

Table of Contents

| | |
|---|----------------|
| What's New! | 2-6 |
| The Hach Difference | 7-20 |
| Guide to U.S. Customer Service | 8-9 |
| Guide to International Customer Service..... | 10-12 |
| hach.com | 13-15 |
| Technical Training (HTTC) | 16 |
| Service Partnership Programs | 17 |
| Hach EPA Compliant Methods | 18-20 |
| Laboratory & Field Instruments | 21-122 |
| Meters & Probes | 21-54 |
| BOD Analysis | 55-58 |
| Spectrophotometers & Colorimeters..... | 59-78 |
| Laboratory Turbidimeters | 79-84 |
| Sample Cells | 85-92 |
| Titration Products | 93-100 |
| Lab Automation | 101-102 |
| Sample Preparation | 103-108 |
| Samplers | 109-122 |
| Chemicals & Reagents | 123-226 |
| Parameters (Acidity to Zinc) | 123-198 |
| Alphabetical Listing of Reagents..... | 199-226 |
| Microbiological Products | 227-248 |
| Hach Test Kits | 249-322 |
| Portable Environmental Laboratories | 249-262 |
| Application Test Kits | 263-284 |
| Single Parameter Test Kits | 285-308 |
| Test Kit Replacement Parts & Reagent Reordering | 309-322 |
| Laboratory Supplies | 323-386 |
| Process Instrumentation | 387-472 |
| Controllers | 387-398 |
| Process Instruments..... | 399-471 |
| Obsolete Products & Replacements..... | 472 |
| Flow Products | 473-494 |
| Hach Homeland Security Technologies | 495-512 |
| Product Number Index | 513-526 |
| Alphabetical Index | 527-536 |

NEW Electrochemistry Products

What's New!

NEW! pH, ORP, and Sodium Probes



pH Ultra

Gives fastest response compared to competitor probes. Ideal for rapid measurement and/or working with difficult samples such as low-ionic strength (pure water).



ORP (Oxidation Reduction Potential)

Features a flat disk design for optimal performance and easy sensor cleaning. Offered in standard, rugged and refillable models.



Sodium ISE (Ion Selective Electrode)

Uses an exclusive ISE design that ensures fast start up and minimal conditioning requirements to prevent calibration re-work.

See pages 27-28.



NEW! Non-Glass pH Probes & Meters

With stainless steel probes and ISFET silicon chip sensors.

See pages 37-39.



NEW! Probeless Meters —Just “Dip and Go”

Provide the ultimate ease-of-use for portable spot check testing. Ideal for clean water applications and tap sampling.

See pages 40-41.



NEW! Benchtop Spectrophotometer

Solid VIS benchtop with high-speed scanning plus many extras for simplified operation.

See page 69.



NEW! 2100Q Portable Turbidimeter

The easiest to use turbidimeter available!

- The most accurate turbidity measurement every time, even for rapidly settling samples.
- On-screen calibration assistance.
- Simplified data transfer.

See page 82.

NEW Chemicals & Reagents

NEW! Simplified TKN Analysis

A simple alternative for traditional TKN analysis that anyone can do.

- Eliminate the use of mercury and other harmful chemicals.
- 3 tests in 1! Results for total nitrogen, nitrate and nitrite and TKN are all obtained at once for optimum process control.

See page 73.



NEW! Chlorine Method-Freechlor F Reagent Solution

A "green" alternative—no pretreatment steps for manganese. Eliminate the need to know if manganese or chloramines are present.

See page 145.



MORE! TNTplus™ Chemistries

More parameters for more productivity—as a part of the comprehensive line of TNTplus for drinking water and wastewater facilities.

Total Alkalinity • Chlorine • Mercury-Free COD
Copper • Iron • HR Nitrate • Sulfate
Volatile Acids

See page 73.

See our new TNTplus video at: www.hach.com/tntplus



EPA APPROVED

NEW! MI Media

- 24 hour detection time.
- EPA approved for use in drinking water, surface, ground, well, recreational as well as process water for ultra pure chemical processing.
- Simultaneous detection of coliforms and e-Coli.

See page 234.

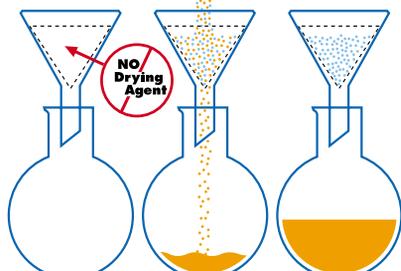


EXPANDED Laboratory Supplies

What's New!

We've added many NEW laboratory supply products, including...

Xenosep SPS™ (Solvent Phase Separator) Filter
Makes Sample Drying Easy for any Density Solvent



1. Place Shorter SPS Filter in Funnel
2. SPS Filter Passes Immiscible Solvent
3. Hydrophobic SPS Filter Retains Water

Electrochemistry Meters

See pages 343-344.



Solvent Phase Separator Filters

See page 348.

Lead and Copper Scanning Analyzer

See page 363.



Leica® DM500 Compound Microscopes

See page 364.

General Purpose Oven

See page 366.



Digital Thermometers

See pages 379-380.

...and much, much more!

NEW! American Recovery and Reinvestment Act (ARRA)



We are prepared to support ARRA (stimulus) projects by providing you with the highest quality products for your Drinking Water and Wastewater projects.

For additional information,

HACH ARRA HOTLINE: (800) 227-4224 and press #6171

Email us at ARRA@hach.com

Website: www.hach.com/arra

Please note: When requesting a quote or placing an order related to ARRA, please specify that a "Buy American" product is needed.

NEW! Dissolved Oxygen Sensor for Beer



Precise oxygen measurement with optical technology for beer and deaerated water.

See page 416.

NEW! A1100 Dissolved Oxygen EC Sensor



Electrochemical (EC) sensor for corrosion control, in-line beverage, and deaerated water applications.

See page 417.



NEW! Amperometric Chlorine Analyzers

Hach's answer to reagentless amperometric chlorine measurement.

See page 405.

NEW! Easy-To-Maintain Nitrate Sensor



The easiest to maintain nitrate ISE sensor for continuous trending.

See page 430.

NEW! Oil-In-Water Sensor



Continuous oil-in-water monitoring for the right price.

See page 431.

NEW! Dissolved Oxygen Sensor for Power Plants



The first maintenance-free optical oxygen sensor for power plants.

See page 413.

NEW! Ozone Sensor for Bottled Water Applications



Reduce maintenance to only 5 minutes.

See page 435.

NEW Process Instrumentation

What's New!

NEW! Sodium Analyzers

Low-level sodium measurement in high purity water.



See page 451.

NEW! Hand-held Suspended Solids & Turbidity Sensor



Hand-held turbidity, suspended solids and sludge blanket level instrument.

See page 456.



NEW! Suspended Solids & Turbidity Sensor

Measures on-line suspended solids in virtually all applications under the strictest regulatory conditions.

See page 455.

NEW! TOC Analyzers

Designed to provide low maintenance, online TOC, TN, TP monitoring even in the most difficult sample applications.



See pages 458-459.

NEW Hach Homeland Security Technologies

NEW! CityGuard™ Security Network Portal and Real-Time Water Distribution Monitoring System

Your virtual command center...from source to tap.

See pages 496-497.



NEW! GuardianBlue® Event Monitor

Adds event detection capabilities to sensor data from the Source Water Monitoring Panel, the Distribution Monitoring Panel or the GuardianBlue System.

See pages 502-503.



The Hach Difference

The Hach Difference

See Inside!

- **Guide to U.S. Customer Service**
- **Guide to International Customer Service**
- **hach.com**
- **Technical Training (HTTC)**
- **Service Partnership Programs**
- **Hach EPA Compliant Methods**



Be Right™

Order Placement

To place an order, or if you have questions about Hach products, ordering, or shipping information, call one of our customer service representatives.

Municipal:
800-227-4224
or 970-669-3050

Industrial:
866-450-4248
or 970-669-3050

You may also fax your order anytime, day or night, to:
970-669-2932

We may require a written or faxed copy of the Purchase Order or confirming document, complete with authorizing signatures.

You may also place your order online at:
www.hach.com

Mailing address (for orders):

Hach Company
P.O. Box 608
Loveland, CO 80539-0608 USA

For Hach Homeland Security Technologies, please call:

800-604-3493
or visit www.hachhst.com

For Radiometer Analytical customer service, please call:

800-998-8110
or visit www.radiometer-analytical.com

For Lachat Instruments customer service, please call:

800-247-7613
or visit www.LachatInstruments.com

For GLI customer service, please call:

800-454-0263
or visit www.hach.com/gliwelcome

For Sigma customer service, please call:

800-227-4224
or visit www.hach.com/sb

For Marsh-McBirney customer service, please call:

800-368-2723
or visit www.hachflow.com

Is Your Shipment Staying Within the United States?

You are responsible for designating in your Purchase Order the true, ultimate country of destination of products you order. The following guidelines apply exclusively to products being used within the United States. For information about products intended for use outside the United States, see page 10.

Prices and Terms

Please contact the Customer Service Department for a complete copy of Hach Company's Terms and Conditions of Sale for U.S. Sales. All prices in this catalog apply to products used within the United States and are shown in U.S. dollars, FOB Hach's shipping point. Catalog prices, specifications, and statements of policy in this catalog are current at the time of printing and are subject to change without notice.

Terms of Payment

Payment may be through established credit, or by VISA®, MasterCard®, or American Express® charge cards. Customers are normally invoiced on the date of shipment, and payment is due within 30 days of invoicing. Invoice is supplied with shipping charges listed separately.

Sales and Use Tax

Hach Company is required to collect sales and use taxes on all sales based on the ship-to location. If orders from your organization are tax-exempt, please provide the appropriate documentation at the time of order.

Cancellations

Hach routinely ships orders within 48 hours of order placement. If a cancelled order has been shipped, the customer must return the order within 30 days or it will be considered accepted. Shipping charges for cancelled orders returned are the responsibility of the customer.

Shipping and Transportation

Hach's Distribution Department will select the best method of shipment and will accommodate rush shipments by air at an additional charge when regulations permit. Hazardous materials are shipped according to applicable transportation regulations. Terms are FOB Ames, Iowa, or FOB Loveland, Colorado. Hach reserves the right to approve carriers, modes, and rate of transportation. Delivery is complete when Hach places the shipment with the first carrier, and risk of loss or damage in transit are the responsibility of the buyer.

Hach reserves the right to back order goods unless buyer expressly states otherwise. Back orders will be invoiced separately.

Simplified Freight Charge Table^{1, 2, 3}

| Total Price of Merchandise Ordered | Standard Surface (Mainland USA) | Second Day Delivery (Mainland USA) | Next Day Delivery (Mainland USA) | Second Day Delivery (Alaska & Hawaii) | Next Day Delivery (Alaska & Hawaii) |
|------------------------------------|---------------------------------|------------------------------------|----------------------------------|---------------------------------------|-------------------------------------|
| \$0.00 - \$24.99 | \$9.95 | \$22.95 | \$42.95 | \$34.95 | \$64.95 |
| \$25.00 - \$49.99 | \$12.95 | \$30.95 | \$58.95 | \$44.95 | \$89.95 |
| \$50.00 - \$249.99 | \$15.95 | \$47.95 | \$91.95 | \$64.95 | \$130.95 |
| \$250.00 - \$499.99 | \$26.95 | \$67.95 | \$144.95 | \$87.95 | \$173.95 |
| \$500.00 - \$999.99 | \$36.95 | \$96.95 | \$198.95 | \$121.95 | \$240.95 |
| \$1,000.00 - \$2,499.99 | \$59.95 | \$119.95 | \$229.95 | \$141.95 | \$277.95 |
| \$2,500.00 - \$4,999.99 | \$69.95 | \$159.95 | \$269.95 | \$166.95 | \$308.95 |
| \$5,000.00 - \$9,999.99 | \$99.95 | \$184.95 | \$310.95 | \$195.95 | \$334.95 |
| Over \$10,000 | 2% of Net Order Value | 4% of Net Order Value | 6% of Net Order Value | 4% of Net Order Value | 6% of Net Order Value |

¹ Freight charges shown are only applicable to orders billing and shipping to U.S. destinations. Freight charges will be prepaid and added to invoice. Freight for the Reagent Delivery Program is charged on each shipment release and is based on the total price of each shipment release. Freight charges are subject to change without notice.

² Additional freight charges will be applied to orders containing bulky and/or heavy items.

³ Orders shipping to Alaska or Hawaii: Additional freight charges may be applied at time of order processing. Second Day and Next Day delivery is not available to all destinations.

Shipping & Transportation Policy

For orders with a U.S.A. billing and shipping destination, Hach's shipping department will select the method of shipment appropriate to the merchandise ordered, and will accommodate rush shipments by air at an additional charge (when regulations permit). Hazardous materials are shipped according to applicable transportation regulations. FOB shipping point is either Ames, Iowa, or Loveland, Colorado (United States).

Hach reserves the right to approve carriers, modes of transportation and routing of products. Delivery is complete when Hach places the shipment with the first carrier. Shipments in transit are the responsibility of the buyer. Should your purchase not reach its U.S.A. destination, call 800-227-4224 for assistance in tracking your shipment. If freight appears to be damaged upon receipt, do not accept it from the carrier. If acceptance has been completed and hidden damage is discovered, contact the carrier for assistance in filing a claim.

Tracking and Claims

Should your purchase not reach its U.S. destination, Hach will assist you in tracking the shipment. Or, track your order online at www.hach.com. If your freight appears to be damaged when you receive it, do not accept it from the carrier.

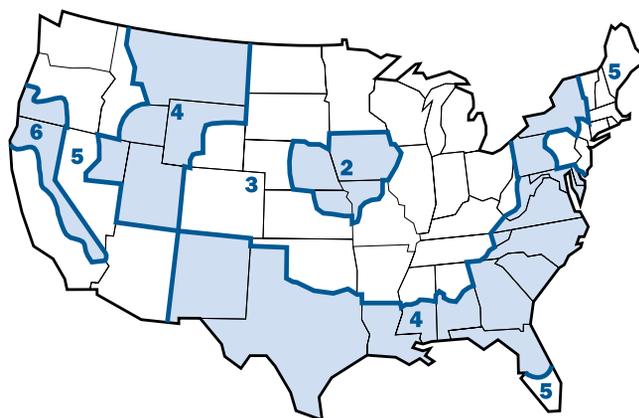
If you have completed acceptance and discover hidden damage, contact the carrier for assistance with filing a claim.

Returning Merchandise

Normal business transactions inevitably require an occasional return of merchandise for exchange or credit. No material may be returned without Hach's express written consent and proper documentation. To expedite return shipments from inside the United States, please follow the return procedure outlined here.

1. Within 30 days of receipt of merchandise, call the Customer Service Department to obtain Return Authorization.
2. Hach will send you Return Authorization documentation, labels, and instructions, or advise you with a Return Authorization number.
3. Attach Return Authorization labels and documents to the outside of the returned goods shipping carton(s), or you may be advised to apply the Return Authorization number on the carton. Ship carton(s) to Hach within 15 days. Shipments not bearing Return Authorization labels or Return Authorization Number will be refused.

Scheduled Delivery Chart



Estimated number of business days until your standard surface shipment will be delivered.

Terms of Return Shipments

Return shipments must meet the following requirements to be accepted or credited:

1. Products must be returned in the original packaging, with labels intact and not defaced. All items returned are inspected to determine credit value. Credit will only be issued on product returned in like-new condition. If items returned are not received in like-new condition, they will be disposed of and credit will not be issued.
2. Freight charges associated with returned merchandise are the responsibility of the customer. Hach cannot accept collect shipments without prior authorization.
3. All returns must be shipped to Hach within 15 days from the date of Return Authorization. Returns not shipped within this time frame will require reauthorization.
4. Hach can only authorize returns for unopened chemicals.

All chemicals must be packaged and shipped in compliance with the regulations of the U.S. Department of Transportation. Hach Company will provide complete instructions with your Return Authorization.

Guide to International Customer Service

Worldwide Sales and Service

Wherever you are—Santiago, Stuttgart, or Singapore—there's an authorized Hach distributor office nearby. Their staff can advise you about Hach products, assist with orders, and obtain instrument service. To find out how to reach the Hach office nearest you, see the contact information at the bottom of this page.

Here's a partial list of countries in which Hach representative offices are located:

| | | | | | |
|-------------------|-----------------------|------------------|-----------------------------|-----------------------|-----------------------------|
| <i>Algeria</i> | <i>Cyprus</i> | <i>Honduras</i> | <i>Malta</i> | <i>Poland</i> | <i>Trinidad</i> |
| <i>Argentina</i> | <i>Czech Republic</i> | <i>Hong Kong</i> | <i>Mauritius</i> | <i>Portugal</i> | <i>Tunisia</i> |
| <i>Aruba</i> | <i>Denmark</i> | <i>Hungary</i> | <i>Mexico</i> | <i>Puerto Rico</i> | <i>Turkey</i> |
| <i>Australia</i> | <i>Dom. Republic</i> | <i>Iceland</i> | <i>Morocco</i> | <i>Qatar</i> | <i>United Arab Emirates</i> |
| <i>Austria</i> | <i>Ecuador</i> | <i>India</i> | <i>The Netherlands</i> | <i>Romania</i> | <i>United Kingdom</i> |
| <i>Bahrain</i> | <i>Egypt</i> | <i>Indonesia</i> | <i>Netherlands Antilles</i> | <i>Russia</i> | <i>Uruguay</i> |
| <i>Belgium</i> | <i>El Salvador</i> | <i>Ireland</i> | <i>New Zealand</i> | <i>Saudi Arabia</i> | <i>Venezuela</i> |
| <i>Belize</i> | <i>Estonia</i> | <i>Israel</i> | <i>Nicaragua</i> | <i>Senegal/Gambia</i> | <i>Vietnam</i> |
| <i>Bolivia</i> | <i>Ethiopia</i> | <i>Italy</i> | <i>Nigeria</i> | <i>Singapore</i> | <i>Yemen</i> |
| <i>Brazil</i> | <i>Finland</i> | <i>Jamaica</i> | <i>Norway</i> | <i>Slovenia</i> | <i>Zimbabwe</i> |
| <i>Bulgaria</i> | <i>France</i> | <i>Japan</i> | <i>Oman</i> | <i>South Africa</i> | |
| <i>Canada</i> | <i>Germany</i> | <i>Jordan</i> | <i>Pakistan</i> | <i>Spain</i> | |
| <i>Chile</i> | <i>Ghana</i> | <i>Kenya</i> | <i>Panama</i> | <i>Sri Lanka</i> | |
| <i>China</i> | <i>Greece</i> | <i>Korea</i> | <i>Papua New Guinea</i> | <i>Sweden</i> | |
| <i>Colombia</i> | <i>Guam</i> | <i>Kuwait</i> | <i>Paraguay</i> | <i>Switzerland</i> | |
| <i>Costa Rica</i> | <i>Guatemala</i> | <i>Macao</i> | <i>Peru</i> | <i>Taiwan</i> | |
| <i>Croatia</i> | <i>Guyana</i> | <i>Malaysia</i> | <i>Philippines</i> | <i>Thailand</i> | |

How to Reach the International Department

Contact the offices below 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 Operations. If you are calling from inside the United States, call 800-227-4224.

U.S. exporters and customers in the United States, Canada, Latin America, Africa, Asia, and Australia/New Zealand contact:

HACH COMPANY WORLD HEADQUARTERS
P.O. Box 389
Loveland, CO 80539-0389 U.S.A.
Telephone: 970-669-3050
800-227-4224 (U.S. callers)
Fax: 970-461-3939
E-mail: intl@hach.com
www.hach.com

Visit the *NEW* Latin American Website:

www.hach-latinoamerica.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
Willstätterstraße 11
D-40549 Düsseldorf GERMANY
Telephone +49 (0) 211 5288-0
Fax: +49 (0) 211 5288-143
E-mail: info@hach-lange.de
www.hach-lange.com

In People's Republic of China, Hong Kong, and Macau, contact:

HACH CHINA
Room 301, Scitech Tower
#22 Jianguomen wai Avenue
Beijing, P.R. CHINA
Customer Support Hotline: 400-610-9290 - Toll Free
Customer Support Hotline: 800-810-9290
Hach Beijing Office: 8610-65150290
E-mail: Hachchina@hachservice.com
www.hach.com.cn

***For instrument service in Canada, use the information below:**

HACH SALES & SERVICE CANADA LTD.
400 Britannia Road East, Unit 1
Mississauga, Ontario L4Z 1X9
Telephone: 1-800-665-7635
Fax: 1-866-259-0984
E-mail: infocanada@hach.com

Is Your Shipment Going Outside the United States?

If your Hach product is to be used outside the United States—whether you are a U.S.-based trading company, a multinational corporation with shipping points all over the world, or an individual wishing to export a Hach product—you are considered an international customer. As such, you qualify for a wide range of services, all of which have been designed to expedite your shipments in the most reliable and efficient means possible.

For proper processing, please be sure to note on your Purchase Order the country in which the products will ultimately be used.

Worldwide Sales and Service Network

Distributors are located throughout the world to sell, service, and replenish Hach products. Contact International Customer Support at Hach Company, or consult our website at www.hach.com to locate the Hach office or authorized distributor nearest you.

Rapid Quotation Service

When the International Department at Hach receives a direct request for a quotation, we respond quickly, often within 24 hours of your request. Simply tell us the product number and the quantity of the product you need, and we will mail, e-mail, or fax a Pro Forma Invoice, complete with your price, the terms and conditions of the sale, and a freight estimate (if required) based on documentation needs and shipping preferences. Ultimate country of destination is required for quotes.

You can contact us for your quotation request by e-mail at:

intl@hach.com

Or by fax at:

970-461-3939

For convenient local service, outside the U.S., contact the Hach office or authorized distributor serving your area. Please visit our website, www.hach.com to locate the distributor nearest you.

Product Inquiries and Order Placement

If you are calling from within the United States, use our toll-free number to reach the International Department:

800-227-4224

If you are calling from outside the United States, call Hach World Headquarters, and an operator will direct your call to International Customer Support:

970-669-3050

Terms of Payment

Hach offers many payment methods to international customers, including:

1. *Open account.* If you anticipate a long-term relationship with Hach Company, we invite you to supply the references and financial statements necessary to establish an open account.
2. *Credit card.* For your convenience, we accept VISA®, MasterCard®, and American Express® cards issued by U.S. banks.
3. *Advance payment.* Your order will be immediately released for shipment, if you pay by cashier's check or wire transfer to our bank.
4. *Documentary drafts.* If you provide Hach with the appropriate information, we send necessary collection documents to your bank at the time of shipment.
5. *Letters of credit.* Hach has a streamlined system of guidelines to speed processing of international letters of credit.

Be sure to request the "Letter of Credit Instructions" before contacting your bank. Ask your Hach representative for assistance in setting up the best method of payment for your circumstances.

Tax-Free

Avoid paying unnecessary taxes and surcharges. Orders destined for export are not charged U.S., state, or local taxes when routed through the International Department. Resale certificates or proof of export and destination may be required.

Shipping and Transportation

Among the services Hach can provide to customers taking delivery at an international location are:

Packaging and Compliance Documents

Your shipments may contain materials which are regulated as hazardous. Hach can provide packaging, marking, labeling, and documentation for safe and legal transport via ocean or air. Wooden crating is available at an additional charge.

Forwarder and Carrier Selection

U.S. and international regulations mandate the use of only those forwarders, carriers, and brokers who have demonstrated or attested to Hach that they have the necessary training to handle Hach shipments in total compliance with applicable regulations. Customers who are planning to use a forwarder, carrier, or broker should first check with Hach to assure that the forwarder, carrier, or broker selected is qualified to handle Hach products. Hach reserves the right to refuse to tender shipments to forwarders, carriers, or brokers who are not certified to handle hazardous materials shipments.

Tracking and Claims

We take extreme care to fill and package your orders properly. If errors or damages do occur, file a report with your carrier immediately and contact the International Department at Hach.

Continued on next page.

Returns

Normal business transactions inevitably require an occasional return of merchandise for exchange or credit. To expedite your international return shipments, please follow the return procedure outlined here:

1. *To return merchandise or to return an instrument for service (whether or not under warranty), first contact the International Department to inform them that you wish to return an item.*
2. *Upon authorization, Hach will send return information or "Import Routing Instructions." This information will give you the details you need for preparing, shipping, and documenting the return goods.*
3. *Please use the Import Routing Instructions to create a commercial invoice before returning to Hach. Return shipments not accompanied by or deviating from the Import Routing Instructions may be lost, delayed in transport, or refused upon arrival at Hach Company.*

Terms for Return Shipments. Return shipments must meet the following requirements to be accepted or credited:

- *Products must be returned in the original packaging, with labels intact and not defaced. All items returned are inspected to determine credit value. Credit will only be issued on product which is returned in like-new condition. If items returned are not received in like-new condition they will be disposed of and credit will not be issued.*
- *Freight charges and U.S. Customs clearance charges and duties associated with return merchandise are the responsibility of the customer. Hach will not accept "freight collect" shipments unless prior authorization is obtained.*
- *Hach can only authorize returns for unopened chemicals. All chemicals should be packaged and shipped in compliance with the regulations of the U.S. Department of Transportation and other international regulatory organizations' guidelines, appropriate to the mode of transportation used for the original shipment. Hach Company will provide complete instructions with your Import Routing Instructions.*

Warranties

Hach warrants most products against defective materials or workmanship for at least one year from the date of shipment; longer warranties may apply to some items.

HACH WARRANTS TO THE ORIGINAL BUYER THAT HACH PRODUCTS WILL CONFORM TO ANY EXPRESS WRITTEN WARRANTY GIVEN BY HACH TO THE BUYER. EXCEPT AS EXPRESSLY SET FORTH IN THE PRECEDING SENTENCE, HACH MAKES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO ANY PRODUCTS. HACH EXPRESSLY DISCLAIMS ANY WARRANTIES IMPLIED BY LAW, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF REMEDIES: Hach shall, at its option, replace or repair the nonconforming products or refund the price paid for the product. THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

LIMITATION OF DAMAGES: IN NO EVENT SHALL HACH BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND FOR BREACH OF ANY WARRANTY, NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, OR OTHERWISE.

Catalog descriptions, pictures, and specifications, although accurate to the best of Hach's knowledge, are not a guarantee or warranty.

Warranty of products destined for shipment outside the United States applies to the original purchaser only. Authorized Hach distributors normally extend a similar warranty to customers who purchase Hach products from them.

Limits of Use

Hach products are sold only for the purposes identified in Hach catalogs and literature, and are not intended for any other purpose. Hach products sold in this catalog are not intended to be used as drugs, food additives, foods, or cosmetics, whether for humans or animals. Products that are intended for research and development use may not be used in a manufacturing process or in manufactured products. Any warranty granted by Hach is void if products are not used as intended.

Find it here.. buy it today on www.hach.com
24 Hours a Day–7 Days a Week.



Order Online

- Secure and safe online ordering
- Create quotes with 60-day product price hold
- Create pre-scheduled reagent deliveries
- Quick product add to order
- View all orders online and check status

Live Help

- Get technical support on products and applications
- Help with finding product information
- Assistance with product ordering
- Quickly engage with lab, process, and customer service operators

(Available only in U.S.)



Web Tools

- Express order entry
- MSDS Downloads
- Certificate of analysis download
- Reagent expiration date lookup
- Invoice request for registered users

Online ordering valid to U.S. customers only, for products to be used in the United States.

Hach expertise delivered to your inbox from **hach.com**

Sign up to get the latest Hach news, products, and information to help with your application needs.

- Receive product news and announcements specific to your industry/application
- Sign-up for any of our popular "application-focused" Hach.Communicator email newsletters
- Receive special promotions and Hach product offers
- Stay informed of Seminars, Webcasts, and events



Simply go to: **www.hach.com/email-request** and sign-up!

HACH Hach - O

Drinking Water HACH.COMMUNICATOR

Comparison of On-Site Chromium Analysis Methods and Instrumentation -- Amperometric vs. Colorimetric

Amperometric Historically, both amperometric and colorimetric technologies have been used widely for monitoring free and total chromium(VI) concentrations within water treatment processes and distribution systems. However, the accuracy of the amperometric sensors and the necessity to routinely calibrate them against accepted methods brings into question their suitability for regulatory reporting.

Colorimetric To help determine the best applications for each, our team tested both amperometric and colorimetric systems under varying conditions in controlled lab settings and on-site at multiple water treatment facilities. The results and conclusions from this testing were presented at Hach's Virtual Trade Show in early November and at Suez at the Water Quality Technology Conference (WQTC) in early November. Both presentations included the bench testing and on-site case studies performed to evaluate the accuracy of the amperometric technology for measuring chromium(VI) concentrations.

View the detailed Virtual Trade Show presentation. Sign in as an attendee and navigate to the "Presentation Center" to view the recorded presentation and download the slide. The presentation is approximately 40 minutes long. Available until 02/02/10.

For a more thorough analysis, download the original transcript on which the presentation was based.

Save a Tree Help save a tree by printing up with the making professional of your choice. Please only the savings you need. It makes your printing information.

November 2009, Issue 09
©2009 Hach Company
Hach Communicator is an e-newsletter published exclusively to our valued customers.
www.hach.com

HACH Hach - O

Save More with Hach's Differential pH Technology

We can't make money grow on trees, but Hach's breakthrough Differential pH technology does provide these money-saving features:

- Purchase only one differential pH sensor over three years instead buying a combination probe every six months.
- Our unique ball bridge extends the working life of the sensor by protecting the reference electrode from harsh process conditions.
- Our encapsulated construction protects the sensor's built-in gaskets from moisture and humidity, ensuring reliable sensor operation.

Put it all up, and you can **save up to 82%** on probe replacement costs!

What kind of warranty do you get with your current sensor? Hach Company offers a one-year warranty on each sensor for defects in materials and workmanship. In addition, we are so confident in our sensor's performance, you will not pay full price for a replacement sensor for two and a half years!

Watch our video and learn more about Hach's Differential pH Technology.

► Request your application.

BEST WARRANTY in the Industry!

www.hach.com

Visit www.hach.com/promos anytime for all the latest offers from Hach Company!

Take advantage of:

- Promotional giveaways like tools and apparel
- Hach Premium Points Program (P3) bonus point offers
- Discounts and offers on Hach products
- NEW for 2010—52 week Hach Chemistry promotion, see www.hach.com/promos for details



The screenshot shows the Hach.com website interface. At the top, there's a navigation bar with 'HACH' logo and 'Hach - O'. Below that, a search bar and navigation tabs for Home, Information, Support, Tools, Water Test, Chemicals, and Contact Us. The main content area is titled 'Hach Promotions' and features several offers:

- End of Year Limited-time P3 Offer:** Order over \$125 on Hach.com and receive 4,000 bonus P3 points to use towards P3 prizes. This is a limited-time offer through December 31st. Simply enter offer code **120214** at the checkout page with your order of \$125 or more.
- Tool Set Offer:** Get a 12 piece Craftsman® tool set with your purchase of select H20 electrochemistry meters. Offer good through December 31, 2009 while supplies last. See end of the corresponding offer code below at checkout to receive your Craftman tool set.
 - Buy an H2010 meter - **102434**
 - Buy an H2010 meter - **102734**
- Hach Heavy Duty Multi-tool with 50% Off:** Order \$70 or more on Hach.com and receive a Free Heavy duty Hach multi-tool. Offer expires December 31st, 2009 or while supplies last. To get the Multi-tool, simply enter offer code **102134** in the offer code box when checking out.
- 525 Buffer Set - P300:** Status extended by popular demand! Try the H210000 and H20000™ promo of your choice **FREE** to Home Service or Portable Meter and sensor and get a **FREE** 50 Buffer Set. We're so sure you'll love HACH'S electrochemistry systems & want improvement over your current system that we'd like to thank you to try it for 28 days. That's right so your old system for a 12% rebate. If you decide not to keep the Hach system, receive \$ for a full refund. Keep the Buffer set as our way of saying thanks! Call 1-800-227-4224 for details.

On the right side of the screenshot, there's a section for 'Get a member of the P3 program?' and a sign-up form for promotional alerts by email.



Online promotions valid to U.S. customers only.

Find it here... Buy it today on www.hach.com
U.S. customers only.



Technical Training (HTTC)

The Hach Difference



Hach Technical Training Center

Since 1988, the Hach Technical Training Center (HTTC) has provided you and your colleagues with world-class hands-on training that's practical, affordable, and conveniently nearby. Our classes help customers ensure they are performing their water analysis correctly so that they achieve accurate results, every time.

Many of our courses focus on basic laboratory practices and methods, which include electrochemical (pH, conductivity, dissolved oxygen, etc.), colorimetry (chlorine, fluoride, phosphate, nitrogen species, metals, TOC, etc.), turbidity measurement and titrations (alkalinity, hardness, chlorine, etc.). Advanced courses address more complex methods including digital applications. HTTC's application-based, hands-on training classes are available to fit every budget:



Regional Training

- Hands-on laboratory analysis training in convenient, regional locations
- Topics relevant to applications in drinking water and wastewater
- Most classes are state approved for Continuing Education Units
- Class offerings, schedule & locations are available at www.hach.com/training



Customized Training

- Custom classes designed for your individual needs, at your location or in Loveland, Colorado
- For more information, call 1-800-227-4224 x2344 or email the Hach Technical Training Center at httc@hach.com

Hach's knowledgeable instructors, each with extensive experience in instruction and water analysis, can increase the skill and confidence of your operators through practical, hands-on training with Hach instrumentation.

Partner with Hach for practical, affordable, hands-on training!



Service Partnership Programs

Let Hach's Service Partnership Programs perform for you:

Optimal performance • Maximum up time • Quality data

Hach recommends annual preventative instrument maintenance to fully ensure and prolong the life of your product. By partnering with Hach, you can be confident knowing that your instrument and operations are well maintained and functioning smoothly. You can also be assured that if something goes wrong, Hach will help resolve problems quickly and without hassles.

Hach's experienced, trained professionals help ensure that you receive support to keep your system operational and at peak performance. As an ISO 9001 certified company, we maintain the highest qualities for quality assurance and NIST traceable test and calibration equipment.

Consult our service selection guide below to choose the program best for you. Or mix and match programs to create a solution that specifically fits your needs.

Call for details: 800-227-4224, ext. 6178.



Look for this icon throughout the catalog—it designates a wide range of products for which our Service Partnership Programs can really be of benefit to you.

The Hach Difference

Service Selection Guide

| | PROGRAMS* | | |
|---|--|---|--|
| | (Can be mixed and matched. Save up to 20% off à la carte service.) | | |
| | Field Service | Bench Service | Preventative Maintenance |
| SELECT WHEN: | You want an all-inclusive, on-site solution for reliable, timely preventative maintenance. | You require reliable, timely preventative maintenance, but prefer factory service to on-site service. | You need help with scheduled, factory-recommended instrument maintenance at your facility. |
| PARTS | | | |
| Repair parts + shipping** | ■ | ■ | |
| Maintenance parts + shipping** | ■ | ■ | ■ |
| INSTRUMENT | | | |
| On-site start-up† | ■ | | ■ |
| Calibration | ■ | ■ | ■ |
| Certification | ■ | ■ | ■ |
| Factory-recommended maintenance | ■ | ■ | ■ |
| Free software upgrades | ■ | ■ | ■ |
| HACH TECHNICIANS | | | |
| Toll-free priority support | ■ | ■ | ■ |
| Scheduled and unscheduled tech travel | ■ | | |
| TRAINING | | | |
| Repair (on-site) | | | |
| Operation & Maintenance + startup | ■ | | ■ |
| REPAIRS | | | |
| Priority status | ■ | ■ | ■ |
| Annual repairs (covered under one annual price) | ■ | ■ | |
| Free loaners during repair | ■ | ■ | ■ |
| OPTIONS | | | |
| 25% off warranty credit and free start up‡ | ■ | ■ | ■ |
| Reagent delivery program | ■ | ■ | ■ |
| On-site reagent replenishment | ■ | | ■ |

*Service Programs are available only in the U.S. and Canada. **Includes shipping as required. †New equipment under contract. ‡Within 60 days of new instrument purchase.

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.

Hach 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 by Hach. 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 ₃ | WW | 8010 | Accepted | SM 2310 B(4a) | 130 |
| Acidity, Methyl Orange, Digital Titration | WW | 8201 | Equivalent | SM 2310 B(4a) | 130 |
| Acidity, Phenolphthalein, Digital Titration | WW | 8202 | Equivalent | SM 2310 B(4a) | 130 |
| Alkalinity, Digital Titration | WW | 8203 | Equivalent | SM 2320 B | 132 |
| Alkalinity, Titration | DW | 8221 | Equivalent | SM 2320 B | 132 |
| Ammonia as Nitrogen | WW | 10205 | Equivalent | EPA 350.1, SM 4500-NH ₃ G or H | 134 |
| Ammonia as Nitrogen | WW | 10205 | Equivalent | EPA 350.1, SM 4500-NH ₃ G or H | 134 |
| Ammonia as Nitrogen | WW | 10205 | Equivalent | EPA 350.1, SM 4500-NH ₃ G or H | 134 |
| Ammonia Nitrogen, Electrode | WW | 10001 | Equivalent | SM 4500-NH ₃ D, E, F, or G | 47 |
| Ammonia Nitrogen, Known Addition, Electrode | WW | 10002 | Equivalent | SM 4500-NH ₃ D, E, F, or G | 47 |
| Ammonia, as Nitrogen | WW | 8038 | Accepted | SM 4500-NH ₃ C | 134 |
| Arsenic, Total | WW | 8013 | Accepted | SM 3500-As B or C | 137 |
| BOD | WW | 8043 | Accepted | SM 5210 B | 139 |
| Chemical Oxygen Demand | WW | 8000 | Approved | 40 CFR 136 | 151 |
| Chemical Oxygen Demand | WW | 8231 | Accepted | EPA 410.3 or SM 5220 C | — |
| Chemical Oxygen Demand | WW | 8000 | Equivalent | EPA 410.3 or SM 5220 C | 151 |
| Chemical Oxygen Demand | WW | 8000 | Equivalent | EPA 410.3 or SM 5220 C | 151 |
| Chloride, Mercuric Nitrate | WW | 8206 | Accepted | SM 4500-Cl C | 143 |
| Chloride, Mercuric Nitrate, Digital Titration | WW | 8206 | Accepted | SM 4500-Cl C | 143 |
| Chloride, Silver Nitrate | WW | 8225 | Accepted | SM 4500-Cl B | 144 |
| Chlorine, Free | DW | 10231 | Equivalent | SM 4500-Cl G | 145 |
| Chlorine, Free | DW | 8021 | Accepted | SM 4500-CL G | 145-147 |
| Chlorine, Free Amperometric Titration | DW | 8334 | Equivalent | SM 4500-CL D | 145 |
| Chlorine, Free Amperometric Titration | WW | 8334 | Equivalent | SM 4500-CL D | 145 |
| Chlorine, Free & Total | WW | 10232 | Equivalent | SM 4500-Cl G | 145 |
| Chlorine, Total Amperometric Forward Titration | DW | 10026 | Equivalent | SM 4500-CL D | 146 |

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

Hach EPA Compliant Methods

The Hach Difference

| Analyte | Sample Matrix† | Hach Method | Approval Type | Reference Method | See Page |
|---|----------------|-------------|---------------|---------------------------------|----------|
| Chlorine, Total Residual | WW | 8167 | Accepted | SM 4500-Cl G | 145, 147 |
| Chlorine, Total Residual | DW | 8167 | Accepted | SM 4500-Cl G | 145, 147 |
| Chlorine, Total Residual | DW | 8168 | Accepted | SM 4500-Cl D | 146 |
| Chlorine, Total Residual | WW | 8168 | Accepted | SM 4500-Cl D | 146 |
| Chlorine, Total Residual, Amperometric Back Titration | WW | 10025 | Accepted | SM 4500-Cl C | 146 |
| Chlorine, Total Residual, DPD | WW | 10014 | Accepted | SM 4500-CL G | — |
| Chlorine, Total, DPD | DW | 8370 | Accepted | SM 4500-CL G | 144 |
| Chromium VI | WW | 10218/10219 | Equivalent | SM 3500-Cr D | 149 |
| Chromium VI, Dissolved | WW | 8023 | Accepted | SM 3500-Cr B or D | 149 |
| Coliform, Fecal, EC Medium with/MUG | DW | 10018 | Equivalent | SM 9221 D | 229 |
| Coliform, Total and <i>E. coli</i> , m-ColiBlue24 | DW | 8433 | Approved | 40 CFR 141.21, page 349 | 229 |
| Coliforms, <i>E. coli</i> , m-TEC | SW | 8367 | Equivalent | EPA 1103.1 | 230 |
| Coliforms, Fecal and Total, MPN, A1 Medium | DW | 8368 | Equivalent | SM 9221 B/D | 230 |
| Coliforms, P/A | DW | 8319 | Equivalent | SM 9221 D | 235 |
| Color, APHA Pt-CO | DW | 8025 | Equivalent | SM 2120 B | 153 |
| Conductivity | DW | 8160 | Accepted | SM 2510 B | 22-54 |
| Copper, Bicinchoinate Procedure | WW | 8506 | Approved | SM 3500-CU C or E | 154 |
| <i>E. coli</i> , m-ColiBlue24 | WW | 10029 | Approved | Federal Register March 26, 2007 | 230 |
| <i>E. coli</i> , m-ColiBlue24, enumeration | SW | 10029 | Approved | 68 FR 43274, July 21, 2003 | 230 |
| <i>E. coli</i> , m-ColiBlue24, P/A | DW | 10029 | Approved | 40 CFR 141.21, page 349 | 230 |
| Fecal Coliform, LT Broth and EC | SW | 8001A | Accepted | SM 9221 E | 230 |
| Fecal Coliform, LT Broth and EC | SS | 8001A | Accepted | SM 9221 E | 230 |
| Fecal Coliform, Sludge, MPN, A1 Medium | WW | 10028 | Equivalent | SM 9221 D/E | 230 |
| Fecal Coliform, Sludge, MPN, LTB/EC Medium | WW | 10027 | Equivalent | SM 9221 D/E | 236 |
| Fluoride | DW | 8029 | Accepted | SM 4500-F C | 158-159 |
| Fluoride, Electrode | DW | 8323 | Equivalent | SM 4500-F C | 46 |
| Fluoride, Electrode | WW | 8323 | Equivalent | SM 4500-F C | 46 |
| Fluoride, SPADNS | WW | 8029 | Accepted | SM 4500-F D | 158-159 |
| Fluoride, SPADNS | DW | 8029 | Accepted | SM 4500-F D | 158-159 |
| Fluoride, SPADNS2, Arsenic Free | WW | 10225 | Equivalent | SM 4500-F D | 158-159 |
| Fluoride, SPADNS2, Arsenic Free | DW | 10225 | Equivalent | SM 4500-F D | 158-159 |
| Fluoride, Total | WW | 8029 | Accepted | SM 4500-F-B or C | 158-159 |
| Hardness, Calcium, Digital Titration | WW | 8204 | Equivalent | SM 3500-Ca D | 141 |
| Hardness, Calcium, Titration | WW | 8222 | Equivalent | SM 3500-Ca D | 141 |
| Hardness, Calcium, Titration | DW | 8222 | Equivalent | SM 3500-Ca D | 141 |
| Hardness, Total | WW | 8226 | Accepted | SM 2340 B or C | 161 |
| Hardness, Total, Digital Titration | WW | 8213 | Equivalent | SM 2340 B or C | 161-162 |
| Hydrogen Ion, pH | WW | 8156 | Accepted | SM 4500-H+ B | — |
| Iron, Total | WW | 8008 | Approved | Federal Register June 27, 1980 | 166-167 |
| Iron | DW | 10229 | Equivalent | SM 3500-Fe B, D | 166 |
| Lead, Total | WW | 8033 | Accepted | SM 3500-Pb B or D | 168 |
| Manganese | WW | 8034 | Approved | 40 CFR 136 | 169 |
| Nickel, Total | WW | 8037 | Accepted | SM 3500-Ni D | 172 |

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

Continued on next page.

Find it here... Buy it today on www.hach.com
U.S. customers only.



Hach EPA Compliant Methods

The Hach Difference

| Analyte | Sample Matrix† | Hach Method | Approval Type | Reference Method | See Page |
|--|----------------|-------------|---------------|--|----------|
| Nitrate, ISE | DW | 8324 | Accepted | SM 4500-NO ₃ D | 46 |
| Nitrite as Nitrogen | WW | 10207 | Equivalent | SM 4500-NO ₂ B | 175 |
| Oil and Grease, Gravimetric | WW | 10056 | Equivalent | EPA 1664 or SM 5520 B | 177 |
| Oxygen, Dissolved, Luminescence | WW | 10360 | Approved* | ASTM D888-05 or Hach Method 10360 | 24-45 |
| Oxygen, Dissolved, Polarographic | WW | 8157 | Accepted | SM 4500-O G | 42-45 |
| Oxygen, Dissolved, Winkler | WW | 8229 | Accepted | SM 4500-O C | 157 |
| Ozone, Colorimetric | DW | 8311 | Equivalent | SM 4500-O ₃ B | 178 |
| pH | DW | 8156 | Accepted | EPA 151.1, 2; SM 4500-H+ B | 24-47 |
| Phenols, 4AAP Procedure | WW | 8047 | Accepted | EPA 420.1 | 181 |
| Phosphate, Ortho | WW | 8048 | Accepted | SM 4500-P E | 183-184 |
| Phosphate, Ortho | WW | 10209 | Equivalent | SM 4500-P E | 183 |
| Phosphate, Ortho | WW | 10209 | Equivalent | SM 4500-P E | 183 |
| Phosphate, Ortho | WW | 10209 | Equivalent | SM 4500-P E | 183 |
| Phosphorus, Total | WW | 10209 | Equivalent | SM 4500-P E | 183 |
| Phosphorus, Total | WW | 10209 | Equivalent | SM 4500-P E | 183 |
| Phosphorus, Total | WW | 10209 | Equivalent | SM 4500-P E | 183 |
| Silica, Colorimetric | DW | 8186 | Equivalent | SM 4500-Si E; SM 4500-SiO ₂ E | 187 |
| Solids, Dissolved | WW | 8277 | Equivalent | SM 2540 C | 189 |
| Solids, Filterable | WW | 8163 | Equivalent | SM 2540 C | 189 |
| Solids, Settleable | WW | 8165 | Equivalent | SM 2540 F | 189 |
| Solids, Total | WW | 8271 | Equivalent | SM 2540 B | 189 |
| Solids, Total Non-filterable | WW | 8158 | Accepted | SM 2540 D | 189 |
| Solids, Volatile, Non-filterable | WW | 8164 | Equivalent | EPA 160.4 | 189 |
| Specific Conductance | WW | 8160 | Accepted | EPA 120.1; SM 2510 B | 24-45 |
| Sulfate as SO ₄ | WW | 8051 | Accepted | ASTM D516-90, O ₂ | 190 |
| Sulfide as S | WW | 8131 | Accepted | SM 4500-S ₂ E or F | 190 |
| Sulfite as SO ₃ | WW | 8071 | Accepted | SM 4500-SO ₃ B | 191 |
| Sulfite, Digital Titration | WW | 8216 | Equivalent | SM 4500-SO ₃ B | 191 |
| Total and Fecal Coliforms, m-Endo | DW | 8074 | Equivalent | SM 9222 A/D | 229 |
| Total and Fecal Coliforms, m-Endo | SW | 8074 | Equivalent | SM 9222 A/D | 229 |
| Total Coliform, LT Broth and BGB Broth | WW | 8001 | Accepted | SM 9221 B | 229 |
| Turbidity | DW | 8195 | Approved | 40 CFR 141 | 82-84 |
| Turbidity | DW | 10133 | Approved | 40 CFR 141 | 82-84 |
| Turbidity | DW | GLI | Approved | 40 CFR 141 | — |
| Zinc | WW | 8009 | Approved | 40 CFR 136 | 197 |

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

