

SLOVENSKI STANDARD
SIST EN ISO 10304-2:1998**01-januar-1998****Nadomešča:****SIST ISO 10304-2:1996**

Kakovost vode - Določevanje raztopljenih anionov z ionsko kromatografijo - 2. del: Določevanje bromida, klorida, nitrata, nitrita, ortofosfata in sulfata v odpadni vodi (ISO 10304-2:1995)

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 (ISO 10304-2:1995)

Wasserbeschaffenheit - Bestimmung der gelösten Anionen mittels Ionenchromatographie - Teil 2: Bestimmung von Bromid, Chlorid, Nitrat, Nitrit, Ortho-Phosphat und Sulfat in Abwasser (ISO 10304-2:1995)

Qualité de l'eau - Dosage des anions dissous par chromatographie des ions en phase liquide - Partie 2: Dosage des ions bromure, chlorure, nitrate, nitrite, orthophosphate et sulfate, dans les eaux usées (ISO 10304-2:1995)

Ta slovenski standard je istoveten z: EN ISO 10304-2:1996**ICS:**

| | | |
|-----------|---------------------------------|--|
| 13.060.30 | Odpadna voda | Sewage water |
| 13.060.50 | Preiskava vode na kemične snovi | Examination of water for chemical substances |

SIST EN ISO 10304-2:1998**en**

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EUROPEAN STANDARD

EN ISO 10304-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1996

ICS 13.060.00

Descriptors: See ISO document

English version

**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
(ISO 10304-2:1995)**

Qualité de l'eau - Dosage des anions dissous
par chromatographie des ions en phase liquide
- Partie 2: Dosage des ions bromure, chlorure,
nitrate, nitrite, orthophosphate et sulfate,
dans les eaux usées (ISO 10304-2:1995)

Wasserbeschaffenheit - Bestimmung der gelösten
Anionen mittels Ionenchromatographie - Teil 2:
Bestimmung von Bromid, Chlorid, Nitrat, Nitrit,
ortho-Phosphat und Sulfat in Abwasser
(ISO 10304-2:1995)

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This European Standard was approved by CEN on 1996-07-05. 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.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

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

Page 2
EN ISO 10304-2:1996

Foreword

The text of the International Standard from Technical Committee ISO/TC 147 "Water quality" of the International Organization for Standardization (ISO) has been taken over as an European Standard 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 February 1997, and conflicting national standards shall be withdrawn at the latest by February 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 10304-2:1995 has been approved by CEN as a European Standard without any modification.

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

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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.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|----------------|-------------|
| ISO 5667-1 | 1980 | Water quality – Sampling – Part 1: Guidance on 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 5667-3 | 1995 |
| ISO 10304-1 | 1994 | 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 | EN ISO 10304-1 | 1995 |

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INTERNATIONAL
STANDARD

ISO
10304-2

First edition
1995-04-01

**Water quality — Determination of
dissolved anions by liquid chromatography
of ions —**

iTeh STANDARD PREVIEW

Part 2:

(Determination of bromide, chloride, nitrate,
nitrite, orthophosphate and sulfate in waste
water)

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Qualité de l'eau — Dosage des anions dissous par chromatographie des ions en phase liquide —

Partie 2: Dosage des ions bromure, chlorure, nitrate, nitrite, orthophosphate et sulfate dans les eaux usées



Reference number
ISO 10304-2:1995(E)

ISO 10304-2:1995(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 10304-2 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical, biochemical methods*.

ISO 10304 consists of the following parts, under the general title *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*
- *Part 3: Determination of chromate, iodide, sulfite, thiocyanate and thiosulfate*
- *Part 4: Determination of chlorate, chloride and chlorite in water with low contamination*

The title of ISO 10304-1:1992 is *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*

Annex A of this part of ISO 10304 is for information only.

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Introduction

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

Resolution power

It is essential that the peak resolution R does not fall below 1,3 for the anion to be determined and the nearest peak (see clause 6 and figure 3).

Method of detection

a) Measurement of the electrical conductivity with or without a suppressor device, respectively.

b) Photometric measurement (UV/VIS), directly or indirectly.

Applicability of the method

Working ranges are according to table 1.

Calibration

Calibration and determination of the linear working range. Use of the method of standard addition for special cases of application (see clause 9).

Quality control of the analytical method

Validity check of the calibration function (see 8.3). Replicate determinations if necessary.

The diversity of the appropriate and suitable assemblies and the procedural steps depending on them (e.g. composition of the mobile phases) permit a global description only.

For further information on the analytical technique, refer to ISO 10304-1.

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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

1 Scope

1.2 Interferences

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1.1 General

This part of ISO 10304 specifies a method for the determination of the dissolved anions bromide, chloride, nitrate, nitrite, orthophosphate and sulfate in waste waters.

The working ranges listed in table 1 may be obtained by an appropriate sample pretreatment (e.g. dilution) and by applying a conductivity detector (CD) or a UV-detector.

Table 1 — Working ranges of the analytical method

| Anion | Working range mg/l | Detection direct UV-detection |
|---|-----------------------|-------------------------------------|
| Bromide (Br ⁻) | 0,05 to 20 | CD or UV (200 nm to 215 nm) |
| Chloride (Cl ⁻) | 0,1 to 50 | CD |
| Nitrate (NO ₃ ⁻) | 0,1 to 50 | CD or UV (200 nm to 215 nm) |
| Nitrite (NO ₂ ⁻) | 0,05 to 20 | CD or UV (200 nm to 215 nm) |
| Orthophosphate (PO ₄ ³⁻) | 0,1 to 20 | CD |
| Sulfate (SO ₄ ²⁻) | 0,1 to 100 | CD |

NOTE — The working range is limited by the exchange capacity of the columns.

1.2.1 Organic acids, such as monocarboxylic or dicarboxylic acids, can interfere with the determination of inorganic anions.

1.2.2 In a buffered eluent (e.g. carbonate/hydrogen carbonate), the determination will not be influenced by the sample pH in the range of pH 2 to pH 9.

1.2.3 Large concentration differences between the anions Br⁻, Cl⁻, NO₃⁻, NO₂⁻, PO₄³⁻ and SO₄²⁻ may lead to typical cross-sensitivity interferences caused by an insufficient separation. The respective concentrations given in table 2 were typical for conductivity detectors and UV-detectors; no interferences could be observed with a sample volume of 50 µl. The data given are valid only when the quality requirements specified for the columns are met (see clause 6). The determination of chloride may be subject to interference from high fluoride concentrations.