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

Part 3:

Determination of chromate, iodide, sulfite,
thiocyanate and thiosulfate

*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



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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 10304-3 was prepared by Technical Committee ISO/TC 147, *Water quality*, SC 2, *Physical, chemical and 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 1: Determination of fluoride, chloride, bromide, nitrate, nitrite, orthophosphate and sulfate in water with low contamination*
- *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*

Annexes A and B of this part of ISO 10304 are for information only.

Introduction

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

- | | |
|--------------------------------------|--|
| 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: | <ul style="list-style-type: none">1) measurement of the electrical conductivity with or without suppressor device2) spectrometric measurement (UV/VIS), directly or indirectly3) 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].

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

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 ²⁻), 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 ²⁻), 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 ²⁻), 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>