

INTERNATIONAL STANDARD

ISO
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Water quality — Determination of sodium and potassium —

Part 3:

Determination of sodium and potassium by
flame emission spectrometry

*Qualité de l'eau — Dosage du sodium et du potassium —
Partie 3: Dosage par spectrométrie d'émission de flamme*



Reference number
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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 9964-3 was prepared by Technical Committee ISO/TC 147, *Water quality*, Sub-Committee SC 2, *Physical, chemical, biochemical methods*.

ISO 9964 consists of the following parts, under the general title *Water quality* — *Determination of sodium and potassium*:

- *Part 1: Determination of sodium by atomic absorption spectrometry*
- *Part 2: Determination of potassium by atomic absorption spectrometry*
- *Part 3: Determination of sodium and potassium by flame emission spectrometry*

Annex A of this part of ISO 9964 is for information only.

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Water quality — Determination of sodium and potassium

Part 3:

Determination of sodium and potassium by flame emission spectrometry

1 Scope

1.1 Field of application

This International Standard specifies a method for the determination of dissolved sodium and potassium by flame emission spectrometry (FES). It is intended for the analysis of raw and drinking waters.

The method is applicable to water samples with a mass concentration of sodium and potassium of up to 10 mg/l. For samples containing higher concentrations of sodium and potassium, a smaller test portion is taken for analysis. The lower limits of determination are less than 0,1 mg/l for both sodium and potassium.

1.2 Interferences

The ions normally present in raw and drinking waters do not interfere with the flame emission spectrometric method for sodium and potassium if an ionization suppressant is present.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9964. 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 9964 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, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes.*

ISO 5667-2:1991, *Water quality — Sampling — Part 2: Guidance on sampling techniques.*

3 Principle

Aspiration of the sample into a gas flame of sufficient thermal energy to cause any sodium and potassium present to emit its characteristic radiation. Measurement of the intensity at a wavelength of 589,0 nm for sodium and 766,5 nm for potassium.

When using the air/acetylene flame, the addition of caesium chloride solution as an ionization buffer is necessary.

4 Reagents

During the analysis, use only reagents of recognized analytical grade and only deionized water or water of equivalent purity.

4.1 Hydrochloric acid, $c(\text{HCl}) \approx 11 \text{ mol/l}$, $\rho = 1,18 \text{ g/ml}$.

4.2 Nitric acid, $c(\text{HNO}_3) \approx 16 \text{ mol/l}$, $\rho = 1,41 \text{ g/ml}$.

4.3 Caesium chloride, (CsCl), solution.

Dissolve 25 g of caesium chloride in a solution of 50 ml of hydrochloric acid (4.1) and 450 ml of water, and dilute to 1 litre with water in a one-mark volumetric flask.