

Technical Specification

Tests For: Magnesium in Water

Test Range: 0–50 mg/L

Reagent Chemistry Used: Thiazole Yellow G

Method Detection Limit*: 2 mg/L

Limit of Quantification**: 6 mg/L

*The Method Detection Limit (MDL) is defined as the minimum measured concentration of a substance that can be reported with 99% confidence to be different from the method blank results.ⁱ

**The Limit of Quantification (LOQ) is the smallest quantity that can be detected with reasonable certainty for a given analytical procedure.ⁱⁱ

Testing for Magnesium

Magnesium is a widely occurring natural element and is found in most water supplies. Magnesium salts contribute to the hardness of water and higher levels of magnesium will be found therefore in hard water areas. Scale formation in heating and steam raising equipment is promoted by the presence of magnesium salts in the water. Magnesium salts do however have a lower scale forming tendency than calcium salts.

The Palintest Magnecol test provides a simple means of measuring magnesium levels in water over the range 0–50 mg/l Mg.

Reagent Chemistry

The Palintest Magnecol test is based on a simple colorimetric procedure. Magnesium reacts with an organic reagent to produce an orange-coloured complex. The reagent itself is yellow and therefore over the range of the test a series of colours from yellow through to orange are produced.

The colour produced in the test is indicative of the magnesium concentration and is measured using a Palintest Photometer.

Best Practice Advice for Testing

- To convert mg/l Mg to magnesium hardness as CaCO₃, multiply by 4.2.

ⁱ EPA, Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, Dec 2016.

ⁱⁱ IUPAC. *Compendium of Chemical Terminology, 2nd ed. (the "Gold Book")*.