

Photometer Method

PHOSPHATE LR

TEST FOR LOW LEVELS OF PHOSPHATE IN NATURAL AND DRINKING WATERS

**AUTOMATIC
WAVELENGTH
SELECTION****0 – 4.0 mg/l PO₄****0 – 1.3 mg/l P**

Phosphates are extensively used in detergent formulations and washing powders. Phosphates also find widespread application in the food processing industry and in industrial water treatment processes. Agricultural fertilizers normally contain phosphate minerals and phosphates also arise from the breakdown of plant materials and in animal wastes.

Phosphates can therefore enter water courses through a variety of routes - particularly domestic and industrial effluents and run-off from agricultural land. Phosphate is an important control test for natural and drinking waters.

Whilst phosphates are not generally considered harmful for human consumption, they do exhibit a complex effect on the natural environment. In particular phosphates are associated with eutrophication of water and with rapid unwanted plant growth in rivers and lakes. Phosphates present in natural water pass through into drinking water supplies.

The Palintest Phosphate LR test provides a simple method of measuring phosphate levels over the range 0 - 4 mg/l PO₄. For drinking water the EEC has set a guide level of 0.5 mg/l PO₄ (0.4 mg/l P₂O₅) and a maximum admissible concentration of 6.7 mg/l PO₄ (5 mg/l P₂O₅).

Method

In the Palintest Phosphate LR method, the phosphate reacts under acid conditions with ammonium molybdate to form phospho-molybdic acid. This compound is reduced by ascorbic acid to form the intensely coloured 'molybdenum blue' complex. A catalyst is incorporated to ensure complete and rapid colour development, and an inhibitor is used to prevent interference from silica. The reagents are provided in the form of two tablets for maximum convenience. The test is simply carried out by adding one of each tablet to a sample of the water.

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

Reagents and Equipment

Palintest Phosphate No 1 LR Tablets

Palintest Phosphate No 2 LR Tablets

Palintest Automatic Wavelength Selection Photometer

Round Test Tubes, 10 ml glass (PT 595)

Test Procedure

- 1 Fill test tube with sample to the 10 ml mark.
- 2 Add one Phosphate No 1 LR tablet, crush and mix to dissolve.
- 3 Add one Phosphate No 2 LR tablet, crush and mix to dissolve.
- 4 Stand for 10 minutes to allow full colour development.
- 5 Select Phot 28 on Photometer for result as mg/l PO_4 , or Phot 70 for result as mg/l P.
- 6 Take Photometer reading in usual manner (see Photometer instructions).

Note

Phosphate concentrations can be expressed in a number of different ways. The following factors may be used for the conversion of readings :-

To convert from PO_4 to P_2O_5 - multiply by 0.75

To convert from PO_4 to P - multiply by 0.33
