

Photometer Method

IRON LR

TEST FOR LOW LEVELS OF IRON IN NATURAL AND TREATED WATER

AUTOMATIC WAVELENGTH SELECTION

0 – 1.0 mg/l

Iron occurs widely in nature and is found in many natural and treated waters. Iron is an objectionable constituent in both domestic and industrial water supplies. The presence of iron affects the taste of beverages and causes unsightly staining of laundered clothes, plumbing fittings, swimming pool surfaces and the like. The formation of insoluble iron deposits is troublesome in many industrial applications and in agricultural water uses such as drip feed irrigation. In industry iron salts occur through corrosion of plant and equipment, and from industrial processes.

Iron is therefore an important test for the monitoring of natural and drinking waters, for corrosion control in industry and for the checking of effluents and waste waters. The Palintest Iron LR test provides a simple test for the determination of low levels of iron in water over the range 0 - 1 mg/l Fe. The test responds to both ferrous and ferric iron and thus gives a measure of the total iron content of the water.

Method

The Palintest Iron LR test is based on a single tablet reagent containing 3-(2-Pyridyl)-5, 6-bis(4-phenyl-sulphonic acid)-1, 2, 4-triazine (PPST) formulated with a decomplexing/reducing agent in an acid buffer. The test is simply carried out by adding a tablet to a sample of the water under test. The decomplexing/reducing agent breaks down weakly complexed forms of iron, and converts the iron from the ferric to the ferrous form. The ferrous iron reacts with PPST to form a pink coloration.

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

Reagents and Equipment

Palintest Iron LR Tablets
Palintest Automatic Wavelength Selection Photometer
Round Test Tubes 10 ml glass (PT 595)

Test Procedure

- 1 Fill the test tube with sample to the 10 ml mark.
- 2 Add one Iron LR tablet, crush and mix to dissolve.
- 3 Stand for one minute to allow full colour development.
- 4 Select Phot 18 on Photometer.
- 5 Take Photometer reading in usual manner (see Photometer instructions).
- 6 The result is displayed as mg/l Fe.

Iron Complexes

The test colour development will normally be complete within one minute. Continued colour development after this time is indicative of more strongly bound iron complexes in the water. In such cases the test solution should be stood for a longer period, say 10 - 15 minutes, until colour development is complete.

In certain industrial applications strong complexing agents are added to act as corrosion inhibitors. Moreover, some samples may contain precipitated iron complexes or particles of metallic iron. These samples will require pre-treatment by a standard laboratory procedure if it is required to determine the total iron content. The usual method of pre-treatment is acidification-with or without boiling, depending, on the nature of the sample.

To use the Palintest Iron LR test after such pre-treatment procedures, add the Iron LR tablet to the acidified sample, adjust to pH 3.5 - 4.0 using ammonia or sodium hydroxide, then take the photometer reading in the normal manner.
