INTERNATIONAL STANDARD

ISO 6878

First edition
1998-08-15

Water quality — Spectrometric determination of phosphorus using ammonium molybdate

Qualité de l'eau — Dosage spectrométrique du phosphore en utilisant le molybdate d'ammonium

Reference number
ISO 6878:1998(E)

Contents

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

Foreword

ISO (the International Organization for Standardization) is a world-wide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 6878 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical, biochemical methods.*

This first edition of ISO 6878 cancels and replaces the first edition of ISO 6878-1:1986, which has been technically revised.

Annexes A, B and C of this International Standard are for information only.

Water quality — Spectrometric determination of phosphorus using ammonium molybdate

1 Scope

This International Standard specifies the determination of different forms of phosphorus compounds present in the dissolved and undissolved states in various concentrations in ground, surface and waste waters.

In particular, methods are given for the determination of

— orthophosphate (see clause 3);

— orthophosphate after solvent extraction (see clause 4);

— hydrolysable phosphate plus orthophosphate (see clause 5);

— total soluble phosphorus and total phosphorus after decomposition (see clauses 6 and 7).

The methods are applicable to all kinds of water, including seawater and effluents. Phosphorus contents within the range of 0,005 mg/l to 0,8 mg/l may be determined in such samples without dilution.

A solvent extraction procedure allows smaller phosphorus concentrations to be determined with a detection limit of about 0,0005 mg/l .

See annex B for some known interferences. There may be others and it is recommended to verify whether any such exist and take action to remove them.

2 Principle

Orthophosphate ions are reacted with an acid solution containing molybdate and antimony ions to form an antimony phosphomolybdate complex.

The complex is reduced with ascorbic acid to form a strongly coloured blue molybdenum complex. The absorbance of this complex is measured to determine the concentration of orthophosphate present.

Polyphosphate and some organophosphorus compounds are determined if converted to molybdate-reactive orthophosphate formed by sulfuric acid hydrolysis.

Many organophosphorus compounds are converted to orthophosphate by mineralization with persulfate. Nitric acid-sulfuric acid mineralization is used if a more vigorous treatment is required.