SLOVENSKI STANDARD
SIST EN ISO 13395:1999

01-marec-1999

Kakovost vode - Določevanje nitritnega in nitratnega dušika in vsota obeh s pretočno analizo (CFA in FIA) in spektrofotometrijsko detekcijo (ISO 13395:1996)

Water quality - Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analysis (CFA and FIA) and spectrometric detection (ISO 13395:1996)

Wasserbeschaffenheit - Bestimmung von Nitritstickstoff, Nitratstickstoff und der Summe von beiden mit der Fließanalytik (CFA und FIA) und spektrometrischer Detektion (ISO 13395:1996)

Qualité de l'eau - Détermination de l'azote nitreux et de l'azote nitrique et de la somme des deux par analyse en flux (CFA et FIA) et détection spectrométrique (ISO 13395:1996)

Ta slovenski standard je istoveten z: **EN ISO 13395:1996**

ICS:

13.060.50	Preiskava vode na kemične snovi	Examination of water for chemical substances

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EUROPEAN STANDARD

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EN ISO 13395

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English version

Water quality - Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analysis (CFA and FIA) and spectrometric detection (ISO 13395:1996)

Qualité de l'eau - Détermination de l'azote nitreux et de l'azote nitrique et de la somme des deux par analyse en flux (CFA et FIA) et détection spectrométrique (ISO 13395:1996)

This European Standard was approved by CEN on 1996-06-09. 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.

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 Central Secretariat has the same status as the official versions.

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CEN

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

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Foreword

The text of the International Standard ISO 13395:1996 has been prepared by Technical Committee ISO/TC 147 "Water quality" in collaboration with Technical Committee CEN/TC 230 "Water analysis", the secretariat of which is held by DIN.

This European Standard consists of 4 informative Annexes and one Annex ZA.

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 January 1997, and conflicting national standards shall be withdrawn at the latest by January 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 and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 13395:1996 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

Annex ZA (normative)
Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 5667-1	1980	Water quality - Sampling - Part 1: Guidance of the design of sampling programmes	EN 25667-1	1993
ISO 5667-2	1991	Water quality - Sampling - Part 2: Guidance on sampling techniques	EN 25667-2	1993
ISO 5667-3	1994	Water quality - Sampling - Part 3: Guidance on the preservation and handling of samples	EN ISO 5667-1	1995
ISO 10304-1	1994	Water quality – Determination of dissolve fluoride, chloride, nitrite, orthophosphate, bromide, nitrate and sulfate ions, using liquid chromatography of ions – Part 1: Method for water with low contamination	EN ISO 10304-1	1995

INTERNATIONAL STANDARD

ISO 13395

First edition
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Water quality — Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analysis (CFA and FIA) and spectrometric detection

Qualité de l'eau — Détermination de l'azote nitreux et de l'azote nitrique et de la somme des deux par analyse en flux (CFA et FIA) et détection spectrométrique

Reference number
ISO 13395:1996(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.

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.

International Standard ISO 13395 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical, biochemical methods*.

Annexes A, B, C and D of this International Standard are for information only.

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Introduction

Methods using flow analysis enable wet chemistry procedures to be automatized and are particularly suitable for the processing of many analytes in water in large series of samples at a high analysis frequency (up to 100 samples per hour).

A differentiation is made 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 will react with the reagent solutions on their way through the manifold. The sample preparation may be integrated in the manifold. The reaction product is measured in a flow detector (e.g. flow photometer).

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Water quality — Determination of nitrite nitrogen and nitrate nitrogen and the sum of both by flow analysis (CFA and FIA) and spectrometric detection

1 Scope

This International Standard specifies a method for the determination of nitrite(N) (see note 2), nitrate(N) or the sum of both [nitrite/nitrate(N)], in various types of waters (such as ground, drinking, surface, and waste waters) in mass concentrations ranging from 0,01 mg/l to 1 mg/l for nitrite(N) and from 0,2 mg/l to 20 mg/l for nitrite/nitrate(N), both in the undiluted sample. The range of application can be changed by varying the operating conditions.

NOTES

1 Seawater may be analysed with changes in respect to sensitivity and adaptation of the carrier solution and calibration solutions to the salinity of the samples.

2 The following concise terms are used in the text of this International Standard:

nitrite(N):	(mass concentration of) nitrite, expressed as nitrogen
nitrate(N):	(mass concentration of) nitrate, expressed as nitrogen
nitrite/nitrate(N):	(mass concentration of) the sum of nitrite(N) and nitrate(N)

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 5667-1:1980, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes.*

ISO 5667-2:1991, *Water quality — Sampling — Part 2: Guidance on sampling techniques.*

ISO 5667-3:1994, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples.*

ISO 6777:1984, *Water quality — Determination of nitrite — Molecular absorption spectrometric method.*

3 Principle

3.1 Sum of nitrite(N) and nitrate(N), nitrite/nitrate(N)

With flow injection analysis (FIA), the sample is fed into a continuously flowing buffer solution (carrier stream) by means of an injection valve, or, with continuous flow analysis (CFA) being applied, it is continuously mixed with this buffer solution. Nitrate in the sample is reduced with metallic cadmium to nitrite [4]. Then, a phosphoric acid reagent solution that is also flowing continuously is admixed. Nitrite that is initially present and nitrite resulting from the reduction of nitrate will diazotize sulfanilamide in acid solution to the diazonium salt which is then coupled with *N*-(1-naphthyl)ethylenediamine to form a red dye [5] [6][7].

Waste containing cadmium in liquid or solid form shall be removed appropriately.