

Photometer Method

SILICA LR

TEST FOR SILICA IN NATURAL, TREATED AND INDUSTRIAL WATER

AUTOMATIC WAVELENGTH SELECTION

0 – 4.0 mg/l SiO₂

Silicon, in the form of silica, is one of the earth's most abundant elements. Silicon is found widely in natural waters as colloidal silica or soluble silicates.

Silica and silicates do not normally cause any problems in water intended for domestic consumption. However their presence is undesirable in water used in a variety of industrial applications. This is because of the tendency of such water to form a hard scale on equipment. Silica and silicate containing waters are particularly troublesome in steam generating plant such as high pressure boilers since silica scale can build up on turbine blades.

The Palintest Silica LR test provides a simple means of measuring silica and silicate levels in natural, treated and industrial waters over the range 0 - 4 mg/l SiO₂.

Method

Ammonium molybdate reacts with silica under acid conditions to produce molybdosilicic acid. In the presence of a reducing agent, this compound is reduced to form an intense blue complex. Phosphate reacts in a similar manner. Interference by phosphate is prevented by introducing a reagent which destroys any molybdophosphoric acid which may form.

The reagents for the method are provided in tablet form and the test is carried out simply by adding tablets to a sample of water. The intensity of the colour produced in the test is proportional to the silica concentration and is measured using a Palintest Photometer.

Reagents and Equipment

Palintest Silica No 1 Tablets

Palintest Silica No 2 Tablets

Palintest Silica PR Tablets

Palintest Automatic Wavelength Selection Photometer

Round Test Tubes, 10 ml glass (PT 595)

Test Instructions

- 1 Fill test tube with sample to the 10 ml mark
- 2 Add one Silica No 1 tablet, crush and mix to dissolve. Stand for five minutes to allow the silica to react.
- 3 Add one Silica PR tablet, crush and mix to dissolve. (This stage may be omitted if the sample is known to be completely free of phosphate).
- 4 Add one Silica No 2 tablet, crush and mix to dissolve. Stand for one minute to allow full colour development.
- 5 Select Phot 31 on Photometer.
- 6 Take Photometer reading in usual manner (see Photometer instructions).
- 7 The result is displayed as mg/l SiO_2 .

Note

For testing high levels of Silica the Palintest Silica HR test should be used. The range of this test is 0 - 100 mg/l (see Test Instruction Phot 56).
