

Molybdate

Method

Molybdate is used throughout the industrial water treatment and power generation industries as a corrosion inhibitor in both open- and closed-loop cooling water systems. In solution, molybdate anions complex with oxidized iron to form a protective film of molybdate and ferric-oxide. Molybdate is considered an effective, environmentally acceptable alternative to chromate treatment. Unlike many other transition elements, molybdenum exhibits low or even negligible toxicity.

The Catechol Method

References: G. P. Haight and V. Paragamian, *Analytical Chemistry*, pp. 32, 642 (1960). H. Onishi and E. B. Sandell, *Photometric Determination of Trace Metals*, 4th ed., Part 1, p. 295 (1978).

The molybdate test method employs the catechol chemistry. In a mildly reducing alkaline solution, catechol reacts with hexavalent molybdenum to form a yellow-orange colored chelate in direct proportion to the hexavalent molybdenum concentration. Test results are expressed in ppm (mg/L) molybdenum (Mo).

Visual Kits

Range: 0-7 ppm as Mo
MDL: 0.5 ppm / Method: Catechol

	Cat#
CHEMets Kit	K-6701
CHEMets Refill, 30 ampoules	R-6702
Comparator 0, 1, 2, 3, 4, 5, 6, 7 ppm	C-6701
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, 25 mL sample cup and instructions.	

Range: 2-24 ppm as Mo
MDL: 2 ppm / Method: Catechol

	Cat#
CHEMets Kit	K-6702
CHEMets Refill, 30 ampoules	R-6702
Comparator 2, 4, 6, 8, 10, 12, 16, 20, 24 ppm	C-6702
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, 25 mL sample cup and instructions.	

Range: 20-200 ppm as Mo
MDL: 20 ppm / Method: Catechol

	Cat#
CHEMets Kit	K-6720
CHEMets Refill, 30 ampoules	R-6720
Comparator 20, 40, 60, 80, 100, 120, 140, 160, 200 ppm	C-6720
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, 25 mL sample cup and instructions.	

Instrumental Kit

Multi-Analyte Photometers
V-2000 / V-3000
(See page 14 for instrumental features)

Range: 0-25.0 ppm as Mo
Method: Catechol

	Cat#
Vacu-vials Kit	K-6703
Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules, 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.

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-0503

* 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.



Monochloramine

Method

Monochloramine is a colorless liquid that is soluble in water. It is commonly added to drinking water to function as a secondary disinfectant in a process called chloramination.

The Hydroxybenzyl Alcohol (HBA) Method

References: Krom, Michael D., *Spectrophotometric Determination of Ammonia: A study of a Modified Berthelot Reduction Using Salicylate and Dichloroisocyanurate*, *The Analyst*, V105 pp. 305-316, 1980.

Monochloramine reacts with hydroxybenzyl alcohol (HBA), in the presence of sodium nitroferricyanide, to form a green colored complex. This test method measures monochloramine only. Results are expressed in ppm (mg/L) monochloramine as chlorine, $\text{NH}_2\text{Cl}\text{-Cl}_2$. CHEMetrics offers ammonia test kits employing the HBA chemistry that can be used in conjunction with the monochloramine kits to determine free ammonia concentration. Contact technical@chemetrics.com for details.

Visual Kit

Range: 0-20 ppm as $\text{NH}_2\text{Cl}\text{-Cl}_2$
MDL: 0.625 ppm / Method: Hydroxybenzyl Alcohol (HBA)

	Cat#
CHEMets Kit	K-6802
CHEMets Refill, 30 ampoules	R-6802
Activator Solution, six 10 mL bottles	A-6802
Comparator 0, 1.25, 2.5, 3.75, 5.0, 7.5, 10, 15, 20 ppm	C-6802
Kit comes in a plastic case and contains everything needed to perform 30 tests: Refill, Comparator, Stabilizer Solution, Catalyst Solution, 25 mL sample cup, and instructions.	

Instrumental Kit

Multi-Analyte Photometers
V-2000 / V-3000
(See page 14 for instrumental features)

Range: V-2000: 0-15.0 ppm as $\text{NH}_2\text{Cl}\text{-Cl}_2$
V-3000/Spec: 0-8.00 ppm as $\text{NH}_2\text{Cl}\text{-Cl}_2$
Method: Hydroxybenzyl Alcohol (HBA)

	Cat#
Vacu-vials Kit	K-6803
Kit comes in a cardboard box and contains everything needed to perform 30 tests: stabilizer solution, catalyst solution, thirty ampoules, 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.

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

*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.

