

Photometer Method

MOLYBDATE HR

AUTOMATIC
WAVELENGTH
SELECTIONTEST FOR LOW LEVELS OF MOLYBDATE
IN INDUSTRIAL WATERS AND EFFLUENTS0 – 100 mg/l MoO₄

Formulations containing Molybdate are used as corrosion inhibitors in industrial water treatment. In particular, molybdate finds application in closed recirculating systems such as hot water heating systems and chilled water systems. Molybdate-based formulations have replaced older forms of corrosion inhibitor such as chromate.

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 HR test provides a simple means of measuring high levels of molybdate in industrial waters and effluents and covers the range 0 - 100 mg/l MoO₄.

Method

Molybdates react with thioglycollate under acid conditions to give a yellow coloured complex. Slightly oxidising conditions are maintained during the acidification stage in order to keep the molybdate in a fully oxidised state. 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. 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 HR Tablets

Palintest Molybdate No 2 HR Tablets

Palintest Automatic Wavelength Selection Photometer

Round Test Tubes, 10 ml glass (PT 595)

Test Procedure

- 1 Fill round test tube with sample to the 10 ml mark.
- 2 Add one Molybdate No 1 HR tablet, crush and mix to dissolve.
- 3 Add one Molybdate No 2 HR tablet, crush and mix to dissolve.
- 4 Select Phot 22 on Photometer.
- 5 Take Photometer reading in usual manner (see Photometer instructions).
- 6 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 readings :-

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

The presence of Fe^{2+} (ferrous) or Fe^{3+} (ferric) iron at 5 mg/l causes the rapid development of a red colour in the test. This may be prevented by the treatment of the 10 ml sample with one Palintest EDTA tablet prior to carrying out the test.
