

Photometer Method

MOLYBDATE LR

AUTOMATIC WAVELENGTH SELECTION

TEST FOR LOW LEVELS OF MOLYBDATE IN INDUSTRIAL WATERS AND EFFLUENTS

0 – 20 mg/l MoO₄

Formulations containing molybdate are used as corrosion inhibitors in industrial water treatment. In particular, low level molybdate treatment finds application in cooling systems. Molybdate based formulations have replaced older forms of corrosion inhibitors.

When using molybdate treatment it is necessary to control the molybdate concentration within specified levels depending on the application involved. Moreover, since molybdates are widely used in water treatment and in industrial processes, molybdate is an increasingly important test for effluents and industrial discharges.

The Palintest Molybdate LR test provides a simple means of measuring low levels of molybdate in industrial waters and effluents and covers the range 0 - 20 mg/l MoO₄ (0 – 12 mg/l Mo).

Method

Molybdates react with a dihydroxybenzene disulphonic acid salt under slightly acid conditions to give a yellow coloured complex. Under the conditions of the test, iron does not interfere and there is no significant interference from other metals at levels likely to be found in industrial water systems (see Notes). The reagents are provided in the form of two tablets for maximum convenience. The test is simply carried out by adding one of each tablet to a sample of water.

The intensity of the colour produced in the test is proportional to the molybdate concentration and is measured using a Palintest Photometer.

Reagents and Equipment

Palintest Molybdate No 1 LR Tablets

Palintest Molybdate No 2 LR Tablets

Palintest Automatic Wavelength Selection Photometer

Palintest Photometer Round Test Tubes, 10 ml glass (PT 595)

Test Procedure

- 1 Filter sample if necessary to obtain a clear solution.
- 2 Fill test tube with sample to the 10 ml mark.
- 3 Add one Molybdate No 1 LR tablet, crush and mix to dissolve.
- 4 Add one Molybdate No 2 LR tablet, crush and mix to dissolve.
- 5 Stand for two minutes to allow full colour development.
- 6 Select Phot 42 on the Photometer.
- 7 Take Photometer reading in the usual manner (see Photometer instructions).
- 8 The result is displayed as mg/l MoO_4 .

Note

Molybdate concentrations can be expressed in a number of different ways. The following factors may be used for the conversion of results :-

To convert from MoO_4 to Na_2MoO_4 - multiply by 1.3

To convert from MoO_4 to Mo - multiply by 0.6.

Interferences

- 1 Copper 20 mg/l, zinc 20 mg/l, phosphate 100 mg/l and calcium 200 mg/l do not interfere in this test.
 - 2 Iron 10 mg/l and chlorine 10 mg/l cause slightly high blank readings equivalent to 0.6 mg/l Mo. However, they do not cause any interference in samples which contain molybdate.
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