
**Water quality — Determination of
nitrogen —**

Part 1:

**Method using oxidative digestion with
peroxodisulfate**

Qualité de l'eau — Dosage de l'azote —

Partie 1: Méthode par minéralisation oxydante au peroxodisulfate



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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 11905-1 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

ISO 11905 consists of the following parts, under the general title *Water quality — Determination of nitrogen*:

- *Part 1: Method using oxidative digestion with peroxodisulfate*
- *Part 2: Determination of bound nitrogen after oxidation and combustion to nitrogen dioxide using chemiluminescent detection*

Annexes A to D of this part of ISO 11905 are for information only.

INTRODUCTION

This part of ISO 11905 describes the peroxodisulfate oxidation of nitrogen compounds in water to produce nitrate. Specific details of the determination of a continuous flow method with initial reduction of nitrate to nitrite by copperized cadmium are then reported. The procedures referred to in the normative method is the reference method. Annex C gives examples of alternative techniques suitable for the determination of nitrate in the digest solution. While staying within the scope of this part of ISO 11905, it is permissible to use such alternatives only provided that their performance meets or is better than that given in table A.1, when calculated using procedures described in ISO 5725-2, and when the comparison of precision data between this part of ISO 11905 and any alternative technique is carried out using the procedures described in ISO 2854.

All references to nitrogen concentrations are expressed in milligrams of nitrogen per litre of solution (mg/l).

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Water quality — Determination of nitrogen —

Part 1:

Method using oxidative digestion with peroxodisulfate

1 Scope

This part of ISO 11905 specifies a method for the determination of nitrogen present in water, in the form of free ammonia, ammonium, nitrite, nitrate and organic nitrogen compounds capable of conversion to nitrate under the oxidative conditions described.

Dissolved nitrogen gas is not determined by this method.

This method is applicable to the analysis of natural fresh water, sea water, drinking water, surface water and treated sewage effluent. It is also applicable to the analysis of sewage and trade wastes in which the amount of organic matter in the test portion can be kept below 40 mg/l, expressed as carbon (C), when measured by Total Organic Carbon (TOC), or 120 mg/l, expressed as oxygen (O₂), when measured by Chemical Oxygen Demand (COD) according to the respective International Standards.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11905. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11905 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 current valid International Standards.

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

ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic methods for the determination of repeatability and reproducibility of a standard measurement method*.

3 Range of detection

Using the maximum test portion specified in 9.1, nitrogen (N) can be determined in the range up to 5 mg/l. Much higher concentrations can be determined using smaller test portions.

Using the maximum test portion, the lower limit of detection, expressed as N, is typically 0,02 mg/l. This depends on the method used to measure the nitrate concentration resulting from the oxidation.

4 Sensitivity

Sensitivity will depend upon the method used to measure the nitrate concentration resulting from the oxidation.