



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 11206:2013

Water quality - Determination of dissolved bromate - Method using ion chromatography (IC) and post column reaction (PCR) (ISO 11206:2011)

## I.S. EN ISO 11206:2013

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

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SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces:*

*This document is based on:*  
EN ISO 11206:2013

*Published:*  
5 April, 2013

This document was published under the authority of the NSAI and comes into effect on:  
5 April, 2013

**ICS number:**

13.060.50

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ICS 13.060.50

English Version

**Water quality - Determination of dissolved bromate - Method  
using ion chromatography (IC) and post column reaction (PCR)  
(ISO 11206:2011)**

Qualité de l'eau - Détermination du bromate dissous -  
Méthode utilisant la chromatographie ionique (IC) et la  
réaction post-colonne (PCR) (ISO 11206:2011)

Wasserbeschaffenheit - Bestimmung von gelöstem Bromat  
- Verfahren mittels Ionenchromatographie (IC) und  
Nachsäulenreaktion (PCR) (ISO 11206:2011)

This European Standard was approved by CEN on 10 February 2013.

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## **Foreword**

The text of ISO 11206:2011 has been prepared by Technical Committee ISO/TC 147 "Water quality" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 11206:2013 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of an identical text or by endorsement, at the latest by September 2013, and conflicting national standards shall be withdrawn at the latest by September 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### **Endorsement notice**

The text of ISO 11206:2011 has been approved by CEN as EN ISO 11206:2013 without any modification.

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**I.S. EN ISO 11206:2013**  
**INTERNATIONAL**  
**STANDARD**

**ISO**  
**11206**

First edition  
2011-07-01

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**Water quality — Determination of  
dissolved bromate — Method using ion  
chromatography (IC) and post column  
reaction (PCR)**

*Qualité de l'eau — Détermination du bromate dissous — Méthode utilisant  
la chromatographie ionique (IC) et la réaction post-colonne (PCR)*



Reference number  
ISO 11206:2011(E)

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Published in Switzerland



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11206 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

# Water quality — Determination of dissolved bromate — Method using ion chromatography (IC) and post column reaction (PCR)

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

**IMPORTANT** — It is absolutely essential that tests conducted according to this International Standard be carried out by suitably trained staff.

## 1 Scope

This International Standard specifies a method for the determination of dissolved bromate in water (e.g. drinking water, mineral water, raw water, surface water, partially treated water or swimming pool water).

Appropriate pretreatment of the sample (e.g. dilution) allows determination of bromate at concentrations  $\geq 0,5 \mu\text{g/l}$ .

The working range is restricted by the ion-exchange capacity of the separator column. Dilution of the sample to the bromate working range can be necessary.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO 8466-2, *Water quality — Calibration and evaluation of analytical methods and estimation of performance characteristics — Part 2: Calibration strategy for non-linear second order calibration functions*

## 3 Interferences

Metals present in samples and eluents bind to the resin material of the separator column, resulting in a loss of performance. Metal ions can be eliminated with the aid of special cation exchangers (see 6.2 and Clause 8, Note 1).

Solid particles and organic compounds (e.g. mineral oils, detergents, and humic acids) shorten the lifetime of the precolumn and the separator column (see Clause 8, Notes 2 and 3).

Chlorite can interfere with the determination of bromate. Remove chlorite in accordance with the procedure specified in 9.4, if necessary.

**NOTE** Any substance that has a retention time coinciding with bromate and that produces a detector response can interfere. A high concentration of ions can have an impact on the resolution and on the analyte's retention time. Sample dilution and/or gradient elution overcomes much interference.

## 4 Principle

The sample is pretreated in order to remove ozone, chlorine dioxide, chlorite, metals and solids, if necessary (see Clause 8). Bromate is separated by ion chromatography (IC). An anion exchange resin is used as the stationary phase and either acids (e.g. sulfuric acid) or aqueous solutions of salts of weak monobasic acids

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