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Water quality — Determination of alkalinity —

Part 1:

Determination of total and composite alkalinity

Qualité de l'eau — Détermination de l'alcalinité —

Partie 1: Détermination de l'alcalinité totale et composite



Reference number
ISO 9963-1:1994(E)

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 9963-1 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical, biochemical methods*.

ISO 9963 consists of the following parts, under the general title *Water quality — Determination of alkalinity*:

- *Part 1: Determination of total and composite alkalinity*
- *Part 2: Determination of carbonate alkalinity*

Annex A of this part of ISO 9963 is for information only.

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Water quality — Determination of alkalinity —

Part 1:

Determination of total and composite alkalinity

1 Scope

This part of ISO 9963 specifies a method for the titrimetric determination of alkalinity. It is intended for the analysis of natural and treated water, and waste water, and can be used directly for waters having an alkalinity concentration of up to 20 mmol/l. For samples containing higher concentrations of alkalinity, a smaller test portion can be used for analysis. The recommended lower limit is 0,4 mmol/l. Suspended matter in the form of carbonate may interfere with the analysis. This interference can be reduced by filtration prior to the titration.

The endpoint detection, using a pH-meter, is less prone to interferences than the use of the indicator.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9963. 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 9963 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 385-1:1984, *Laboratory glassware — Burettes — Part 1: General requirements*.

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

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*.

ISO 6107-2:1989, *Water quality — Vocabulary — Part 2*.

IEC 746-2:1982, *Expression of performance of electrochemical analyzers — Part 2: pH Value*.

3 Definitions

For the purposes of this part of ISO 9963, the following definitions apply.

3.1 alkalinity (A): The quantitative capacity of aqueous media to react with hydrogen ions. [ISO 6107-2]

3.2 methyl red (methyl orange) endpoint alkalinity: An arbitrary measurement of the total alkalinity (A_T) of water obtained by titration to the methyl red (methyl orange) indicator endpoint (pH 4,5); to assess the equivalent hydrogen carbonate, carbonate and hydroxide concentration of water.

3.3 phenolphthalein endpoint alkalinity; composite alkalinity (A_p): The measurement by titration to the phenolphthalein endpoint (pH 8,3) of that portion of alkalinity arbitrarily attributed to all the hydroxyl and half the carbonate content of a water. [ISO 6107-2]

NOTE 1 The alkalinity of water is primarily a function of the hydrogen carbonate, carbonate and hydroxide concen-