

# Hach Test Kits: Single Parameter Test Kits

Single Parameter Test Kits

See Inside!

- **Virtually every parameter for your water monitoring needs: Halogens, Heavy Metals, Transition Metals, Dissolved Gases, Disinfectants, pH and Acidity, Salts and Hardness, and more!**
- **Water testing supplies from simple test strips, to color blocks and wheels, to colorimeters and automatic titrators.**



*Be Right™*

# Hach Water Quality Test Strips

Single Parameter Test Kits



## Convenient Water Testing Solutions

- Simplify testing and get results in less than 1 minute, in the field or lab
- Eliminate chemical handling and clean-up with simple test strip analysis
- Reduce guesswork by screening samples with Hach test strips



### Hach Test Strips At-A-Glance

Parameter	Range*	Steps	# Tests	Product Number
<b>5-in-1 Water Quality Test Strips</b>			Bottle of 50	<b>275250</b>
Free Chlorine	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0		
Total Chlorine	0-10 mg/L	0, 0.5, 1.0, 2.0, 4.0, 10.0		
Total Hardness (as CaCO <sub>3</sub> )	0-25 gpg	0, 1.5, 3, 7, 15, 25		
	0-425 mg/L	0, 25, 50, 120, 250, 425		
Total Alkalinity (as CaCO <sub>3</sub> )	0-240 mg/L	0, 40, 80, 120, 180, 240		
pH	6.2-8.4	6.2, 6.8, 7.2, 7.8, 8.4 pH units		
<b>Ammonia (see Nitrogen, Ammonia)</b>				
<b>Alkalinity, Total</b>	0-240 mg/L (ppm)	0, 40, 80, 120, 240	50	<b>2744850</b>
<b>Arsenic, Low Range**</b>	0-500 ppb As	0, 10, 30, 50, 70, 300, 500	100	<b>2800000</b>
<b>Arsenic, EZ, Dual Range†</b>	0-500 ppb As 0-4,000 ppb As	0, 10, 25, 50, 100, 250, 500 0, 35, 75, 175, 1500, 4000	100	<b>2822800</b>
<b>Calcium (see Hardness)</b>				
<b>Low Range Chloride (Quantab®)</b>	30-600 mg/L Cl <sup>-</sup>	10-20 mg/L increments	40	<b>2744940</b>
<b>High Range Chloride (Quantab®)</b>	300-6,000 mg/L Cl <sup>-</sup>	100-200 mg/L increments	40	<b>2751340</b>
<b>Free &amp; Total Chlorine, Low Range</b>	0-10 mg/L Cl <sub>2</sub>	0, 0.5, 1, 2, 4, 10	50	<b>2745050</b>
<b>Free &amp; Total Chlorine, Low Range</b>	0-10 mg/L Cl <sub>2</sub>	0, 0.5, 1, 2, 4, 10	250‡	<b>2793944</b>
<b>Free Chlorine, High Range</b>	0 to 600 mg/L Cl <sub>2</sub>	0, 25, 50, 100, 200, 400, 600	100	<b>2890200</b>
<b>Copper, Free &amp; Total</b>	0-3 mg/L Cu	0,0,2,0,5,1,3	25	<b>2745125</b>
<b>Hardness, Total (as CaCO<sub>3</sub>)</b>	0-425 ppm, 0-25 gpg	0, 25, 50, 120, 250, 425	1,000‡ 250‡ 50	<b>2793828</b> <b>2793844</b> <b>2745250</b>
<b>Iron, Total Dissolved</b>	0-5 ppm Fe	0, 0.15, 0.3, 0.6, 1, 2, 5	25	<b>2745325</b>
<b>Magnesium (see Hardness)</b>				
<b>Nitrogen, Ammonia</b>	0-6 mg/L NH <sub>3</sub> -N	0, 0.25, 0.5, 1, 3, 6	25	<b>2755325</b>
<b>Nitrate and Nitrite</b>	Nitrate: 0 - 50 mg/L Nitrite: 0-3 mg/L	0, 1, 2, 5, 10, 20, 50 0, 0.15, 0.3, 1, 1.5, 3	25	<b>2745425</b>
<b>pH</b>	4-9 pH 0-14 pH	4, 5, 6, 7, 8, 9 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	50 100	<b>2745650</b> <b>2601300</b>
<b>Phosphate, Ortho (as PO<sub>4</sub>)</b>	0-50 mg/L PO <sub>4</sub>	0, 5, 15, 30, 50	50	<b>2757150</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

†Cannot determine organic forms of arsenic; sulfide correction only available with purchase of additional reagents. ‡Individually wrapped.



## Acidity

Acidity is usually caused by the presence of mineral acids, salts of strong acids, or free carbon dioxide. In surface or ground waters, acidity may be from natural substances or industrial pollution. Excessive levels cause corrosion and can be detrimental to fish. Kit AC-6 reads results in mg/L, with a conversion factor to grains per gallon.

## Alkalinity

Caused by the presence of carbonates, bicarbonates, hydroxides, and other dissolved salts, alkalinity is important to drinking water, food, and beverage processors, boiler operators, and aquatic biologists.

## Aluminum

Based on the Aluminon method, the Pocket Colorimeter™ II Aluminum Test Kit comes with everything needed for low range aluminum measurement, including a direct reading colorimeter, a rugged carrying case, and enough reagent for 100 tests.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Acidity</b>								
Methyl-Orange (MO) & Phenolphthalein	AC-6	Drop count titration/ Sodium hydroxide	5-100 20-400	5 20	100	B	1	222301
(P or Total) as CaCO <sub>3</sub>	AC-DT	Digital Titrator/ Sodium hydroxide	10-4,000	0.1-1.0	100	F	3.5	2064000
<b>Alachlor in Water</b>								
	Pocket Colorimeter™ II	Semiquantitative Colorimeter Immunoassay	0.1-0.5 ppb thresholds		Up to 18	Q	8	2812900
<b>Alkalinity</b>								
Phenolphthalein	Test Strips		0-240 ppm	Steps: 0, 40, 80, 120, 180, 240 ppm	50		0.2	2744850
(P) & Total (MO) as CaCO <sub>3</sub>	AL-AP	Drop count titration/ Sulfuric acid	0.4-8 gpg 1-20 gpg	0.4 gpg 1 gpg	100	B	1	2444300
	AL-AP, MG-L	Drop count titration/ Sulfuric acid	5-100 20-400	5 20	100	B	1	2444301
	AL-TA	Drop count titration/ Sulfuric acid	23-495 gpg 385-8,500	23 gpg 385	100	B	1	2314500
	AL-DT	Digital Titrator/ Sulfuric acid	10-4,000	0.1-10	100 +100	F	3.5	2063700
<b>Aluminum</b>								
As Al <sup>3+</sup>	Pocket Colorimeter™ II	Colorimeter/ Aluminon	0.01-0.80	0.01	100	R	5	5870025
<b>Ammonia, Nitrogen, low range</b>								
As NH <sub>3</sub> -N, For freshwater	Cube	Color cube/Salicylate	0.2-0.8	0.2	25	Sealed Bag	1	2266900
	Test Strips		0-6 ppm	Steps: 0, 0.25, 0.5, 1.0, 3.0, 6.0 ppm	25			2755325
<b>Aqua Ammonia</b>								
As NH <sub>3</sub>	N-HRDT	Digital Titrator	5-35% (50-350 g/L)	.034% (.34 g/L)	100	F	5	2930400

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.



Alkalinity Test Kit— Model AL-DT  
Prod. No. 2063700



Pocket Colorimeter™ II Aluminum Test Kit  
Prod. No. 5870025



Aqua Ammonia Test Kit  
Prod. No. 2930400

# Arsenic — Carbon Dioxide

## Arsenic

Arsenic is an element that occurs naturally in the earth's crust. The weathering of rocks and erosion can deposit arsenic in water bodies. Exposure to arsenic at high levels poses serious health effects as it is a known human carcinogen. Hach's Arsenic Kit can measure down to 10 parts per billion of arsenic. Hach offers two arsenic test kits to choose from. The EZ Arsenic Test Kit is more economical and has fewer steps, but generates more hazardous waste. The regular Arsenic Test Kit offers superior accuracy with less hazardous waste. Organic Arsenic can be determined with a simple digestion with the regular kit.

## Ascorbic Acid

Model ASC-1 Ascorbic Acid Test Kit was developed in cooperation with beverage producers and uses the drop-count titration method to measure ascorbic acid (vitamin C).

## Atrazine

Atrazine is a very popular herbicide that is applied mainly to corn and sorghum crops. The USEPA has set the Maximum Contaminant Level for Atrazine in drinking water at 3 parts per billion. Hach's Atrazine in Water test kit provides semi-quantitative results and can be used to screen a large number of water samples.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Arsenic</b>								
	Test Strip <sup>†</sup>		0-500 ppb	Steps: 0, 10, 30, 50, 100 70, 300, 500 ppb	100	D	2.5	<b>2800000</b>
	Test Strip (EZ) <sup>‡</sup>		0-500 ppb	Steps: 0, 10, 25, 50, 100 250, 500 ppb	100	D	2.5	<b>2822800</b>
			0-4,000 ppb	0, 35, 75, 175, 1500, 4000 ppb				
<b>Ascorbic Acid</b>								
	ASC-1	Drop count titration/ Iodometric	10-200	10	100	D	2.5	<b>2308100</b>
<b>Atrazine</b>								
	Pocket Colorimeter™ II	Semiquantitative Colorimeter Immunoassay	0.1, 0.5, 3.0 ppb		up to 18	Q	8	<b>2763500</b>
<b>Benzotriazole</b> - see Triazole, page 307.								
<b>Bromine</b>								
As Br <sub>2</sub>	L-P Cube	Color cube/DPD	0-3.0	0.6	50	Sealed Bag	0.2	<b>2194000</b>
	Pocket Colorimeter™ II	Colorimeter/DPD	0.05-4.50 0.2-10.0	0.01 0.1	100 50	D	2.5	<b>5870001</b>
<b>Calcium</b> - see Hardness, page 296.								
<b>Carbon Dioxide</b>								
As CO <sub>2</sub>	CA-23	Drop count titration/ Sodium hydroxide Phenolphthalein	1.25-25 2-40 5-100	1.25 2 5	200	D	1	<b>143601</b>
	CA-DT	Digital Titrator/ Sodium hydroxide Phenolphthalein	10.1-1,000	0.1, 2.0	50	F	3.5	<b>2064100</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm. <sup>†</sup>Use for organic forms and sulfide removal.

<sup>‡</sup>Cannot determine organic forms of arsenic; sulfide correction available with purchase of additional reagents.



Arsenic Test Kit  
Prod. No. 2800000



Atrazine Test Kit  
Prod. No. 2763500

## Chloramination

Monochloramine is commonly used as an alternative to free chlorine for disinfecting drinking water, because it forms less disinfection by-products (DBP) than free chlorine. Hach developed the Indophenol method for Chloramine (Mono), which is very specific for monochloramine. The test involves adding one reagent to the sample, waiting a 5 minute reaction time, and measuring the concentration in a colorimeter or spectrophotometer. See below for monochloramine tests.

## Chloride

Found in nearly all natural waters, chloride affects human taste above 250 mg/L. High levels inhibit plant growth, and many industrial processes need to limit chloride concentration. Test kits use either silver or mercuric nitrate titrant. The Model CD-DT, a multi-range kit, is supplied with a demineralizer bottle for high-range sample dilution. Using the same reliable silver nitrate chemistry, Chloride QuanTab® Titrators are ideal for determining quantitative results quickly.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Chloramine, Mono and Free Ammonia</b>								
As Cl <sub>2</sub>	Pocket Colorimeter™ II	Indophenol	Monochloramine	0.01	100	D	2.5	5870026
			Free Ammonia	0.04-4.50 mg/L 0.02-0.50 mg/L	50			
<b>Chloride</b>								
As Cl <sup>-</sup>	QuanTab® **	Titration Strip	30-600 ppm	10-20 ppm increments	40		0.2	2744940
	QuanTab® **	Titration Strip	300-6,000 ppm	100-200 ppm increments	40		0.2	2751340
	8-P	Drop count titration/ Silver nitrate	5-100 20-400	5 20	100	B	1	144001
	CD-51	Drop count titration/ Silver nitrate	500-10,000 5000-100,000	500 5000	100	B	1	208601
	CD-DT	Digital Titrator/ Mercuric nitrate	10-8,000	0.1-20	100	F	4	2063500
	CDS-DT	Digital Titrator/Silver nitrate	10-10,000	10	100	F	4	2580600

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*QuanTab® is a registered trademark of Environmental Test Systems, Inc., a division of Hach Company.



Ammonia/Monochloramine Test Kit  
Prod. No. 5870026



Chloride Test Kit— Model CD-51  
Prod. No. 208601



Free and Total Chlorine— Model CN-66  
Prod. No. 223101



Chlorine— Pocket Colorimeter,™ II  
Prod. No. 5870000



Free and Total Chlorine— Model CN-70  
Prod. No. 1454200

## Definitions of Chlorine Forms

- *Total Chlorine*—Free and combined chlorine
- \* *Free Chlorine*—Chlorine present as hypochlorous acid and/or hypochlorite ion
- \* *Combined Chlorine*—Chlorine present as monochloramine, dichloramine, nitrogen trichloride, and other chloro-derivatives

### Chlorine

The most widely used disinfectant for drinking water, chlorine is also important for sanitizing swimming pools, cooling towers, other industrial equipment, and in the treatment of municipal wastewater. Its measurement and control are vital for both safety and economic reasons.

Many Hach chlorine tests have been accepted by the USEPA for reporting purposes. Test kits containing DPD colorimetric reagent are used most often for monitoring potable water, swimming pools, and waste effluent. Powder DPD dissolves and reacts with chlorine more quickly than tablet-form DPD, giving more accurate results. Powder DPD also has a considerable advantage over orthotolidine, a hazardous substance sometimes used as a chlorine test reagent. It is more stable than liquid DPD reagents, providing more reliable results.

Kits for determining higher levels of chlorine use thiosulfate to measure chlorine titrimetrically.

## About Cl<sub>2</sub>, Br<sub>2</sub>, and I<sub>2</sub> Testing

All of our total chlorine test kits can be used to measure iodine or bromine in the absence of chlorine or other oxidants. Kit method cannot differentiate between halogens (only provides total halogens).

For iodine concentration, multiply test results by 3.58; for bromine, multiply by 2.25. Kits also are available for the direct measurement of bromine and iodine.

### Chlorine Dioxide

Monitor ClO<sub>2</sub> levels on-site with the Chlorine Dioxide Test Kit, which uses the reliable and EPA-accepted DPD method to monitor ClO<sub>2</sub> concentration, while eliminating chlorine interference through the addition of glycine. With 100 tests per kit and an available range of 0-2 mg/L and a resolution of 0.1 mg/L, operators can accurately monitor around the 0.8 mg/L regulated limit. Use this kit as a cost-effective method for maintaining optimum chlorine dioxide levels in your plant.

# Chlorine — Chlorine Dioxide

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Chlorine, low range</b>								
As free & total Cl <sub>2</sub>	Pocket Colorimeter™ II <sup>1</sup>	Colorimeter/DPD	0.02-2.00 F&T 0.1-8.0 F&T	0.01 0.1	100	D	2.5	5870000
As free Cl <sub>2</sub>	CN-66F <sup>2</sup>	Color disc/DPD	0.1-3.5	0.1	100	B	1	223102
As total Cl <sub>2</sub>	CN-66T <sup>2</sup>	Color disc/DPD	0.1-3.5	0.1	100	B	1	223103
As free & total Cl <sub>2</sub>	CN-66 <sup>2</sup>	Color disc/DPD	0.1-3.5	0.1	50 F, 50 T	B	1	223101
As free & total Cl <sub>2</sub>	CN-70 <sup>2</sup>	Color disc/DPD	0.02-0.7 0.1-3.5	0.02 0.1	100	D	2	1454200
As free Cl <sub>2</sub>	CN-70F <sup>2</sup>	Color disc/DPD	0.02-0.7 0.1-3.5	0.02 0.1	200	D	2.5	1454201
As total Cl <sub>2</sub>	CN-70T <sup>2</sup>	Color disc/DPD	0.02-0.7 0.1-3.5	0.1 0.02	200	D	2.5	1454202
As free & total Cl <sub>2</sub>	TS	Test Strips	0-10	Steps: 0, 0.5, 1, 2, 4, 10	250 individually wrapped		1	2793944
As free & total Cl <sub>2</sub>	TS	Test Strips	0-10	Steps: 0, 0.5, 1, 2, 4, 10	50		0.2	2745050
As free Cl <sub>2</sub>	Cube	Color cube/DPD	0.5-2.5	0.5	50	Sealed Bag	0.5	2060300
As total Cl <sub>2</sub>	Cube	Color cube/DPD	0.5-2.5	0.5	50	Sealed Bag	0.25	2060400
As free & total Cl <sub>2</sub>	CN-80 <sup>2</sup>	Color disc/DPD	0.02-0.7 0.1-3.0 (0-10 mg/L: T only)	0.02 0.1 0.5	100	D	2.5	2129000
As free Cl <sub>2</sub>	AccuVac® Kit <sup>2</sup>	Color disc/DPD	0.1-2.5	0.1	25	G	4.08	2502050
								Pkg of 25 free chlorine reagent ampules (resupply for Prod. No. 2502050) 2502025
As total Cl <sub>2</sub>	AccuVac® Kit <sup>2</sup>	Color disc/DPD	0.1-2.5	0.1	25	G	4.08	2503050
								Pkg of 25 total chlorine reagent ampules (resupply for Prod. No. 2503050) 2503025
<b>Chlorine, mid and high range</b>								
As total Cl <sub>2</sub>	CN-65	Drop count titration/ Thiosulfate	0.2-4 1-20	0.2 1	100	D	2	225401
	CN-21P	Drop count titration/ Thiosulfate	10-200	10	100	B	1	2444400
	CN-DT	Digital Titrator/Thiosulfate	20-2,000	0.2-5.0	100	F	4	2471100
<i>Also see Hypochlorite (Bleach), page 297.</i>								
<b>Chlorine, high range, and pH</b> (Not recommended for regulatory reporting.)								
	Pocket Colorimeter™ II	Colorimeter/DPD Phenol Red	0.1-10.0 Cl <sub>2</sub> 6.0-8.5 pH	0.1 0.1	100	R	4.8	5870012
<i>Also see Hypochlorite (Bleach), page 297.</i>								
<b>Chlorine Dioxide</b>								
	CLD-2 <sup>2</sup>	Color Disc/DPD	0.1-2.0	0.1	100			2842800
	Pocket Colorimeter™ II	DPD/Glycine	0.05-5.00	0.01	100	D	3	5870051

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

<sup>1</sup>EPA-accepted for wastewater and potable water. Approved by some states for potable water under specific conditions. Check with your regulatory agency.

<sup>2</sup>EPA-accepted for potable water. Approved by some states for potable water under specific conditions. Check with your regulatory agency.



Chlorine— AccuVac® Model  
Prod. No. 2502050

# Chromium — Color

## Chromium

Used as a corrosion inhibitor in cooling systems, chromium is also used in surface finishing, leather tanning, and other industries. The most widely used form, hexavalent chromium, is very toxic and strict limits are placed on discharges.

## Color

The Hach color test reads the apparent color created by dissolved substances that can indicate industrial, agricultural, or natural pollution.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Chromium, low range</b>								
As hexavalent Cr	Cube	Color cube/ Diphenylcarbazine	0.2-1.0	0.2	50	Sealed Bag	0.5	<b>1252700</b>
	CH-8	Color disc/ Diphenylcarbazine	0.1-1.5	0.1	100	D	1	<b>183400</b>
As hexavalent Cr	Pocket Colorimeter™ II <sup>1</sup>	Colorimeter/ Diphenylcarbazine	0.01-0.70	0.01	100	D	2.5	<b>5870017</b>
	Pkg of 25 hexavalent chromium reagent ampules (optional resupply for Prod. No. 5870017)							
As hexavalent & total Cr (trivalent by difference)	CH-12 <sup>1</sup>	Color disc/ Diphenylcarbazine, Hypobromite oxidation	0.1-1.5	0.1	50 Cr <sup>6+</sup> +50 T	F	3	<b>222800</b>
<b>Chromium, high range</b>								
As hexavalent Cr	CH-14	Drop count titration/ Thiosulfate	5-100 50-1000	5 50	100	D	2	<b>222702</b>
<b>Cobalt &amp; Nickel</b>								
	Pocket Colorimeter™ II	Colorimeter/PAN	0.02-2.00 Co 0.01-1.00 Ni	0.01 0.01	100	D	3	<b>5870020</b>
<b>Color</b>								
As color units	CO-1	Color disc/ APHA Platinum – Cobalt Standard	0-100 units 0-500	5 units 25	No Limit	D	1	<b>223400</b>

\*mg/L unless otherwise noted, ppb = µg/L, ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

<sup>1</sup>EPA-accepted for wastewater. Check with your regulatory agency.



Low Range Chromium- Cube Mode  
Prod. No. 1252700



Color Test Kit- Model CO-1  
Prod. No. 223400

## Copper

Copper may exist in natural waters and effluents as a soluble salt or as suspended solids. A small amount is essential for plants and animals, and concentrations exceeding 0.1 mg/L are useful for controlling algae and plankton growth. Quantities ranging from 0.02 to 0.1 mg/L are toxic for some fish, so its use for treating fish disease requires careful monitoring. Our Long-path Cube Kit (Prod. No. 2193800), sensitive to 0.05 mg/L free copper, is ideal for this use.

## Cyanide

The main sources of cyanide, an extremely poisonous substance, are metal-cleaning and electroplating baths, gas scrubbers, gas works, coke ovens, and various chemical processes. This kit uses the popular pyridine-pyrazolone method.

## Cyanuric Acid

A stabilizing agent for chlorine, cyanuric acid is used in swimming pool treatment. The CY-3 kit uses reagents and a “dipstick” to measure cyanuric acid concentration.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Copper</b>								
	Test Strips		0-3 ppm	Steps: 0, 0.2, 0.5, 1, 3 ppm	25		0.2	2745125
As free Cu	CU-5	Color-disc/Bicinchoninate	0.1-5	0.1	100 F	B	1	1421300
As free & total Cu†	CU-6	Color-disc/Bicinchoninate, Hydrosulfite reduction	0.1-5	0.1	50 F +50 T	B	1	2194100
As free Cu	Pocket Colorimeter™ II	Colorimeter/Bicinchoninate	0.04-5.00	0.01	100	D	2.5	5870019
	Pkg of 25 free copper reagent ampules (optional resupply for Prod. No. 5870019)							2504025
<b>Cyanide</b>								
As free CN <sup>-</sup>	CYN-3	Color disc/Pyridine-Pyrazolone	0.01-0.3	0.01	100	R	2.5	201002
<b>Cyanuric Acid</b>								
	CY-3	Turbidimetry	20-100	20	100	D	2	185102

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

†Test gives total dissolved copper; true total copper requires digestion. Requires Prod. No. 2118669 – Free Copper Powder Pillows; 2118869 – Hydrosulfite Powder Pillows; 2119040 – Graduated Cylinder.



Cyanide Test Kit— Model CYN-3  
Prod. No. 201002



Cyanuric Acid Test Kit— Model CY-3  
Prod. No. 185102

# DEHA — Dissolved Oxygen

## DEHA

N,N-Diethylhydroxylamine (DEHA) replaces hydrazine and its derivatives as an oxygen scavenger in steam generation systems.

## Detergents

The presence of detergents in surface or ground waters indicates industrial or domestic pollution. In natural waters, anionic LAS and ABS detergents cause excessive foaming, produce undesirable taste and odors, promote growth of disease-producing organisms, and tend to kill aquatic life.

## Dissolved Oxygen

Low DO levels indicate serious pollution. Adequate amounts are crucial for fish life, but conversely, DO must be excluded from boiler feedwater to prevent corrosion.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>DEHA</b>								
	DH-1	Color disc/ Iron reduction	1-65 µg/L 5-375 µg/L 22.5-1,700 µg/L	1 µg/L 5 µg/L 22.5 µg/L	100	R	9	2168200
<b>Detergents</b>								
As LAS and/or ABS detergents	DE-2	Color disc/ Toluidine blue-O Chloroform	0-1		32	Q	9	143203
<b>Dissolved Oxygen</b>								
As DO	OX-2P	Drop count titration/ Modified Winkler	0.2-4 1-20	0.2	100	D	3	146900
							Sample size is 60 mL	
	OX-DT	Digital Titrator/ Modified Winkler	1-10	0.02-0.2	50	G	6.5	2063100
							Sample size is 300 mL	
	AccuVac® Kit	Color disc/HRDO	0-15	0.2	25	G	4.1	2515050
	Pocket Colorimeter™ II	Colorimeter/ AccuVac®	0.2-10.0	0.1	50	D	4.6	5870003
		Pkg of 25 reagent ampules (resupply for Prod. Nos. 2515050, 5870003)						2515025
	AccuVac® Kit	Color disc/LRDO	0-1000 µg/L	50 µg/L	25	G	4.1	2501050

**Ethylene Glycol** - see Glycol, page 295.

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.



Dissolved Oxygen— AccuVac® Model  
Prod. No. 2515050



Dissolved Oxygen Test Kit— Model OX-2P  
Prod. No. 146900

## Fluoride

An aid to preventing tooth decay, fluoride is administered to public drinking water supplies at approximately 1 mg/L. Maintenance of the proper concentration is essential in maintaining effectiveness and safety of the fluoridation procedure. Fluoride can also occur naturally—in some cases at problem concentrations.

## Formaldehyde

Formaldehyde solutions are used for maintenance of reverse osmosis systems and as disinfectants. The Model FM-1 measures higher concentrations by drop count titration.

## Glutaraldehyde

From oil fields to cooling towers, hospitals to food plants, poultry farms to dental offices, Hach's new Glutaraldehyde Kit can help monitor disinfection processes. The kit measures from 0.5 to 4,000 mg/L glutaraldehyde.

## Glycol

Ethylene glycol (anti-freeze) contamination of automotive lubricants is an indication of a cracked engine block. Glycol presence also can indicate leaks in cooling systems. Kit Model EG-1 presents a purple color if ethylene glycol and other 1,2 glycols are present in oil or water.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Fluoride</b>								
As F <sup>-</sup>	Pocket Colorimeter™ II <sup>1</sup>	Colorimeter/ SPADNS	0.1-2.0	0.1**	25-50	D	5	<b>5870005</b>
		Pkg of 25 fluoride SPADNS AccuVac® Ampules (resupply for Prod. No. 5870005)						<b>2506025</b>
As F <sup>-</sup> (Arsenic Free)	Pocket Colorimeter™ II <sup>1</sup>	Colorimeter/ SPADNS2	0.1-2.0	0.1**	25-50	D	5	<b>2513100</b>
		Pkg of 25 fluoride SPADNS2 AccuVac® Ampules (resupply for Prod. No. 2513100)						<b>2527025</b>
<b>Formaldehyde</b>								
As CH <sub>2</sub> O	FM-1	Drop count titration/ Thymolphthalein	0.05-1% 0.5-10%	0.05% 0.5%	100	D	2.5	<b>2183100</b>
<b>Glutaraldehyde</b>								
	GT-1	Color disc	0.5-4000	0.5	100	Q	8.3	<b>2587200</b>
ACCESSORIES REQUIRED Hot Plate, 4.25 x 4.25", 120 Vac								<b>2881400</b>
<b>Glycol</b>								
Ethylene glycol in oil or water	EG-1	Visual/ Appearance of color	Presence or absence of glycol		25	G	3.5	<b>2186400</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*Greater sensitivity (0.01 mg/L) can be achieved by substituting bottled SPADNS solutions for AccuVac® Ampules supplied with kit.

<sup>1</sup>USEPA-accepted for wastewater and potable water. Check with your regulatory agency.



SPADNS Fluoride AccuVac Ampules  
Prod. No. 2506025



Formaldehyde Test Kit  
Prod. No. 2183100

## Hardness

Water hardness is caused almost entirely by calcium and magnesium ions. Other di- and trivalent metals have a similar effect, but usually are not present in high enough concentration in potable waters to cause problems. Hardness increases soap consumption in laundries and causes scale in boilers.

Hardness test kits include test strips, and the inexpensive Models 5-B and 5-EP are designed for homeowners needing quick checks on the efficiency of water softeners. More sophisticated test kits allow the determination of total hardness and also calcium and magnesium (by difference).

Models 5-EP and HA-4P are available in your choice of units: mg/L or gpg.



**MOST POPULAR CHOICES!**

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Hardness, total</b>								
As CaCO <sub>3</sub>	Test Strips		0-425 ppm	Steps: 0, 25, 50, 120, 250, 425 ppm	50 250 individually wrapped		0.2	<b>2745250</b> <b>2793844</b>
	Test Strips		0-25 gpg	Steps: 0, 1.5, 3, 7, 15, 25 gpg	1000 individually wrapped			<b>2793828</b>
	5-B	Drop count titration/EDTA-bulk powder	1-30 gpg	1 gpg	100	L	1	<b>145300</b>
	5-EP	Drop count titration/EDTA-powder pillows	1-30 gpg	1 gpg	100	B	1	<b>145400</b>
	5-EP MG-L	Drop count titration/EDTA-powder pillows	20-400	20	100	B	1	<b>145401</b>
	HA-71A	Drop count titration/EDTA-powder pillows	1-20 1-20 gpg	1 1 gpg	100	D	2.5	<b>145201</b>
	HA-DT	Digital Titrator/EDTA	10-4000	0.1-10	100	F	4	<b>2063600</b>
<b>Hardness, total &amp; Calcium</b>								
As CaCO <sub>3</sub>	HA-4P	Drop count titration/EDTA	1-20 gpg	1 gpg	100	D	3	<b>145700</b>
(Magnesium by difference)	HA-4P MG-L	Drop count titration/EDTA	20-400	20	100	D	3	<b>145701</b>
	HAC-DT	Digital Titrator/EDTA	10-4000	0.1-10	100 Ca +100 T	F	4	<b>2063900</b>
	Test Strips		0-425 ppm	Steps: 0, 25, 50, 120, 250, 425 ppm	1000 individually wrapped			<b>2793828</b>
	Test Strips		0-25 gpg	0, 1.5, 3, 7, 15, 25 gpg	250 individually wrapped			<b>2793844</b>
	Test Strips		0-425 ppm	Steps: 0, 25, 50, 120, 250, 425 ppm	250 individually wrapped			<b>2793844</b>
	Test Strips		0-25 gpg	0, 1.5, 3, 7, 15, 25 gpg	250 individually wrapped			<b>2793844</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.



Hardness, Total Test Kit- Model 5-B  
Prod. No. 145300



Hardness, Total Test Kit- Model 5-EP  
Prod. No. 145400



Hardness, Total Test Kit- Model HA-71A  
Prod. No. 145201

## Hydrazine

A fuming, oily liquid, hydrazine is used as an oxygen scavenger in high-pressure boiler feedwater. Hach test kits provide information about when to replenish hydrazine.

## Hydrogen Peroxide

A disinfectant, hydrogen peroxide is particularly useful as a supplement to the ultraviolet disinfection of water supply systems. Kit Model HYP-1 contains thiosulfate titrant solution for determining peroxide by the drop count method.

## Hydrogen Sulfide

Resulting from the anaerobic decomposition of organic matter, hydrogen sulfide is present in many water supplies. Sewage and industrial wastes are other sources of sulfide pollution. Highly toxic, this compound has a characteristic rotten egg odor, which can be detected long before harmful concentrations are reached.

## Hypochlorite (Bleach)

Many drinking water plants use bleach for disinfection because it is safer to use and less expensive to ship than gaseous chlorine. However, sodium hypochlorite solutions that exceed 15-trade percent can experience a significant loss of available chlorine within a few days. Because sodium hypochlorite is less stable than chlorine gas and is greatly affected by heat, light, pH, and heavy metal cations, treatment plant operators need to regularly monitor the quality of incoming sodium hypochlorite and the decay rate of the stored product.

The Sodium Hypochlorite Titration Method quickly determines available chlorine in liquid sodium hypochlorite (bleach). Using a stabilized form of prepared sodium thiosulfate titrant, you can complete the test in less than five minutes. Use the Digital Titrator method to monitor samples in the 5 to 15 percent (as Cl<sub>2</sub>) range with better than ±5 percent accuracy or a drop-count test kit when maximum accuracy is not required.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number	
<b>Hydrazine</b>									
As N <sub>2</sub> H <sub>4</sub>	HY-2	Color disc/ p-Dimethylamino- benzaldehyde	0.02-1	0.02	300**	D	2.5	184900	
ACCESSORY									
DI Water	177-mL (6 oz) capacity demineralizer bottle, refillable							1429900	
<b>Hydrogen Peroxide</b>									
As H <sub>2</sub> O <sub>2</sub>	HYP-1	Drop count titration/ Thiosulfate	0.2-2 1-10	0.2 1	100	D	2.5	2291700	
<b>Hydrogen Sulfide</b>									
As H <sub>2</sub> S	HS-C	Color chart/ Effervescence of H <sub>2</sub> S	0-5	0.0, 0.1, 0.3, 0.5, 0.7, 1.0, 2.0, 5.0	18	M	0.5	2537800	
As S <sup>2-</sup>	HS-WR	Color disc/ Methylene blue	0.01-0.55 0.05-2.25 0.25-11.25	0.01 0.05 0.25	60 60 30	D	3.5	223801†	
ACCESSORIES									
Treated reagent papers are supplied for 100 tests; effervescence tablets (AlkaSeltzer®) are supplied for 18 tests. Purchase additional tablets locally or from Hach (see below).									
Treated Papers					100			2537733	
Foil-wrapped package of 36 AlkaSeltzer® tablets (for 18 tests)					18			1453300	
<b>Hypochlorite, high range</b>									
(Bleach) As Cl <sub>2</sub>	CN-HRDT	Digital Titrator/Thiosulfate	5-15%	0.05%	100	G	3	2687100	
	CN-HR	Drop count titration/ Thiosulfate	5-15%	0.5%	100	D	5	2687200	

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*Reagents are supplied for 300 tests; enough DI water for 50 tests. Obtain additional DI water locally or use refillable demineralizer bottle.

†Includes a separate Pretreatment Kit for turbid or colored samples.



Hydrogen Sulfide Test Kit— Model HS-C  
Prod. No. 2537800



Hydrogen Sulfide Test Kit— Model HS-WR  
Prod. No. 223801

# Iodine — Iron

## Iodine

Often added to process water in poultry plants, iodine is a widely used industrial disinfectant. The long-path cube method allows quick measurement of low iodine concentrations. In the absence of chlorine or other oxidants, chlorine test kits (see pages 291) can also be used to determine iodine.

## Iron

In domestic water supplies, iron can do great economic damage by staining laundry and porcelain fixtures and by producing an off taste in beverages. In water supplies used for commercial beverage production, low levels of iron are critical. Hach test kits with TPTZ powder reagent and Hach test strips provide the simplest method for determining low to mid-range iron concentrations.



**MOST POPULAR CHOICES!**

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number	
<b>Iodine</b>									
As I	LP Cube	Long-path cube/DPD	0-2.5	0.5	50	Sealed Bag	0.5	<b>2193900</b>	
<b>Iron, low range</b>									
As Fe**	IR-24	Color disc/FerroZine®	0-0.2 0-1.0	0.002 0.01	100	D	2	<b>255600</b>	
	IR-21	Color disc/TPTZ	0-0.1 0-1.2	0.01 0.05	100	D	2	<b>2299300</b>	
	Pocket Colorimeter™ II	Colorimeter/TPTZ	0.01-1.70	0.01	50-100	D	2.5	<b>5870016</b>	
	Pkg of 25 iron reagent ampules (optional resupply for Prod. No. 5870016)								<b>2510025</b>
<b>Iron, medium range</b>									
As Fe**	IR-18	Color disc/ 1,10 Phenanthroline	0.1-5	0.1	100	B	1	<b>146400</b>	
	IR-18A	Color disc/ 1,10 Phenanthroline	0.02-1	0.02	100	B	2	<b>146500</b>	
	IR-18B	Color disc/ 1,10 Phenanthroline	0.2-10	0.2	100	B	1	<b>146401</b>	
	Test Strips		0-5 ppm	Steps: 0, 0.15, 0.3, 0.6, 1, 2, 5 ppm	25		0.2	<b>2745325</b>	
	Cube	Cube/1,10 Phenanthroline	1-5	1	50	Sealed Bag	0.25	<b>1400800</b>	
	Cube	Cube/1,10 Phenanthroline	2-10	2	50	Sealed Bag	0.25	<b>2543500</b>	
	Pocket Colorimeter™ II FerroVer® (total Fe)	Colorimeter/ Colorimeter™ II FerroVer® (total Fe)	0.02-5.00	0.01	100	D	3	<b>5870022</b>	
	Pkg of 25 iron reagent ampules (optional resupply for Prod. No. 5870022)								<b>2507025</b>
As Fe**	AccuVac® Kit†	Color disc/ 1,10 Phenanthroline	0.2-10	0.2	25	G	4	<b>2507050</b>	
As Fe <sup>2+</sup> (ferrous iron)	IR-18C	Color disc/ 1,10 Phenanthroline	0.2-10	0.2	100	B	1	<b>2667200</b>	

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*Dissolved Fe<sup>2+</sup> and Fe<sup>3+</sup> detected, digestion required for Total Iron.

†EPA-accepted for wastewater and potable water. Approved by some states for potable water under specific conditions. Check with your regulatory agency.



Iron Test Kit— Model IR-21  
Prod. No. 2299300



Iron Color Cube Kit  
Prod. No. 1400800



Iron Test Kit— AccuVac® Model  
Prod. No. 2507050

# Lead — Monochloramine

## Lead

A portable alternative to atomic absorption and/or organic extraction, Hach's LeadTrak® test brings the accuracy and convenience of laboratory testing to the field. Sensitive to less than 5 µg/L, the LeadTrak® test requires no fume hood and produces results in 15 minutes.

## Manganese

Manganese causes a bitter taste in water, and at concentrations above 0.1 mg/L, it causes objectionable stains on laundry and plumbing fixtures. Manganese control is also important in the beverage, paper, and textile industries, and in dye production and food processing.

## Molybdate

Molybdates are gaining over chromates for use as nontoxic corrosion inhibitors. They are used increasingly in cooling towers.



**MOST POPULAR CHOICES!**

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Lead (LeadTrak®)</b>								
	Pocket Colorimeter™ II	Colorimeter/ Fast column extraction	5-150 µg/L	1 µg/L	20	Q	14	5870021
		Lead reagent set for 20 tests (resupply for Prod. No. 5870021)						2375000
<b>Lignin</b> - see Tannin, page 306.								
<b>Manganese</b>								
As Mn	MN-5	Color disc/Cold periodate	0.1-3	0.1	100	D	2	146700
	MN-PAN	Color disc/PAN	0.05-0.7	0.05	50	D	3	2350800
	Pocket Colorimeter™ II <sup>1</sup>	Colorimeter/ Cold periodate	0.2-20.0	0.1	100	D	3	5870015
	Pocket Colorimeter™ II	Colorimeter/PAN	0.01-0.70	0.01	100	D	15	5870018
<b>Magnesium</b> - see Hardness, page 296.								
<b>Molybdate</b>								
As Molybdenum	MO-2	Color disc/ Mercaptoacetic acid	0.2-10 1-50	0.2 1	100	F	3	1419301
	MO-LR	Color disc/ Ternary complex	0.25-3	0.25	100	D	2	2359300
	Pocket Colorimeter™ II	Colorimeter/ Ternary complex	0.02-3.00 0.1-12.0	0.01 0.1	100	D	4.1	5870010
		MolyVer® 6 AccuVac® Ampule Reagent Set for 25 tests (optional resupply for Prod. No. 5870010)						2522098
<b>Monochloramine</b> - see Chloramine, Mono and Free Ammonia, page 289.								

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

<sup>1</sup>EPA-accepted for wastewater. Check with your regulatory agency.



Manganese Test Kit— Model MN-5  
Prod. No. 146700



Molybdate Test Kit  
Prod. No. 2359300

# Nickel — Nitrogen, Ammonia

## Nickel

Although seldom found in natural waters, nickel is often present in industrial wastewaters as a corrosion product of stainless steel, nickel alloys, and from metal plating baths. The Pocket Colorimeter™ II performs both nickel and cobalt tests.

## Nitrogen

Normally found in water or soil as ammonia (NH<sub>3</sub>), nitrate (NO<sub>3</sub><sup>-</sup>), and nitrite (NO<sub>2</sub><sup>-</sup>), nitrogen is an indispensable part of the life cycle. However, even though plants, animals, and most microorganisms require some form of combined nitrogen for growth and reproduction, concentrations above certain levels can present problems. Wastewater plants must monitor nitrogen forms and concentrations to assure efficient operation and effective pollution removal.

## Nitrogen, Ammonia

A product of microbiological decay of plant and animal protein, ammonia (NH<sub>3</sub>) is used in commercial fertilizers. Its presence in raw surface waters usually indicates domestic or agricultural pollution. Above certain levels, it is toxic to fish. Several economical kits are available for testing ammonia in fresh and saltwater.



**MOST POPULAR CHOICES!**

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Nickel &amp; Cobalt</b>								
	Pocket Colorimeter™ II	Colorimeter/PAN	001-1.00 Ni 0.02-2.00 Co	0.01 0.01	100	D	3	5870020
<b>Nitrate</b> - see Nitrogen, Nitrate page 301.								
<b>Nitrite</b> - see Nitrogen, Nitrite page 301.								
<b>Nitrogen, Ammonia, low range</b>								
As NH <sub>3</sub> -N, For freshwater	Cube	Color cube/Salicylate	0.2-0.8	0.2	25	Sealed Bag	1	2266900
	Test Strips		0-6 ppm	Steps: 0, 0.25, 0.5, 1.0, 3.0, 6.0 ppm	25			2755325
<b>Nitrogen, Ammonia, mid range</b>								
For freshwater	NI-8	Color disc/Nessler reagent	0.1-3	0.1	100	B	1	224100
For freshwater or seawater**	NI-SA	Color disc/Salicylate	0.1-2.5	0.1	100	D	1	2428700
As NH <sub>3</sub> -N, For freshwater	Cube	Color cube/ Nessler reagent	0.5-2.5	0.5	25	Sealed Bag	0.25	1252400
For freshwater or seawater**	Pocket Colorimeter™ II	Colorimeter/Salicylate	0.01-0.80	0.1	100	R	4.1	5870040

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*For additional seawater test kits, see pages 268-269 (Aquaculture).



Nitrogen, Ammonia Test Kit  
Prod. No. 2266900



Nitrogen, Ammonia Test Kit— Model NI-8  
Prod. No. 224100

# Nitrogen, Nitrate — Nitrogen Pretreatment

## Nitrate

Excessive amounts of nitrate or nitrite in water can cause infant death, adult illness, and produce spontaneous abortion in cows. Some wells contain high levels of nitrate. Due to a high degree of technique sensitivity, a standard is highly recommended, see page 204.

## Nitrate/Nitrite

When water contains high nitrate levels, nitrites often are present in low concentration.

## Nitrite

An intermediate stage in the biological decomposition of nitrogen-containing organic compounds, fairly low levels of nitrite can be harmful to humans and aquatic life. On the other hand, high levels of nitrite are useful as corrosion inhibitors in cooling towers.

## Nitrogen Pretreatment Kit

Used with Models NI-11, NI-14, and NI-12 to remove high-level nitrite interference, color, and turbidity from samples.



**MOST POPULAR CHOICES!**

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Nitrogen, Nitrate</b>								
As NO <sub>3</sub> <sup>-</sup> -N	NI-14**	Color disc/ Cadmium reduction	0.02-1 0.2-10	0.02 0.2	50	D	1	<b>1416100</b>
	Cube	Color cube/ Cadmium reduction	0-50	10	50	Sealed Bag		<b>1403700</b>
	NI-11**	Color disc/ Cadmium reduction	1-50	1.0	100	D	1	<b>146803</b>
	AccuVac® Kit	Color disc/ Cadmium reduction	1-50	1	25	G	4.1	<b>2511050</b>
	Pocket Colorimeter™ II	Colorimeter/ Cadmium reduction	0.4-30.0	0.1	100	D	2.5	<b>5870002</b>
							Pkg of 25 nitrate-N reagent ampules (resupply for Prod. No. 2511050, optional for Prod. No. 5870002)	<b>2511025</b>
<b>Nitrogen, Nitrate/Nitrite</b>								
	Test Strips		0-50 ppm NO <sub>3</sub> <sup>-</sup> -N 0-3 ppm NO <sub>2</sub> <sup>-</sup> -N	Steps: 0, 1, 2, 5, 10, 20, 50 ppm Steps: 0, 0.15, 0.3, 1, 1.5, 3 ppm	25		0.2	<b>2745425</b>
NO <sub>3</sub> <sup>-</sup> -N/NO <sub>2</sub> <sup>-</sup> -N	NI-12**	Color disc/Cadmium reduction, Diazotization	1-50 NO <sub>3</sub> <sup>-</sup> -N 0.01-0.5 NO <sub>2</sub> <sup>-</sup> -N	1 0.01	100 NO <sub>3</sub> <sup>-</sup> -N +100 NO <sub>2</sub> <sup>-</sup> -N	D	2	<b>1408100</b>
<b>Nitrogen, Nitrite, low range</b>								
As NO <sub>2</sub> <sup>-</sup> -N	Cube	Color cube/Diazotization	0-1.0	0.2	50	Sealed Bag	0.25	<b>2059600</b>
	NI-15	Color disc/Diazotization	0.01-0.5	0.01	100	D	1	<b>2182000</b>
<b>Nitrogen, Nitrite, high range</b>								
As NO <sub>2</sub> <sup>-</sup>	NI-6	Color disc/ Ferrous sulfate	2-100 40-2,000	2 40	100 <sup>†</sup>	D	2	<b>224000</b>
	ACCESSORY						177 mL (6 oz) capacity demineralizer bottle	<b>1429900</b>
<b>Nitrogen Pretreatment</b>								
For use with NI-11, NI-14 and NI-12 Kits	PT-1	Bromine/Phenol			100	K	0.5	<b>226800</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*Nitrogen pretreatment kit is required. <sup>†</sup>Reagents supplied for 100 tests, but additional DI water is needed for more than 12 samples in the 0-100 mg/L range. Obtain DI water locally or use the refillable demineralizer bottle (Prod. No. 1429900) sold above.



Nitrate and Nitrite Test Strips  
Prod. No. 2745425



High Range Nitrate- AccuVac® Model  
Prod. No. 2511050



# Oxygen, Dissolved — PCB in Soil

## Ozone

Controlling disinfectant levels in water, wastewater, and industrial water applications is fast and easy with Hach's ozone test kits. For economical operation, choose the OZ-2 color disc kit. If your application calls for an ozone-specific procedure, select one of our convenient colorimeter test kits. The Pocket Colorimeter™ II instrument and the AccuVac® Test Kit are based on indigo trisulfonate chemistry and will mask interference from chlorine and other oxidizing agents. This indigo method makes ozone analysis easier.

## PCB in Soil

For fast environmental monitoring of polychlorinated biphenyls (PCB) in soil, Hach's new PCB in Soil Test Kit allows on-site detection in less than 30 minutes. The kit enables analysts to test contaminated soils on-site and evaluate the progress of remediation. Soil extraction kit included.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Oxygen, Dissolved</b> - see Dissolved Oxygen, page 294.								
<b>Oxygen Scavenger</b>								
As DEHA, hydroquinone, erythorbic acid, and methylethylketoxime	OS-1	Color disc/Iron reduction	Variable†		50	R	4.5	2349500
<b>Ozone</b>								
As O <sub>3</sub>	OZ-2	Color disc/DPD	0.1-2.30	0.1	100	B	1	2064400
	AccuVac® Kit	Color disc/Indigo trisulfonate	0.01-0.30	0.01	25	G	4.1	2516050
	AccuVac® Kit	Color disc/Indigo trisulfonate	0.02-0.80	0.02	25	G	4.1	2517050
	AccuVac® Kit	Color disc/Indigo trisulfonate	0.05-1.50	0.05	25	G	4.1	2518050
	Pocket Colorimeter™	Colorimeter/Indigo trisulfonate	0.01-0.25 0.01-0.75	0.01	25	D	4	5870004
<b>Peroxide</b> - see Hydrogen Peroxide, page 297.								
<b>PCB in Soil</b>								
	Pocket Colorimeter™ II	Colorimeter/Immunoassay	1, 5, 10, 50 ppm thresholds		up to 18	Q (2 cases)		2773400

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.  
†Ranges & increments are similar to DEHA Test Kit (page 271), but are dependent on the oxygen scavenger used.



Oxygen Scavenger Test Kit— Model OS-1  
Prod. No. 2349500



Ozone— AccuVac® Model  
Prod. No. 2518050

## pH

Most natural waters range from pH 4 to pH 9, but commonly are above pH 7 because of carbonates and bicarbonates (alkalinity). The pH of water used in industry, boiler feed water, and swimming pools usually is kept within a narrow range. Choose a kit to monitor the appropriate range—they are all easy to use.

## Phosphate

Phosphorus occurs in natural waters as one of the forms of phosphates: ortho- or reactive phosphate, meta- or poly- (condensed) phosphate (requires hot acid digestion), and organic phosphate (requires vigorous digestion). Necessary filtration equipment for clarifying turbid samples is included with kits marked "T" in the "No. of Tests" column. (Continued on next page.)

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>pH, narrow range</b>								
	Cube	Color cube/ Bromthymol blue	5.5-7.5 pH	0.5 pH	50	Sealed Bag	0.25	<b>2067100</b>
	Cube	Color cube/Phenol red	6.5-8.5 pH	0.5 pH	50	Sealed Bag	0.25	<b>1251900</b>
<b>pH, mid range</b>								
	Test Strips		4-9 pH	Steps: 4, 5, 6, 7, 8, 9 pH	50		0.2	<b>2745650</b>
	17G	Color disc/ Mid range indicator	6.5-8.5 pH	0.1 pH	200	B	1	<b>2667400</b>
	17F	Color disc/ Bromthymol blue	5.5-8.5 pH	0.1 pH	200	B	1	<b>147006</b>
	17H	Color disc/Phenol red	6.5-8.5 pH	0.1 pH	200	B	1	<b>147008</b>
	17J	Color disc/Thymol blue	7.8-10.0 pH	0.1 pH	200	B	1	<b>147009</b>
<b>pH, mid range &amp; high range Chlorine</b>								
	Pocket Colorimeter™ II	Colorimeter/ Phenol red, DPD	6.0-8.5 pH 0.1-10.0 Cl <sub>2</sub>	0.1 0.1	100	D	4.8	<b>5870012</b>
<b>pH, wide range</b>								
	17N	Color disc/ Wide range indicator	4-10 pH	0.5 pH	300	B	1	<b>147011</b>
<b>Phenols</b>								
	PL-1	Color disc/ 4-aminoantipyrine	0.02-1 0.1-5	0.02 0.1	100	D	1	<b>2483600</b>
<b>Phosphate, ortho-/meta-</b>								
As PO <sub>4</sub> <sup>3-</sup>	PO-23	Color disc/Ascorbic acid for clear samples	0.1-5 1-50	0.1 1	100 C**‡	F	4	<b>224902</b>
	PO-23A	Color disc/Ascorbic acid for clear or turbid samples	0.1-5 1-50	0.1 1	100 C/T**‡	F	3.5	<b>224903</b>
<b>Phosphate, total ortho-/meta-</b>								
As PO <sub>4</sub> <sup>3-</sup>	PO-24	Color disc/Ascorbic acid	0.02-1 0.1-5 1-50	0.02 0.1 1	50 C/T**‡	F	4.5	<b>225001</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*C for Clear samples. \*\*T for Turbid samples.

‡Kit includes nine Heatab fuel tablets (required for digestion). For each metaphosphate determination, one Heatab is required. For each organic total phosphate determination, three Heatabs are required. See page 311 for additional Heatabs.

pH Wide-Range Test Kit— Model 17N  
Prod. No. 147011



# Phosphonate — Phosphorus, Orthophosphate

## Phosphate (continued from previous page)

Phosphates enter water supplies from soil runoff, cleaning operations, water treatment, boiler blowdown, and sewage. Although necessary for biological growth, too much phosphate causes excessive growth of aquatic plants and eutrophication. Industrial control includes maintenance of minimum levels in boilers and in cleaning operations. Necessary filtration equipment for clarifying turbid samples is included with kits marked "T" in the "No. of Tests" column.

## Phosphonate

The Phosphonate kits use a UV lamp and persulfate to convert the phosphonate value into phosphate for measurement.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Phosphonate</b>								
As PO <sub>4</sub> <sup>3-</sup>	PN-10	Color disc/UV photolysis (115 Vac, 60 Hz)	1-5 1-250	1	100	F	10.5	2113300
	PN-10	Color disc/UV photolysis (230 Vac, 50 Hz)	1-5 1-250	1	100	F	11.5	2113302
	PN-10	Color disc (As above but without UV lamp and power supply.)	1-5; 1-250	1	100	F	5	2113301
	Pocket Colorimeter™ II	Colorimeter/UV photolysis 115V lamp	0.1-25.0 1-125	0.1 1	100	Q	14.3	5870007
	Pocket Colorimeter™ II	Colorimeter/UV photolysis 230V lamp	0.1-25.0 1-125	0.1 1	100	Q	14.3	5870008
<b>Phosphorus, Orthophosphate (reactive)</b>								
As PO <sub>4</sub> <sup>3-</sup>	Test Strips		0-50 ppm	Steps: 0, 5, 15, 30, 50	50		0.2	2757150
	Cube	Color cube/Ascorbic acid	1-5	1	50 C**	E	0.25	1252200
	PO-19	Color disc/Ascorbic acid	0.02-1 0.1-5 1-50	0.02 0.1 1	100 C**	R	2.5	224800
	PO-19A	Color disc/Ascorbic acid (Includes filtration for turbid samples.)	0.1-5 1-50	0.1 1	100 C/T**	R	3	224801
	AccuVac® Kit	Color disc/Ascorbic acid	0.1-5	0.1	25 C**	G	4.1	2508050
	Pocket Colorimeter™ II	Colorimeter/Ascorbic acid	0.02-3.00	0.01	100 C**	D	2.8	5870006
	Pkg of 25 orthophosphate reagent ampules (optional resupply for Prod. No. 2508050)							2508025
	PO-14	Color disc/ Stannous	0.1-4.5 1-45	0.1 1	100 C**	D	2.5	147500

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

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.  
\*\*C for Clear samples. \*\*T for Turbid samples.



Phosphate Test Kit— Model PO-19  
Prod. No. 224800



Orthophosphate Test Kit— AccuVac® Model  
Prod. No. 2508050

## Silica

Dissolved silica is found in almost all natural waters. Its presence is undesirable for many industrial uses because of scale formation. High-pressure boiler turbines are especially susceptible. Test kits contain a reagent to remove phosphate interference, as well as reagents for measuring silica.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Salinity</b>								
	SA-DT	Digital Titrator/ mercuric nitrate	2-100 ppt	2 ppt	100	D	1	2421800
<b>Silica, low range</b>								
As SiO <sub>2</sub>	SI-7	Color disc/ Heteropoly blue, amino acid	0.02-1.00	0.02	100	D	2.5	2255000
<b>Silica, high range</b>								
As SiO <sub>2</sub>	SI-5	Color disc/ Heteropoly blue amino acid	1-40 20-800	1 20	100	D	2.5	1455400
	Pocket Colorimeter™ II	Colorimeter/ Silicomolybdate	1-100	1	100	D	3	5870034

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm; ppt = part per thousand.



Salinity Test Kit- Model SA-DT  
Prod. No. 2421800



High Range Silica Test Kit - Model SI-5  
Prod. No. 1455400

# Silver — Tannin / Lignin

## Silver

To prevent pollution and economic loss, surface finishers, photographic film manufacturers and processors, and others need to keep close tabs on silver discharges. Kit directions also include the digestion and dilution procedures needed for testing silver strike bath samples.

## Sulfate

Widely found in natural waters, sulfate may be at high levels in mine drainage. High concentrations of magnesium or sodium sulfate in water act as cathartics.

## Sulfite

Because sulfite oxidizes readily to sulfate, it normally is not present in natural waters. It is used in paper mills for bleaching pulp and in boiler water as an oxygen scavenger.

## Tannin/Lignin

A product of decomposed plant material, tannin occurs in natural waters and is used for boiler and cooling tower water treatment, dyeing, ink manufacture, tanning, and paper sizing. Lignin, also a plant product, is found in paper pulp manufacturing waste. Tannin and lignin are analyzed together and reported as mg/L tannic acid.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>Silver</b>								
As Ag	RapidSilver™	Visual Comparison	5-50 ppb	5 µg/L	100	F	4	2674500
<b>Sulfate</b>								
As SO <sub>4</sub> <sup>2-</sup>	SF-1	Extinction/Turbidimetric	50-200	50	100	D	1.5	225100
	Pocket Colorimeter™ II	Colorimeter/Turbidimetric	1-80	1	100	D	3	5870029
	AccuVac® Ampules (alternate reagent for Prod. No. 5870029)							2509025
<b>Sulfide</b> - see Hydrogen Sulfide, page 297.								
<b>Sulfite</b>								
As SO <sub>3</sub> <sup>2-</sup>	SU-5	Drop count, titration Iodometric	1-20 10-200	1 10	100	D	2	148002
	SU-DT	Digital Titrator/Iodometric	10-800	0.4-4.0**	100	F	4	2063300
<b>Tannin/Lignin</b>								
As tannic acid	TA-3	Color disc/Tyrosine	0.5-15 5-150	0.5 5	100	R	3	193701

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm. \*\*Digit Multipliers when using Digital Titrators.



Sulfate Test Kit— Model SF-1  
Prod. No. 225100



Sulfite Test Kit— Model SU-DT with Digital Titrator  
Prod. No. 2063300

## TPH in Soil/Water

For personnel responsible for underground storage tanks, off-site waste impounds, petrochemical plants, and waste remediation sites, Hach TPH kits provide fast, accurate results at low levels. The soil kit measures total petroleum hydrocarbons at thresholds above or below 20, 50, 100, and 200 parts per million (ppm). The water kit has thresholds of 2, 5, 10, and 20 ppm. Soil extraction kit included.

## Triazole

Benzotriazole and tolyltriazole are used in cooling systems as corrosion inhibitors for copper and copper alloys. Hach's innovative triazole method employs an ultraviolet light-catalyzed reaction that produces a yellow color.

## Water-in-Oil

Measurement of low levels of water in oil provides critical data in oil quality determinations, oil line operation, and diesel engine maintenance. The Model WO-1 has proven particularly useful on board ships. Reagent is packaged in unit-dose vials, and parts in contact with the sample are disposable, so clean-up is eliminated.

## Zinc

Although essential in our diet, high zinc concentrations in water can irritate the human digestive system. At levels above 5 mg/L, it causes a bitter taste and opalescence in alkaline drinking water. Industrial effluents may contribute large amounts of zinc.

Test	Model	Method/Chemistry	Range (mg/L)*	Smallest Increment (mg/L)*	Approx. No. of Tests	Case Style (See page 310)	Ship. Wt. (lb)	Product Number
<b>TPH in Soil**</b>								
	Pocket Colorimeter™ II**	Colorimeter/Immunoassay	20, 50, 100, 200 ppm thresholds		up to 18	Q (2 cases)	26	<b>2775000</b>
<b>TPH in Water</b>								
	Pocket Colorimeter™ II	Colorimeter/Immunoassay	2, 5, 10, 20 ppm thresholds		up to 18	Q	25	<b>2774200</b>
<b>Triazole</b>								
As benzotriazole	TZ-1	Color disc/UV photolysis or tolyltriazole (115 Vac, 60 Hz)	0.5-15	0.5	50	F	12	<b>2167500</b>
	TZ-1	Color disc/UV photolysis (230 Vac, 50 Hz)	0.5-15	0.5	50	F	12	<b>2167502</b>
	TZ-1	Color disc/UV photolysis As above but without UV lamp and power supply	0.5-15	0.5	50	G	5	<b>2167570</b>
<b>Water-in-Oil</b>								
As %	WO-1	Volumetric displacement/Calcium hydride	0-1% 0-10%	0.05% 0.20%	25	no case	3.5	<b>2237300</b>
<b>Zinc</b>								
As Zn	Pocket Colorimeter™ II	Colorimeter/Zincon	0.02-3.00	0.01	100	R	3.5	<b>5870009†</b>

\*mg/L unless otherwise noted; ppb = µg/L; ppm = mg/L.; gpg = grains per gallon; 1 gpg = 17.1 mg/L or 17.1 ppm.

\*\*Soil extraction kit included.

†USEPA-approved for wastewater analysis.



Triazole Test Kit—Model TZ-1  
Prod. No. 2167500

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