

Reagents

Description	Method	Platform	Range	# Tests	Product Number
DIGITAL TITRATOR TITRATION	8211				
Chromate Reagent Set		PP, DT	20->400 mg/L CrO ₄ ²⁻	100	2272400
Set includes:					
(1) Dissolved Oxygen 3 Powder Pillows		PP		100	98799
(2) Potassium Iodide Powder Pillows		PP		50	2059996
(1) Sodium Thiosulfate Titration Cartridge, 0.2068 N		DT		40-100	2267601
(1) Starch Indicator Solution, 100 mL		S		40-100	34932

Standards

Description	Volume	Concentration	Product Number
Chromium, Hexavalent Standard	100 mL	1,000 mg/L Cr ⁶⁺	1466442
Chromium, Hexavalent Standard	100 mL	50 mg/L Cr ⁶⁺	81042H

Accessories Required to Run Tests

Description	Product Number
Digital Titrator	1690001

Chromium, Hexavalent and Total

- Hexavalent Chromium method EPA accepted for wastewater analysis

- Rapid, accurate results
- Easily monitor total chromium for process control



Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
ChromaVer®3 Chromium Reagent PP, 10 mL	8023	PP	0.010-0.700 mg/L Cr ⁶⁺	except DR/3000, DR/2000, DR/850, DR/820	Yes	100 1,000	1271099 1271028
ChromaVer®3 Chromium AccuVac	8023	AV	0.010-0.700 mg/L Cr ⁶⁺	All except DR/850, DR/820	Yes	25	2505025
ChromaVer®3 Chromium Reagent PP, 25 mL	8023	PP	0-1.00 mg/L Cr ⁶⁺	DR/3000, DR/2000	Yes	100	1206699
Total Chromium Reagent Set	8024	PP	0.01-0.70 mg/L Cr	All except DR/850, DR/820, PC II		100	2242500
Set includes:							
(1) Acid Powder Pillows		PP				100	212699
(1) ChromaVer® 3 Chromium Powder Pillows		PP				100	1206699
(1) Chromium 1 Powder Pillows		PP				100	204399
(1) Chromium 2 Powder Pillows		PP				100	204499
Chromium, Hexavalent and Total TNTplus	10218 (Cr ⁶⁺) 10219 (T)	TNT+	0.03-1.00 mg/L Cr	DR 5000, DR 2800	Yes†	25	TNT854

†EPA equivalent for Cr⁶⁺ only.

Test Kits

Description	Method	Platform	Range	# Tests	Product Number
Chromium Test Kit, as Hexavalent Cr		CC	0.2-1.0 mg/L Cr ⁶⁺	50	1252700
Chromium Test Kit, as Hexavalent Cr (Model CH-8)		CD	0.1-1.5 mg/L Cr ⁶⁺	100	183400
Chromium Test Kit, as Hexavalent and Total Trivalent by difference (Model CH-12)		CD	0.1-1.5 mg/L Cr	50 (Cr ⁶⁺) 50 (Total)	222800
Pocket Colorimeter™ II – Chromium, Hexavalent	8023	PCII	0.01-0.70 mg/L Cr ⁶⁺	100	5870017
Chromium Test Kit, as Hexavalent Cr (Model CH-14)		DCT	5-100/ 50-1,000 mg/L	100	222702
Soils and Water Chromium Test Kit, (Hexavalent) in soils and water (extraction)		EX	0.5-15,000 mg/Kg CrO ₄ ²⁻ (soil) 0-750 mg/L Cr ⁶⁺ (water)	100	2461800

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

Chromium, Hexavalent and Total

Standards

Description	Volume	Concentration	Product Number
Chromium Hexavalent Standard Solution as Cr ⁶⁺ (NIST)	2 mL/ 20 PourRite Ampules	5 mg/L Cr ⁶⁺	2605620
Chromium Hexavalent Standard Solution as Cr ⁶⁺ (NIST)	10 mL/ 16 Voluette Ampules	12.5 mg/L Cr ⁶⁺	1425610
Chromium Hexavalent Standard Solution as Cr ³⁺ (NIST)	100 mL	50 mg/L Cr ⁶⁺	81042H
Chromium Trivalent Standard Solution as Cr ³⁺ (NIST)	100 mL	50 mg/L Cr ³⁺	1415142
Chromium Hexavalent Standard Solution as Cr ⁶⁺ (NIST)	100 mL	1,000 mg/L Cr ⁶⁺	1466442

Accessories Required to Run Tests

Description	Product Number
DRB200 Reactor (Required for Total Cr digestion with Product No. TNT854—to order, visit www.hach.com or contact your Hach representative.)	
Water Bath (Required for Total Cr digestion with Prod. No. 2242500.)	195555
Hot Plate, 115 V (Required for Total Cr digestion with Prod. No. 2242500.)	1206701
Hot Plate, 220 V (Required for Total Cr digestion with Prod. No. 2242500.)	1206702

Cobalt

- 0 – 2 mg/L range
- Low cost alternative

- Easy-to-use colorimetric method

- Determine both cobalt and nickel concentrations with one test (with a spectrophotometer)

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Cobalt / Nickel Reagent Set, 10 mL Set includes: (2) EDTA Powder Pillows (2) Phthalate-Phosphate Powder Pillows (1) PAN Indicator Solution, 0.3%, 100 mL	8078	PP, S PP PP S	0.01-2.00 mg/L Co	All except DR/3000, DR/2000, DR/800	100 50 50 100	2651600 700599 2615199 2150232
Cobalt / Nickel Reagent Set, 25 mL Set includes: (2) EDTA Powder Pillows (4) Phthalate-Phosphate Powder Pillows (2) PAN Indicator Solution, 0.3%, 100 mL	8078	PP, S PP PP S	0.01-2.00 mg/L Co	DR/3000, DR/2000	100 50 25 50	2242600 700599 2150166 2150232

Test Kits

Description	Platform	Range	# Tests	Product Number
Pocket Colorimeter™ II – Nickel and Cobalt	PCII PP, S	0.01-1.00 mg/L Ni 0.02-2.00 mg/L Co	100	5870020

Standards

Description	Volume	Concentration	Product Number
Cobalt Standard Solution as Co (NIST)	100 mL	1,000 mg/L Co	2150342

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COD (Chemical Oxygen Demand)

- EPA approved, can be used for NPDES reporting
- Accurate, rapid method
- Allows you to respond to changing operational conditions

- COD 2 reagents are Mercury-free
- TNTplus™ Reagents: Bar code—Auto Test Recognition, Fast Results, Flat-Bottom Vials, EPA Approved

**EPA
COMPLIANT**
WHERE INDICATED

Parameters

Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	Digestion Required	# Tests	Product Number
COD DIGESTION VIALS—16 mm		8000						
ULR PK/25		TNT/COD	0.7-40.0 mg/L	DR 5000, DR 2800, DR/3000, DR/4000		Yes	25	2415825
ULR PK/150		TNT/COD	0.7-40.0 mg/L	DR 5000, DR 2800, DR/3000, DR/4000		Yes	150	2415815
LR PK/25		TNT/COD	3-150 mg/L	All except DR/850, DR/820, PC II	Yes	Yes	25	2125825
LR PK/150		TNT/COD	3-150 mg/L	All except DR/850, DR/820, PC II	Yes	Yes	150	2125815
HR PK/25		TNT/COD	20-1,500 mg/L	All except DR/850, DR/820, PC II	Yes	Yes	25	2125925
HR PK/150		TNT/COD	20-1,500 mg/L	All except DR/850, DR/820, PC II	Yes	Yes	150	2125915
HR+ PK/25		TNT/COD	200-15,000 mg/L	All except DR/850, DR/820, PC II		Yes	25	2415925
HR+ PK/150		TNT/COD	200-15,000 mg/L	All except DR/850, DR/820, PC II		Yes	150	2415915

COD 2 DIGESTION VIALS—16 mm

LR PK/25		TNT/COD	3-150 mg/L	All except DR/850, DR/820, PC II		Yes	25	2565025
HR PK/25		TNT/COD	20-1,500 mg/L	All except DR/850, DR/820, PC II		Yes	25	2565125
HR PK/150		TNT/COD	20-1,500 mg/L	All except DR/850, DR/820, PC II		Yes	150	2565115
UHR PK/25		TNT/COD	200-15,000 mg/L	All except DR/850, DR/820, PC II		Yes	25	2834325

COD TNTplus™—13 mm

ULR PK/24	10211	TNT+	1.0-60.0 mg/L	DR 5000, DR 2800		Yes	24	TNT820
LR PK/25	8000	TNT+	3-150 mg/L	DR 5000, DR 2800	Yes	Yes	25	TNT821
LR PK/150	8000	TNT+	3-150 mg/L	DR 5000, DR 2800	Yes	Yes	150	TNT82106
HR PK/25	8000	TNT+	20-1,500 mg/L	DR 5000, DR 2800	Yes	Yes	25	TNT822
HR PK/150	8000	TNT+	20-1,500 mg/L	DR 5000, DR 2800	Yes	Yes	150	TNT82206
UHR PK/25	10212	TNT+	250-15,000 mg/L	DR 5000, DR 2800		Yes	25	TNT823

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

Continued on next page.



COD TNTplus™

*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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COD (Chemical Oxygen Demand)

Standards

Description	Volume	Concentration	Product Number
COD Standard Solution (NIST)	200 mL	300 mg/L COD	1218629
COD Standard Solution (NIST)	500 mL	300 mg/L COD	1218649
COD Standard Solution (NIST)	200 mL	800 mg/L COD	2672629
COD Standard Solution (NIST)	200 mL	1,000 mg/L COD	2253929
Oxygen Demand, Mixed Parameter QC Standard; (BOD, COD, TOC)	10 mL/ 16 Volute 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 $\text{NH}_3\text{-N}$; Nitrate-10 mg/L $\text{NO}_3\text{-N}$; Phosphate-10 mg/L PO_4^{3-} ; COD-500 mg/L COD; Sulfate-400 mg/L SO_4^{2-} ; 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 $\text{NH}_3\text{-N}$; Nitrate- 4 mg/L $\text{NO}_3\text{-N}$; Phosphate- 2 mg/L PO_4^{3-} ; COD- 25 mg/L COD; Sulfate- 50 mg/L SO_4^{2-} ; TOC- 8 mg/L TOC	2833249

Accessories Required to Run Tests

Description	Product Number
DRB200 Reactor, multiple models available (To order, visit www.hach.com or contact your Hach representative.)	
Test Tube Rack, 16 mm	1864100
Test Tube Rack, 13 mm	2497900
Reactor Adapter, 16 mm to 13 mm, 5/pk (For use with older COD reactors with 16mm holes)	2895805

ez COD™ Recycling

Hassle-free, economical COD disposal!

- Low Cost—Save up to 50% vs current disposal options
- Hassle Free—Place entire vial into receptacle
- Environmentally Friendly—Silver and Mercury are reclaimed
- One Stop Shopping—Order COD and recycling from one source



Introducing ez COD Recycling for Hach COD!

COD analysis exposes your facility to a potentially hazardous by-product. On-site storage of large quantities can be dangerous, while outside disposal services can be expensive. With Hach ez COD, your facility receives a DOT approved recycling container, prepared handling documents and pre-paid transportation to a recycling facility for easy and environmentally sound reagent reclamation. All at a fraction of what other services charge.

Prod. No. Description

- 2895405 5 Gallon Program**
Includes 5 gallon container, documentation and transportation to the recycling facility. 5 gallon holds approximately 400 16 mm COD vials or 650 13 mm TNTplus vials. (Maximum total weight of 25 lbs.)
- 2895420 20 Gallon Program**
Includes 20 gallon container, documentation and transportation to the recycling facility. 20 gallon holds approximately 1,600 16 mm COD vials or 2,600 13 mm TNTplus vials.
- 2895455 55 Gallon Program**
Includes 55 gallon container, documentation and transportation to the recycling facility. 55 gallon holds approximately 4,400 16mm COD vials or 7,150 TNTplus vials.

*For continental U.S. domestic customers only—not for Alaska and Hawaii.
Hazardous waste holding periods may apply. Check with your regulatory specialist.*



COD, Manganese III

An alternative “green” method for determining COD.

- Eliminates heavy metals from your waste stream
- Minimizes or completely eliminates disposal costs

- Proven as a fast and reliable alternative to BOD for process control
- Optional Chloride Removal System—up to 1,000 mg/L Chloride
- Shows good correlation to BOD and COD (dichromate) methods

Reagents

Description	Method	Platform	Range	Instrument*	Digestion Required	# Tests	Product Number
Manganese III COD Vials	10067	TNT	30-1,000 mg/L	All except PC II	Yes	25	2623425
Manganese III COD Vials	10067	TNT	30-1,000 mg/L	All except PC II	Yes	150	2623415
Chloride Removal Cartridges	10067					25	2661825
Chloride Removal Cartridges	10067					150	2661815
Sulfuric Acid, 2.5 L							97909

Accessories Required to Run Tests

Description	Product Number
DRB200 Reactor (To order, visit www.hach.com or contact your Hach representative.)	
Test Tube Rack, 16 mm	1864100
Blender, 2-speed, 1.2L container, 120 Vac 50/60 Hz	2616100
Blender, 2-speed, 1.2L container, 240 Vac 50/60 Hz	2616102
FOR OPTIONAL CHLORIDE REMOVAL SYSTEM	
Vacuum Pretreatment Device (VPD)	4900000
Vacuum Pump, 1.2 CFM@ 60 Hz 27.2 Hg Max	2824800
Cap, with inert Teflon® liner for mixing bottle, 12/pk	2401812

Color

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
PLATINUM-COBALT STANDARD METHOD	8025					
Hydrochloric Acid Solution, 1.0N, 1 L		S	3-200 Units [†] ; 15-500 Units	All except DR/850, DR/820, PC II	Varies	2321353
Sodium Hydroxide, 1.00 N, 1 L		S	3-200 Units [†] ; 15-500 Units	All except DR/850, DR/820, PC II	Varies	104553
Water, Deionized (4L Bottle)		S	3-200 Units [†] ; 15-500 Units	All except DR/850, DR/820, PC II	Varies	27256

[†]DR 5000, DR 2800, and DR 2700 only.

Test Kits

Description	Platform	Range	# Tests	Product Number
Color Test Kit (Model CO-1)	CD	5-100/ 25-500 units	no limit	223400

Standards

Description	Volume	Concentration	Product Number
Color Standard	1 L	15 Pt Co Units	2602853
Color Standard	1 L	500 Pt Co Units	141453
Color Standard	10 mL/16	500 Pt Co Units	141410

Accessories Required to Run Tests

Description	Product Number
Filter Holder, magnetic, 47-mm	1352900
Filter, membrane, 47-mm, 0.45-microns, 100/pk	2894700
Flask, filtering, 500-mL	54649
Sample Cell, 5 cm (50 mm) pathlength, rectangular glass (required for low range)	2629250

Conductivity

For information about Hach laboratory and field conductivity instruments, please see pages 27-47.
See pages 406-409 for Hach's wide range of sensors for on-line measurement of conductivity.

*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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U.S. customers only.



- Several ranges and methods available
- Field or laboratory testing

- Bicinchoninate method—EPA approved with digestion; Hach's mid range
- Porphyrin method—quick and easy; Hach's lowest range



Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
COLORIMETRIC METHOD							
Copper Reagent Set , 10 mL, Porphyrin Set includes: (1) Copper Masking Powder Pillows (2) Porphyrin 1 Powder Pillows (2) Porphyrin 2 Powder Pillows	8143	PP	2-210 µg/L Cu	DR 5000, DR/4000, DR/4000, DR 2800, DR 2700, DR/2010, DR/890		100	2603300
		PP				100	2603449
		PP				50	2603549
		PP				50	2603649
Copper Reagent Set , 25 mL, Porphyrin Set includes: (1) Copper Masking Powder Pillows (2) Porphyrin 1 Powder Pillows (2) Porphyrin 2 Powder Pillows	8143	PP	2-210 µg/L Cu	DR/3000, DR/2000		100	2242700
		PP				100	2187399
		PP				50	2187469
		PP				50	2187569
Copper Reagent Set (Free and Total) Set includes: (1) Hydrosulfite Powder Pillows (1) Free Copper Powder Pillows		PP	0.04-5.00 mg/L Cu	DR 5000, DR 2800 DR 2700, DR/890 PCII		100	2439200
		PP				100	2118869
		PP				100	2182369
CuVer 1 Copper Reagent , 10 mL <i>Bicinchoninate</i>	8506	PP	0.04-5.00 mg/L Cu	All except DR/3000, DR/2000, DR/850, DR/820	Yes	100 1000	2105869 2105828
CuVer 1 Copper Reagent , 25 mL <i>Bicinchoninate</i>	8506	PP	0.04-5.00 mg/L Cu	DR/3000, DR/2000	Yes	100 1000	1418899 1418828
CuVer 2 Copper AccuVac <i>Bicinchoninate</i>	8026	AV	0.04-5.00 mg/L Cu	All except DR/850, DR/820		25	2504025
ANODIC STRIPPING VOLTAMMETRY METHOD (For more information, see page 162.)							
Sensor Pack for Copper			50 - 2000 µg/L	HSA-1000		10	5040200

Test Strips

Description	Platform	Range	# Tests	Product Number
Copper Test Strips (Free & Total)	TS	0-3 mg/L Cu (0,0.2,0.5,1,3 steps)	25	2745125

Test Kits

Description	Method	Platform	Range	# Tests	Product Number
Free and Total Copper Test Kit (Model CU-6)		CD	0.1-5.0 mg/L Cu	50 (Free), 50 (Total)	2194100
Free Copper Test Kit (Model CU-5)		CD	0.1-5.0 mg/L Cu	100	1421300
Pocket Colorimeter™ II – Copper	8506	PCII, PP	0.04-5.00 mg/L Cu	Kit includes PC II	5870019

Standards

Description	Volume	Concentration	Product Number
Copper Standard Solution as Cu (NIST) PourRite Ampules	2 mL/20	4 mg/L Cu	2605720
Copper Standard Solution as Cu (NIST)	100 mL	10 mg/L Cu	12932
Copper Standard Solution as Cu (NIST) Volumetric Ampules	10 mL/16	75 mg/L Cu	1424710
Copper Standard Solution as Cu (NIST)	100 mL	100 mg/L Cu	12842
Copper Standard Solution as Cu (NIST)	100 mL	1,000 mg/L Cu	259342
Metals Drinking Water (Low Range) Mixed Parameter QC Standard; (Copper, Iron, Manganese)	500 mL	Copper-1.0 mg/L Cu; Iron-0.3 mg/L Fe; Manganese-0.1 mg/L Mn	2833749
Metals Drinking Water (High Range) Mixed Parameter QC Standard; (Copper, Iron, Manganese)	500 mL	Copper- 2.5 mg/L Cu, Iron- 1.5 mg/L Fe, Manganese- 5.0 mg/L Mn	2833649

See page 410 for on-line measurement with the APA 6000 Copper Analyzer.

*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.



• Stable, 3-reagent system

• Sensitive—low level determination

• Low range is ideal for drinking water and wastewater

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Cyanide Reagent Set, 10 mL	8027	PP	0.002-0.240 mg/L CN ⁻	All except DR/3000, DR/2000, DR/820, PC II	100	2430200
Set Includes:						
(1) CyaniVer® 3 Cyanide Powder Pillows	PP				100	2106869
(1) CyaniVer® 4 Cyanide Powder Pillows	PP				100	2106969
(1) CyaniVer® 5 Cyanide Powder Pillows	PP				100	2107069
Cyanide Reagent Set, 25 mL	8027	PP	0.002-0.240 mg/L CN ⁻	DR/3000, DR/2000	100	2242800
Set Includes:						
(1) CyaniVer® 3 Cyanide Powder Pillows	PP				100	1403969
(1) CyaniVer® 4 Cyanide Powder Pillows	PP				100	1404099
(1) CyaniVer® 5 Cyanide Powder Pillows	PP				100	1404169

Test Kits

Description	Platform	Range	# Tests	Product Number
Cyanide Test Kit (Model CYN-3)	CD	0.01-0.30 mg/L CN ⁻	100	201002



Accessories Required to Run Lab Test

Description	Product Number
Distillation Apparatus, Cyanide Accessories	2265800
AND	
Distillation Apparatus, General Purpose Accessories	2265300
AND EITHER	
Distillation Apparatus Heater, 115 Vac, 60 Hz	2274400
OR	
Distillation Apparatus Heater, 230 Vac, 50 Hz	2274402

See Procedure for additional common labware required for this test.

For information about distilling samples for cyanides with the Lachat Instruments MICRO DIST® System, please see page 99.

*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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Cyanuric Acid

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
TURBIDIMETRIC METHOD	8139					
Cyanuric Acid 2 Reagent Powder Pillows		PP	5-50 mg/L	All except DR 5000, DR/4000, PC II	50	246066

Test Kits

Description	Platform	Range	# Tests	Product Number
Cyanuric Acid Test Kit (Model CY-3)	TRB	20-100 mg/L	100	185102

DEHA

See Oxygen Scavengers on page 172.

Detergents / Surfactants

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Detergents Reagent Set	8028	PP, S	0.002-0.275 mg/L LAS	All except DR/820, PC II	70-100	2446800
Set Includes:						
(1) Benzene, ACS, 4 L	S				75	1444017
(2) Buffer Solution, sulfate-type, 500 mL	S				50	45249
(3) Detergent Reagent Powder Pillows	PP				25	100868
Detergents Reagent Set Air Freight Configuration (Benzene is packaged in multiple bottles to meet air freight regulations.)					70-100	2446801

Test Kits

Description	Platform	Range	# Tests	Product Number
Detergents Test Kit (Model DE-2)	CD	0-1 mg/L LAS	32	143203

Standards

Description	Volume	Concentration	# Tests	Product Number
Detergent Standard Solution, 10mL	10 mL/16 Voluette Ampules	60 mg/L LAS	16	1427110

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- Colorimetric and titration methods available
- AccuVac® ampules are ideal for volatile analytes like dissolved oxygen—just snap and measure!

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
COLORIMETRIC METHOD						
Dissolved Oxygen AccuVac, LR	8316	AV	6-800 µg/L O ₂	All except DR/820, PC II	25	2501025
Dissolved Oxygen AccuVac, MR	8166	AV	0.3-15.0 mg/L O ₂	All	25	2515025
Dissolved Oxygen AccuVac, HR HR uses same AccuVac as MR, at different measurement wavelength.	8333	AV	1.0-40.0 mg/L O ₂	All except DR/800, PC II	25	2515025

DIGITAL TITRATOR TITRATION

Dissolved Oxygen Reagent Set , Digital Titrator	8215	DT	1-10 mg/L O ₂		50	2272200
Set Includes:						
(1) Alkaline Iodide-Azide Powder Pillows		PP			50	107266
(1) Manganous Sulfate Powder Pillows		PP			50	107166
(1) Sodium Thiosulfate Titration Cartridge, 0.2000 N		DT	up to 10 mg/L O ₂		40-100	2267501
(1) Starch Indicator Solution, 100 mL		S			50	34932
(1) Sulfamic Acid Powder Pillows		PP			50	2076266
Sodium Thiosulfate Titration Cartridge, 2.00 N		DT	>10 mg/L O ₂		40-100	1440101

BURET TITRATION

Buret Titration Reagent Set	8229	PP, S	1->10 mg/L O ₂		100	2351400
Set Includes:						
(2) Alkaline Iodide-Azide Powder Pillows		PP			50	107266
(2) Manganous Sulfate Powder Pillows		PP			50	107166
(1) Starch Indicator Solution, 100 mL		S			50	34932
(1) Sulfamic Acid Powder Pillows		PP			100	107399
(1) Sodium Thiosulfate Standard Solution Stabilized, 0.025 N, 1 L		S			100	2409353
Alkaline Iodide-Azide Reagent		PP	1- greater than 10 mg/L	None	50	107266
Manganous Sulfate		PP	1- greater than 10 mg/L	None	50	107166
Sodium Thiosulfate Standard, Titrant Stabilized 0.025 N, 1 L		S	1- greater than 10 mg/L	None	varies	2409353
Starch Indicator Solution, 100 mL		S	1- greater than 10 mg/L	None	50	34932
Sodium Thiosulfate Standard Solution 0.025N		S	1- greater than 10 mg/L	None	varies	35253
Sulfamic Acid		PP	1- greater than 10 mg/L	None	100	107399



MOST POPULAR!

Test Kits

Description	Platform	Range		# Tests	Product Number
Pocket Colorimeter™ II – DO System	PCII, AV	0.2-10.0 mg/L O ₂	Kit includes PC II	25	5870003
Dissolved Oxygen Test Kit (Model OX-2P)	DCT	0.2-4, 1-20 mg/L O ₂		100	146900
Dissolved Oxygen Test Kit (AccuVac)	CD, AV	0.2-15 mg/L O ₂		25	2515050
Dissolved Oxygen Test Kit (Model OX-DT)	DT	1-10 mg/L O ₂		50	2063100
Dissolved Oxygen Test Kit (AccuVac)	CD, AV	50-1,000 ppb O ₂		25	2501050

See pages 412-417 for on-line measurement with the Hach LDO® Probe and other Hach Process DO Analyzers.

*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=Swiftest™; TNT=Test 'N Tube™; TNT+=TNTplus™; TRB=Turbidity; TS=Test Strip

Dissolved Oxygen, Luminescent

Parameters

- No membranes to clean or replace
- Low maintenance

- No polarization time
- Rapid response

- 99% accuracy

See Hach LDO® and other innovative Hach electrochemical products on pages 27-52.



EDTA

See Chelant on page 137.

Erythorbic Acid

See Oxygen Scavengers on page 172.

Fluoride

Hach's SPADNS Fluoride tests for the simplicity & reliability you expect.

- Available in multiple reagent platforms (AccuVac® and bulk solution)
- Easy-to-use one reagent test
- EPA accepted, distillation required for reporting purposes
- Hach method can analyze samples with up to 5 mg/L chlorine with no interference

NEW! ARSENIC-FREE SPADNS 2 Reagent!

- Removes chlorine interference without sodium arsenite
- Simplify waste disposal and minimize potential exposure
- Use as a direct replacement for SPADNS Reagent Solution or AccuVacs. SPADNS 2 Reagents can be used with existing Fluoride procedures.

**EPA
COMPLIANT**
WHERE INDICATED

Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
SPADNS Fluoride AccuVac	8029	AV	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	25	2506025
SPADNS Reagent Solution, 500mL	8029	S	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	125	44449
SPADNS Reagent Solution, 1,000mL	8029	S	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	250	44453
SPADNS Reagent Solution, 3.78L	8029	S	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	945	44417

SPADNS 2 REAGENT—ARSENIC-FREE FORMULA!

SPADNS 2 Fluoride AccuVac	10225	AV	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	25	2527025
SPADNS 2 Reagent Solution, 500mL	10225	S	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	125	2947549
SPADNS 2 Reagent Solution, 1,000mL	10225	S	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	250	2947553
SPADNS 2 Reagent Solution, 3.78L	10225	S	0.02-2.00 mg/L F ⁻	All except DR/820	Yes†	945	2947517

ION SELECTIVE ELECTRODE METHOD

Fluoride Ionic Strength Adjuster Powder Pillows (TISAB)	PP	0.01 mg/L to saturated	sensION 2, sensION 4	Yes	100	258999
Fluoride Ionic Strength Adjuster Powder (TISAB), 454g	Jar	0.01 mg/L to saturated	sensION 2, sensION 4	Yes		258901
Fluoride Ionic Strength Adjuster Solution (TISAB)	S	0.01 mg/L to saturated	sensION 2, sensION 4	Yes	750	2829017

†Methods on DR/890 and DR/850 are not EPA approved.

*Per 40 CFR 136.6 Method Modification and Flexibility

*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.



Test Kits

Description	Method	Platform	Range	EPA Compliant	# Tests	Product Number
Pocket Colorimeter™ II – Fluoride	8029	PCII, AV	0.1 - 2.0 mg/L†	Yes	50	5870005
Pocket Colorimeter™ II – Fluoride SPADNS2 (Arsenic-free)	10225	PCII, AV	0.1 - 2.0 mg/L†	Yes	50	2513100

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

Standards

Description	Volume	Concentration	Instrument*	Product Number
Spec✓ Gel Secondary Standard Kit – Fluoride	Set of 4 Vials	0-2.0 mg/L F ⁻	All except DR/3000 and DR/800 Series instruments	2712500
Fluoride Standard Solution	500 mL	0.2 mg/L F ⁻		40502
Fluoride Standard Solution	500 mL	0.5 mg/L F ⁻		40505
Fluoride Standard Solution	500 mL	0.8 mg/L F ⁻		40508
Fluoride Standard Solution	500 mL	1.0 mg/L F ⁻		29149
Fluoride Standard Solution	1 L	1.0 mg/L F ⁻		29153
Fluoride Standard Solution	500 mL	1.2 mg/L F ⁻		40512
Fluoride Standard Solution	500 mL	1.5 mg/L F ⁻		40515
Fluoride Standard Solution	500 mL	2.0 mg/L F ⁻		40520
Fluoride Standard Solution	500 mL	5.0 mg/L F ⁻		2797149
Fluoride Standard Solution	500 mL	10 mg/L F ⁻		35949
Fluoride Standard Solution	500 mL	19 mg/L F ⁻		2126249
Fluoride Standard Solution	500 mL	100 mg/L F ⁻		23249
Drinking Water Inorganics, Mixed Parameter QC Standard; (Fluoride Nitrate, Phosphate, Sulfate)	500 mL	Fluoride- 1 mg/L F ⁻ ; Nitrate- 2 mg/L NO ₃ ⁻ -N; Phosphate- 2 mg/L PO ₄ ³⁻ ; Sulfate- 50 mg/L SO ₄ ²⁻		2833049

Accessories Required to Run Lab Test (When distillation is required for EPA reporting.)

Description	Product Number
Distillation Apparatus, General Purpose Accessories	2265300
AND	
Distillation Apparatus Heater, 115 Vac, 60 Hz	2274400
OR	
Distillation Apparatus Heater, 230 Vac, 50 Hz	2274402

See Procedure for additional common labware required for this test.

See page 426 for on-line measurement with the CA610 Fluoride Analyzer.



SPADNS2 Fluoride AccuVac
(Arsenic-free)
Prod. No. 2527025

*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

Formaldehyde

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Formaldehyde Reagent Set	8110	PP, S	3-500 µg/L CH ₂ O	All except DR/800, PC II	100	2257700
Set Includes:						
(1) Developing Solution for Low Range Formaldehyde, 500 mL		S			100	2257249
(2) MBTH Powder Pillows		PP			50	2257169

Test Kits

Description	Platform	Range	# Tests	Product Number
Formaldehyde Test Kit (Model FM-1)	DCT	0.05-1%/ 0.5-10%	100	2183100

Accessories Required to Run Tests

Description	Product Number
Cylinder, Graduated Mixing, 50-mL	189641
Pipet, Serological, 5-mL	53237
Pipet Filler, Safety Bulb	1465100

Standards

Description	Volume	Concentration	# Tests	Product Number
Formaldehyde Standard Solution	10 mL/16 Voluette Ampules	4,000 mg/L	16	2257310

Glutaraldehyde

Test Kits

Description	Platform	Range	# Tests	Product Number
Glutaraldehyde Test Kit (Model GT-1)	CD	0.5-4,000 mg/L	100	2587200

Accessories Required to Run Tests

Description	Product Number
Hot Plate 4" x 4", 120 V	2881400

Glycol

Test Kits

Description	Platform	Range	# Tests	Product Number
Glycol Test Kit (Model EG-1)	Visual	Presence or absence of Glycol	25	2186400
Semiquantitative determination of glycol in water or oil.				
Visual appearance of color indicates glycol presence.				

*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 Titration; EX=Extraction; IA=Immunoassay; PCII=Pocket Colorimeter™ II; PP=Powder Pillows; RL=Rapid Liquid; S=Solution; SP=Solution Pillow; SW=SwiftTest™; TNT=Test 'N Tube™; TNT+=TNTplus™; TRB=Turbidity; TS=Test Strip



- Determine Magnesium by difference: Magnesium is difference between Total Hardness and Calcium
- Multiple titration and colorimetric methods available
- A wide variety of reagent platforms available
- Calcium hardness methods (CalVer2) are highly sensitive and have sharp end points for accurate results

- Total hardness methods (Calmagite) are formulated for enhanced stability and are free from most interferences
- Ultra low range method (Chlorophosphonazo) developed specifically to be used with Hach spectrophotometers for ultrapure and boiler feed water analysis



Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
ULTRA LOW RANGE							
COLORIMETRIC							
Ultra Low Range Hardness Reagent Set	8374	S	4-1000 µg/L CaCO ₃	All except DR/800 PC II		250	2603101
Set includes (Plastic 1" sample cell w/cap included):							
(1) Chlorophosphonazo Indicator Solution, 500 mL		S				250	2589549
(2) CDTA Solution, 10 mL		S				100	2589636
Ultra Low Range Hardness Reagent Set	8374	S	8-1000 µg/L CaCO ₃	All except DR/800 PC II		100	2603100
Set includes (Plastic 1" sample cell w/cap included):							
(1) Chlorophosphonazo Indicator Solution Pillows		S				100	2589599
(1) CDTA Solution, 10 mL		S				100	2589636
LOW RANGE							
COLORIMETRIC							
Hardness Reagent Set	8030	S	0.05-4.00 mg/L Ca as CaCO ₃	All except PC II		100	2319900
Set includes:			0.05-4.00 mg/L Mg as CaCO ₃				
(1) EGTA Solution, 50 mL		S				100	2229726
(1) Alkali Solution, 100 mL		S				100	2241732
(1) Calcium/ Magnesium Indicator, 100 mL		S				100	2241832
(1) EDTA Solution, 1 M, 50 mL		S				100	2241926
MID-RANGE							
DIGITAL TITRATOR TITRATION							
Hardness Reagent Set (Total LR)	8213	DT	10-160 mg/L CaCO ₃		Yes [‡]	100	2448000
Set includes:							
(1) Hardness 1 Buffer Solution, 100 mL		S				100	42432
(1) ManVer 2 Powder Pillows		PP				100	85199
(1) TitraVer EDTA 0.0800 M Cartridge		DT				40-100	1436401
Hardness Reagent Set (Total LR)	8213	DT	1-16 G.d.h. CaCO ₃ [†]			100	2447800
Set includes:							
(1) Hardness 1 Buffer Solution, 100 mL		S				100	42432
(1) ManVer 2 Powder Pillows		PP				100	85199
(1) TitraVer EDTA 0.0.1428 M Cartridge		DT				40-100	1496001
Hardness, Total Sequential Reagent Set (Magnesium by Difference)	8329	DT	10-160 mg/L CaCO ₃			100	2448600
Set includes:							
(1) Potassium Hydroxide 8 N, 100 mL		S				100	28232H
(1) CalVer 2 Powder Pillows		PP				100	94799
(1) ManVer 2 Powder Pillows		PP				100	92899
(1) TitraVer EDTA 0.0800 M Cartridge		DT				40-100	1436401
(1) Hardness 1 Buffer Solution, 100 mL		S				100	42432
(1) Sulfuric Acid, 5.25 N, 100 mL		S				100	244932
BURET TITRATION							
Hardness Reagent Set (Total LR)	8226	PP, S	0-2500 mg/L CaCO ₃		Yes [‡]	100	2447600
Set includes:							
(1) Hardness 1 Buffer Solution, 100 mL		S				100	42432
(1) ManVer 2 Powder Pillows		PP				100	85199
(1) EDTA Standard Solution 0.0200 N, 1 L		S				40-100	20553
HIGH RANGE							
DIGITAL TITRATOR TITRATION							
Hardness Reagent Set (Total HR)	8213	DT	100-4000 mg/L CaCO ₃			100	2448100
Set includes:							
Hardness 1 Buffer Solution, 100 mL		S				100	42432
ManVer 2 Powder Pillows		PP				100	85199
EDTA Standard Solution 0.800 M, Cartridge		DT				40-100	1439901

[†]G.d.h. = German degree hardness; 1 German degree hardness equals 17.9 mg/L CaCO₃

[‡]Equivalent to EPA Reference Method 215.2 as per the Guide to Method Flexibility and Approval of EPA Water Methods, US Environmental Protection Agency, Engineering and Analysis Division, Office of Science and Technology, Office of Water, Washington, DC., Draft, December 1996.

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	EPA Compliant	# Tests	Product Number
HIGH RANGE						
DIGITAL TITRATOR TITRATION						
Hardness Reagent Set (Total HR)	8213	DT	10-100+ G.d.h. CaCO ₃ [†]		100	2447900
Set includes:						
(1) Hardness 1 Buffer Solution, 100 mL		S			100	42432
(1) ManVer 2 Powder Pillows		PP			100	85199
(1) TitraVer EDTA 0.714 M Cartridge		DT			40-100	1495901
Hardness, Total Sequential Reagent Set (Magnesium by Difference)	8329	DT	100-4000 mg/L CaCO ₃		100	2448700
Set includes:						
(1) Sulfuric Acid, 5.25 N, 100 mL		S			100	244932
(1) Potassium Hydroxide 8 N, 100 mL		S			100	28232H
(1) CalVer 2 Powder Pillows		PP			100	94799
(1) ManVer 2 Powder Pillows		PP			100	92899
(1) TitraVer EDTA 0.800 M Cartridge		DT			40-100	1439901
(1) Hardness 1 Buffer Solution, 100 mL		S			100	42432
Hardness, Total Sequential Reagent Set (Magnesium by Difference)	8329	DT	10-100+ G.d.h. CaCO ₃ [†]		100	2448500
Set includes:						
(1) Potassium Hydroxide 8 N, 100 mL		S			100	28232H
(1) CalVer 2 Powder Pillows		PP			100	94799
(1) ManVer 2 Powder Pillows		PP			100	92899
(1) TitraVer EDTA 0.714 M Cartridge		DT			40-100	1495901
(1) Hardness 1 Buffer Solution, 100 mL		S			100	42432
(1) Sulfuric Acid, 5.25 N, 100 mL		S			100	244932
BURET TITRATION						
Hardness Reagent Set (Total HR)	8222	PP, S	100-25000 mg/L CaCO ₃	Yes[‡]	100	2447700
Set includes:						
(1) Hardness 1 Buffer Solution, 100 mL		S			100	42432
(1) ManVer 2 Powder Pillows		PP			100	85199
(1) EDTA Standard Solution, 0.200 N, 500 mL		S			40-100	102149
TITRANTS, BUFFERS, INDICATORS						
EDTA Standard Solution, 0.200N, 500 mL, Titrant		S	1,000-25,000 mg/L CaCO ₃			102149
EDTA Standard Solution, 0.0200N, 1 L, Titrant		S	0-2,500 mg/L CaCO ₃			20553
EDTA Standard Solution, 0.0200N, 4 L, Titrant		S	0-2,500 mg/L CaCO ₃			20556
TitraVer EDTA 0.0800M, Titrant cartridge		DT	10-160 mg/L CaCO ₃			1436401
TitraVer EDTA 0.800M, Titrant cartridge		DT	100-4,000 mg/L CaCO ₃			1439901
Hardness 1 Buffer Solution, 100 mL, Buffer		S				42432
Hardness 1 Buffer Solution, 500 mL, Buffer		S				42449
Hardness 1 Buffer Solution, 1 L, Buffer		S				42453
Hardness 2 Test Solution, 100 mL MDB, Indicator		S				42532
Hardness 2 Test Solution, 500mL Indicator		S				42549
Hardness 3 Test Solution, 500mL Indicator		S				42649
Hardness 3 Test Solution, 1L Titrant		S				42653
ManVer 2 Hardness Indicator Powder Pillows, 50 mL		PP			100	85199
ManVer 2 Hardness Indicator Powder Pillows		PP			100	92899

[†]G.d.h. = German degree hardness; 1 German degree hardness equals 17.9 mg/L CaCO₃

[‡]Equivalent to EPA Reference Method 215.2 as per the Guide to Method Flexibility and Approval of EPA Water Methods, US Environmental Protection Agency, Engineering and Analysis Division, Office of Science and Technology, Office of Water, Washington, DC., Draft, December 1996.

**See pages 427-428 for on-line
measurement with the APA 6000
and SP510 Hardness Analyzers.**

PLATFORM KEY: AV=AccuVac®; CC=Color Cube; CD=Color Disc; DCT=Drop Count Titration; DT=Digital Titration; 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





MOST POPULAR!

Test Strips

Description	Platform	Range	# Tests	Product Number
Total Hardness Test Strips (as CaCO ₃)	TS	0-425 ppm, 0-25 gpg (0, 25, 50, 120, 250, 425 steps)	1,000 [†]	2793828
Total Hardness Test Strips (as CaCO ₃)	TS	0-425 ppm, 0-25 gpg (0, 25, 50, 120, 250, 425 steps)	250 [†]	2793844
Total Hardness Test Strips (as CaCO ₃)	TS	0-425 ppm, 0-25 gpg (0, 25, 50, 120, 250, 425 steps)	50	2745250

[†]Individually wrapped.

Test Kits

Description	Platform	Range	# Tests	Product Number
HARDNESS, TOTAL				
Total Hardness Test Kit (Model 5-B)	DCT	1-30 gpg CaCO ₃	100	145300
Total Hardness Test Kit (Model HA-71A)	DCT	1-20 mg/L + 1-20 gpg CaCO ₃	100	145201
Total Hardness Test Kit (Model 5-EP)	PP	1-30 gpg CaCO ₃ (Powder Pillow Reagents)	100	145400
Total Hardness Test Kit (Model 5-EP, MG-L)	DCT	20-400 mg/L CaCO ₃	100	145401
Total Hardness Test Kit (Model HA-DT)	DT	10-4,000 mg/L	50	2063600

HARDNESS, TOTAL & CALCIUM

Total & Calcium Hardness Test Kit (Model HA-4P)	DCT	1-20 gpg CaCO ₃	100	145700
Total & Calcium Hardness Test Kit (Model HA-4P, MG-L)	DCT	20-400 mg/L CaCO ₃	100	145701
Total & Calcium Hardness Test Kit (Model HAC-DT)	DT	10-4,000 mg/L CaCO ₃	100 Ca, +100 T	2063900

Standards

Description	Volume	Concentration	Product Number
Hardness Standard Solution (NIST)	946 mL	0.50 mg/L CaCO ₃	2058016
Hardness Standard Solution (NIST)	946 mL	2.0 mg/L CaCO ₃	2058116
Hardness Standard + Iron Solution as CaCO ₃ (NIST)	500 mL	20 gpg (340 mg/L) + 2 mg/L Fe	47949
Hardness Standard Solution as CaCO ₃ (NIST)	10 mL/ 16 Voluette Ampoules	10,000 mg/L	218710
Low Range Hardness, Mixed Parameter QC Standard; (Total Hardness, Calcium Hardness)	500 mL	Total Hardness- 100 mg/L CaCO ₃ ; Calcium Hardness- 50 mg/L CaCO ₃	2833449
High Range Hardness, Mixed Parameter QC Standard; (Total Hardness, Calcium Hardness)	500 mL	Total Hardness- 1,000 mg/L CaCO ₃ ; Calcium Hardness- 500 mg/L CaCO ₃	2833349
Magnesium, Hardness, Standard Solutions	100 mL	1,000 mg/L Mg	1479442

Accessories Required to Run Tests

Description	Product Number
Digital Titrator	1690001
Buret, Class A, 25 mL	2636540
Buret, Class A, 50 mL	2636541



Hach Digital Titrator
Prod. No. 1690001
For more information,
see page 90.

Hydrazine

Parameters

- Easy-to-use one reagent test
- Concentration ranges ideal for boiler water analysis
- Easy AccuVac® configuration for limiting oxygen exposure of sample

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
HydraVer 2 Hydrazine Reagent, 100 mL	8141	S	4-600 µg/L N ₂ H ₄	All except DR/850, DR/820, PC II	100	179032
HydraVer 2 Hydrazine Reagent, 500 mL	8141	S	4-600 µg/L N ₂ H ₄	All except DR/850, DR/820, PC II	100	179049
HydraVer 2 Hydrazine Reagent, 1 L	8141	S	4-600 µg/L N ₂ H ₄	All except DR/850, DR/820, PC II	100	179053
Hydrazine Reagent AccuVac Ampules	8141	AV	4-600 µg/L N ₂ H ₄	All except PC II	25	2524025

Test Kits

Description	Platform	Range	# Tests	Product Number
Hydrazine Test Kit (Model HY-2)	CD	0.02-1.00 mg/L N ₂ H ₄	300†	184900

†Reagents are supplied for 300 tests; enough DI water for 50 tests.

See page 433 for on-line measurement with the 9186 Analyzer.

Hydrogen Peroxide

- Simple drop count titration provides quantitative measurement

Test Kits

Description	Platform	Range	# Tests	Product Number
Hydrogen Peroxide Test Kit (Model HYP-1)	DCT	0.2-2.0 mg/L; 1-10 mg/L H ₂ O ₂	100	2291700

Hydrogen Sulfide

Also see Sulfide on page 184.

Test Kits

Description	Platform	Range	# Tests	Product Number
Hydrogen Sulfide Test Kit (Model HS-C) Effervescence of H ₂ S	CC	0-5 mg/L H ₂ 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 ²⁻ (0.01 smallest increment) 0.5-2.25 mg/L S ²⁻ (0.5 smallest increment) 2.5-11.25 mg/L S ²⁻ (2.5 smallest increment)	60 60 30	223801

Hydroquinone

See Oxygen Scavengers, page 172.

*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.



Hypochlorite / Bleach Solutions

- Measure activity of hypochlorite-based disinfectants
- Digital Titrator or Drop Count kits provide a choice of methods

- Portable system allows determinations in the field or in the lab

Parameters

Test Kits

Description	Method	Platform	Range	# Tests	Product Number
DIGITAL TITRATOR TITRATION					
Hypochlorite HR, Reagent Set	10100	DT	5-15 % Cl ₂	100	2687000
Set includes:					
(1) Acid Reagent Powder Pillows		PP		100	104299
(2) Potassium Iodide Powder Pillows		PP		50	2059996
(1) Sodium Thiosulfate Titrant Cartridge, 2.26 N		DT		40-100	2686901
(1) Starch Indicator Solution		S		100	34932
Hypochlorite Test Kit (Model CN-HRDT)		DT	5-15% = 50-150 g/L Cl ₂	100	2687100
Hypochlorite Test Kit (CN-HR)		DCT	5-15% Cl ₂	100	2687200

Hypochlorite Test Kit
(Model CN-HRDT)
Prod. No. 2687100



To assay ammonia solutions
for chloramine formation, see
Aqua Ammonia on page 130.

Iodine

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
DPD METHOD						
DPD Total Chlorine Reagent, 10-mL Powder Pillows	8031	PP	0.07-7.00 mg/L I ₂	All except DR/3000, DR/2000, DR/800, PC II	100	2105669
DPD Total Chlorine Reagent, 25-mL Powder Pillows		PP	0.07-7.00 mg/L I ₂	DR/32000, DR/2000	100	1406499
DPD Total Chlorine, AccuVac Reagent		AV	0.07-7.00 mg/L I ₂	All except DR/3000, DR/2000, DR/800, PC II	25	2503025

Test Kits

Description	Platform	Range	# Tests	Product Number
Iodine Test Kit	CC	0.5-2.5 mg/L I ₂	50	2193900

*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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An Understanding of Iron—Its Forms and Analysis Methods

Hach Company offers the following guidance for selecting the right iron method for your application.

Ferrous Iron Reagent

Determines iron in the ferrous (Fe^{2+}) form. Digestion or other sample pretreatment may cause ferrous iron to be lost.

FerroVer® Iron Reagent

For determination of total soluble iron including all ferric (Fe^{3+}) and ferrous iron (Fe^{2+}) as well as complexed iron compounds (Fe-EDTA). EPA approved for reporting total iron when an acid digestion is used. Total FerroVer – Ferrous Iron = Ferric Iron. Perfect for many applications and a wide range of concentrations. Determines iron in the presence of copper.

TPTZ Iron Reagent

More sensitive than FerroVer. Not EPA accepted.

FerroZine™ Iron Reagent

Determines soluble ferric (Fe^{3+}) and ferrous (Fe^{2+}) iron. Digestion is needed for strongly chelated iron complexes (such as those with EDTA) and Total Iron. Use where trace level iron analysis is required.

FerroMo™ Iron Reagent

Determines iron in the presence of molybdenum compounds in cooling tower waters. Eliminates the reduction of molybdenum which forms a black solution. No pretreatment necessary. Available as a two-powder pillow reagent system.

Iron Titration Method

Determines high levels of soluble ferrous (Fe^{2+}) and ferric (Fe^{3+}) iron in industrial or oil field applications, usually without any sample pretreatment. Uses three unit-dose powder reagents and a Digital Titrator titration cartridge.

With Hach iron methods you have the assurance that you have the right test, no matter what the application.

- Complete product offering for a wide range of applications
- EPA-approved FerroVer®

- FerroZine™ used for trace levels of iron
- Multiple reagent platforms



Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
COLORIMETRIC							
FerroMo Reagent Set	8365	PP	0.01-1.80 mg/L Fe	All except DR/820, PC II		100	2544800
Set includes:							
(4) FerroMo Iron Reagent 1 Powder Pillows		PP				25	2543768
(2) FerroMo Iron Reagent 2 Powder Pillows		PP				50	2543866
Ferrous Iron Powder Pillows	8146	PP	0.02-3.00 mg/L Fe^{2+}	All except PC II		100	103769
Ferrous Iron AccuVac	8146	AV	0.02-3.00 mg/L Fe^{2+}	All except PC II		25	2514025
FerroVer Iron Reagent Powder Pillow, 10 mL	8008	PP	0.02-3.00 mg/L Fe	All except DR/3000, DR/2000	Yes	100	2105769
FerroVer Iron Reagent Powder Pillow, 10 mL	8008	PP	0.02-3.00 mg/L Fe	All except DR/3000, DR/2000	Yes	1,000	2105728
FerroVer AccuVac	8008	AV	0.02-3.00 mg/L Fe	All	Yes	25	2507025
FerroVer Iron Reagent Powder Pillow, 25 mL	8008	PP	0.02-3.00 mg/L Fe	DR/3000, DR/2000		100	85499
FerroVer Iron Reagent Powder Pillow, 25 mL	8008	PP	0.02-3.00 mg/L Fe	DR/3000, DR/2000		1,000	85428
FerroZine Iron Reagent Solution, 500 mL	8147	S	0.009-1.400 mg/L Fe	All except DR/850, DR/820, PC II		1,000	230149
FerroZine Iron Reagent Solution Pillows	8147	SP	0.009-1.400 mg/L Fe	All except DR/850, DR/820, PC II		50	230166
TPTZ Iron Reagent Powder Pillow, 10 mL	8112	PP	0.012-1.800 mg/L Fe	All except DR/3000, DR/2000, DR/820		100	2608799
TPTZ Iron Reagent Powder Pillows, 25 mL	8112	PP	0.012-1.800 mg/L Fe	DR/3000, DR/2000		100	2275699
TPTZ Iron Reagent AccuVac	8112	AV	0.012-1.800 mg/L Fe	All except DR/820		25	2510025
DIGITAL TITRATOR TITRATION							
Iron Reagent Set, Digital Titrator	8214	DT	10-100 mg/L Fe			100	2449200
Set includes:							
(1) Citrate Buffer Powder Pillows for Iron		PP				100	2081599
(1) Sulfosalicylic Acid Powder Pillows		PP				100	2081669
(1) TitraVer EDTA Cartridge, 0.0716 M		DT				40-100	2081701
(1) Sodium Periodate Powder Pillows		PP				100	98499
Iron Reagent Set, Digital Titrator	8214	DT	100-1000 mg/L Fe			100	2449300
Set includes:							
(1) Citrate Buffer Powder Pillows for Iron		PP				100	2081599
(1) Sulfosalicylic Acid Powder Pillows		PP				100	2081669
(1) TitraVer EDTA Cartridge, 0.716 M		DT				40-100	2081801
(1) Sodium Periodate Powder Pillows		PP				100	98499

*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.

Test Strips

Description	Platform	Range	# Tests	Product Number
Iron Test Strips, Total Dissolved Iron	TS	0-5 ppm Fe (0, 0.15, 0.3, 0.6, 1, 2, 5 steps)	25	2745325

Test Kits

Description	Method	Platform	Range	EPA Compliant	# Tests	Product Number	
Pocket Colorimeter™ II – Iron, FerroVer®	8008	PCII, PP	0.02-5.00 mg/L Fe	Kit includes PC II	Yes	100	5870022
Pocket Colorimeter™ II – Iron, TPTZ	8112	PCII, PP	0.01-1.70 mg/L Fe	Kit includes PC II		100	5870016
Iron Test Kit, Low Range (Model IR-24)		CD	0.002-0.200; 0.01-1.00 mg/L Fe			100	255600
Iron Test Kit, Low Range (Model IR-21)		CD	0.01-0.10, 0.05-1.20 mg/L Fe			100	2299300
Iron Test Kit (Model IR-18)		CD	0.1-5 mg/L Fe			100	146400
Iron Test Kit (Model IR-18A)		CD	0.02-1.00 mg/L Fe			100	146500
Iron Test Kit (Model IR-18B)		CD	0.2-10 mg/L Fe			100	146401
Iron Test Kit (Model IR-18C)		CD	0.2-10.0 Fe ²⁺			100	2667200
Iron Test Kit		CC	1-5 mg/L Fe			50	1400800
Iron Test Kit		CC	2-10 mg/L Fe			50	2543500
Iron Test Kit (AccuVac)		CD, AV	0.2-10.0 mg/L Fe			25	2507050



Iron Test Kit – AccuVac® Model,
Prod. No. 2507050

Standards

Description	Volume	Concentration	Product Number
Iron Standard Solution as Fe (NIST)	500 mL	1 mg/L Fe	13949
Iron Standard Solution as Fe (NIST)	500 mL	10 mg/L Fe	14049
Iron Standard Solution as Fe (NIST)	10 mL/ 16 Voluette Ampules	25 mg/L Fe	1425310
Iron Standard Solution as Fe (NIST)	10 mL/ 16 Voluette Ampules	50 mg/L Fe	1425410
Iron Standard Solution as Fe (NIST)	100 mL	100 mg/L Fe	1417542
Iron Standard Solution as Fe (NIST)	100 mL	1,000 mg/L Fe	227142
Metals Drinking Water (Low Range) Mixed Parameter QC Standard; (Copper, Iron, Manganese)	500 mL	Copper-1.0 mg/L Cu; Iron-0.3 mg/L Fe; Manganese-0.1 mg/L Mn	2833749
Metals Drinking Water (High Range) Mixed Parameter QC Standard; (Copper, Iron, Manganese)	500 mL	Copper- 2.5 mg/L Cu, Iron-1.5 mg/L Fe, Manganese- 5.0 mg/L Mn	2833649

Iso-Ascorbic Acid

See Oxygen Scavengers, page 172.

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.



- Dithizone method EPA accepted for NPDES reporting of total lead (digestion required for reporting)
- Low range suitable for trace analysis

- LeadTrak® is a convenient field deployable method for drinking water only
- TNTplus™ convenience and accuracy

Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
LeadTrak® Reagent Set	8317	PP, S	5-150 µg/L Pb	All except DR/800		20	2375000
Set includes:							
(1) pPb-1 Acid Preservative, 236 mL		S				20	2368531
(1) pPb-2 Fixer Solution, 43 mL		S				20	2368655
(1) pPb-3 Eluant, 500 mL		S				20	2368749
(1) pPb-4 Neutralizer, 22 mL		S				20	2368855
(1) pPb-5 Indicator Powder Pillows		PP				20	2368964
(1) pPb-6 Decolorizer, 10 mL		S				20	2374755
(1) Dropper, LDPE 0.5 and 1 mL (20/pk) (3 included in kit)							2124720
(1) Pipette Tips (10/pk)							2275410
(1) Lead Standard Solution 10 mg/L, 25 mL		S					2374820
(20) pPb Fast Column Extractor (each)							2374900
Lead TNTplus™, PAR Method	10216	TNT+	0.1-2.0 mg/L Pb	DR 5000, DR 2800		25	TNT850
Add Metals Prep Set Prod. No. TNT890 to determine total lead metal.							
Lead Reagent Set, Dithizone Method	8033	PP, S	3-300 µg/L Pb	All except DR/800 PC II	Yes	60-100	2243100
Set includes:							
(1) Citrate Buffer Powder Pillows		PP				100	1420299
(2) Chloroform, ACS, 4 L		S				60-100	1445817
(1) DithiVer® Metals Reagent Powder Pillows		PP				25	1261699
(2) Potassium Cyanide, ACS, 125 g		Jar				50	76714
(1) Sodium Hydroxide, 5N, 1 L		S				100	245053
(2) Sodium Hydroxide, 5N, 59 mL		S				50	245026
Lead Reagent Set, Air Freight Configuration						60-100	2243101
(Chloroform is packaged in multiple bottles to meet air freight regulations.)							

ANODIC STRIPPING VOLTAMETRY METHOD (For more information, see the bottom of this page.)

Sensor Pack for Lead	2-100 micrograms per liter	HSA-1000	Yes†	10	5040100
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†Drinking water only.

For Lead and Copper Rule compliance, also see Copper reagents on page 148.

HSA-1000 Portable Analyzer

Range	Detection Limit
2-100 µg/L (Lead)	2 µg/L (Lead)
50-2000 µg/L (Copper)	50 µg/L (Copper)

Prod. No.	Description
5040000	HSA-1000 Analyzer for Lead and Copper Includes an instrument, a manual, a soft-sided carrying case, two electrode caps and test tube holders, and eight AA batteries. (Sensor Packs must be ordered separately.)



For more information, see page 49.

Test Kits

Description	Method	Platform	Range	Instrument	# Tests	Product Number
Pocket Colorimeter™ II – LeadTrak® System	8317	PCII	5 - 150 µg/L Pb	Kit includes PC II	20	5870021

Standards

Description	Volume	Concentration	Product Number
Lead Standard Solution as Pb (NIST)	25 mL	10 mg/L Pb	2374820
Lead Standard Solution as Pb (NIST)	100 mL	100 mg/L Pb	1261742
Lead Standard Solution as Pb (NIST)	100 mL	1,000 mg/L Pb	1279642

*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 (For Total Lead determination with Prod. No. TNT850—to order, visit www.hach.com or contact your Hach representative.)	
Metal Prep Set (For Total Lead determination with Prod. No. TNT850)	TNT890
Lead, PPb-1 Acid Preservative Solution, for LeadTrak® Lead Test, 236 mL	2368531
Reaction Tubes, 20 mm, 5/pk (For use with Metal Prep Set, Prod. No. TNT890)	LZP065

Magnesium, Hardness

- Determine Magnesium by difference: Magnesium is difference between Total Hardness and Calcium
- See "Hardness" pages 155-157 for reagent sets

Manganese

- High range method is EPA approved for wastewater analysis (digestion required for reporting purposes)
- Low range PAN method is highly sensitive and ideal for drinking water samples



Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
Manganese Reagent Set, LR PAN, 10 mL	8149	PP, S	0.006-0.700 mg/L Mn	All except DR/3000, DR/2000, DR/850, DR/820		50	2651700
Set includes:							
(1) Alkaline Cyanide Reagent, 50 mL		S				50	2122326
(1) Ascorbic Acid Powder Pillows		PP				50	1457799
(1) PAN Indicator Solution, 0.1%, 50 mL		S				50	2122426
Manganese Reagent Set, LR PAN, 25 mL	8149	PP, S	0.006-0.700 mg/L Mn	DR/3000, DR/2000		100	2243300
Set includes:							
(2) Alkaline Cyanide Reagent, 100 mL		S				50	2122332
(2) Ascorbic Acid Powder Pillows		PP				50	1457799
(2) PAN Indicator Solution, 0.1%, 100 mL		S				50	2122432
Manganese Reagent Set, HR 10 mL	8034	PP	0.1-20.0 mg/L Mn	All except DR/3000, DR/2000	Yes	100	2430000
Set includes:							
(1) Citrate Buffer Powder Pillows		PP				100	2107669
(1) Sodium Periodate Powder Pillows		PP				100	2107769
Manganese Reagent Set, HR 25 mL	8034	PP	0.1-20.0 mg/L Mn	DR/3000, DR/2000	Yes	100	2243200
Set includes:							
(1) Citrate Buffer Powder Pillows		PP				100	98399
(1) Sodium Periodate Powder Pillows		PP				100	98499

Test Kits

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
Pocket Colorimeter™ II – Manganese LR	8149	PCII	0.01 - 0.70 mg/L Mn	Kit includes PC II		50	5870018
Pocket Colorimeter™ II – Manganese HR	8034	PCII	0.2 - 20.0 mg/L Mn	Kit includes PC II	Yes	100	5870015
Manganese Test Kit (Model MN-PAN)		CD	0.05-0.70 mg/L Mn			50	2350800
Manganese Test Kit (Model MN-5)		CD	0.1-3.0 mg/L Mn			100	146700

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

Manganese

Parameters

Standards

Description	Volume	Concentration	Product Number
Manganese Standard Solution as Mn (NIST)	2 mL/ 20 Voluette Ampules	10 mg/L Mn	2605820
Manganese Standard Solution as Mn (NIST)	2 mL/ 20 Voluette Ampules	25 mg/L Mn	2112820
Manganese Standard Solution as Mn (NIST)	10 mL/ 16 Voluette Ampules	250 mg/L Mn	1425810
Manganese Standard Solution as Mn (NIST)	100 mL	1,000 mg/L Mn	1279142
Metals Drinking Water (Low Range) Mixed Parameter QC Standard; (Copper, Iron, Manganese)	500 mL	Copper-1.0 mg/L Cu; Iron-0.3 mg/L Fe; Manganese-0.1 mg/L Mn	2833749
Metals Drinking Water (High Range) Mixed Parameter QC Standard; (Copper, Iron, Manganese)	500 mL	Copper- 2.5 mg/L Cu, Iron- 1.5 mg/L Fe, Manganese- 5.0 mg/L Mn	2833649

MEKO (Methylethylketoxime)

See Oxygen Scavengers, page 172.

Mercury

- Hach's patented cold vapor method allows you to measure down to 0.1 µg/L Hg
- Pre-measured, pre-packaged reagents
- Pre-calibrated instruments

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Mercury Cold Vapor Reagent Set Set includes:	10065	PP, S	0.1-2.5 µg/L Hg	All except DR/3000, DR/2000, DR/800, PC II	25	2658300
(1) HgEx™ Reagent A Stannous Sulfate Solution, 20 mL Ampules		S			25	2658825
(1) HgEx™ Reagent B Sulfuric Acid Standard Solution, 500 mL		S			25	2658949
(1) HgEx™ Reagent C Sodium Hypochlorite Solution, 55 mL		S			25	2659059
(1) HgEx™ Reagent 3 Alkaline Powder Pillows		PP			25	2658448
(1) HgEx™ Reagent 4 Indicator Powder Pillows		PP			25	2658548
(1) HgEx™ Reagent 5 Hydroxide Solution, 10 mL		S			25	2658636
(1) HgEx™ Reagent 6 Complexing Powder Pillows		PP			25	2658748
(2) Mercury Scrubber						2655800

Standards

Description	Volume	Concentration	Product Number
Mercury Standard Solution	100 mL	1,000 mg/L Hg	1419542

Accessories Required to Run Tests

Description	Product Number
Cold Vapor Mercury Apparatus Set	2674400
Vacuum Pump, with fittings, 220 V	2824802
Thermometer	2635700

See Procedure for a complete list of required accessories.

Microbiology

See pages 223-242.

*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



- Choice of ranges and methods to meet testing needs, lab and portable methods available

- Two reagent platforms
- Low range ternary complex method is specifically designed for boiler and cooling water

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Molybdenum Reagent Set, 20 mL, LR Set includes: (1) Molybdenum 1 Powder Pillows (1) Molybdenum 2 Solution, 50 mL	8169	PP, S PP S	0.02-3.00 mg/L Mo	All except DR/3000, DR/2000, DR/820	100 100 100	2449400 2352449 2352512
Molybdenum Reagent Set, 50 mL, LR Set includes: (1) Molybdenum 1 Powder Pillows (1) Molybdenum 2 Solution, 100 mL	8169	PP, S PP S	0.02-3.00 mg/L Mo	DR/3000, DR/2000	100 100 100	2440200 2352769 2352532
Molybdenum Reagent Set, 10 mL, HR Set includes: (1) MolyVer® 1 Molybdenum Powder Pillows (1) MolyVer® 2 Molybdenum Powder Pillows (1) MolyVer® 3 Molybdenum Powder Pillows	8036	PP PP PP PP	0.3-40.0 mg/L Mo	All except DR/3000, DR/2000, DR/850, DR/820, PC II	100 100 100 100	2604100 2604299 2604399 2604499
Molybdenum Reagent Set, 25 mL, HR Set includes: (1) MolyVer® 1 Molybdenum Powder Pillows (1) MolyVer® 2 Molybdenum Powder Pillows (1) MolyVer® 3 Molybdenum Powder Pillows	8036	PP PP PP PP	0-35.0 mg/L Mo	DR/3000, DR/2000	100 100 100 100	2243400 1414669 1414869 1417869
MolyVer 6 AccuVac Reagent Set Set includes: (1) MolyVer® 6 AccuVac (1) CDTA Solution, 0.4 M, 15 mL	8036	AV AV S	0.2-40.0 mg/L Mo	All except DR/850, DR/820, PC II	25 25 25	2522098 2522025 2615436

Test Kits

Description	Method	Platform	Range		# Tests	Product Number
Pocket Colorimeter™ II – Molybdate	8169	PCII, PP	0.02-3.00 / 0.1-12.0 mg/L Mo	Kit includes PC II	100	5870010
Molybdenum Test Kit (Model MO-LR)		CD	0.1-3.0 mg/L Mo		100	2359300
Molybdenum Test Kit (Model MO-2)		CD	0.2-10.0/ 1-50 mg/L Mo		100	1419301
Molybdenum Reagent Set (for MO-2)		PP	0.2-10.0/ 1-50 mg/L Mo		100	2243400

Standards

Description	Volume	Concentration	Product Number
Molybdenum Standard Solution	100 mL	10 mg/L Mo ⁶⁺	1418742
Molybdenum Standard Solution	100 mL	1,000 mg/L Mo ⁶⁺	1418642

Monochloramine

- Measure monochloramine without interferences from other chlorine species

- Control your chloramination facility by pairing with the new Free Ammonia test

- 5 minute test

Reagents

Description	Method	Platform	Range	Instrument*	# Tests	Product Number
Monochloramine Powder Pillows	10171	PP	0.04-4.50 mg/L Cl ₂	All except DR/820	50	2802246
Monochloramine Reagent Set, HR	10172	TNT	0.1-10.0 mg/L Cl ₂	All except DR/800, PC II	25-50 [†]	2805145

[†]Dependent on the number of performed reagent blanks.

Continued on next page.

See page 400 for on-line measurement with the APA 6000 Analyzer.

*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.

Monochloramine

Test Kits

Description	Method	Platform	Range		# Tests	Product Number
Pocket Colorimeter™ II Test Kit – Free Ammonia & Monochloramine	10171	PC II, PP, S	0.02-0.50 mg/L NH ₃ -N 0.04-4.50 mg/L Cl ₂	Kit includes PC II	50	5870026
					Free Ammonia or 100 Monochloramine	
Nitrification Control Kit Contains tests for:		PP, S		Kit includes DR/890		2882200
Free Ammonia			0.02-0.50 mg/L NH ₃ -N		50	
Monochloramine			0.04-4.50 mg/L Cl ₂		100	
Nitrite			0-0.350 mg/L NO ₂ ⁻ -N		100	
Total Chlorine, LR			0-2.00 mg/L Cl ₂		100	
Total Chlorine, HR			0.1-10.0 mg/L Cl ₂		100	

Standards

Description	Volume	Concentration	Product Number
Monochloramine/Free Ammonia	Set of	0.04 – 4.50 mg/L Cl ₂	2507500
Spec✓ Secondary Standard Kit	4 vials	0.01 – 0.50 mg/L NH ₃ -N	

To control drinking water distribution systems, see Free Ammonia on pages 129-130, Nitrite on page 169, and Trihalomethanes on pages 189-190.

Nickel

- *Heptoxime method—EPA approved for wastewater analysis (digestion required for reporting purposes)*
- *NEW for high range—TNTplus (Prod. No. TNT856) barcoded vials for automatic method detection*

- *PAN method—Hach's lowest range Nickel test—a quick and easy method*
- *PAN method measures Nickel and Cobalt on the same sample (with a spectrophotometer)*

EPA COMPLIANT
WHERE INDICATED

Reagents

Description	Method	Platform	Range	Instrument*	EPA Compliant	# Tests	Product Number
Nickel Reagent Set , PAN Method, 10 mL Set includes:	8150	PP, S	0.006-1.000 mg/L Ni	All except DR/3000, DR/2000, DR/800		100	2651600
(2) EDTA Powder Pillows		PP				50	700599
(1) PAN Indicator 0.3%, 100 mL		S				100	2150232
(2) Phthalate- Phosphate Powder Pillows		PP				50	2615199
Nickel Reagent Set , PAN Method, 25 mL Set includes:	8150	PP, S	0.006-1.000 mg/L Ni	DR/3000, DR/2000, DR/890		100	2242600
(2) EDTA Powder Pillows		PP				50	700599
(2) PAN Indicator 0.3%, 100 mL		S				50	2150232
(4) Phthalate- Phosphate Powder Pillows		PP				25	2150166
Nickel Reagent Set , Heptoxime Method Set includes:	8037	PP, S	0.02-1.80 mg/L Ni	All except DR/800, PC II	Yes	50	2243500
(3) Chloroform, ACS, 500 mL		S					1445849
(2) Nickel 1 Powder Pillows		PP				25	212368
(2) Nickel 2 Powder Pillows		PP				25	212468
Nickel TNTplus™, Dimethylglyoxime Method Add Metals Prep Set Prod. No. TNT890 to determine total Nickel metal.	10220	TNT+	0.1-6.0 mg/L Ni	DR 5000, DR 2800		25	TNT856

*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

