

## Test Kits

Description	Method	Platform	Range	# Tests	Product Number
Pocket Colorimeter™ II – Nickel and Cobalt	8150	PCII	0.01-1.00 mg/L Ni; 0.02-2.00 mg/L Co	Kit includes PC II	100 5870020

## Accessories Required to Run Tests

Description	Product Number
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.)	
Metal Prep Set for Total Nickel (Prod. No. TNT856), 25/pk	TNT890
Reaction tubes, 20 mm, 5/pk (for use with Metal Prep Set.)	LZP065

## Standards

Description	Volume	Concentration	Product Number
Nickel Standard Solution as Ni (NIST)	100 mL	1,000 mg/L Ni	1417642

# Nitrate

- 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

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<b>Cd REDUCTION METHOD</b>						
<b>Nitrate Reagent Set</b> , 10 mL, LR	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:						
(1) NitraVer 6 Powder Pillows		PP			100	2107249
(1) NitriVer 3 Powder Pillows		PP			100	2107169
<b>Nitrate Reagent Set</b> , 25 mL, LR	8192	PP	0-0.50 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR/3000, DR/2000	100	2245100
Set includes:						
(1) NitriVer 3 Powder Pillows		PP			100	1406599
(1) NitraVer 6 Powder Pillows		PP			100	1411999
NitraVer 5 Reagent, 10 mL, HR, MR†	8039/8171	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 Reagent Powder Pillows, 25 mL	8039/8171	PP	0.3-30.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR/3000, DR/2000	100	1403499
NitraVer 5 Reagent Powder Pillows, 25 mL	8039/8171	PP	0.3-30.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR/3000, DR/2000	1,000	1403428
NitraVer 5 AccuVac, HR, MR†	8039/8171	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, Nitrogen TNTplus™, LR	10206	TNT+	0.2-13.5 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR 5000, DR 2800	25	TNT835
Nitrate, Nitrogen TNTplus™, HR	10206	TNT+	5-35 mg/L NO <sub>3</sub> <sup>-</sup> -N	DR 5000, DR 2800	25	TNT836
<b>CHROMOTROPIC ACID METHOD</b>						
<b>NitraVer X Nitrate Reagent Set</b> , HR	10020	TNT	0.2-30.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	All except DR/850, DR/820, PC II	25-50‡	2605345
<b>Nitrate Pretreatment Reagent Set</b>		S				2438700
Set includes:						
(1) Phenol Solution, 30 g/L, 29 mL		S				211220
(1) Bromine Water, 30 g/L, 29 mL		S				221120
Urea (for nitrite interference removal in Chromotropic Acid method), 100 g						1123726
<b>ION SELECTIVE ELECTRODE METHOD</b>						
Nitrate Ionic Strength Adjuster Powder Pillows		PP	0.05-14,000 mg/L	sensION 2 & sensION 4	100	4456369
Nitrate Ionic Strength Adjuster Solution, 500 mL		S				2488349

†MR method cannot be performed on the DR/850, DR/820, or PC II.

‡Dependent on the number of performed reagent blanks.

Continued on next page.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; 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	Range	# Tests	Product Number
Nitrate and Nitrite Test Strips	TS	Nitrate: 0-50 mg/L NO <sub>3</sub> <sup>-</sup> -N Nitrite: 0-3.0 mg/L NO <sub>2</sub> <sup>-</sup> -N	(0, 1, 2, 5, 10, 20, 50 steps) (0, 0.15, 0.3, 1, 1.5, 3 steps)	25 2745425

## Test Kits

Description	Method	Platform	Range	# Tests	Product Number
Pocket Colorimeter™ II – Nitrate	8039	PCII, PP	0.4-30.0 mg/L NO <sub>3</sub> <sup>-</sup> -N	Kit includes PC II	100 5870002
Nitrate Test Kit (Model NI-14)		CD	0-1/ 1-10 mg/L NO <sub>3</sub> <sup>-</sup> -N		50 1416100
Nitrate Test Kit (Model NI-11)		CD	1-50 mg/L NO <sub>3</sub> <sup>-</sup> -N		100 146803
Nitrate Test Kit		CC	10-50 mg/L NO <sub>3</sub> <sup>-</sup> -N		50 1403700
Nitrate Test Kit (AccuVac)		CD, AV	1-50 mg/L NO <sub>3</sub> <sup>-</sup> -N		25 2511050
Nitrate/Nitrite Test Kit (Model NI-12)		CD	1-50 mg/L NO <sub>3</sub> <sup>-</sup> -N; 0.01-0.50 NO <sub>2</sub> <sup>-</sup> -N mg/L		100 1408100

## Standards

Description	Volume	Concentration	Product Number
Nitrogen-Nitrate Standard Solution as NO <sub>3</sub> <sup>-</sup> -N (NIST)	500 mL	1 mg/L NO <sub>3</sub> <sup>-</sup> -N	204649
Nitrogen-Nitrate Standard Solution as NO <sub>3</sub> <sup>-</sup> -N (NIST)	500 mL	10 mg/L NO <sub>3</sub> <sup>-</sup> -N	30749
Nitrogen-Nitrate Standard Solution as NO <sub>3</sub> <sup>-</sup> -N (NIST)	500 mL	100 mg/L NO <sub>3</sub> <sup>-</sup> -N	194749
Nitrogen-Nitrate Standard Solution as NO <sub>3</sub> <sup>-</sup> -N (NIST)	500 mL	1,000 mg/L NO <sub>3</sub> <sup>-</sup> -N	1279249
Nitrate Standard as NO <sub>3</sub> <sup>-</sup> -N	10 mL/16 Voluette Ampules	5 mg/L NO <sub>3</sub> <sup>-</sup> -N	2557810
Nitrate Standard as NO <sub>3</sub> <sup>-</sup> -N	10 mL/16 Voluette Ampules	500 mg/L NO <sub>3</sub> <sup>-</sup> -N	1426010
Nitrate Standard as NO <sub>3</sub> <sup>-</sup> -N	2 mL/20 Voluette Ampules	500 mg/L NO <sub>3</sub> <sup>-</sup> -N	1426020
Drinking Water Inorganics, Mixed Parameter QC Standard; (Fluoride, Nitrate, Phosphate, Sulfate)	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
Wastewater Influent Inorganics, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia-15 mg/L NH <sub>3</sub> -N; Nitrate-10 mg/L NO <sub>3</sub> <sup>-</sup> -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, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> <sup>-</sup> -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

For on-line nitrate measurement,  
see pages 429-430.



Single and Multi-Parameter  
Standards  
For the Standards Product Guide  
visit: [www.hach.com/stdslc](http://www.hach.com/stdslc)

- 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, available in three reagent platforms (Powder Pillows, AccuVac® and Test 'N Tube™)



## Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
<b>NitriVer 3 TNT Reagent Set</b>	10019	TNT	0.002-0.500 mg/L NO <sub>2</sub> <sup>-</sup> -N	All except PCII		25-50 <sup>†</sup>	<b>2608345</b>
NitriVer 3 Nitrite Reagent, 10 mL	8507	PP	0.002-0.300 mg/L NO <sub>2</sub> <sup>-</sup> -N	All except PCII	Yes	100	<b>2107169</b>
NitriVer 3 AccuVac	8507	AV	0.002-0.300 mg/L NO <sub>2</sub> <sup>-</sup> -N	All except PCII	Yes	25	<b>2512025</b>
Nitrite TNTplus™, LR	10207	TNT+	0.015-0.60 mg/L NO <sub>2</sub> <sup>-</sup> -N	DR 5000, DR 3800, DR 2800	Yes <sup>‡</sup>	25	<b>TNT839</b>
Nitrite TNTplus™, HR	10237	TNT+	0.6-6.0 mg/L NO <sub>2</sub> <sup>-</sup> -N (2.0-20.0 mg/L NO <sub>2</sub> <sup>-</sup> )	DR 5000, DR 3800, DR 2800		25	<b>TNT839</b>
NitriVer 2 Reagent Powder Pillows, 10 mL	8153	PP	2-250 mg/L NO <sub>2</sub> <sup>-</sup>	DR 5000, DR 3800, DR 2800, DR 2700, DR/890, DR/2010, DR/4000		100	<b>2107569</b>
NitriVer 3 Nitrite Reagent Powder Pillows, 25 mL	8507	PP	0.02-0.300 mg/L NO <sub>2</sub> <sup>-</sup> -N	DR/2000, DR/3000		100	<b>1406599</b>
NitriVer 3 Nitrite Reagent Powder Pillows, 25 mL	8507	PP	0.02-0.300 mg/L NO <sub>2</sub> <sup>-</sup> -N	DR/2000, DR/3000		1,000	<b>1406528</b>
NitriVer 2 Nitrite Reagent Powder Pillows, 25 mL	8153	PP	2-150 mg/L NO <sub>2</sub> <sup>-</sup>	DR/2000, DR/3000		100	<b>221969</b>
<b>DIGITAL TITRATOR TITRATIONS</b>	8351						
Ceric Standard Solution Titration Cartridge, 0.5 N		DT	100-2500 mg/L NaNO <sub>2</sub>				<b>2270701</b>
Ferroun Indicator Solution, 29 mL		S					<b>181233</b>
Sulfuric Acid Standard Solution, 5.25 N, 100 mL		S					<b>244932</b>

<sup>†</sup>Dependent on the number of performed reagent blanks. <sup>‡</sup>EPA equivalent.

## Test Strips

Description	Platform	Range	# Tests	Product Number
Nitrate and Nitrite Test Strips	TS	Nitrate: 0 - 50 mg/L (0, 1, 2, 5, 10, 20, 50 steps) Nitrite: 0-3 mg/L (0, 0.15, 0.3, 1, 1.5, 3 steps)	25	<b>2745425</b>

## Test Kits

Description	Platform	Range	# Tests	Product Number
Nitrite Test Kit (Model NI-6)	CD	0-100/0-2,000 mg/L NO <sub>2</sub> <sup>-</sup>	100	<b>224000</b>
Nitrite Test Kit (Model NI-15)	CD	0.01-0.50 mg/L NO <sub>2</sub> <sup>-</sup> -N	100	<b>2182000</b>
Nitrite Test Kit	CC	0.2-1.0 mg/L NO <sub>2</sub> <sup>-</sup> -N	50	<b>2059600</b>
<b>Nitrification Control Kit</b>	PP, S			<b>2882200</b>
Kit includes DR/890 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		0-0.350 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	

## Standards

Description	Volume	Concentration	Product Number
Nitrite Solution <sup>†</sup> , Stock as N, APHA	500 mL	250ng.nk (250 mg/L)	<b>2340249</b>

<sup>†</sup>Limited stability.

<sup>‡</sup>Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; 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

# Nitrogen, Total

• Rapid, easy-to-use methods

• Available as a TNTplus test for ultimate ease of use

## Reagents

Description	Method	Platform	Range	Instrument*	Digestion Required	# Tests	Product Number
<b>Total Nitrogen TNT Reagent Set</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 TNT Reagent Set, HR</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 5000, DR 3800, DR 2800	Yes	25	<b>TNT826</b>
Nitrogen, Total TNTplus™, HR	10208	TNT+	5-40 mg/L N	DR 5000, DR 3800, DR 2800	Yes	25	<b>TNT827</b>
Nitrogen, Total TNTplus™, UHR	10208	TNT+	20-100 mg/L N	DR 5000, DR 3800, DR 2800	Yes	25	<b>TNT828</b>
<b>TOTAL KJELDAHL NITROGEN</b>							
Simplified TKN (s-TKN™) TNTplus <b>NEW!</b>	10242	TNT+	0-16 mg/L N	DR 5000, DR 3800, DR 2800	Yes**	25	<b>TNT880</b>
<b>Nitrogen Reagent Set, Nessler's Method (TKN)</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:							
(1) Nessler Reagent, 500 mL		S				250	<b>2119449</b>
(1) Hydrogen Peroxide, 50%, 490 mL		S				25	<b>2119649</b>
(1) TKN Indicator Solution, 50 mL		S				250	<b>2251926</b>
(1) Potassium Hydroxide Standard, 1.0 N, 50 mL		S				250	<b>2314426</b>
(1) Polyvinyl Alcohol Dispersing Reagent, 50 mL		S				250	<b>2376526</b>
(1) Mineral Stabilizer, 50 mL		S				250	<b>2376626</b>
(1) Potassium Hydroxide Standard, 8 N, 100 mL		S				250	<b>28232H</b>
(1) Sulfuric Acid, ACS 500 mL		S				250	<b>97949</b>
Set requires Digesdahl Apparatus (See Accessories below).							
<b>TOTAL INORGANIC NITROGEN (TIN)</b>	10021						
Requires both Prod. No. 2604945 and Prod. No. 2604545.							
<b>Total Inorganic Nitrogen Pretreatment Reagent Set</b>		TNT	0.2-25.0 mg/L N	All except PC II		25-50 <sup>†</sup>	<b>2604945</b>
<b>Ammonia Reagent Set, AmVer (Salicylate), LR</b>		TNT	0.02-2.50 mg/L NH <sub>3</sub> -N	All except PC II		25-50 <sup>†</sup>	<b>2604545</b>
<b>LACHAT INSTRUMENT REAGENTS</b>							
<b>TKN Reagent Set</b> Please contact Technical Support for determination of method and range.				Lachat QuikChem® 8500 System		300	<b>52906</b>

<sup>†</sup>Dependent on the number of performed reagent blanks. <sup>\*\*</sup>DRB 200 with 20mm wells required. Visit [www.hach.com](http://www.hach.com) for more details. <sup>‡</sup>Digesdahl digestion required.

## Standards

Description	Volume	Concentration	Product Number
Ammonia Nitrogen Standard Solution	500 mL	10-mg/L NH <sub>3</sub> -N	<b>15349</b>
Ammonia Nitrogen Standard Solution	500 mL	100-mg/L NH <sub>3</sub> -N	<b>2406549</b>
Ammonia Nitrogen Standard Solution	1 L	1,000-mg/L NH <sub>3</sub> -N	<b>2354153</b>
Primary Standard Set, for Kjeldahl Nitrogen	25 g each		<b>2277800</b>
Set of 3 compounds: Ammonia p-Toluene Sulfonate, Glycine p-Toluene Sulfonate, Nicotinic Acid p-Toluene Sulfonate			
Water, Deionized	500 mL		<b>27249</b>
Water, Organic-free	500 mL		<b>2641549</b>
Wastewater Effluent Inorganics, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> <sup>-</sup> -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>

## Accessories Required to Run Tests

Description	Product Number
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 (recommended for Total Inorganic Nitrogen test)	115 Vac 6x15 mL <b>2676500</b> 220 Vac 6x15 mL <b>2676502</b>
Tube Rack for Total Nitrogen Reaction Tubes, 20 mm	<b>2497902</b>
Replacement Reaction Tubes, 20 mm, 5/pkg	<b>LZP065</b>
Cylinder, mixing, 25 mL	<b>189640</b>
Pipet, TenSette®, 0.1-1.0 mL	<b>1970001</b>
Pipet, TenSette®, 1.0-10.0 mL	<b>1970010</b>
Test Tube Cooling Rack, 13 mm Vials	<b>2497900</b>
Test Tube Cooling Rack, 16 mm Vials	<b>1864100</b>
Digesdahl Apparatus for TKN, 115 Vac	<b>2313020</b>
Digesdahl Apparatus for TKN, 220 Vac	<b>2313021</b>

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

## Reagents

Description	Platform	Instrument*	Product Number
<b>Nutrients Basic Reagent Set, TNTplus</b> 25 tests each: Nitrogen, Total, LR • Phosphorus, Total and Reactive (ortho), LR	TNT+	DR 5000, DR 3800, DR 2800	2925000 <sup>†</sup>
<b>Nutrients Testing Basic Reagent Set, Test 'N Tube</b> 25 test each: Nitrogen, Total, LR • Phosphorus, Total, LR	TNT	All except DR/850, DR/820, PC II	2925200 <sup>‡</sup>
<b>Nutrients Advanced Reagent Set, TNTplus</b> 25 tests each: Nitrogen, Total, LR • Nitrogen, Ammonia, LR • Nitrogen, Nitrate, LR • Nitrogen, Nitrite, LR • Phosphorus, Total and Reactive (ortho), LR	TNT+	DR 5000, DR 3800, DR 2800	2925100 <sup>†</sup>
<b>Nutrients Testing Basic Reagent Set, Test 'N Tube</b> • Nitrogen, Total, LR, 25 - 49 tests • Nitrogen, Ammonia, HR, 50 tests • Nitrogen, Nitrate, HR, 50 tests • Nitrogen, Nitrite, LR, 50 tests • Phosphorus, Total, LR, 25 - 49 tests • Phosphorus, Reactive, (ortho) LR, 50 tests	TNT	All except DR/850, DR/820, PC II	2925300 <sup>‡</sup>

<sup>†</sup>Requires Digestion. Use DRB200 Reactor (Prod. No. DRB200-05) with 13 mm vial wells or use TNTplus Adaptor Sleeves 16 mm to 13 mm (Prod. No. 28958-05) 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 16mm vial wells

## Oil and Grease

## Reagents

EPA  
COMPLIANT

Description	Method	Platform	Range	# Tests	Product Number
<b>HEXANE EXTRACTABLE GRAVIMETRIC METHOD</b>	10056				
Acetone, ACS, 500 mL		S	15 - 3,000 mg/L HEM and SGT-HEM		1442949
Hexadecane, 99%, 100 mL		S			2664842
Hydrochloric Acid Standard Solution, 500 mL, 1:1 (6N)		S			88449
Hexane, ACS, 500 mL		S			1447849
pH Paper		0-14		100	2601300
Silica Gel with indicator, 454 g					1426901
Silica Gel, 100-200 mesh, 500 g					2665034
Sodium Sulfate, Anhydrous, 454 g					709901
Stearic Acid, 500 g					2664934

## Accessories Required to Run Tests

Description	Product Number
Aspirator, Vacuum	213100
Desiccator, Vacuum	2088800
Funnel, Separatory, 500 mL	52049
Hot Plate, 120 Vac	2881400
Oven, Drying 120 Vac	1428900
Pipette, Serological, 5 mL	53237

Refer to procedure for complete list of required accessories.

Above products are for use with  
Hach Method 10056. See page 108  
for Xenosep® SPE System  
for testing for Oil and Grease  
using EPA Method 1664A.

ORP

For information about Hach laboratory and field ORP instruments, please see pages 24-47.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCL=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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U.S. customers only.



# 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	Range	Instrument*	# Tests	Product Number
Oxygen Scavenger Reagent Set	8140	PP, S	5-600 µg/L carbohydrazide 3-450 µg/L DEHA 9-1,000 µg/L hydroquinone 13-1500 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: (2) DEHA 1 Powder Pillows (1) DEHA 2 Solution, 100 mL		PP S			50 100	2167969 2168042
Bottle, mixing, with 25-mL mark						1704200

## Test Kits

Description	Platform	Range	# Tests	Product Number
DEHA Test Kit (Model DH-1)	CD	0-65,0-375,0-1700 µg/L DEHA	50	2168200
Oxygen Scavenger Test Kit (Model OS-1)	CD	0-65,0-375,0-1700 µg/L DEHA (and other Oxygen Scavengers)	100	2349500

For on-line measurement of oxygen scavenger/hydrazine, see page 433.

# 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	Range	Instrument*	# Tests	Product Number
Ozone AccuVac	8311	AV	0.01-0.25 mg/L O <sub>3</sub>	All except DR/820	25	2516025
Ozone AccuVac	8311	AV	0.01-0.75 mg/L O <sub>3</sub>	All except DR/820	25	2517025
Ozone AccuVac	8311	AV	0.01-1.50 mg/L O <sub>3</sub>	All except DR/820, PC II	25	2518025

## Test Kits

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Pocket Colorimeter™ II – Ozone	8311	PCII, AV	0.01-0.25 / 0.01-0.75 mg/L O <sub>3</sub>	Kit includes PC II	50	5870004
Ozone Test Kit (AccuVac) Indigo Method		AV, CD	0.01-0.30 mg/L O <sub>3</sub>		25	2516050
Ozone Test Kit (AccuVac) Indigo Method		AV, CD	0.02-0.80 mg/L O <sub>3</sub>		25	2517050
Ozone Test Kit (AccuVac) Indigo Method		AV, CD	0.05-1.6 mg/L O <sub>3</sub>		25	2518050
Ozone Test Kit (Model OZ-2), DPD Method		CD	0.05-2.30 mg/L O <sub>3</sub>		100	2064400

## Standards

Description	Volume	Concentration	Instrument	Product Number
Spec✓ Gel secondary standard kit – Ozone MR	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

For amperometric ozone measurement, see page 434.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

# PCB (Polychlorinated Biphenyls)

- Portable systems allow on-site evaluation

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
PCB Reagent Set	10050	IA	1, 5, 10, 50 ppm Thresholds	All except DR/3000 DR/2000, DR/800	up to 18	2773500
Soil Extraction Refill Kit						2775200
Water, Demineralized, 500 mL						27248

## Test Kits

Description	Method	Platform	Range		# Tests	Product Number
Pocket Colorimeter™ II – PCB in Soil	10050	PCII, IA	Threshold ppm	Kit includes PCII	up to 18	2773400

## Accessories Required to Run Tests (All are included in Pocket Colorimeter II Kit.)

Description	Product Number
Balance, AccuLab Pocket Pro	2796900
Soil Scoop, 5 g each	2657205
Caps, flip-spout 2/pkg	2581802
Rack, for 1 cm microcuvettes	4879900
Pipet, TenSette, 0.1 - 1.0 mL	1970001
Wipes, Disposable	2097000
Marker, Laboratory	2092000

# pH

## Test Strips

Description	Platform	Range	# Tests	Product Number
pH Test Strips	TS	4-9 pH (4,5,6,7,8,9 steps)	50	2745650

## Test Kits

Description	Platform	Range	# Tests	Product Number
<b>pH, NARROW RANGE</b>				
pH Test Kit, Bromthymol Blue	CC	5.5-7.5 pH	50	2067100
pH Test Kit, Phenol Red	CC	6.5-8.5 pH	50	1251900
<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 5870012
pH Test Kit, Bromthymol Blue (Model 17F)	CD	5.5-8.5 pH	100	147006
pH Test Kit, Phenol Red Liquid (Model 17H)	CD	6.5-8.5 pH	200	147008
pH Test Kit, Phenol Red PP (Model 17G)	CD	6.5-8.5 pH	200	2667400
pH Test Kit, Thymol Blue (Model 17J)	CD	7.8-10.0 pH	200	147009
<b>pH, WIDE RANGE</b>				
pH Test Kit (Model 17N)	CD	4-10 pH (0.5 unit steps)	300	147011

Continued on next page.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; 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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U.S. customers only.



## Standards (Buffers)

Description	Volume	Concentration	Product Number
<b>COLOR-CODED</b>			
Buffer Solution, (color-coded Red) (NIST)	500 mL	pH 4.01	2283449
Buffer Solution, (color-coded Red) (NIST)	4 L	pH 4.01	2283456
Buffer Solution, (color-coded Red) (NIST)	20 L	pH 4.01	2283461
Buffer PP (color-coded Red), 50 mL, pk/50 <sup>†</sup>	PP	pH 4.01	2226966
Buffer PP (color-coded Red), 50 mL, pk/250 <sup>†</sup>	PP	pH 4.01	2226964
Buffer Solution, (color-coded Yellow) (NIST)	500 mL	pH 7.00	2283549
Buffer Solution, (color-coded Yellow) (NIST)	4 L	pH 7.00	2283556
Buffer Solution, (color-coded Yellow) (NIST)	20 L	pH 7.00	2283561
Buffer PP (color-coded Yellow), 50 mL, pk/50 <sup>†</sup>	PP	pH 7.00	2227066
Buffer PP (color-coded Yellow), 50 mL, pk/250 <sup>†</sup>	PP	pH 7.00	2227064
Buffer Solution, (color-coded Blue) (NIST)	500 mL	pH 10.01	2283649
Buffer Solution, (color-coded Blue) (NIST)	4 L	pH 10.01	2283656
Buffer Solution, (color-coded Blue) (NIST)	20 L	pH 10.01	2283661
Buffer PP (color-coded Blue), 50 mL, pk/50 <sup>†</sup>	PP	pH 10.01	2227166
Buffer PP (color-coded Blue), 50 mL, pk/250 <sup>†</sup>	PP	pH 10.01	2227164
Buffer PP (color-coded Red and Yellow), pk/10 <sup>†</sup> each color	PP	pH 4.01 and pH 7.00	2299264
<b>COLOR-CODED 3-PACKS</b>			
One container each of pH standardization buffer solutions at pH 4.01 (red), 7.00 (yellow) and 10.01 (blue).	500 mL bottles 4 L bottles 20 L containers		2947600 2507200 2507300
<b>COLORLESS</b>			
Buffer Solution, (colorless) (NIST)	500 mL	pH 4.01	1222349
Buffer Solution, (colorless) (NIST)	4 L	pH 4.01	1222356
Buffer PP (colorless), 50 mL, pk/50 <sup>†</sup>	PP	pH 6.00	1405566
Buffer PP (colorless), 50 mL, pk/15 <sup>†</sup>	PP	pH 6.86	1409895
Buffer Solution, (colorless) (NIST)	500 mL	pH 7.00	1222249
Buffer Solution, (colorless) (NIST)	4 L	pH 7.00	1222256
Buffer PP (colorless), 50 mL, pk/15 <sup>†</sup>	PP	pH 8.00	1407995
Buffer PP (colorless), 50 mL, pk/15 <sup>†</sup>	PP	pH 9.00	1410766
Buffer Solution, (colorless) (NIST)	500 mL	pH 10.01	1222149
Buffer Solution, (colorless) (NIST)	4 L	pH 10.01	1222156
<sup>†</sup> NOTE: one Powder Pillow of buffer prepares 50 mL.			
<b>SINGLET™ SOLUTION PACKS</b>			
Buffer Solution, pk/20 total (10 each)		pH 7.00 and pH 10.01	2769820
Buffer Solution, pk/20 total (10 each)		pH 4.01 and pH 7.00	2769920
Buffer Solution, pk/20		pH 4.01	2770020
Buffer Solution, pk/20		pH 7.00	2770120
Buffer Solution, pk/20		pH 10.01	2770220

For world-class on-line pH sensors,  
see pages 437-442.

## Indicators

Description	Volume / # Tests	Product Number
Bromocresol Green Indicator Solution, pH indicator: pH 3.8 (yellow)-pH 5.4 (blue)	500 mL	2329549
Bromocresol Green-Methyl Red Indicator Powder Pillows	100 Powder 15 g	94399 94323
Bromocresol Green-Methyl Red Indicator Solution, APHA, Alkalinity	15 mL SCDB 100 mL MDB 500 mL	2329236 2329232 2329249
Bromocresol Purple Indicator Solution, 0.02% (alc.)	100 mL MDB	25432
Phenolphthalein Indicator Powder Pillows	100	94299

**Indicators (Continued)**

Description	Volume	Product Number
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	100 Powder Pillows	1455099
Bromphenol Blue Indicator Solution pH indicator for acidity and alkalinity titrations Visual transition interval: pH 3.0 (yellow)-pH 4.6 (blue)	100 mL MDB	1455232
Bromthymol Blue Indicator Powder Pillows pH indicator Visual transition interval: pH 6.0 (yellow)- pH 7.6 (blue)	100 Powder Pillows	2067299
Bromthymol Blue Indicator Solution Standardized for colorimetric pH determination, pH range 5.5-7.3	100 mL MDB 500 mL	25532 25549
Methyl Orange Indicator Solution, 0.5 g/L	100 mL MDB 500 mL	14832 14849
Methyl Purple Indicator Solution, 1.0 g/L, for alkalinity titrations; pH range 4.8 to 5.4	100 mL MDB 500 mL	2193432 2193449
Methyl Red Indicator Solution, 1.0 g/L, APHA	500 mL	14949
Phenol Red Indicator Solutions, standardized for colorimetric pH determination Color range: pH 5.8 (yellow)-pH 7.3 (red)	15 mL SCDB 50 mL SCDB 100 mL MDB 500 mL 50 mL spec. grade	21136 21126 21132 21149 2657512
Thymol Blue Indicator Solution; pH range 7.4-9.5	100 mL MDB	25732
Thymolphthalein Indicator Solution, 1.0 g/L pH indicator: Visual transition interval: pH 8.8 (colorless)-pH 10.5 (blue)	15 mL SCDB	2185336
Wide Range pH Indicator Solution, for colorimeters and spectrophotometers	500 mL	2329649
Wide Range-4 pH Indicator Solution, for test kits	100 mL MDB 1 L	2329332 2329353

**Phenols**

- EPA approved (distillation required)

**Reagents**

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
<b>Phenols Reagent Set</b> (no air freight) Set Includes: (3) Buffer Solution, Hardness 1, 500 mL (2) Chloroform, ACS 4L (2) Phenol Reagent Powder Pillows (2) Phenol 2 Reagent Powder Pillows	8047	PP, S S S PP PP	0.002-0.200 mg/L Phenol	All except DR/800 PC II	Yes	100	2243900
<b>Phenols Reagent Set</b> , packaged for air freight Same contents as 22439-00. Reagents are packaged to meet air freight regulations		PP, S	0.002-0.200 mg/L Phenol	DR 5000, DR 3800, DR 2800	Yes	100	2243901

**Test Kits**

Description	Platform	Range	# Tests	Product Number
PL-1 Test Kit	CD	0.02-1.00 ; 0.1-5.0 mg/L	100	2483600

**Standards**

Description	Volume	Product Number
Phenol, ACS	113 g Jar	75814

Continued on next page.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

## Accessories Required to Run Tests

Description	Product Number
Funnel, Separatory, 500 mL	52049
Pipet, Volumetric, Class A, 5.00 mL	1451537
Distillation Apparatus Set, General Purpose (Additional reagents are required for the distillation procedure.)	2265300
Distillation Heater and Support Apparatus, 115 V	2274400
Distillation Heater and Support Apparatus, 230 V	2274402
Cylinder, graduated, 500 mL	50849

# Phosphonates

- Hach's unique UV Oxidation provides quick determination of phosphonates, without hot plate digestions

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<b>Phosphonate Reagent Set, 10 mL</b> Set Includes: (1) Potassium Persulfate Powder Pillows (2) PhosVer 3 Powder Pillows, 10 mL	8007	PP	0.02-2.50 1.0-125 mg/L PO <sub>4</sub> <sup>3-</sup>	All except DR/820	100	2429700
		PP			100	2084769
		PP			100	2106069
<b>Phosphonate Reagent Set, 25 mL</b> Set Includes: (1) Potassium Persulfate Powder Pillows (2) PhosVer 3 Powder Pillows, 25 mL	8007	PP	0.02-2.50 1.0-125 mg/L PO <sub>4</sub> <sup>3-</sup>	DR/2000, DR/3000	100	2244000
		PP			100	2084769
		PP			50	212599

**Also see Benzotriazole  
on pages 138-139 and  
Oxygen Scavengers on page 178.**

## Test Kits

Description	Method	Platform	Range	# Tests	Product Number
Phosphonate Test Kit (Model PN-10), with UV Lamp, 115V		CD	0.1-5 / 1-125 mg/L	100	2113300
Phosphonate Test Kit (Model PN-10), with UV Lamp, 220V		CD	0.1-5 / 1-125 mg/L	100	2113302
Phosphonate Test Kit (Model PN-10), without Lamp		CD	0.1-5 / 1-125 mg/L	100	2113301
Pocket Colorimeter™ II – Phosphonate	8007	PP	0.1-2.5/1-125 mg/L	100	5870007

## Standards

Description	Volume	Concentration	Product Number
Phosphate Standard Solution	500 mL	1 mg/L	256949
Phosphate Standard Solution	946 mL	10 mg/L	1420416
Phosphate Standard Solution	10 mL/16 Voluette Ampules	50 mg/L	17110

## Accessories Required to Run Tests

Description	Product Number
Bottle, mixing, with 25-mL mark	1704200
Cylinder, mixing, 50-mL	189641
UV Lamp with power supply, 115V, includes goggles	2082800
UV Lamp with power supply, 220V, includes goggles	2082802
UV Lamp 9V Power Supply Field Pack	2670600
UV Lamp 9V Power Supply	2670800

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCI=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

- **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	Range	Instrument*	EPA Compliant	Digestion Required	# Tests	Product Number
<b>PHOSPHORUS TNTplus™ – 13 mm</b>								
Phosphorus, Reactive	10214	TNT+	1.6-30 mg/L P (5-90 mg/L PO <sub>4</sub> )	DR 5000, DR 3800, DR 2800			25	<b>TNT846</b>
Phosphorus, Reactive and Total, LR	10209	TNT+	0.05-1.5 mg/L P (0.15-4.5 mg/L PO <sub>4</sub> )	DR 5000, DR 3800, DR 2800	Yes	Yes for Total	25	<b>TNT843</b>
Phosphorus, Reactive and Total, HR	10209	TNT+	0.5-5 mg/L P (1.5-15.0 mg/L PO <sub>4</sub> )	DR 5000, DR 3800, DR 2800	Yes	Yes for Total	25	<b>TNT844</b>
Phosphorus, Reactive and Total, UHR	10209	TNT+	2-20 mg/L P (6-60 mg/L PO <sub>4</sub> )	DR 5000, DR 3800, DR 2800	Yes	Yes for Total	25	<b>TNT845</b>
<b>PHOSPHORUS</b>								
<b>Phosphorus Rapid Liquid Reagent Set</b> Ascorbic Acid Method Set Includes:	10055	S	19-3000 µg/L PO <sub>4</sub>	All except DR/4000, DR/800, PC II			250	<b>2678600</b>
(1) Ascorbic Acid Reagent Dilution Solution, 450 mL		S					250	<b>2599949</b>
(1) Ascorbic Acid Reagent Powder, 48g		Jar					250	<b>2651255</b>
(1) Molybdate Reagent Solution, 500 mL		S					250	<b>2599849</b>
<b>Phosphate Reagent Set</b> <b>Total + Acid Hydrolyzable</b> Ascorbic Acid Method	8180	TNT	0.06-3.50 mg/L PO <sub>4</sub>	All except DR/820, PC II			25-50†	<b>2742745</b>
PhosVer® 3 Powder Pillows, 10 mL	8048	PP	0.02-2.50 mg/L PO <sub>4</sub>	All except DR/3000, DR/2000, DR/820	Yes		100	<b>2106069</b>
PhosVer® 3 Powder Pillows, 25 mL	8048	PP	0-2.50 mg/L PO <sub>4</sub>	DR/3000, DR/2000	Yes		100	<b>212599</b>
PhosVer® 3 AccuVac Ampules	8048	AV	0.02-2.50 mg/L PO <sub>4</sub>	All except DR/820	Yes		25	<b>2508025</b>
<b>Reactive Phosphorus, Orthophosphate</b> <b>Reagent Set, LR PhosVer® 3 Method</b>	8048	TNT	0.06-5.00 mg/L PO <sub>4</sub>	All except DR/820, PC II			25-50†	<b>2742545</b>
<b>Orthophosphate Reagent Set</b> Amino Acid Method Set Includes:	8178	S	0.23-30.00 mg/L PO <sub>4</sub>	All except PC II			100	<b>2244100</b>
(1) Amino Acid Reagent, 100 mL		S					100	<b>193432</b>
(1) Molybdate Reagent, 100 mL		S					100	<b>223632</b>
Molybdovanadate Reagent, 100mL, HR & Rapid Liquid, HR	8114	S	0.3-45.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			50	<b>2076032</b>
Molybdovanadate Reagent, 500mL, HR & Rapid Liquid, HR	8114	S	0.3-45.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			250	<b>2076049</b>
Phosphorus, Molybdovanadate AccuVac	8114	AV	0.3-45.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			25	<b>2525025</b>
<b>Reactive Phosphorus Reagent Set, HR</b> Molybdovanadate Method	8114	TNT	1.0-100.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II			25-50†	<b>2767345</b>
<b>Total Phosphorus Reagent Set, TNT, HR</b> Molybdovanadate Method	10127	TNT	1.0-100.0 mg/L PO <sub>4</sub>	All except DR/850, DR/820, PC II		Yes	25-50†	<b>2767245</b>
<b>Total Phosphorus Reagent Set, TNT, LR</b>	8190	TNT	0.06-3.50 mg/L PO <sub>4</sub>	All except DR/820, PC II	Yes	Yes	25-50†	<b>2742645</b>
<b>Phosphorus Digestion Reagent Set</b> Set Includes:	8190	PP, S		All			100	<b>2459000</b>
(1) Sulfuric Acid 5.25 N, 100 mL		S					100	<b>244932</b>
(1) Sodium Hydroxide 5.0 N, 100 mL		S					100	<b>245032</b>
(1) Potassium Persulfate Powder Pillows		PP					100	<b>245199</b>

†Dependent on the number of performed reagent blanks.

Continued on next page.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

## Reagents (Continued)

Description	Method	Platform	Range	Instrument*	EPA Compliant	Digestion Required	# Tests	Product Number
PhosVer® 3 Powder Pillows, 10 mL	8048	PP	0.02-2.50 mg/L PO <sub>4</sub>	All except DR/820	Yes		1,000	2106028
PhosVer® 3 Powder Pillows, 25 mL	8048	PP	0.02-2.50 mg/L PO <sub>4</sub>	DR/3000, DR/2000	Yes		100	212599
PhosVer® 3 Powder Pillows, 25 mL	8048	PP	0.02-2.50 mg/L PO <sub>4</sub>	DR/3000, DR/2000	Yes		1,000	212528

### LACHAT INSTRUMENT REAGENTS

<b>Phosphate Reagent Set</b> Please contact Technical Support for determination of method and range.			Lachat QuikChem® 8500 System				1,500	52902
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## Test Strips

Description	Platform	Range	# Tests	Product Number
Phosphate, Ortho (as PO <sub>4</sub> )	TS	0-50 mg/L PO <sub>4</sub> (0, 5, 15, 30, 50 steps)	50	2757150

## Test Kits

Description	Method	Platform	Range	# Tests	Product Number	
Pocket Colorimeter™ II - Phosphate	8048	PCII	0.02-3.00 mg/L PO <sub>4</sub>	Kit includes PC II	100	5870006
Orthophosphate Test Kit (reactive) (Model PO-19) For clean samples		CD	0.02-1.00, 0.1-5.0, 1-50 mg/L PO <sub>4</sub>		100	224800
Orthophosphate Test Kit (reactive) (Model PO-19A) For clean samples and turbid samples		CD	0.1-5.0, 1-50 mg/L PO <sub>4</sub>		100	224801
Orthophosphate Test Kit (reactive) (Model PO-14)†		CD	0.1-4.5; 1-45 mg/L PO <sub>4</sub>		100	147500
Orthophosphate Test Kit (AccuVac)		AV, CD	0.1-5 mg/L PO <sub>4</sub>		25	2508050
Orthophosphate Test Kit		CC	1-5 mg/L PO <sub>4</sub>		50	1252200

†PO-14 is especially suited for measuring orthophosphate in waters conditioned with Poly-4 or similar orthophosphate compounds.

## Standards

Description	Volume	Concentration	Product Number
Phosphate Standard Solution	500 mL	1 mg/L PO <sub>4</sub> <sup>3-</sup>	256949
Phosphate Standard Solution	946 mL	3 mg/L PO <sub>4</sub> <sup>3-</sup>	2059716
Phosphate Standard Solution	946 mL	10 mg/L PO <sub>4</sub> <sup>3-</sup>	1420416
Phosphate Standard Solution	100 mL	15 mg/L PO <sub>4</sub> <sup>3-</sup>	1424342
Phosphorus Standard Solution as P (NIST)	10 mL/16 Voluette Ampules	25 mg/L P	2109210
Phosphate Standard Solution	946 mL	30 mg/L PO <sub>4</sub> <sup>3-</sup>	1436716
Phosphate Standard Solution	2 mL / 20 Voluette Ampules	50 mg/L PO <sub>4</sub> <sup>3-</sup>	17120H
Phosphate Standard Solution	10 mL/16 Voluette Ampules	50 mg/L PO <sub>4</sub> <sup>3-</sup>	17110
Phosphate Standard Solution	500 mL	50 mg/L PO <sub>4</sub> <sup>3-</sup>	17149
Phosphate Standard Solution	100 mL	100 mg/L PO <sub>4</sub> <sup>3-</sup>	1436832
Phosphate Standard Solution	10 mL/16 Voluette Ampules	500 mg/L PO <sub>4</sub> <sup>3-</sup>	1424210
Phosphate Standard Solution	100 mL	500 mg/L PO <sub>4</sub> <sup>3-</sup>	1424232
Phosphorus Standard Solution as P (NIST)	100 mL	1000 mg/L P	2321142
Drinking Water Inorganics, Mixed Parameter QC Standard; (Fluoride Nitrate, Phosphate, Sulfate )	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
Wastewater Influent Inorganics, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia-15 mg/L NH <sub>3</sub> -N; Nitrate-10 mg/L NO <sub>3</sub> <sup>-</sup> -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, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> <sup>-</sup> -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

## Accessories Required to Run Tests

Description	Product Number
DRB200 Reactor (Required for Total Phosphate TNT and TNTplus™ methods—to order, visit <a href="http://www.hach.com">www.hach.com</a> or contact your Hach representative.)	
Sample Blank Vials, 5/pk (required for Prod. No. TNT846)	TNT919
Reactor Adapter, 16 mm to 13 mm, 5/pk (For use with older COD Reactors with 16 mm holes)	2895805

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<b>Potassium Reagent Set</b>	8049	PP	0.1-7.0 mg/L K	All except DR/800, PC II	100	<b>2459100</b>
Set Includes:						
(4) Potassium 1 Reagent Powder Pillows		PP			25	<b>1432198</b>
(4) Potassium 2 Reagent Powder Pillows		PP			25	<b>1432298</b>
(1) Potassium 3 Reagent Powder Pillows		PP			100	<b>1432399</b>

## Standards

Description	Volume	Concentration	Product Number
Potassium Standard Solution	500 mL	100 mg/L K	<b>2351749</b>
Potassium Standard Solution	10 mL/16 Voluette Ampules	250 mg/L K	<b>1479010</b>

# Quaternary Ammonium Compounds

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<b>Quaternary Ammonium Compounds Reagent Set</b>	8337	PP	0.2-5.0 mg/L as CTAB	All except DR/800, PC II	100	<b>2459200</b>
Set Includes:						
(4) QAC Reagent 1 Powder Pillows		PP			50	<b>2401066</b>
(8) QAC Reagent 2 Powder Pillows		PP			12.5	<b>2401268</b>

## Standards

Description	Volume	Concentration	Product Number
QAC Standard Solution	100 mL	100 mg/L as CTAB	<b>2415342</b>

# Salinity

Also see Meters Section, pages 24-47.

## Reagents

Description	Method	Platform	Range	Instrument	# Tests	Product Number
<b>MERCURIC NITRATE METHOD</b>	10073					
Diphenylcarbazone Reagent Powder Pillows		PP	0-100 ppt salinity		100	<b>96799</b>
Mercuric Nitrate Titration Cartridge, 2.570 N		DT	0-100 ppt salinity	Digital Titrator	40-100	<b>2393701</b>
Water, Deionized (4L Bottle)		S				<b>27256</b>

## Test Kits

Description	Platform	Range	# Tests	Product Number
Salinity Test Kit (Model SA-DT)	DT	2-100 ppt	100	<b>2421800</b>

## Accessories Required to Run Tests

Description	Product Number
Digital Titrator	<b>1690001</b>
Syringe, 3-cc, Luer lock tip	<b>4321300</b>
Vial with 2, 5, 10, 15, 20, and 25-mL marks	<b>219300</b>

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCL=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	Range	Instrument*	# Tests	Product Number
<b>Selenium Reagent Set</b>	8194	S	0.01-1.00 mg/L Se	All except DR/800, PC II	66-100	<b>2244200</b>
Set Includes:						
(1) Sulfate Buffer Solution pH 2.0, 500 mL		S			50	<b>45249</b>
(1) Diaminobenzidine tetrahydrochloride, 5 g		Jar			50	<b>706222</b>
(1) Potassium Hydroxide Std Soln 12N, 100 mL		S			25	<b>23032</b>
(1) TitraVer Hardness Reagent, ACS, 100 g		Jar			250	<b>20426</b>
(1) Toluene, ACS 4L		S			66-100	<b>1447017</b>
<b>Selenium Reagent Set, Air Freight Configuration</b> (Toluene is packaged in multiple bottles to meet air freight regulations.)					66-100	<b>2244201</b>
Water, Deionized (4L Bottle)		S				<b>27256</b>
<b>DISTILLATION REAGENTS</b>						
Hydrochloric Acid Standard Solution, 0.1N, 1,000 mL						<b>1481253</b>
Hydrogen Peroxide, 30%, ACS, 473 mL						<b>14411</b>
Methyl Orange Indicator Solution, (0.50 g/L), 500 mL						<b>14849</b>
Phenol Solution, 30 g/L, 29 mL						<b>211220</b>
Potassium Permanganate Standard Solution, 1 g/L, 100 mL						<b>1416442</b>
Sodium Hydroxide Standard Solution, 0.100 N, 1,000 mL						<b>19153</b>
Sulfuric Acid Standard Solution, 19.2 N, 500 mL						<b>203849</b>

## Standards

Description	Volume	Concentration	Product Number
Selenium Standard Solution	100 mL	1000 mg/L	<b>2240742</b>

## Accessories Required to Run Tests

Description	Product Number
Pipet, Volumetric, 5 mL	<b>1451537</b>
Hot Plate, 7 x 7in, 115V	<b>2881600</b>
Hot Plate, 7 x 7in, 220V	<b>2881602</b>
Distillation Apparatus Set, general purpose	<b>2265300</b>
Distillation Apparatus Heater, 115 Vac	<b>2274400</b>
Distillation Apparatus Heater, 230 Vac	<b>2274402</b>

Please refer to the Hach procedure at [www.hach.com](http://www.hach.com) for a complete list.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCL=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

- 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	Range	Instrument*	# Tests	Product Number
<b>Silica Ultra Low Range Rapid Liquid Reagent Set</b> Heteropoly Blue Set Includes:	8282	S	3-1000 µg/L SiO <sub>2</sub>	All except DR/4000, DR/800, PC II	250	<b>2678500</b>
(1) Molybdate 3 Reagent Solution, 500 mL		S			250	<b>199549</b>
(1) Citric Acid Reagent Solution, 500 mL		S			250	<b>2254249</b>
(1) Amino Acid F Dilution Solvent, 475 mL		S			250	<b>2353011</b>
(1) Amino Acid F Reagent Powder, 55 g		Jar			250	<b>2651155</b>
<b>Silica Ultra Low Range Bulk Solution Reagent Set</b> Heteropoly Blue Set Includes:	8282	S	3-1000 µg/L SiO <sub>2</sub>	All except DR/800, PC II	100	<b>2553500</b>
(2) Molybdate 3 Reagent Solution, 100 mL		S			100	<b>199532</b>
(2) Citric Acid F Reagent Solution, 100 mL		S			100	<b>2254232</b>
(1) Amino Acid F Reagent Solution, 100 mL		S			100	<b>2386442</b>
<b>Silica Ultra Low Range Ampuled Reagent Set</b> Heteropoly Blue Set Includes:	8282	S	3-1000 µg/L SiO <sub>2</sub>	All except DR/3000, DR/800, PC II	40	<b>2581400</b>
(1) Molybdate 3 Reagent Solution, 100 mL		S			100	<b>199532</b>
(1) Citric Acid F Reagent Solution, 100 mL		S			100	<b>2254232</b>
(2) Amino Acid F Solution, 1.2 mL Ampules, 20/Pk		S			20	<b>2386420</b>
<b>Silica Reagent Set, LR, 10 mL</b> Set Includes:	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>
(2) Molybdate 3 Reagent, 50 mL		S			50	<b>199526</b>
(2) Citric Acid Powder Pillows for Silica		PP			50	<b>2106269</b>
(1) Amino Acid F Reagent Powder Pillows		PP			100	<b>2254069</b>
<b>Silica Reagent Set, HR, 10 mL</b> Set Includes:	8185	PP	1-100 mg/L SiO <sub>2</sub>	All except DR/3000, DR/2000, DR/850, DR/820	100	<b>2429600</b>
(1) Acid Reagent Powder Pillows for HR Silica		PP			100	<b>2107469</b>
(1) Citric Acid Reagent Powder Pillows		PP			100	<b>2106269</b>
(1) Molybdate Reagent Powder Pillows		PP			100	<b>2107369</b>
<b>Silica Low Range Reagent Set, 25 mL</b> Heteropoly Blue Set Includes:	8186	PP, S	0.010-1.600 mg/L SiO <sub>2</sub>	DR/2000	100	<b>2346800</b>
(1) Molybdate 3 Reagent Solution, 100 mL		S			100	<b>199532</b>
(2) Citric Acid Powder Pillows		PP			100	<b>1454899</b>
(1) Amino Acid F Reagent Powder Pillows		PP			100	<b>2253869</b>
<b>Silica High Range Reagent Set, 25 mL</b> Silicomolybdate Set Includes:	8185	PP	1-100 mg/L SiO <sub>2</sub>	DR/3000, DR/2000, DR/800	100	<b>2244300</b>
(1) Molybdate Reagent HR Powder Pillows		PP			100	<b>104199</b>
(1) Acid Reagent Powder Pillows		PP			100	<b>104299</b>
(1) Citric Acid Powder Pillows		PP			100	<b>1454899</b>

Continued on next page.

**To detect the lowest silica limits,  
use the Ultra Low Range  
Rapid Liquid Reagent Set and  
the appropriate Pour Thru Cell  
for your instrument.**

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.



**MOST POPULAR!**

## Test Kits

Description	Method	Platform	Range	# Tests	Product Number
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	0.02-1.00 mg/L SiO <sub>2</sub>	100	2255000
Silica Test Kit, HR (Model SI-5)		CD	1-40/ 20-800 mg/L SiO <sub>2</sub>	100	1455400

## Standards

Description	Volume	Concentration	Product Number
Silica Standard Solution as SiO <sub>2</sub> (NIST)	3.78 L	0.5 mg/L SiO <sub>2</sub>	2100817
Silica Standard Solution as SiO <sub>2</sub> (NIST)	500 mL	1 mg/L SiO <sub>2</sub>	110649
Silica Standard Solution as SiO <sub>2</sub> (NIST)	500 mL	10 mg/L SiO <sub>2</sub>	140349
Silica Standard Solution as SiO <sub>2</sub> (NIST)	236 mL	25 mg/L SiO <sub>2</sub>	2122531
Silica Standard Solution as SiO <sub>2</sub> (NIST)	200 mL	50 mg/L SiO <sub>2</sub>	111729
Silica Standard Solution as SiO <sub>2</sub> (NIST)	500 mL	1000 mg/L SiO <sub>2</sub>	19449

## Accessories Required to Run Tests

The Rapid Liquid and Ultra Low Range Methods require a Pour Thru Cell—please reference the procedure for specifics.

**Hach is the market leader in  
on-line silica measurement,  
see page 449.**

# Silver

- Digestion required for total silver determination or when interferences are present

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<b>Silver Reagent Set</b>	8120	PP	0.02-0.70 mg/L Ag	All except DR/800, PC II	50	2296600
Set Includes:						
(1) Silver 1 Reagent Powder Pillows		PP			50	2293566
(1) Silver 2 Reagent Solution Pillows		SP			50	2293666
(1) Sodium Thiosulfate Powder Pillows		PP			50	2293766

### DIGESTION REAGENTS (for Digesdahl digestion)

Hydrogen Peroxide, 50%, 490 mL						2119649
Phenolphthalein Indicator Solution, 1 g/L, 15 mL						189736
Sodium Hydroxide Solution, 50% , 500 mL						218049
Sodium Hydroxide Solution, 1.00 N, 100 mL						104532
Sulfuric Acid, ACS Concentrated, 2.5 L						97909
Thymolphthalein Indicator Solution 1 g /L, 15 mL						2185336

## Test Kits

Description	Platform	Range	# Tests	Product Number
RapidSilver™, Visual Comparison	Color Match	5-50 ppb Ag	100	2674500

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; 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	Volume	Concentration	Product Number
Silver Standard Solution	100 mL	1000 mg/L Ag	1461342
Water, Deionized (4L Bottle)			27256

**Accessories Required to Run Tests**

Description	Product Number
Digesdahl Digestion Apparatus, 115V	2313020
Boiling Chips, Silicon Carbide, 500g	2055734
Safety Shield for Digesdahl	5003000

**Sodium**

For information about Sodium Electrochemical Probes visit: [www.hach.com](http://www.hach.com).

**Solids, Suspended****Required Apparatus**

Description	Method	Instrument*	Product Number
<b>PHOTOMETRIC METHOD</b> Spectrophotometer or colorimeter, with sample cells.	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

**Save money in chemicals  
by measuring suspended solids  
on-line, see page 453.**

**Solids, Total****Required Apparatus**

Description	Product Number
<b>GRAVIMETRIC</b>	
Cylinder, 50 mL	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	56900
Balance, Analytical	2936701

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

# Sulfate

Parameters



- Single reagent system
- SulfaVer® 4 method EPA accepted for wastewater

## Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
<b>SulfaVer 4 METHOD</b>							
	8051						
SulfaVer 4 Reagent Powder Pillow, 10 mL		PP	2-70 mg/L SO <sub>4</sub> <sup>2-</sup>	All except DR/4000, DR/3000, DR/2010, DR/2000	Yes	100	2106769
SulfaVer 4 AccuVac Ampules		AV	2-70 mg/L SO <sub>4</sub> <sup>2-</sup>	All	Yes	25	2509025
SulfaVer 4 Reagent Powder Pillow, 25 mL		PP	2-70 mg/L SO <sub>4</sub> <sup>2-</sup>	DR/4000, DR/3000, DR/2010, DR/2000	Yes	100	1206599
SulfaVer 4 Reagent Powder Pillow, 25 mL		PP	2-70 mg/L SO <sub>4</sub> <sup>2-</sup>	DR/4000, DR/3000, DR/2010, DR/2000	Yes	1,000	1206528
Sulfate TNTplus™, LR	10227	TNT+	40-50 mg/L SO <sub>4</sub>	DR 5000, DR 3800, DR 2800		25	TNT864
Sulfate TNTplus™, HR	10227	TNT+	150-900 mg/L SO <sub>4</sub>	DR 5000, DR 3800, DR 2800		25	TNT865

## Test Kits

Description	Method	Platform	Range		# Tests	Product Number
Pocket Colorimeter™ II –Sulfate	8051	PCII, PP	2-70 mg/L	Kit includes PC II	100	5870029
Sulfate Test Kit (Model SF-1)		TRB	50-200 mg/L		100	225100

## Standards

Description	Volume	Concentration	Product Number
Sulfate Standard Solution as SO <sub>4</sub> <sup>2-</sup> (NIST)	500 mL	50 mg/L SO <sub>4</sub> <sup>2-</sup>	257849
Sulfate Standard Solution as SO <sub>4</sub> <sup>2-</sup> (NIST)	500 mL	100 mg/L SO <sub>4</sub> <sup>2-</sup>	89149
Sulfate Standard Solution as SO <sub>4</sub> <sup>2-</sup> (NIST)	500 mL	1000 mg/L SO <sub>4</sub> <sup>2-</sup>	2175749
Sulfate Standard Solution as SO <sub>4</sub> <sup>2-</sup> (NIST)	10 mL/ 16 Voluette Ampules	2500 mg/L SO <sub>4</sub> <sup>2-</sup>	1425210
Sulfate Standard Solution as SO <sub>4</sub> <sup>2-</sup> (NIST)	500 mL	2500 mg/L SO <sub>4</sub> <sup>2-</sup>	1425249

Learn more about standards with the Hach Standards Product Guide visit: [www.hach.com/stdslc](http://www.hach.com/stdslc)

# Sulfide / Hydrogen Sulfide

- Quick, easy test kits available for field use
- Stable formulations



## Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
<b>Sulfide Reagent Set</b>	8131	S	5-800 µg/L S <sup>2-</sup>	All except DR/820, PC II	Yes	100	2244500
Set Includes:							
(2) Sulfide 1 Reagent, 100 mL		S				50	181632
(2) Sulfide 2 Reagent, 100 mL		S				50	181732

## Test Kits

Description	Platform	Range	# Tests	Product Number
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 (0.0, 0.1, 0.3, 0.5, 0.7, 1.0, 2.0, 5.0 steps)	18	2537800
Hydrogen Sulfide Test Kit (Model HS-WR) Methylene blue	CD	0.01-0.55 mg/L S <sup>2-</sup> 0.5-2.25 mg/L S <sup>2-</sup> 2.5-11.25 mg/L S <sup>2-</sup>	60 60 30	223801

## Accessories Required to Run Tests

Description	Product Number
Pipet, Serological, 10 mL	53238

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.



• Choice of titration method (buret titration, Digital Titrator)

• Reagents formulated for boiler water analysis

## Reagents

Description	Method	Platform	Range	# Tests	Product Number
<b>BURET TITRATION</b>					
<b>Sulfite Reagent Set</b> , Buret Titration	8071	PP, S	0->500 mg/L SO <sub>3</sub> <sup>2-</sup>	100	2459800
Set Includes:					
(1) Starch Indicator Solution, 100 mL		S		100	34932
(1) Dissolved Oxygen 3 Powder Pillows		PP		100	98799
(1) Potassium Iodide-Iodate Std Soln. 0.0125 N, 1L		S		40-100	1400153
Water, De-Ionized, 4 L		S			27256
<b>DIGITAL TITRATOR TITRATION</b>					
<b>Sulfite Reagent Set</b> , Digital Titrator Titration	8216	DT	4->400 mg/L SO <sub>3</sub> <sup>2-</sup>	100	2272300
Set Includes:					
(1) Starch Indicator Solution, 100 mL		S		100	34932
(1) Dissolved Oxygen 3 Powder Pillows		PP		100	98799
(1) Iodate-Iodide 0.3998N Cartridge		DT		40-100	1496101

## Test Kits

Description	Platform	Range	# Tests	Product Number
Sulfite Test Kit (Model SU-5)	DCT	1-20; 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	Volume	Concentration	Product Number
Sodium Thiosulfate Standard Solution 0.025N	1000 mL	0.025 N	2409353
Sulfite Equivalent Solution as SO <sub>3</sub> <sup>2-</sup> (NIST)	500 mL	15 mg/L	2408449
Sulfite Equivalent Solution as SO <sub>3</sub> <sup>2-</sup> (NIST)	10 mL/16 Voluette Ampules	5,000 mg/L	2267410

# Surfactants

See Detergents on page 156.

# Tannin and Lignin

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<b>Tannin and Lignin Reagent Set</b>	8193	S	0.1-9.0 mg/L as Tannic Acid	All except DR/820, PC II	100	2244600
Set includes:						
(2) Sodium Carbonate Solution, 500 mL		S			100	67549
(1) TanniVer® 3 Reagent, 100 mL		S			100	256032
Water, De-Ionized, 4L		S				27256

## Test Kits

Description	Platform	Range	# Tests	Product Number
Tannin and Lignin Test Kit (Model TA-3)	CD	0.5-15; 5-150 mg/L	100	193701

Continued on next page.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCL=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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U.S. customers only.



# Tannin and Lignin

## Standards

Description	Product Number
Tannic Acid, 113g	79114
Water, De-Ionized, 4 L	27256

## Accessories Required to Run Tests

Description	Product Number
Pipet, Volumetric, Class A, 5.0 mL	1451537
Pipet, Volumetric, Class A, 0.5 mL	1451534
Cylinder, Mixing, Graduated 25 mL	2088640

# TDS (Total Dissolved Solids)

See pages 24-47.

# 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	Range	Instrument*	Digestion Required	# Tests	Product Number
<b>TOC TNT Reagent Set, LR</b> Includes: Acid Digestion Solution Vials Low Range TOC, Sulfate Buffer Solution, Funnel, Indicator Ampules Low Range TOC, TOC Persulfate PP	10129	TNT	0.3-20.0 mg/L C	All except DR/3000, DR/2000, DR/820, PC II	Yes	25-50 <sup>†</sup>	2760345
<b>TOC TNT Reagent Set, MR</b> Includes: Acid Digestion Solution Vials High Range TOC, Sulfate Buffer Solution, Funnel, Indicator Ampules High Range TOC, TOC Persulfate PP	10173	TNT	15-150 mg/L C	All except DR/3000, DR/2000, DR/820, PC II	Yes	25-50 <sup>†</sup>	2815945
<b>TOC TNT Reagent Set, HR</b> Includes: Acid Digestion Solution Vials High Range TOC, Sulfate Buffer Solution, Funnel, Indicator Ampules High Range TOC, TOC Persulfate PP	10128	TNT	100-700 mg/L C	All except DR/3000, DR/2000, DR/820, PC II	Yes	25-50 <sup>†</sup>	2760445
Water, Organic-free, 500 mL		S					2641549

<sup>†</sup>Dependent on the number of performed reagent blanks.

## Standards

Description	Volume	Concentration	Product Number
TOC Standard Solution (KHP Standard)	20 mL 5 ampules	1000 mg/L C	2791505
Oxygen Demand, Mixed Parameter QC Standard; (BOD, COD, TOC)	10 mL/ 16 Voluette Ampules	BOD - 396 mg/L BOD COD - 617 mg/L COD TOC - 242 mg/L TOC	2833510
Wastewater Influent Inorganics, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia-15 mg/L NH <sub>3</sub> -N; Nitrate-10 mg/L NO <sub>3</sub> <sup>-</sup> -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, Mixed Parameter QC Standard; (Ammonia, Nitrate, Phosphate, COD, Sulfate, TOC)	500 mL	Ammonia- 2 mg/L NH <sub>3</sub> -N; Nitrate- 4 mg/L NO <sub>3</sub> <sup>-</sup> -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
Potassium Acid Phthalate, Primary Standard, 500 g			31534

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

## Accessories Required to Run Tests

Description	Product Number
DRB200 Reactor (To order, visit <a href="http://www.hach.com">www.hach.com</a> or contact your Hach representative.)	
Pipet, Tensette, 0.1-1.0 mL	1970001
Pipet, Tensette, 1.0-10.0 mL	1970010
Stir Bar, 7/8 x 3/16 in.	4531500
Magnetic Stirrer, 4 x 4 in., 115 V	2881200
pH Paper, 1.0 - 11.0 pH, pk of 5 rolls	39133
Test Tube Cooling Rack	1864100

For on-line TOC measurement,  
see pages 458-463

## Tolytriazole

See Benzotriazole, on pages 138-139.

## Toxicity

- Quick and inexpensive method makes it easy to monitor more frequently
- Economical alternative to bioassays

### Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
<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:						
(1) ToxTrak Powder Pillows		PP			50	<b>2560766</b>
(1) ToxTrak Accelerator Solution, 15 mL		S			50	<b>2560836</b>
(1) Media Set, Total Bacteria					varies	<b>2277700</b>
(5) Culture Tube 16 mm x 100 mm (5/pk)						<b>2275806</b>
(1) Sterile Transfer Pipette (15/pk)						<b>2232512</b>
(1) Sodium Thiosulfate Standard, 0.0246 N, 100 mL					varies	<b>2409232</b>

### Test Kits

Description	Platform	# Tests	Product Number
Eclox™ Water Test Kit	Multiple	50	<b>2886800</b>
Eclox™ Reagent Set	Multiple	50	<b>2886900</b>
ToxTrak™ Toxicity Test Kit	CD	25	<b>2597700</b>
Culture Set, ToxTrak™		30	<b>2597800</b>

## Accessories Required to Run Tests

Description	Product Number
Incubator, 12-well (for ToxTrak inoculum development), 120 V, 50/60 Hz	<b>2281400</b>

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCL=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

# TPH in Soil (Total Petroleum Hydrocarbons)

• Portable systems allow on-site evaluation

• Detect TPH in soil or water

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
TPH Reagent Set	10050	IA	Threshold ppm 20, 50, 100, 200 ppm threshold	All except DR/3000, DR/2000, DR/800	up to 18	2774300
Soil Extraction Refill Kit						2775200
Water, Demineralized 500 mL						27248

## Test Kits

Description	Method	Platform	Range	Instrument	# Tests	Product Number
Pocket Colorimeter™ II – TPH in Soil	10050	PCII, IA	Threshold ppm 20, 50, 100, 200 ppm threshold	Kit includes PC II	up to 18	2775000

## Accessories Required to Run Tests *(Included in Pocket Colorimeter Kit)*

Description	Product Number
Balance, AccuLab Pocket Pro	2796900
Soil Scoop, 5 g each	2657205
Caps, flip-spout 2/pkg	2581802
Rack, for 1 cm microcuvettes	4879900
Pipet, TenSette, 0.1 - 1.0 mL	1970001
Wipes, Disposable	2097000
Marker, Laboratory	2092000

# TPH in Water (Total Petroleum Hydrocarbons)

## Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
TPH Reagent Set	10050	IA	Threshold ppm 2, 5, 10, 20 ppm threshold	All except DR/3000, DR/2000, DR/800	up to 18	2774300
Water, Demineralized 500 mL						27248

## Test Kits

Description	Method	Platform	Range	Instrument	# Tests	Product Number
Pocket Colorimeter™ II – TPH in Water	10050	PCII, IA	Threshold ppm	Kit includes PCII	up to 18	2774200

## Accessories Required to Run Tests *(Included in Pocket Colorimeter Kit)*

Description	Product Number
Caps, flip-spout, 2/pkg	2581802
Rack, for 1 cm microcuvettes	4879900
Pipet, Tensette®, 0.1 - 1.0 mL	1970001
Wipes, Disposable	2097000
Marker, Laboratory	2092000

# Triazole

See Benzotriazole, on pages 138-139.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.



# 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	Range	Instrument*	# Tests	Product Number
Chlorine Dosing Ampules, 10 mL ampules, 16/pkg	10224	S	1190-1310 mg/L as Cl <sub>2</sub>	DR 5000, DR 3800, DR 2800, DR 2700	Varies	2504810
DPD Free Chlorine Reagent Powder Pillows, 25 mL		PP			Varies	1407099
<b>THM Plus Reagent Set</b> (See below for contents of reagent set.)					Varies	2790800

## Standards

Description	Volume	Concentration	Product Number
Chloroform Ampules	2 mL, 7/pkg	10 ppm	2756707
Water, Organic Free	500 mL		2641549

## Accessories Required to Run Tests

Description	Product Number
Bottles, Amber Glass, 118 mL, 6/pkg	714424
Caps, Black, PP Teflon liner, 12/pkg	2401812
Cell Holder assembly, TTHM	4788000
Evaporating Dish, 125 mm x 65 mm	2764700
Hot Plate/Stirrer, 7x7 inch, 110 V	2881600
Sample Cells, 10 mL w/caps	2427606
Stir Bar, Teflon-coated, 2.22 x 0.48 cm	4531500

# TTTHM (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	Range	Instrument*	Digestion Required	# Tests	Product Number
<b>TOTAL TRIHALOMETHANES PLUS REAGENT SET</b>							
<b>COLORIMETRIC</b>							
<b>Total Trihalomethanes Plus Reagent Set</b>	10132	PP, S	10-600 µg/L CHCl <sub>3</sub>	DR 5000, DR/4000, DR 3800, DR 2800, DR 2700, DR/2400	Yes	50-99	2790800
Set includes:							
(1) THM 1 Reagent Solution, 15 mL		S				50	2753929
(1) THM 2 Reagent Solution, 330 mL		S				50	2754048
(1) THM 3 Reagent Solution, 110 mL		S				50	2754142
(1) THM 4 Powder Pillows		PP				50	2756699

## Standards

Description	Volume	Concentration	Product Number
Chloroform Ampules, pk/7	2 mL	10 ppm Chloroform	2756707
Water, Organic-Free	500 mL		2641549

Total Trihalomethanes Plus Reagent Set  
Product No. 2790800



Continued on next page.

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titrator; EX=Extraction; IA=Immunoassay; PCI=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

# TTHM (Total Trihalomethanes)

## Accessories Required to Run Tests

Description	Product Number
Cooling Basket; Cell Holder Assembly	4788000
Hot Plate, Stirring, 7" x 7", 115V	2881600
Hot Plate, Stirring, 7" x 7", 230V	2881602
TenSette Pipet, 1-10 mL	1970010

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.

## Turbidity



2100 Series Laboratory Turbidimeters

For lab and portable turbidimeters, see pages 79-84.

See our complete line of turbidity products and solutions, visit the Hach Turbidity Product Guide: [www.hach.com/turbic](http://www.hach.com/turbic)



2100Q Portable Turbidimeter

## Volatile Acids

### Reagents

Description	Method	Platform	Range	Instrument*	Digestion Required	# Tests	Product Number
<b>COLORIMETRIC</b>							
Volatile Acids TNTplus	10240	TNT+	50-2500 mg/L Acetic Acid	DR 5000, DR 3800, DR 2800	Yes†	25	TNT872
<b>Volatile Acids Reagent Set</b>	8196	S	27-2800 mg/L Acetic Acid	All except PC II		100	2244700
Set includes:							
(1) Hydroxylamine Hydrochloride Solution 100 g/L, 100 mL		S				100	81842
(1) Sulfuric Acid Standard Solution, 19.2 N, 100 mL		S				250	203832
(1) Ethylene Glycol, 1 L		S				333	203953
(1) Sodium Hydroxide Standard Solution, 4.5 N, 1 L		S				250	204053
(2) Ferric Chloride-Sulfuric Acid Solution, 1 L		S				50	204253
<b>BURET TITRATION</b>							
Distillation required. See Accessories Required, below.	8291						
Phenolphthalein Powder Pillows		PP	100-2,400 mg/L CH <sub>3</sub> COOH			100	94299
Sodium Hydroxide, 0.100N, 1 L		S					19153
<b>DIGITAL TITRATOR TITRATION</b>							
Distillation required. See Accessories Required, below.							
<b>Volatile Acid Reagent Set</b>	8218	DT, PP	100-2400 mg/L CH <sub>3</sub> COOH			100	2460200
Set includes:							
(1) Sodium Hydroxide Cartridge, 0.9274 N		DT				40-100	1484201
(1) Phenolphthalein Powder Pillows		PP				100	94299

†DRB200 Reactor with 13mm wells required. Visit [www.hach.com](http://www.hach.com) for more details.

### Standards

Description	Volume	Concentration	Product Number
Volatile Acids Standard Solution	10 mL/16 Voluette Ampules	62,500 mg/L Acetic Acid	1427010

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

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## Accessories Required to Run Tests

Description	Product Number
Centrifuge, 115 Vac, 6 x 15 mL	2676500
Centrifuge Tubes, 15 mL, 10/pkg	2278739
Hot Plate, 4-inch, 120 Vac	1206701
Water Bath and Rack	195555
For Distillation:	
General Purpose Distillation Apparatus Set	2265300
Heater and Support Apparatus, 115 Vac, 60 Hz	2274400
Heater and Support Apparatus, 230 Vac, 50 Hz	2274402

## Water in Oil

- Detect coolant leakage into engine lubricants

### Test Kits

Description	Platform	Range	# Tests	Product Number
Model WO-1 Test Kit	Visual	0.05-1, 0.2-10%	25	2237300

## Zinc

- Zincon method EPA approved for NPDES reporting after digestion

- Accurate, reliable results
- Easy to use



### Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
<b>Zinc Reagent Set, 20 mL</b> Set includes: (1) Cyclohexanone, 100 mL (1) ZincoVer 5 Powder Pillows	8009	PP, S S PP	0.01-3.00 mg/L Zn	All except DR/3000, DR/2000	Yes	100	2429300 1403332 2106669
<b>Zinc Reagent Set, 50 mL</b> Set includes: (1) Cyclohexanone, 100 mL (4) ZincoVer 5 Powder Pillows	8009	PP, S S PP	0.01-2.00 mg/L Zn	DR/3000, DR/2000	Yes	100	2244800 1403332 1403268

### Test Kits

Description	Platform	Range		EPA Compliant	# Tests	Product Number
Pocket Colorimeter™ II – Zinc	PCII, PP	0.02-3.00 mg/L Zn	Kit includes PC II	Yes	100	5870009

### Standards

Description	Volume	Concentration	Product Number
Zinc Standard Solution as Zn (NIST)	10 mL/ 16 Voluette Ampules	25 mg/L Zn	1424610
Zinc Standard Solution as Zn (NIST)	100 mL	100 mg/L Zn	237842
Zinc Standard Solution as Zn (NIST)	100 mL	1,000 mg/L Zn	1417742

## Accessories Required to Run Tests

Description	Product Number
Cylinder, Graduated, Mixing, 25 mL	2088640
OR	
Cylinder, Graduated, Mixing 50 mL	189641

\*Generally, the DR 5000 performs the same methods as the DR/4000. The DR 2800 performs the same methods as the DR 2700, DR/2500, and DR/2400. Some exceptions do exist.

# Hach Reagent Delivery Program



## Hach Reagent Delivery Program Facts

### Ensure factory fresh chemicals and reagents, scheduled to meet your usage needs.

For customers who can forecast their reagent supply requirements (up to two years), Hach offers a Reagent Delivery Program (formerly known as SIRR Plan). This program applies to purchases of all Hach chemicals—analyzer reagents, COD vials, AccuVac® Ampoules, buffers and standards, liquids and powders—and offers the following benefits:

- **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.
- **Reduced paperwork**  
Submit one purchase order—Hach ships the amounts you dictate on a schedule you set.
- **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.
- **Lock in pricing for up to 2 years**  
Easily manage your budget. Ask about our tiered volume discount plans of up to 7%.

### 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- or two-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. Maximum contract duration of up to a 24-month period. Freight charges may vary with each shipment, and will be billed after each shipment is sent.
- Tiered discount plan available for large volume orders—contact Hach for details.
- 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.