

INTERNATIONAL STANDARD

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Water quality — Determination of alkalinity —

Part 2:

Determination of carbonate alkalinity

*Qualité de l'eau — Détermination de l'alcalinité —
Partie 2: Détermination de l'alcalinité carbonate*



Reference number
ISO 9963-2:1994(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 9963-2 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*

Annexes A and B of this part of ISO 9963 are for information only.

Water quality — Determination of alkalinity —

Part 2:

Determination of carbonate alkalinity

1 Scope

This part of ISO 9963 specifies a method for the titrimetric determination of carbonate alkalinity in natural and drinking water. Using a higher pH value for the endpoint than the method specified in ISO 9963-1, the influence of other hydrogen acceptors, such as anions of humic acids, is reduced by the procedure.

The method is intended for samples with a carbonate alkalinity between 0,01 mmol/l and 4 mmol/l (as H^+ equivalents). For samples containing higher concentrations of alkalinity, a smaller test portion can be used for analysis.

In this context, carbonate alkalinity is often called total alkalinity and usually has nearly the same numerical value as methyl orange alkalinity (MO-alkalinity).

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

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

ISO 9963-1:1994, *Water quality — Determination of alkalinity — Part 1: Determination of total and composite alkalinity.*

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

3 Definition

For the purposes of this part of ISO 9963, the following definition applies.

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

In this method, the endpoint is chosen in such a way as to permit the full neutralization of the carbonate system.

$$A = c(HCO_3^-) + 2c(CO_3^{2-}) + c(OH^-) + c(X) - c(H^+)$$

Usually proton acceptors (X) other than the carbonate system are present in low concentrations and can often be disregarded. Examples of such buffering sub-