

**Water quality - Determination of
orthophosphate and total phosphorus
contents by flow analysis (FIA and CFA) -
Part 1: Method by flow injection analysis
(FIA)**

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total phosphorus contents by flow analysis (FIA and
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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 15681-1:2005 sisaldab Euroopa standardi EN ISO 15681-1:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.02.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 15681-1:2005 consists of the English text of the European standard EN ISO 15681-1:2004.</p> <p>This document is endorsed on 22.02.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This part of ISO 15681 specifies flow injection analysis (FIA) methods for the determination of orthophosphate in the mass concentration range from 0,01 mg/l to 1,0 mg/l (P), and total phosphorus by manual digestion in accordance with ISO 6878 [5], [6] for the mass concentration range from 0,1 mg/l to 10 mg/l (P). The range of application can be changed by varying the operating conditions.</p>	<p>Scope:</p> <p>This part of ISO 15681 specifies flow injection analysis (FIA) methods for the determination of orthophosphate in the mass concentration range from 0,01 mg/l to 1,0 mg/l (P), and total phosphorus by manual digestion in accordance with ISO 6878 [5], [6] for the mass concentration range from 0,1 mg/l to 10 mg/l (P). The range of application can be changed by varying the operating conditions.</p>
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Võtmesõnad:

English version

Water quality

Determination of orthophosphate and total phosphorus contents by
flow analysis (FIA and CFA)

Part 1: Method by flow injection analysis (FIA)
(ISO 15681-1:2003)

Qualité de l'eau – Dosage des ortho-
phosphates et du phosphore total par
analyse en flux (FIA et CFA) – Partie 1:
Méthode par analyse avec injection en
flux (FIA) (ISO 15681-1:2003)

Wasserbeschaffenheit – Bestimmung
von Orthophosphat und Gesamtphos-
phor mittels Fließanalytik (FIA und
CFA) – Teil 1: Verfahren mittels Fließ-
injektionsanalyse (FIA)
(ISO 15681-1:2003)

This European Standard was approved by CEN on 2004-12-21.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Management Centre: 36, rue de Stassart, B-1050 Brussels

Foreword

International Standard

ISO 15681-1:2003 Water quality – Determination of orthophosphate and total phosphorus contents by flow analysis (FIA and CFA) – Part 1: Method by flow injection analysis (FIA),

which was prepared by ISO/TC 147 'Water quality' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 230 'Water analysis', the Secretariat of which is held by DIN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by June 2005 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 15681-1:2003 was approved by CEN as a European Standard without any modification.

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Contents

Page

Foreword	2
Introduction	4
1 Scope	4
2 Normative references	4
3 Interferences	5
3.1 General interferences	5
3.2 Interferences in the determination of total-P	5
4 Principle	5
4.1 Determination of orthophosphate	5
4.2 Total phosphorus with manual digestion	5
5 Reagents	5
6 Apparatus	9
6.1 Flow injection analysis (FIA)	9
6.2 Additional apparatus	9
6.3 Additional apparatus for the determination of total phosphorus	9
7 Sampling and sample preparation	10
8 Procedure	10
8.1 Analysis preparation	10
8.2 Instrument performance check	10
8.3 Reagent blank check	10
8.4 Calibration	11
8.5 Check of digestion efficiency for determination of total-P	11
8.6 Measurement	11
8.7 Closing down the system	11
9 Calculation of results	12
10 Expression of results	12
11 Test report	12
Annex A (informative) Example of an FIA system	13
Annex B (informative) Precision and accuracy	14
Annex C (informative) Determination of orthophosphate-P and total-P by FIA using ascorbic acid reduction	16
Annex D (informative) Replacement of hydrazine sulfate by DEHA (N,N-diethylhydroxylamine)	21
Bibliography	21

Introduction

Methods of determining water quality using flow analysis automated wet chemical procedures, and are particularly suitable for the processing of many analytes in water in large sample series at a high analysis frequency.

Analysis can be performed by flow injection analysis (FIA) ^{[1], [2]} or continuous flow analysis (CFA) ^[3]. Both methods share the feature of an automatic dosage of the sample into a flow system (manifold) where the analyte in the sample reacts with the reagent solutions on its way through the manifold. The sample preparation may be integrated in the manifold. The amount of reaction product is measured in a flow detector (e.g. flow photometer). This part of ISO 15681 describes the FIA method.

The user should be aware that particular problems could require the specification of additional marginal conditions.

WARNING — Persons using this part of ISO 15681 should be familiar with normal laboratory practice. This part of ISO 15681 does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions. Molybdate and antimony waste solutions should be disposed of properly. It is absolutely essential that tests conducted according to this part of ISO 15681 be carried out by suitably qualified staff.

1 Scope

This part of ISO 15681 specifies flow injection analysis (FIA) methods for the determination of orthophosphate in the mass concentration range from 0,01 mg/l to 1,0 mg/l (P), and total phosphorus by manual digestion in accordance with ISO 6878 ^{[5], [6]} for the mass concentration range from 0,1 mg/l to 10 mg/l (P). The range of application can be changed by varying the operating conditions.

This part of ISO 15681 is applicable to various types of water (such as ground, drinking, surface, leachate and waste waters).

This method is also applicable to the analysis of seawater, but with changes in sensitivity, by adaptation of the carrier and calibration solutions to the salinity of the samples.

2 Normative references

The following reference documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 5667-1, *Water quality — Sampling — Part 1: Guidance on the design on sampling programmes*

ISO 5667-2, *Water quality — Sampling — Part 2: Guidance on sampling techniques*

ISO 5667-3, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of water samples*

ISO 6878:— ¹⁾, *Water quality — Determination of phosphorus — Ammonium molybdate spectrometric method*

ISO 8466-1, *Water quality — Calibration and evaluation of analytical methods and estimation of performance characteristics — Part 1: Statistical evaluation of the linear calibration function*

1) To be published.