



SLOVENSKI STANDARD SIST EN ISO 15681-1:2005

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OSIST prEN ISO 15681-1:2004

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)

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Wasserbeschaffenheit - Bestimmung von Orthophosphat und Gesamtphosphor mittels Fließanalytik (FIA und CFA) - Teil 1: Verfahren mittels Fließinjektionsanalyse (FIA) (ISO 15681-1:2003)

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Qualité de l'eau - Dosage des orthophosphates 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)

Ta slovenski standard je istoveten z: EN ISO 15681-1:2004

ICS:

13.060.50 Ú|^ã\ aca[á^Á aA {ã}^ Examination of water for chemical substances
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 15681-1

December 2004

ICS 13.060.50

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 orthophosphates 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 Gesamtphosphor mittels Fließanalytik (FIA und CFA) - Teil 1: Verfahren mittels Fließinjektionsanalyse (FIA) (ISO 15681-1:2003)

This European Standard was approved by CEN on 21 December 2004.

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 Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

EN ISO 15681-1:2004 (E)**Foreword**

The text of ISO 15681-1:2003 has been prepared by Technical Committee ISO/TC 147 "Water quality" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15681-1:2004 by Technical Committee 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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice
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The text of ISO 15681-1:2003 has been approved by CEN as EN ISO 15681-1:2004 without any modifications.

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INTERNATIONAL STANDARD

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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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*Qualité de l'eau — Dosage des orthophosphates et du phosphore total
par analyse en flux (FIA et CFA) —*

Partie 1. Méthode par analyse avec injection en flux (FIA)

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ISO 15681-1:2003(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15681-1 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

ISO 15681 consists of the following parts, under the general title *Water quality — Determination of orthophosphate and total phosphorus contents by flow analysis (FIA and CFA)*:

— *Part 1: Method by flow injection analysis (FIA)*

— *Part 2: Method by continuous flow analysis (CFA)*

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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.

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

Part 1: Method by flow injection analysis (FIA)

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.