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Water quality — Determination of phosphorus — Part 1: Ammonium molybdate spectrometric method

Qualité de l'eau — Dosage du phosphore — Partie 1: Dosage spectrométrique à l'aide du molybdate d'ammonium

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6878/1 was prepared by Technical Committee ISO/TC 147, *Water quality*.

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0 Introduction

This part of ISO 6878 deals with the determination of phosphorus compounds present in ground, surface, and waste waters in various concentrations in the dissolved and undissolved state.

A spectrometric method after mineralization with sulfuric acid and perchloric acid, for heavily polluted waste water, will form the subject of ISO 6878/2.

1 Scope and field of application

This part of ISO 6878 specifies methods for the determination of

orthophosphate (see **section one**);

orthophosphate after extraction (see **section two**);

hydrolysable phosphate plus orthophosphate (see **section three**);

total soluble phosphorus and total phosphorus after decomposition (see **section four**).

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

An extraction procedure allows smaller phosphorus concentrations to be determined with a detection limit of about 0,000 5 mg/l.

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

2 Principle

Reaction of orthophosphate ions with an acid solution containing molybdate and antimony ions to form an antimony phosphomolybdate complex.

Reduction of the complex with ascorbic acid to form a strongly coloured molybdenum blue complex. Measurement of the absorbance of this to determine the concentration of orthophosphate present.

Polyphosphates and some organophosphorus compounds are determined if converted to the molybdate reactive orthophosphate form 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.