

**Vee kvaliteet. Fosfori määramine.
Ammooniummolübdtaat-spektromeetriline meetod**

Water quality - Determination of phosphorus - Ammonium
molybdate spectrometric method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1189:2000 sisaldab Euroopa standardi EN 1189:1996 ingliskeelset teksti.

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English version

**Water quality - Determination of phosphorus -
Ammonium molybdate spectrometric method**

Qualité de l'eau - Dosage du phosphore - Dosage
spectrométrique à l'aide du molybdate
d'ammonium

Wasserbeschaffenheit - Bestimmung von Phosphor
- Photometrisches Verfahren mittels
Ammoniummolybdat

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

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Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard is based on ISO 6878-1:1986. This European Standard has been prepared by CEN/TC 230 "Water analysis" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1997, and conflicting national standards shall be withdrawn at the latest by April 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Annexes designated "informative" are given only for information. In this Standard Annex A, B, and C are informative.

Introduction

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

1 Scope

This European Standard specifies methods 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 0,005mg/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

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 complex 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.

3 Determination of orthophosphate

3.1 Reagents

3.1.1 General

During the analysis, use only reagents of recognized analytical grade and only distilled water having a phosphate content that is negligible compared with the smallest concentration to be determined in the samples.

For low phosphate contents, double-distilled water from an all-glass apparatus is recommended.

3.1.2 Sulfuric acid, solution, $c(\text{H}_2\text{SO}_4) = 9 \text{ mol/l}$

Add 500 ml $\pm$ 5 ml of water to a 2 l beaker. Cautiously add, with continuous stirring and cooling, 500 ml $\pm$ 5 ml of sulfuric acid, $\rho = 1,84 \text{ g/ml}$. Mix well and allow the solution to cool to room temperature.