

MOLYBDATE METHOD 2

Using 1, 2 Dihydroxybenzene 3, 5 Disulphonic Acid

INTRODUCTION

The use of Molybdates is gaining in popularity as non toxic corrosion inhibitors in cooling towers. Low concentrations are used in closed cooling systems.

PRINCIPLE OF THE METHOD

Molybdates react with 1, 2 dihydroxybenzene 3, 5 disulphonic acid disodium salt (TIRON) in neutral solutions to produce a yellow colour. The intensity of this is proportional to the molybdate concentration measured by comparison with Lovibond permanent colour glass standards.

Any dissolved iron present will interfere and this is prevented by its prior removal using an ion exchange resin.

REAGENTS REQUIRED

1. **Molybdate Reagent MB1**
2. **Molybdate Reagent MB2**
3. **CM Cartridge**
4. **Calcium Hardness Buffer CH2**

THE STANDARD LOVIBOND COMPARATOR DISC 3/162

This disc covers the range 0 - 10mg./l Molybdate as MoO₄ in steps of 0, 1, 2, 3, 4, 5, 6, 8, and 10mg./l. It is used with 40mm.cells.

METHOD

1. Fill two 40mm. cells to the 20ml. mark with sample and place one cell in the left-hand compartment of the Comparator. This acts as a blank for any inherent colour or turbidity present.
2. To the other cell add 10 drops Molybdate Reagent MB1 and mix with a clean stirring rod.
3. Add one heaped scoop (red) of Molybdate Reagent MB2 and mix well until dissolved. If Molybdate alone is present the solution will turn yellow. Allow to stand for 5 minutes for full colour development.
4. If the sample also contains IRON, an orange colour will be given.
5. After the 5 minutes standing period, put the cell in the right-hand compartment of the Comparator. Match the colour produced in the test against the disc by holding the Comparator facing a standard source of white light, such as the Lovibond Daylight 2000 Unit, or against North Daylight (South Daylight in the Southern Hemisphere). Rotate the disc until the nearest colour match is obtained.
6. Read off the concentration of Molybdate in mg./l., as MoO₄, from the bottom right-hand corner of the Comparator.

NOTES

1. If the sample is cloudy, filter to remove suspended solids.
2. The test should always be carried out on a fresh sample as molybdate will be absorbed onto the wall of storage containers.
3. If the colour produced in the test is darker than the top step of the disc pour some of the test solution into a 13.5mm./10ml. moulded cell and match again. The concentration of Mo O₄ = Disc Reading x 3mg /l.

REVISION HISTORY

Date	Change Note	Issue
17/06/02	36/460	2
23/03/05	CA243	3
11/10/06	JC76	4