

**Vee kvaliteet. Lahustunud anioonide
sisalduse määramine ionivahetus-
vedelikkromatograafia abil. Osa 3:
Kromaadi, jodiidi, sulfiti, tiotsüanaadi ja
tiosulfaadi sisalduse määramine**

Water quality - Determination of dissolved anions by
liquid chromatography of ions - Part 3: Determination
of chromate, iodide, sulfite, thiocyanate and
thiosulfate

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 10304-3:1999 sisaldab Euroopa standardi EN ISO 10304-3:1997 ingliskeelset teksti. Käesolev dokument on jõustatud 12.12.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 10304-3:1999 consists of the English text of the European standard EN ISO 10304-3:1997. This document is endorsed on 12.12.1999 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: Käesolev ISO 10304 osa esitab meetodid vesilahustes lahustunud anioonide: jodiidi, tiotsüanaadi ja tiosulfaadi, sulfiti ja kromaadi sisalduse määramiseks. Sobiv proovi eeltöötlemine (näiteks lahjendamine) ning juhtivusandurite (CD), UVandurite (UV) või amperomeetrilise anduri (AD) kasutamine teevad mitmesugused tööpiirkonnad võimalikuks.	Scope:
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ICS 13.060.50

Võtmesõnad: anioonid, jodiidid, keemiline analüüs, kromaadid, kvaliteet, pihustatud vesi, sisalduse määramine, sulfitid, suure jõudlusega vedelikkromatograafia, tiosulfaadid, tiotsüanaadid, veereostus, veetestid, vesi

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Descriptors: Water analysis, anions.

English version

Water quality

**Determination of dissolved anions by liquid
chromatography of ions**

**Part 3: Determination of chromate, iodide, sulfite, thiocyanate
and thiosulfate
(ISO 10304-3 : 1997)**

Qualité de l'eau – Dosage des anions
dissous par chromatographie des
ions en phase liquide – Partie 3:
Dosage des ions chromate, iodure,
sulfite, thiocyanate et thiosulfate
(ISO 10304-3 : 1997)

Wasserbeschaffenheit – Bestimmung
der gelösten Anionen mittels Ionen-
chromatographie – Teil 3: Bestim-
mung von Chromat, Iodid, Sulfit,
Thiocyanat und Thiosulfat
(ISO 10304-3 : 1997)

This European Standard was approved by CEN on 1997-07-18.

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
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Foreword

International Standard

ISO 10304-3 : 1997 Water quality – Determination of dissolved anions by liquid chromatography of ions –
Part 3: Determination of chromate, iodide, sulfite, thiocyanate and thiosulfate,

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 February 1998 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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 10304-3 : 1997 was approved by CEN as a European Standard without any modification.

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Introduction

The essential minimum requirements of an ion chromatographic system applied within the scope of this part of ISO 10304 are the following:

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|--------------------------------------|--|
| a) Resolution of the column: | For the anion to be determined it is essential that the peak resolution does not fall below $R = 1,3$ (4.2.2, figure 3) |
| b) Method of detection: | 1) measurement of the electrical conductivity with or without suppressor device

2) spectrometric measurement (UV/VIS), directly or indirectly

3) amperometric direct detection |
| c) Applicability of the method: | Working ranges according to table 1 |
| d) Calibration (4.5.1): | Calibration and determination of the linear working range (see ISO 8466-1) |
| Guaranteeing the analytical quality: | Validity check of the calibration function. Replicate determinations if necessary. |

The diversity of the appropriate and suitable assemblies and the procedural steps depending on them permit a general description only.

For further information on the analytical technique, see reference [1].

1 Scope

This part of ISO 10304 specifies methods for the determination in aqueous solution of the dissolved anions

- iodide, thiocyanate and thiosulfate (clause 4);
- sulfite (clause 5);
- chromate (clause 6).

An appropriate pretreatment of the sample (e.g. dilution) and the application of a conductivity detector (CD), UV detector (UV) or amperometric detector (AD) make the working ranges given in table 1 feasible.

Table 1 — Applicable working ranges

Anion	Working range ¹⁾	Detector
Chromate (CrO ₄), clause 6	0,05 mg/l to 50 mg/l	UV (λ = 365 nm)
Iodide (I), clause 4	0,1 mg/l to 50 mg/l	CD or UV (λ = 205 nm to 236 nm) AD (approximately 0,7 V to 1,1 V)
Sulfite (SO ₃), clause 5	0,1 mg/l to 50 mg/l 0,5 mg/l to 50 mg/l	CD UV (λ = 205 nm to 220 nm)
Thiocyanate (SCN), clause 4	0,1 mg/l to 50 mg/l	CD or UV (λ = 205 nm to 220 nm) AD (approximately 0,7 V to 1,1 V)
Thiosulfate (S ₂ O ₃), clause 4	0,1 mg/l to 50 mg/l	CD or UV (λ = 205 nm to 220 nm) AD (approximately 0,7 V to 1,1 V)

¹⁾ The working range is restricted by the exchange capacity of the columns. Dilute the sample into the working range if necessary.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 10304. 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 5667-1:1980	<i>Water quality - Sampling - Part 1: Guidance on the design of sampling programmes.</i>
ISO 5667-2:1991	<i>Water quality - Sampling - Part 2: Guidance on sampling techniques.</i>
ISO 5667-3:1994	<i>Water quality - Sampling - Part 3: Guidance on the preservation and handling of samples.</i>
ISO 8466-1:1990	<i>Water quality - Calibration and evaluation of analytical methods and estimation of performance characteristics -Part 1: Statistical evaluation of the linear calibration function.</i>
ISO 10304-1:1992	<i>Water quality - Determination of dissolved fluoride, chloride, nitrite, orthophosphate, bromide, nitrate, and sulfate ions, using liquid chromatography of ions - Part 1: Method for water with low contamination.</i>
ISO 10304-2:1995	<i>Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 2: Determination of bromide, chloride, nitrate, nitrite, orthophosphate and sulfate in waste water.</i>