 7 sc High Sample Temperature (HST) Turbidimeter

### Controller

This sensor requires a Hach sc200 or sc1000 Digital Controller. See pages 318-321 for details.

### Sample Conditioning Option

4669212	Auto Flush Kit; 120 Vac
4669222	Auto Flush Kit; 220 Vac
4668000	Bubble Trap, Head Regulator
4028400	Flow Meter; 100 to 1600 mL/minute Calibration Standards
7121649	StablCal®, 400 NTU, 500 mL
246149	Formazin Primary Standard, 4000 NTU, 500 mL

### Cables

5796000	Digital Extension Cable, 7.7 m (25 ft.)
4630600	Power cord kit, 120 Vac
4630800	Power cord kit, 240 Vac

### Optional Accessories

68700	Cylinder cleaning brush, size 2
4502100	Calibration Cup
2351300	Standardization Plate Kit

For more information, call to request LIT2509.

### Primary Applications

- Drinking Water
- Wastewater
- Industrial Water

### Specifications\*

#### Range

0 to 9999 Nephelometric Turbidity Units (NTU)

#### Accuracy

±5% from 0 to 2000 NTU; ±10% from 2000 to 9999 NTU

#### Sample Flow Required

1.0 to 2.0 L/min (15 to 30 gal/hr)

#### Alarms

Two turbidity set-point alarms, instrument warning and system shutdown alarms are each equipped with an SPDT relay with unpowered contacts rated for 5A resistive load at 230 Vac; alarm 2 can be disabled and its contacts used to control flush valves

#### Power Requirements

115/230 Vac, 50/60 Hz, switch selectable; 0.5/0.3 A

\*Subject to change without notice.

See pages 91-98 for information on Hach laboratory and portable turbidimeters.

# TURBIDITY STANDARDS AND VERIFICATION MODULES

## On-line Turbidity Instruments Standards and Verification Modules

You can eliminate slight variations in reagent concentration and chemical purity when you choose Hach premeasured, premixed reagents that are produced under the most stringent laboratory controls. In the long run, your instrument will last longer and you'll be confident in the accuracy of your results.



The Verification Quick Check is a dry method that verifies calibration to below 0.1 NTU (100mNTU).



The compact and lightweight ICE-PIC™ is ideal for spot verification or calibration of 1720E Turbidimeters.



### Prod. No. Description

#### 1720E Low Range Turbidimeter

StabiCal Calibration Standards

2660153 StabiCal®, 20 NTU, 1 L

Formazin Calibration Standards

246149 Formazin Primary Standard, 4000 NTU, 500 mL

Verification Modules

5225000 20 NTU ICE-PIC™

5221500 1 NTU ICE-PIC™

#### FilterTrak 660 sc Ultra Low Range Turbidimeter

Calibration Standards

1 point calibration

2788453 StabiCal®, 800 mNTU, 1 L

2 point calibration

2723353 StabiCal®, 100 mNTU, 1 L

2788453 StabiCal®, 800 mNTU, 1 L

Verification Standards

2697953 StabiCal®, 300 mNTU, 1 L

2698053 StabiCal®, 500 mNTU, 1 L

Verification Module

6735500 Verification Quick Check, secondary standard

#### Accu4 Low Range Turbidimeter

StabiCal Calibration Standards

2746353 StabiCal®, 40 NTU, 1 L

2746356 StabiCal®, 40 NTU, 1 Gallon (3.78 L)

Formazin Calibration Standards

246149 Formazin Primary Standard, 4000 NTU, 500 mL

Calibration/Verification Modules

8220G1300 Cal-Cube™ Assembly

### Prod. No. Description

#### Surface Scatter 7 sc, High Range Turbidimeter

2660153 StabiCal®, 20 NTU, 1 L

Formazin Calibration Standards

246149 Formazin Primary Standard, 4000 NTU, 500 mL

7121649 StabiCal®, 400 NTU, 500 mL

Calibration/Verification Modules

2351300 Standardization Plate Kit

#### SOLITAX sc Turbidity and Suspended Solids Analyzers

2660549 StabiCal® Turbidity Standard, 800 NTU, 500 mL

#### Other Available Standards

2659600 StabiCal® Set, contains four bottles of 20 NTU,

and four bottles of <0.1 bottles

2659753 StabiCal®, < 0.1 NTU, 1 L

2723356 StabiCal®, 0.1 NTU, 1 Gallon (3.78 L)

2746356 StabiCal®, 40 NTU, 1 Gallon (3.78 L)

Note: StabiCal and Formazin standards are also available in 100 and 500 mL bottles and sealed vials for all of the bench top and portable instrumentation.

For more information, call to request LIT1582.

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# SUSPENDED SOLIDS & TURBIDITY SELECTION GUIDE

## DRINKING WATER

Application	Expected Sample Range	Instrument Recommendation		
		Best	Better	Good
Raw Water	0 - 4,000 NTU	SOLITAX*	SS7 sc	—
Settled Water	0.1 - 20 NTU	SOLITAX*	1720E	—
Filtered Water (Conventional)	0.01 - 2.5 NTU	FilterTrak 660 sc	1720E	ULTRATURB+ sc
Filtered Water (Membrane)	0.01 - 1 NTU	FilterTrak 660 sc**	—	—
Combined Effluent Water	0.01 - 0.3 NTU	FilterTrak 660 sc**	1720E	ULTRATURB+ sc
Filter Backwash	1 - 1,000 NTU	SOLITAX***	TSS sc	—
Distribution	0.1 - 5 NTU	1720E***	FilterTrak 660 sc	ULTRATURB+ sc
Elevated Tank	0.01 - 5 NTU	1720E***	FilterTrak 660 sc	ULTRATURB+ sc

## WASTEWATER

Application	Expected Sample Range	Instrument Recommendation		
		Best	Better	Good
Raw Sewage	150,000 mg/L	SOLITAX***	TSS sc	—
Aeration Basin	1,000 - 10,000 mg/L	SOLITAX***	TSS sc	—
Activated Sludge	1,000 - 25,000 mg/L	SOLITAX***	TSS sc	—
Thickening/Digestion	10,000 - 150,000 mg/L	SOLITAX***	TSS sc	—
Secondary Clarification	100 - 4,000 NTU	SOLITAX***	TSS sc	—
Discharge to Environment	0 - 100 NTU	SOLITAX***	SS7 sc	—

## INDUSTRIAL WATER

Application	Expected Sample Range	Instrument Recommendation		
		Best	Better	Good
High Temperature	0 to 90°C (32 to 194°F)	TSS sc	—	—
High Pressure	6-16 bar (87 to 232°F)	TSS sc	—	—
Class I Div 2	✓	TSS sc	—	—
Ultrapure Applications	✓	TSS sc	—	—
Saline Applications	✓	TSS sc	—	—
Aggressive Media	✓	TSS sc	—	—

\* Low Maintenance

\*\*Improved Accuracy

\*\*\*Best value



You can eliminate slight variations in reagent concentration and chemical purity when you choose Hach premeasured, premixed reagents that are produced under the most stringent laboratory controls. In the long run, your instrument will last longer and you'll be confident in the accuracy of your results.

## Process Analyzer Reagents

	Prod. No.		Prod. No.
<b>APA 6000 Alkalinity Analyzer</b>			
Sulfuric Acid Titrant, 0.08 M H <sub>2</sub> SO <sub>4</sub> , 1 L	2826153	<b>APA 6000 Copper (Low and High Range)</b>	
Mixed Indicator; pH 4.5 & pH 8.3, 1 L	2696653	Reagent 1, Indicator, 1 L	2755953
Alkalinity Standard 1, 0 mg/L, 1 L	2696753	Reagent 2, Buffer, 1 L	2756053
Alkalinity Standard 2, 500 mg/L, 1 L	2826253	Standard 1, 0 mg/L, 1 L	2756253
Alkalinity Wash Solution, 1 L	2697053	Standard 2, 1 mg/L (Low Range), 1 L	2756353
Alkalinity Reagent Set	6001000	Standard 2, 10 mg/L (High Range), 1 L	2756453
Alkalinity Standards Set	6001100	Wash Solution, 1 L	2876453
		Copper Reagent Set	6001600
		Low Range Copper Standards Set	6001700
		High Range Copper Standards Set	6001800
<b>APA 6000 Ammonia / Monochloramine</b>			
Reagent 1, Indicator, 1 L	2776353	<b>APA 6000 Hardness (High Range)</b>	
Reagent 2, Buffer, 1 L	2776453	Reagent 1, Masking Solution, 1 L	2793553
Reagent 3, 1 L	2776553	Reagent 2 Kit, 1 L	2793600
Standard 1, 0 mg/L NH <sub>3</sub> , 1 L	2776653	Reagent 3, Titrant Solution, 1 L	2793753
Standard 2, 2.0 mg/L NH <sub>3</sub> , 1 L	2776753	Standard 1, 0 mg/L, 1 L	2793253
Wash Solution, 1 L	2876453	Standard 2, 1000 mg/L, 1 L	2793353
Ammonia/Monochloramine Reagent Set	6001400	Wash Solution, 1 L	2876453
Ammonia/Monochloramine Standards Set	6001500	High Range Hardness Reagent Set	6002100
		High Range Hardness Standards Set	6002200
<b>AMTAX™sc Ammonia Analyzer</b>			
Cleaning Solution 250 mL	2894246	<b>APA 6000 Hardness Analyzer (Low Range)</b>	
Electrolyte, 3 bottles and 3 membrane caps each for ranges 2, 3, and 4	6182500	Calmagite Indicator, 1 L	2695853
Reagent 2.5 L	2894452	Buffer Solution #2, 1 L	2695753
Standard Solution, 1 mg/L 2 L	2894154	Low Range Hardness Standard 1, 0 mg/L, 1 L	2696253
Standard Solution, 10 mg/L 2 L	2894354	Low Range Hardness Standard 2, 5 mg/L, 1 L	2696353
Standard Solution, 50 mg/L 2 L	2825854	Wash Solution, 1 L	2876453
Standard Solution, 500 mg/L 2 L	2825954	Low Range Hardness Reagent Set	6001900
Standard Solution 0.5 mg/L 2 L	2514654	Low Range Hardness Standards Set	6002000
Standard Solution 2.5 mg/L 2 L	2514754		
Electrolyte, 3 bottles and 3 membrane caps each for range 1	2955300	<b>SP510 Hardness Monitor</b>	
		Buffer Solution, 0.3, 1, 2, 5 mg/L, 500mL	2768549
		Buffer Solution, 10 mg/L, 500mL	2768649
		Buffer Solution, 20 mg/L, 500mL	2768749
		Buffer Solution, 50 mg/L, 500mL	2768849
		Buffer Solution, 100 mg/L, 500mL	2768949
		Indicator Solution, 0.3 mg/L, 500mL	2794649
		Indicator Solution, 1 mg/L, 500mL	2769049
		Indicator Solution, 2 mg/L, 500mL	2769149
		Indicator Solution, 5 to 100 mg/L, 500mL	2769249
		<b>MO42 Molybdate Analyzer</b>	
		MO42 Reagent, 500 mL	2890549

*Continued on the next page.*

**NITRATAX™sc UV Nitrate Sensors**  
 NITRATAX Standard Solution, 50 mg/L NO<sub>3</sub>      **LCW825**

**PHOSPHAX™sc Phosphate Analyzer**  
 PHOSPHAX Reagent, 2000 mL      **2825254**  
 PHOSPHAX Cleaning Solution, 1000 mL      **2825352**

**Series 5000 Phosphate Analyzer (High Range)**  
 Sulfuric Acid Solution, 5.25 N, 2.9 L      **244903**  
 Molybdovanadate Reagent, 2.9 L      **1420703**  
 Anionic Surfactant Solution, 2.9 L      **2375503**  
 Phosphate Standard Solution, 30 mg/L PO<sub>4</sub>, 2.9 L      **1436703**  
 High Range Phosphate Reagent Set      **4563900**

**Series 5000 Phosphate Analyzer (Low Range)**  
 Anionic Surfactant Solution, 2.9 L      **2375503**  
 Ascorbic Acid Reagent Package, 2.9 L      **2600303**  
 Molybdate Reagent Solution, 2.9 L      **2599803**  
 Phosphate Standard Solution, 3 mg/L PO<sub>4</sub>, 2.9 L      **2059703**  
 Water, Zero Standards, 2.9 L      **2600103**  
 Low Range Phosphate Reagent Set      **4563300**  
 High Range Phosphate Reagent Set      **4563900**

**Series 5000 Silica Analyzer**  
 Molybdate 3 Reagent, 2.9 L      **199503**  
 Citric Acid/Surfactant Reagent, 2.9 L      **2347003**  
 Amino Acid F Reagent, 2.9 L      **2353103**  
 Silica Standard Solution, 500 µg/L SiO<sub>2</sub>, 2.9 L      **2100803**  
 Silica Reagent Set      **4562700**

**9073 Sodium Analyzer and 9186 Oxygen Scavenger Analyzer**  
 Diisopropylamine, 99%, 1 L      **2834453**  
 Sodium Chloride as Sodium Standard 10 mg/L, 1 L      **2835153**  
 Sodium Chloride as Sodium Standard 100 mg/L, 1 L      **2834253**

**9245 Sodium Analyzer**  
 Reference Electrolyte, KCl, 3 M, 500 mL      **363140,00500**  
 Di-isopropylamine (DIPA), 1 L      **2834453**  
 Sodium Standard, 10 ppm, 1 L      **2835153**  
 Sodium Standard, 100 ppm, 1 L      **2834253**  
 Sodium Nitrate, 0.5M, 500 mL      **2507149**

**astroTOC™ Online Total Organic Carbon Analyzer**  
 Phosphoric Acid Solution, 0.1 Molar, 5 Gal      **5845800**  
 Phosphoric Acid Solution, 0.3 Molar, 5 Gal      **5845900**  
 Phosphoric Acid Solution, 0.6 Molar, 5 Gal      **5846000**  
 Phosphoric Acid Solution, 1.0 Molar, 5 Gal      **5846100**  
 Sodium Persulfate Solution, 0.2 Molar, 5 Gal      **5845100**  
 Sodium Persulfate Solution, 0.4 Molar, 5 Gal      **5845200**  
 Sodium Persulfate Solution, 0.6 Molar, 5 Gal      **5845300**  
 Sodium Persulfate Solution, 0.8 Molar, 5 Gal      **5845400**  
 Sodium Persulfate Solution, 1.0 Molar, 5 Gal      **5845500**  
 Sodium Persulfate Solution, 1.2 Molar, 5 Gal      **5845600**  
 Sodium Persulfate Solution, 1.5 Molar, 5 Gal      **5845700**  
 Zero Solution, <0.05 mg/L TOC, 4 L      **5847700**  
 TOC Standard Solution, 2.0 mg/L, 4 L      **5846200**  
 TOC Standard Solution, 5.0 mg/L, 4 L      **5847100**  
 TOC Standard Solution, 10.0 mg/L, 4 L      **5846700**  
 TOC Standard Solution, 25.0 mg/L, 4 L      **5846300**  
 TOC Standard Solution, 50.0 mg/L, 4 L      **5847200**  
 TOC Standard Solution, 100.0 mg/L, 4 L      **5846800**  
 TOC Standard Solution, 500 mg/L, 4 L      **5847300**  
 TOC Standard Solution, 1000 mg/L, 4 L      **5846900**  
 TOC Standard Solution, 2000 mg/L, 4 L      **5846500**  
 TOC Standard Solution, 5000 mg/L, 4 L      **5847400**  
 TOC Standard Solution, 10000 mg/L, 4 L      **5847000**

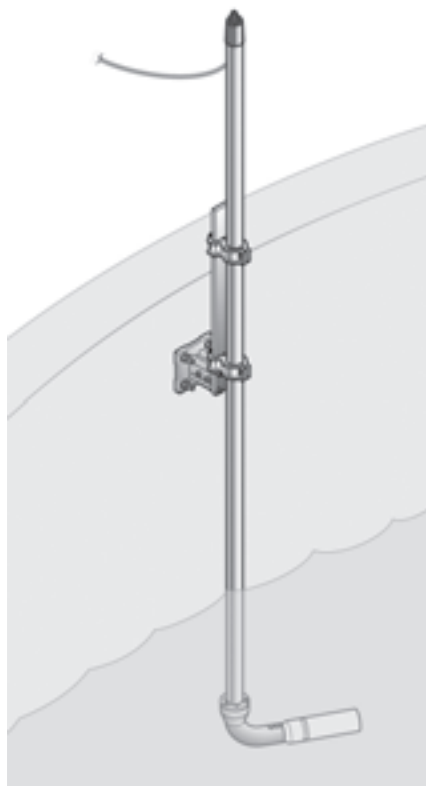


## Fixed Point Mounting Kit

### Compatible Sensors

Sensor Type	Sensor Models
NITRATAX™ sc Nitrate Sensors	plus sc, eco sc, clear sc
SOLITAX® sc Suspended Solids & Turbidity Sensors	t-line, ts-line, hs-line sensors
UVAS sc Organics Sensor	UVAS sc
TSS sc	All TSS sc InSitu sensors

Prod. No.	Description
<b>LZY714.99.53220</b>	Fixed Point Installation Kit for NITRATAX sc Nitrate Sensors
<b>LZY714.99.53120</b>	Fixed Point Installation Kit for SOLITAX sc Suspended Solids & Turbidity Sensors TSS sc Sensors
<b>LZY714.99.53520</b>	Fixed Point Installation Kit for UVAS sc Organics Sensor



## Pivot Point Mounting Kit

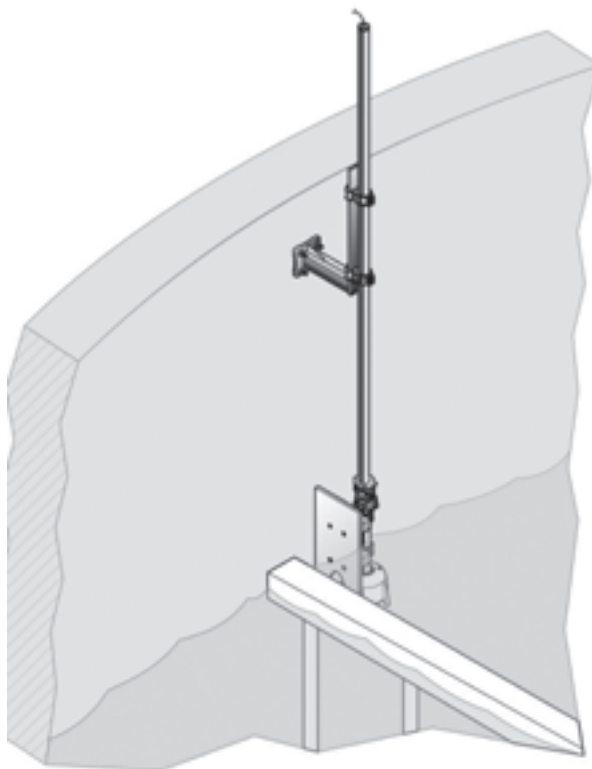
### Compatible Sensors

Sensor Type	Sensor Models
SONATAX sc Sludge Level Sensors	SONATAX sc

Prod. No.	Description
<b>LZY714.99.42120</b>	Fixed Point Mount for SONATAX sc <i>For mounting probe on a pivot assembly for clarifiers with skimmers</i>
<b>LZY714.99.62160</b>	Pivot Mount for SONATAX sc with 0.35 m extension pipe
<b>LZY714.99.72160</b>	Pivot Mount for SONATAX sc (with 1 m extension pipe)

### Optional Mounting

Must be ordered with either Fixed or Pivot mount above.  
**LZX414.00.73000** Standard Rail Mount kit



*Pivot Mount model shown*

PROCESS INSTRUMENTS

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*U.S. customers only.*

# MOUNTING KITS & ACCESSORIES

## Immersion Mounting Kit

### Compatible Sensors

Sensor Type	Sensor Models
pH / ORP Differential Sensors*	Convertible Body Styles

\*For pH / ORP Differential Sensors 1-1/2 inch or Combination Sensors 3/4 inch, contact Hach for mounting options.

### Handrail Hardware

Includes 1-1/2 inch diameter by 7.5 ft. long CPVC pipe, and a unique swivel/pivot/ pipe clamp assembly.

Prod. No.	Material
MH236B00Z	CPVC

### Ball Float Hardware

Includes 1-1/2 inch diameter by 7.5 ft. long CPVC pipe, ball float assembly, and a unique swivel/pivot/ pipe clamp assembly.

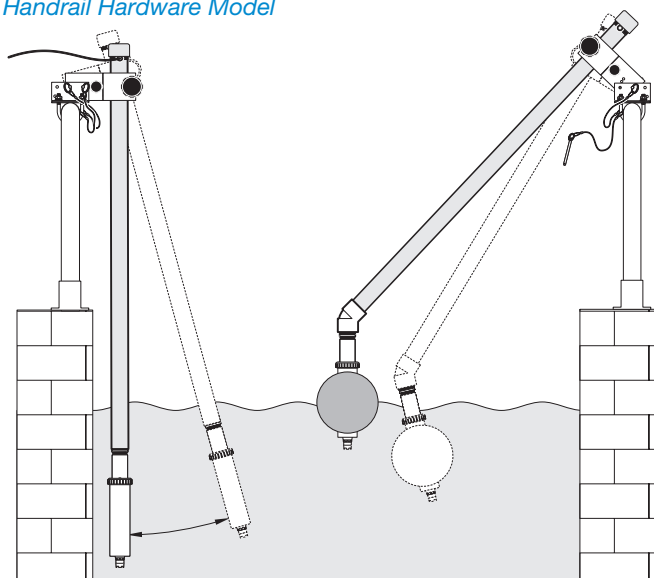
Prod. No.	Material
6131000	CPVC

### Standard Hardware

Includes 1-inch diameter by 4 ft. long pipe and 1-inch x 1-inch NPT coupling in respective material. (Pipe-mount junction box with terminal strip included in analog hardware.)

Prod. No.	Material
<i>For Digital Sensors</i>	
6136400	CPVC
6136500	316 Stainless Steel
<i>For Analog Sensors</i>	
MH434A00B	CPVC
MH414A00B	316 Stainless Steel

Handrail Hardware Model



Ball Float Hardware Model

### Chain Mount Hardware

Includes stainless steel bail, nuts, and washers. Does not include chain. To be used with stainless steel immersion sensor only.

Prod. No.	Material
2881900	316 Stainless Steel

## Insertion Mounting Kit

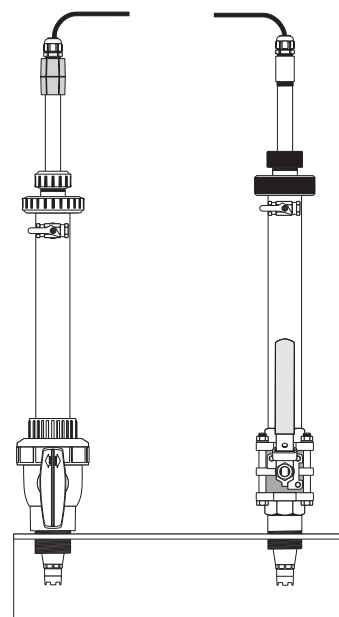
### Compatible Sensors

Sensor Type	Sensor Models
pH / ORP Differential Sensors*	Insertion

\*For pH / ORP Differential Sensors 1-1/2 inch or Combination Sensors 3/4 inch, contact Hach for mounting options..

Includes a 1-1/2 inch ball valve in respective material, 1-1/2 inch NPT close nipple, sensor adapter with two Viton® O-rings and wiper, extension pipe, pipe adapter, back tube, and lock ring.

Prod. No.	Material
<i>For Digital Sensors</i>	
5646300	CPVC
5646350	316 Stainless Steel
<i>For Analog Sensors</i>	
5646400	CPVC
5646450	316 Stainless Steel



CPVC Model

Stainless Steel Insertion Model

## Union Mounting Kit

### Compatible Sensors

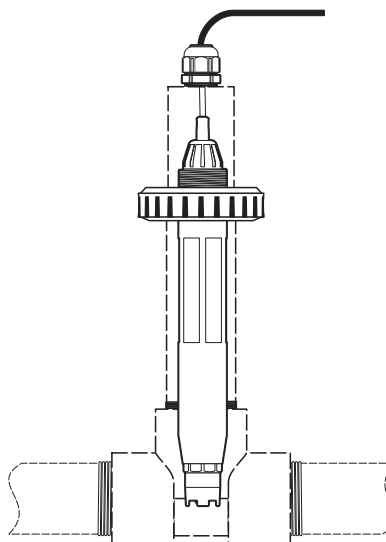
Sensor Type	Sensor Models
pH / ORP Differential Sensors*	Insertion Body Styles

\*For pH / ORP Differential Sensors 1-1/2 inch or Combination Sensors 3/4 inch, contact Hach for mounting options.

Includes standard 1-1/2 inch tee, special union pipe with adapter, sealing hub, and lock ring in respective material, and Viton® O-ring.

Prod. No.	Material
6131300	CPVC
6131400	316 Stainless Steel

Union mounting for Inductive Conductivity Sensors also available. Contact your Hach representative for details.



## Sanitary Mounting Kit

### Compatible Sensors

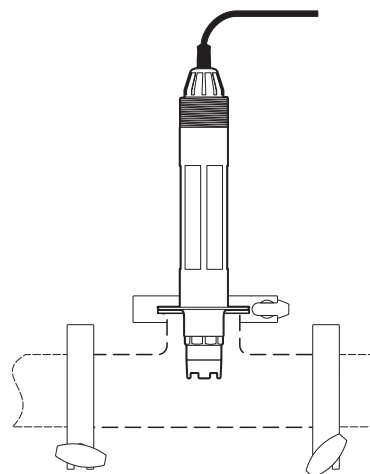
Sensor Type	Sensor Models
pH / ORP Differential Sensors*	Sanitary Body Styles

\*For pH / ORP Differential Sensors 1-1/2 inch or Combination Sensors 3/4 inch, contact Hach for mounting options.

Includes 2-inch sanitary tee and heavy-duty clamp. Special cap and EPDM compound gasket are supplied with sensor but can be separately ordered.

Prod. No.	Material
MH018S8SZ	316 Stainless Steel

Sanitary mounting for Inductive Conductivity Sensors also available. Contact your Hach representative for details.



## Cable Accessories

For the SOLITAX sc, NITRATAX sc, SONATAX sc, TSS sc, and UVAS sc Analyzers only).

Prod. No.	Description
5867000	Junction Box (for extension cables*)
5796000	7.6 m (25 ft.) Extension Cable
5796100	15.2 m (50 ft.) Extension Cable
5796200	30.5 m (100 ft.) Extension Cable
1W1100	Analog Interconnect Cable, order per foot

\*Maximum total length 100 m (328 ft.)

# UPGRADE TO A NEW HACH INSTRUMENT!

## Obsolete Products & Replacements

Instruments No Longer Available for Purchase	Replacement Instrument	See Pages
<b>LAB INSTRUMENTS</b>		
DR/2000 Spectrophotometer DR/2010 Spectrophotometer DR/3000 Spectrophotometer DR/3800 Spectrophotometer	DR 2700 Spectrophotometer DR 2800 Spectrophotometer DR 5000 Spectrophotometer	Choose from the DR 1900, DR 3900, and DR 6000 Spectrophotometers 83-89
DR/700 Colorimeter DR/100 Colorimeter	DR/800 Series Colorimeters	DR 900 Colorimeter (for multiple parameters) or Pocket Colorimeter II (single parameter) 90
EC Series pH and ISE Meters Hach One portable pH/ISE meters (Prod. No. 4380000 & others)		HQd Meters and IntelliCAL Probes; H-Series Portable and Benchtop Meters & Probes; MP Probeless Meters; sensION+ Portable and Benchtop Meters & Probes 15-61
18900 Ratio Turbidimeter 2100A Turbidimeter 43900 Ratio XR Turbidimeter		2100N & 2100AN Laboratory Turbidimeters 94-95
Portalab Turbidimeter		2100Q Portable Turbidimeter 96-97
sensION Water Quality Meters*		sensION+ Water Quality Meters 40-50
<b>PROCESS INSTRUMENTS</b>		
1220 Hardness Monitor		SP510 Hardness Monitor 354
5041D0 & 5042D0 Zullig DO Sensors		Hach LDO Probe 339-340
AC1000 Series Analyzers		CL17 Chlorine Analyzer 331
CL17 (Prod. No. 4418000) Chlorine Analyzer		CL17 (Prod. No. 5440001) 331
1720C Turbidimeter		1720E Low Range Turbidimeter 388
95T/8220 Low Range Turbidimeters		1720E Low-Range Turbidimeter 388
95T/8224 Steady Stream Turbidimeters		Surface Scatter 7 sc Turbidimeter 390
Ratio 2000 Process Turbidimeter		On-Line Process Turbidimeters (application-dependent) 387-390
Surface Scatter 5 Turbidimeter		Surface Scatter 7 sc Turbidimeter 390
<b>CONTROLLERS &amp; TRANSMITTERS</b>		
sc100 Controller*		sc200 and sc1000 Controllers 318-321
Model 53 Controller*		sc200 and sc1000 Controllers 318-321
672 Series		sc200 and sc1000 Controllers 318-321
692 (all versions)		si792 2-wire transmitter 322-323
EC310 EC1000		sc200 and sc1000 Controllers and Digital pH Sensors and 8362sc High Purity pH System 318-321, 368

List not all inclusive. Visit [www.hach.com](http://www.hach.com) for up-to-date product information.

\*Eligible for repair by Hach.

# HACH COMPANY - FLOW PRODUCTS & SERVICES



## Hach FL900 Series Flow Logger with Sensor Family

*Solve any sewer flow monitoring challenge.*



## Hach FH950 Handheld Flow Meter

*Reliable readings in every condition.*



## Hach Data Delivery Services (DDS)

*Flow data without the hassle.*

FLOW



Be Right™



# HACH COMPANY - FLOW PRODUCTS & SERVICES

Hach Flow Meter Products and Services has a proven track record of creating industry-leading innovations with unwavering product accuracy in the open-channel flow measurement world. Empowering you with true and timely flow data for your analysis, we dramatically reduce your risk and enable you to make critical wastewater system decisions with absolute confidence.

From state-of-the-art wireless flow loggers and industry-pioneering non-contact flow sensors, as well as our revolutionary Hach Data Delivery Services (DDS), Hach Flow is committed to providing flexible solutions for all of your flow monitoring challenges. Be sure to visit our website at [hachflow.com](http://hachflow.com) for detailed product information.

## Hach FL900 Series Flow Logger and Sensor Family



The Hach FL900 Series Flow Logger and sensor family combines an innovative flow logger with sensor technologies that have revolutionized open-channel flow monitoring by providing reliable solutions for any sewer flow measurement challenge.

Our innovative sensors include:

- FLO-DAR® AV Sensor that leads all other sensors by consistently delivering accurate flow data by staying out of the flow and avoiding fouling and data loss. Optional Surcharge Velocity Sensor (SVS) allows for continuous and accurate flow monitoring even during surcharge conditions.
- FLO-TOTE® 3 AV Sensor
- Sigma Submerged AV Sensor
- Hach Ultrasonic Sensors

## Hach Data Delivery Services (DDS)

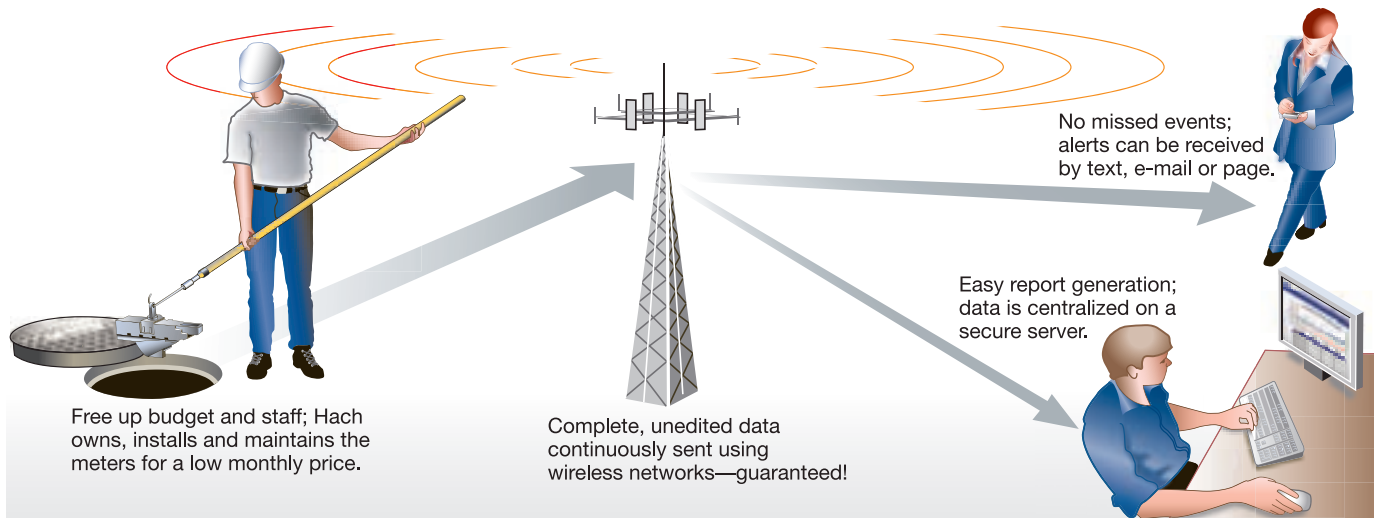
It's no longer only a dream. With Hach DDS you can stop spending all your time struggling just to get reliable flow data, and instead start implementing projects that actually solve your wastewater flow challenges.

DDS is a highly efficient flow monitoring service where, for a fixed monthly fee, Hach will provide the equipment, resources and support you need to acquire your flow data.

And with DDS you finally have options with how the service is structured. With programs that can be customized to solve your particular pain points—budget, technology, resources or hassle—DDS is designed to empower you with smart data, and let you leave the rest to us.



**For all details, visit [hachflow.com/dds](http://hachflow.com/dds)**



## Flow Meters for Permanent Power Applications



### Sigma 950 Flow Meter

Designed for maximum usage flexibility, including a full-range of compatible sensor types, multiple input/output options and the ability to use in either permanent or temporary locations.

### FLO-STATION Flow Monitor with FLO-TOTE® 3 AV Sensor or FLO-DAR® AV Sensor

The FLO-STATION, when combined with the FLO-DAR or the FLO-TOTE 3 sensor, is a highly convenient solution for any flow monitoring application.



### Hach sc200 Universal Controller with Ultrasonic Sensor

An economically-intelligent solution, the sc200 Universal Controller with Ultrasonic Sensor is designed to give highly accurate flow and depth measurements in a wide variety of open-channel flow monitoring applications.

## Hach FH950 Handheld Flow Meter

Designed for use in both environmental and sewer/wastewater flow measurement scenarios, this truly portable handheld meter weighs just 1.5 lbs. The intelligent electromagnetic sensor, with no moving parts, requires no mechanical maintenance. Models are available for Velocity Only or Velocity and Level applications.



For a full list of FH950 features and benefits, visit [hachflow.com](http://hachflow.com)



# INFORMATION MANAGEMENT PRODUCTS



**Hach Water Information Management Solution™ helps you see the complete picture of your water system.**

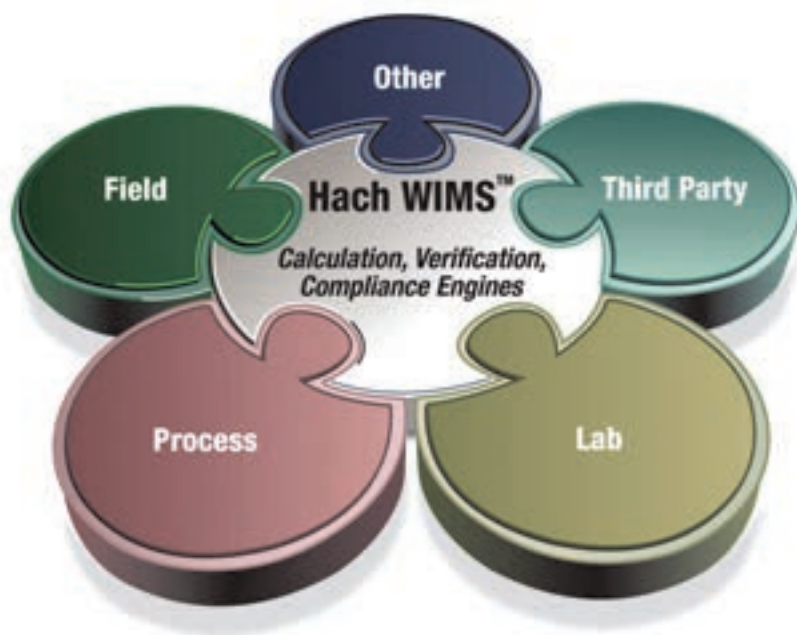


*Be Right™*

# INFORMATION MANAGEMENT PRODUCTS

## HACH WATER INFORMATION MANAGEMENT SOLUTION™ (HACH WIMS™)

Hach Water Information Management Solution (Hach WIMS) brings data from across your drinking water and wastewater systems to a central, secure location for a complete picture of your system helping you to confidently make informed decisions.



### Easily Monitor and Manage Operations

- Enter data once into the system to increase data accuracy
- Increase efficiencies by automatically collecting your SCADA, LIMS and other data and storing it in a central, secure database
- Access your data instantly, locally or over the web, to make more informed decisions
- Quickly troubleshoot system upsets, compliance issues and other problems with a large set of tools
- Set up personalized dashboards to monitor key data and gain quick access to reports and graphs.
- The software flags problems so you know exactly where they occurred
- Powerful audit trails allow you to trust your data

### Improve Operations to Save Time, Money and Energy

- Easily identify cost reduction opportunities by comparing data from throughout your operation
- Quickly compare data in unique ways to get new perspectives of your operation
- Configure graphs for trend analysis, correlations and control charting.
- Historical records are safely stored and always available

### Efficient Reporting and Visualization Saves Valuable Time and Provides Insights

- Preprogrammed EPA and state report templates create paper and electronic regulatory reports (SWTR, DBR, NPDES, DMR, eDMR, MOR, SDWA, CCR, etc)
- Receive automatically scheduled reports on-screen, printed or delivered via email.
- Easily generate accurate business reports and graphs with a few keystrokes
- Over 100 built-in industry-specific formulas allow you to quickly and accurately perform complex calculation and easily handle data qualifiers

### Configuration Options

- Configure Online and Multi-user solutions with more users, facilities, LIMS and SCADA interfaces, and enterprise database support to meet your specific needs.
- Add services and training for additional reports, dashboards, forms, etc and to learn how to perform more complex tasks

### System Requirements and Ordering Information

- Hach WIMS software runs on Windows-based PC's and supports the latest operating systems
- Hach WIMS comes with a standard SQL database and supports Microsoft SQL server and Oracle databases
- Hach WIMS Online requires an Internet Connection
- For specific information on hardware and software requirements contact us at 1 800 677 0067 or visit us at [www.hachwims.com](http://www.hachwims.com)



## Additional Hach Integrated Information Management Products

### Hach WIMS Lab Cal Module

Hach LAB Cal is a water laboratory data management system, specifically designed for drinking water and wastewater providing easy-to-use sample scheduling and tracking tools for effective lab data management. The visual environment takes the complexity out of managing your scheduled samples. Time-saving features, familiar formats, simple workflows, and pricing that is far less than traditional LIMS systems make Hach LAB Cal a very robust and cost-effective solution.

### SCADA and LIMS Interfaces for Hach WIMS

Interfaces are available for all water and wastewater industry SCADA and LIMS systems. Hach SCADA and LIMS interfaces transfer data seamlessly and automatically to Hach WIMS.

### Hach WIMS Portable Solutions

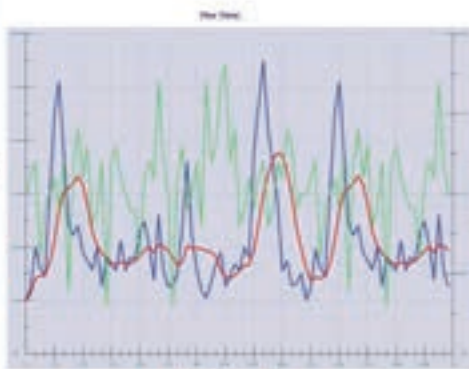
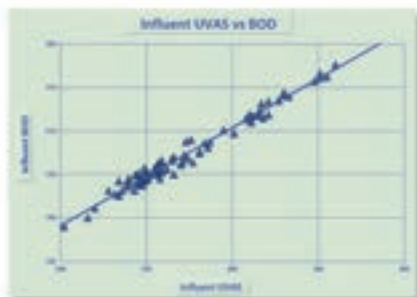
Hach WIMS Portable solution uses doForms™ on familiar Android, iPhone and iPad devices to allow field staff to collect data from anywhere, anytime.

### Services

Hach offers a comprehensive set of services, such as training, programming, installation assistance, set up, configuration, and other specific customer requests to ensure successful use of Hach software.

### Training

Hach training can be provided at a Hach Facility, at the customer site, or over the web. Training sessions can be tailored for each customer or provided for multiple customers in a structured classroom environment.



Readily analyze trends, correlations, probabilities and create control charts.



Data can be entered manually with user-defined data input forms or captured automatically.

Pre-programmed EPA/State report templates include: SWTR, DBP, NPDES, DMR, eDMR, MOR, or design your own reports, charts, or graphs in minutes!

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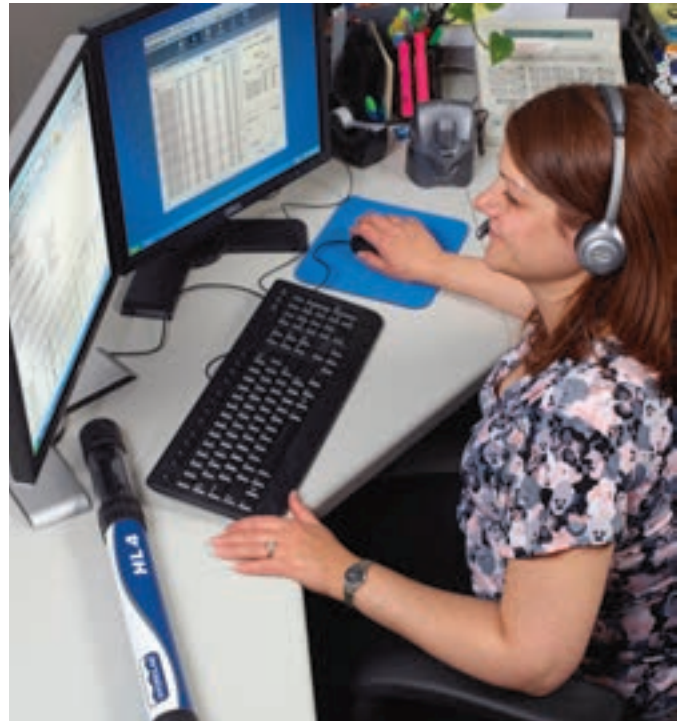
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