

## Molybdate - Catechol Method

Version 11 | Mar 2018

### Applications and Industries

Industrial water treatment, power generation, cooling water systems

### 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 I, p. 295 (1978)

### Chemistry

In a mildly reducing 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 as ppm (mg/L) molybdenum (Mo). To convert results to ppm molybdate ( $\text{MoO}_4^{2-}$ ), multiply test result by 1.67.

### Available Analysis Systems

Visual colorimetric: CHEMets®

Instrumental colorimetric: Vacu-vials®

### Accuracy Statement

CHEMets kits:

± 1 color standard increment

Vacu-vials kit:

With Spectrophotometers and V-3000:

≤ 0.25 ppm at 0 ppm  
± 0.3 ppm at 1.0 ppm  
± 1.2 ppm at 6.0 ppm  
± 1.9 ppm at 19.0 ppm

With V-2000:

≤ 0.25 ppm at 0 ppm  
± 0.3 ppm at 1.0 ppm  
± 1.2 ppm at 6.0 ppm  
± 2.9 ppm at 19.0 ppm

### Interference Information

Molybdate itself at concentrations above the test range may develop an orange-red color with this reagent.

Ferrous iron will cause low and sometimes off-color test results.

Ferric iron interferes by developing a red or violet color.

Nitrite up to at least 20 ppm as  $\text{NO}_2\text{-N}$  does not interfere.

Calcium chloride up to at least 32% does not cause an interference.

Ethylene glycol up to 50% does not interfere significantly.

Propylene glycol at 50% may cause a slightly low bias.

Samples that have extreme pHs or that are highly buffered should be adjusted to near neutral pH prior to analysis.

### Shelf Life

When stored in the dark and at room temperature:

Visual colorimetric:

CHEMets refills, color comparators: at least 1 year

Instrumental colorimetric:

Vacu-vials kit: at least 1 year

### Storage Requirements

Product should be stored in the dark and at room temperature.

### Safety Information

Safety Data Sheets (SDS) are available upon request and at [www.chemetrics.com](http://www.chemetrics.com). Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.