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**Water quality — Digestion for the  
determination of selected elements in  
water —**

**Part 2:  
Nitric acid digestion**

*Qualité de l'eau — Digestion pour la détermination de certains éléments  
dans l'eau —*

*Partie 2: Digestion à l'acide nitrique*



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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 3.

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 part of ISO 15587 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15587-2 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical method*.

ISO 15587 consists of the following parts, under the general title *Water quality — Digestion for the determination of selected elements in water*:

- *Part 1: Aqua regia digestion*
- *Part 2: Nitric acid digestion*

Annexes A to E of this part of ISO 15587 are for information only.

# Water quality — Digestion for the determination of selected elements in water —

## Part 2: Nitric acid digestion

**WARNING** — Persons using this part of ISO 15587 should be familiar with normal laboratory practice. This part of ISO 15587 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.

### 1 Scope

This part of ISO 15587 specifies a method for extracting trace elements from a water sample using nitric acid as a digestion agent. The method is applicable to all types of waters with a suspended solids concentration of less than 20 g/l and a total organic carbon (TOC) concentration expressed as carbon of less than 5 g/l.

The nitric acid digestion method is empirical and it might not necessarily release elements completely. However, for most environmental applications the result is fit for purpose.

Nitric acid digestion is suitable for the release of: Al\*, As\*, Ba\*, Be\*, Ca, Cd, Co, Cr\*, Cu, Fe\*, Hg, K, Mg\*, Mn, Mo, Na, Ni, P, Pb, Se, Sr, Ti, V\*, Zn (asterisk indicates a possible lower recovery compared to *aqua regia* digestion method specified in ISO 15587-1, see reference [1]). It is suitable for the release of Ag only if the sample is stabilized immediately after digestion. Nitric acid digestion is not suitable for Sb, Sn and for the digestion of refractory compounds such as SiO<sub>2</sub>, TiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>.

The method is generic and may be implemented using a wide variety of equipment provided

- the digestion composition is unchanged,
- the digestion temperature is known, and
- the digestion duration is in accordance with this temperature.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 15587. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 15587 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

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