

Chlorine

Methods

Because of its strong oxidizing properties, chlorine is an excellent biocide used to treat potable waters, municipal wastes, and swimming pools. When used to treat potable water, chlorine helps alleviate the adverse effects of iron, manganese, ammonia, and sulfide. The Maximum Residual Disinfectant Level for chlorine is 4 mg/L in drinking water.

The DPD Method

References: USEPA Methods for Chemical Analysis of Water and Wastes, Method 330.5 (1983). APHA Standard Methods, 23rd ed., Method 4500-Cl G - 2000.



In the USEPA-accepted DPD methodology, free chlorine reacts with DPD to form a pink product. When ammonia or amines are present, some of the chlorine may

exist as combined chlorine. Combined chlorine will not interfere with the free chlorine results, provided the readings are taken at one minute. To determine total chlorine (the sum of free and combined), use the A-2500 Activator Solution (potassium iodide) supplied in the kit. Results are expressed as ppm (mg/L) Cl₂.

The DPD method is also applicable to the direct determination of hypochlorite concentrations in various cleaning preparations and disinfectants prior to their dilution. DPD reacts with hypochlorite ions to form a pink color. Results are expressed as percent (%) NaOCl.

The DDPD™ Method

Reference: Developed by CHEMetrics.

The DDPD™ method is derived from the DPD method. Test kits that employ this chemistry are well suited for use where biocides and chromate corrosion inhibitors are used simultaneously. DDPD reacts with free chlorine to form a purple product. When ammonia or amines are present in the sample, some of the chlorine may exist as *combined chlorine*. To determine total chlorine (the sum of free and combined), use the A-2500 Activator Solution (potassium iodide) that is supplied in the kit. Results are expressed as ppm (mg/L) Cl₂.

*Acceptance for drinking and wastewater using CHEMetrics instrumental DPD Vacu-vials products. Please contact us for a copy of the USEPA acceptance letter.

WARNING! The product employing the DDPD method can expose you to chemicals including formaldehyde, which is known to the State of California to cause cancer, and methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Visual Kits

Range: 0-0.20 ppm MDL: 0.04 ppm / Method: DDPD	
Chlorine (free & total) ULR CHEMets Kit	Cat# K-2511
ULR CHEMets Refill, 30 ampoules	R-2511
Activator Solution Pack, six 10 mL bottles	A-2500 ¹
Comparator, Shelf life 12 months 0, 0.04, 0.06, 0.08, 0.10, 0.12, 0.16, 0.20 ppm	C-2511
Kit comes in a cardboard box and contains everything needed to perform 30 tests: Refill, Comparator, Activator Solution, 25 mL sample cup and instructions.	

Range: 0-1 & 0-5 ppm MDL: 0.05 ppm / Method: DPD	
Chlorine (free & total) CHEMets Kit	Cat# K-2504
CHEMets Refill, 30 ampoules	R-2500
Activator Solution Pack, six 10 mL bottles	A-2500 ¹
Low Range Comparator 0, 0.1, 0.2, 0.3, 0.4, 0.6, 0.8, 1.0 ppm	C-2504
High Range Comparator 0, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0 ppm	C-2506
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Low and High Range Comparators, Activator Solution, 25 mL sample cup, and instructions.	

Range: 0-25 & 0-125 ppm MDL: 2.5 ppm / Method: DPD	
Chlorine (free & total) CHEMets Kit	Cat# K-2504D
CHEMets Refill, 30 ampoules	R-2504
Activator Solution Pack, six 10 mL bottles	A-2500 ¹
Low Range Comparator 0, 2.5, 5, 7.5, 10, 15, 20, 25 ppm	C-2504D
High Range Comparator 0, 25, 37.5, 50, 62.5, 75, 87.5, 100, 125 ppm	C-2506D
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, Activator Solution, 25 mL sample cup, 3.0 mL syringe, and instructions.	

Range: 0-50 & 0-250 ppm MDL: 5 ppm / Method: DPD	
Chlorine (free & total) CHEMets Kit	Cat# K-2504A
CHEMets Refill, 30 ampoules	R-2504
Activator Solution Pack, six 10 mL bottles	A-2500 ¹
Low Range Comparator 0, 5, 10, 15, 20, 30, 40, 50 ppm	C-2504A
High Range Comparator 0, 50, 75, 100, 125, 150, 175, 200, 250 ppm	C-2506A
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, Activator Solution, 25 mL sample cup, 1.0 mL syringe and instructions.	

Range: 0-100 & 0-500 ppm MDL: 10 ppm / Method: DPD	
Chlorine (free & total) CHEMets Kit	Cat# K-2504B
CHEMets Refill, 30 ampoules and 30 pipette tips	R-2509
Activator Solution Pack, six 10 mL bottles	A-2500 ¹
Low Range Comparator 0, 10, 20, 30, 40, 60, 80, 100 ppm	C-2504B
High Range Comparator 0, 100, 150, 200, 250, 300, 350, 400, 500 ppm	C-2506B
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, Activator Solution, 25 mL sample cup, 200 uL MiniPet®, and instructions.	

Range: 0-400 & 0-2000 ppm MDL: 400 ppm / Method: DPD	
Chlorine (free & total) CHEMets Kit	Cat# K-2504C
CHEMets Refill, 30 ampoules and 30 pipette tips	R-2509
Activator Solution Pack, six 10 mL bottles	A-2500 ¹
Low Range Comparator 0, 40, 80, 120, 160, 240, 320, 400 ppm	C-2504C
High Range Comparator 0, 400, 600, 800, 1000, 1200, 1400, 1600, 2000 ppm	C-2506C
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Low and High Range Comparators, Activator Solution, 25 mL sample cup, 50 uL MiniPet®, and instructions.	

Range: 0-1.55% MDL: 0.3% / Method: DPD	
Chlorine (hypochlorite) CHEMets Kit	Cat# K-5808
CHEMets Refill, 30 ampoules and 30 pipette tips	R-5808
Comparator 0, 0.3, 0.47, 0.63, 0.78, 0.95, 1.1, 1.25, 1.55%	C-5808
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, 25 mL sample cup, sample prep cup, 3.0 mL syringe, 200 uL MiniPet®, and instructions.	

Range: 0-12.5% MDL: 2.5% / Method: DPD	
Chlorine (hypochlorite) CHEMets Kit	Cat# K-5816
CHEMets Refill, 30 ampoules and 30 pipette tips	R-5808
Comparator 0, 2.5, 3.8, 5, 6.3, 7.5, 8.8, 10, 12.5%	C-5816
Kit comes in a plastic case and contains everything needed to perform 30 tests (except distilled water): Refill, Comparator, 25 mL sample cup, sample prep cup, 3.0 mL syringe, 25 uL MiniPet®, and instructions.	

MiniPet® is a registered trademark of Tricontinent Scientific, Inc.

Instrumental Kits

Multi-Analyte Photometers V-2000 / V-3000 (See page 14 for instrumental features)	
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Range: 0-5.00 ppm Method: DPD	
Chlorine (free) Vacu-vials Kit (USEPA-accepted)	Cat# K-2523
Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, 25 mL sample cup, ampoule blank and instructions.	

Range: 0-5.00 ppm Method: DPD	
Chlorine (free & total) Vacu-vials Kit (USEPA-accepted)	Cat# K-2513
Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, Activator Solution, 25 mL sample cup, ampoule blank, and instructions.	

Vacu-vials Kits require the use of a CHEMetrics Direct-Readout Photometer (photometers sold separately) or a spectrophotometer capable of accepting a 13 mm diameter round cell. See page 14 for details.

SAM Single Analyte Photometer (See page 16 for instrumental features)	
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Range: 0-5.00 ppm Method: DPD	
Chlorine (free & total) SAM Kit	Cat# I-2001
Vacu-vials Kit, 30 ampoules, Activator Solution, 25 mL sample cup, ampoule blank and instructions.	K-2513
SAM Kit comes in a plastic case and contains everything needed to perform 30 tests: Vacu-vials Kit, SAM Photometer, light shield, 4 AAA batteries, screwdriver, and instructions.	

¹The accessory pack supplies enough solution to perform at least 200 tests. The Activator Solution, A-2500, is used to determine Total Chlorine.

Components and Accessories	
Description	Cat#
Sample Cup Pack, 25 mL (6 ea)	A-0013
Ampoule Blank Pack (5 ea)	A-0023
** Sample Zeroing Accessory Pack	A-0025
Syringe Pack, 1.0 mL (6 ea)	A-0027
Syringe Pack, 3.0 mL (6 ea)	A-0063
Pipette Tips Pack (30 ea)	A-0171
MiniPet®, 25 µL (1 ea)	A-0191
MiniPet®, 50 µL (1 ea)	A-0193
MiniPet®, 200 µL (1 ea)	A-0194
Sample Prep Cup Pack (6 ea)	A-0200

** For use when testing colored or turbid samples. See page 13 for details.

Instructions and SDSs are posted on our website. If no shelf life is listed for a product, then the shelf life is at least 1 year.