Palintest
Water Analysis Technologies

Photometer Method

AUTOMATIC WAVELENGTH SELECTION

0 – 0.5 mg/l

ALUMINIUM

TEST FOR TOTAL ALUMINIUM IN NATURAL AND TREATED WATERS

Aluminium sulphate is widely used as a coagulant in drinking water treatment. The determination of aluminium (residual alum) is usually required for the control of alum coagulation and filtration processes at water works.

Aluminium salts are found in natural waters; levels are reported to be increasing particularly in areas affected by acid rain. High aluminium levels can be toxic to fish and aquatic life. Aluminium determination is necessary therefore for environmental control and for testing water used for fish farms, etc.

The Palintest Aluminium test provides a simple method of measuring aluminium levels in natural and drinking waters over the range 0 - 0.5 mg/l.

Method

Aluminium reacts with Eriochrome Cyanine R indicator in slightly acid solution to produce a pink-red coloured complex. The presence of ascorbic acid eliminates interference from iron and manganese. In the Palintest Aluminium method the necessary reagents are incorporated into two test tablets. The test is simply carried out by adding one of each tablet to a sample of the water. The first tablet acidifies the sample to bring any colloidal aluminium into solution and the second tablet buffers the solution to provide the correct conditions for the test.

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

Reagents and Equipment

Palintest Aluminium No 1 Tablets Palintest
Aluminium No 2 Tablets
Palintest Automatic Wavelength Selection Photometer
Palintest Photometer Round Test Tubes, 10 ml glass (PT 595)

Sample Collection

Aluminium is readily absorbed on to the surfaces of sample containers, particularly glass containers. To avoid loss of aluminium, collect samples in plastic bottles and test as soon as possible after collection. Sample bottles should be acid-rinsed and thoroughly washed out with deionised water before re-use.

Test Procedure

1 Fill test tube with sample to the 10 ml mark.

2 Add one Aluminium No 1 tablet, crush and mix to dissolve.

3 Add one Aluminium No 2 tablet, crush and mix vigorously to dissolve. Ensure any bubbles formed during the test dissipate.

4 Stand for five minutes to allow full colour development.

5 Select Phot 3 on Photometer.

6 Take Photometer reading in usual manner (see Photometer instructions).

7 The result is displayed as mg/l Al.

Interferences

The presence of polyphosphate or fluoride can lead to low aluminium readings. Polyphosphate is unlikely to be present in significant quantities in normal water samples. Fluoride will only be significant for control samples from water works where fluoridation is practised. In such cases samples should preferably be taken before the final fluoridation stage.

For samples taken after fluoridation such as those from water distribution systems, or for samples containing natural fluoride, the aluminium concentration should be corrected. To obtain the corrected aluminium concentration multiply the calibration chart value by the factor (1 + 0.4 F) where F is the Fluoride concentration as mg/l F. The fluoride concentration should be determined separately by normal test procedure.