

Water quality - Determination of soluble silicates by flow analysis (FIA and CFA) and photometric detection

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 16264:2004 sisaldab Euroopa standardi EN ISO 16264:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.05.2004 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 16264:2004 consists of the English text of the European standard EN ISO 16264:2004.</p> <p>This document is endorsed on 18.05.2004 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: This International Standard specifies two methods, i.e. flow injection analysis (FIA) and continuous flow analysis (CFA), for the determination of soluble silicate ions in various types of water.</p>	<p>Scope: This International Standard specifies two methods, i.e. flow injection analysis (FIA) and continuous flow analysis (CFA), for the determination of soluble silicate ions in various types of water.</p>
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ICS 13.060.50

Võtmesõnad:

English version

Water quality

Determination of soluble silicates by flow analysis (FIA and CFA) and
photometric detection
(ISO 16264 : 2002)

Qualité de l'eau – Dosage des silicates
solubles par analyse en flux (FIA et
CFA) et détection photométrique
(ISO 16264 : 2002)

Wasserbeschaffenheit – Bestimmung
löslicher Silicate mittels Fließanalytik
(FIA und CFA) und photometrischer
Detektion (ISO 16264 : 2002)

This European Standard was approved by CEN on 2004-01-02.

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.

The European Standards exist 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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.

CEN

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

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

Foreword

International Standard

ISO 16264 : 2002 Water quality – Determination of soluble silicates by flow analysis (FIA and CFA) and photometric detection,

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 August 2004 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 16264 : 2002 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

Contents

	Page
Foreword.....	2
Introduction.....	3
1 Scope	4
2 Normative references	4
3 General interferences.....	4
4 Principle.....	5
5 Reagents.....	5
6 Apparatus.....	7
7 Sampling and sample preparation.....	10
8 Procedure.....	10
9 Calculation	12
10 Precision.....	12
11 Test report.....	13
Bibliography.....	13

Introduction

Further investigation will be necessary to determine whether and to what extent particular problems will require the specification of additional minor conditions.

It is absolutely essential that tests conducted according to this International Standard be carried out by suitably qualified staff.

Differentiation is required between flow injection analysis (FIA) [1], [2], and continuous flow analysis (CFA) [3]. Both methods share the feature of an automatic dosage of the sample into a flow system (manifold) where the analytes in the sample react with the reagent solutions on their way through the manifold. The sample preparation may be integrated into the manifold. The reaction product is determined in a flow detector (e.g. photometer). This detector produces a signal from which the concentration of the parameter can be calculated.

Methods using flow analysis automate wet chemical procedures and are particularly suitable for processing many analytes in water in large sample series at a high analysis frequency.

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard 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.

1 Scope

This International Standard specifies two methods, i.e. flow injection analysis (FIA) and continuous flow analysis (CFA), for the determination of soluble silicate ions in various types of water (such as ground, drinking, surface, leachate and waste water). Both methods are applicable to the determination of a mass concentration of silicate (SiO_2) ranging from 0,2 mg/l to 20 mg/l (with working ranges 0,2 mg/l to 2,0 mg/l and 2 mg/l to 20 mg/l). Other mass concentration ranges are applicable, provided they cover exactly one decade of concentration units (e.g. 0,02 mg/l to 0,2 mg/l in SiO_2).

These methods can be made applicable to seawater by changing the sensitivity and by adapting the reagent and calibration solutions to the salinity of the samples.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 8466-1:1990, *Water quality — Calibration and evaluation of analytical methods and estimation of performance characteristics — Part 1: Statistical evaluation of the linear calibration function*

3 General interferences

Tannin, large amounts of iron, sulfide and phosphate interfere. The treatment with oxalic acid reduces the interference from tannin and eliminates interference from phosphate provided the mass concentrations are < 20 mg/l. If this value is exceeded, the amount of oxalic acid may not be sufficient to destroy all molybdophosphoric acid being formed. In this case, dilute the sample with water (5.1).

When aluminium ions are present in the water sample, the addition of oxalic acid is not completely effective in eliminating phosphate interference. In this case, add 0,2 ml of a 0,1 mol/l sodium cyanide solution per litre of sample prior to analysis.

If the sample contains fluoride in concentrations > 150 mg/l, treat the samples with boric acid.

High concentrations of oxidizing agents are destroyed by adding 1 mol/l of sodium sulfite solution prior to analysis.

If the sample contains large concentrations of sulfide, e.g. > 5 mg/l, special provisions are necessary.