INTERNATIONAL STANDARD 979

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Sodium hydroxide for industrial use — Method of assay

Hydroxyde de sodium à usage industriel — Détermination du titre

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 979 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in September 1973.

It has been approved by the Member Bodies of the following countries :

Austria	India	Spain
Belgium	Ireland	Switzerland
Bulgaria	Italy	Thailand
Chile	Netherlands	Turkey
Czechoslovakia	New Zealand	United Kingdom
Egypt, Arab Rep. of	Poland	U.S.S.R.
France	Portugal	Yugoslavia
Germany	Romania	
Hungary	South Africa, Rep. of	

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

No Member Body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 979-1969, of which it constitutes a technical revision.

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Sodium hydroxide for industrial use — Method of assay

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of assay of sodium hydroxide for industrial use. This assay can be expressed conventionally, as percentages by mass of NaOH, in two different ways :

A total alkalinity (NaOH equiv.);

B caustic alkalinity (NaOH c.), corresponding to the total alkalinity less the alkalinity due to carbonates.

2 REFERENCES

ISO 3195, *Sodium hydroxide for industrial use — Sampling — Test sample — Preparation of the main solution for carrying out certain determinations.*[1]

ISO 3196, *Sodium hydroxide for industrial use — Determination of carbonates content — Titrimetric method.*[1]

3 PRINCIPLE

Titration of the total alkalinity with standard volumetric hydrochloric acid solution in the presence of methyl orange as indicator. Calculation of the two amounts *A* and *B* defined in clause 1.

4 REAGENTS

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

4.1 Hydrochloric acid, N standard volumetric solution.

4.2 Methyl orange, 0,5 g/l solution.

5 APPARATUS

Ordinary laboratory apparatus and

5.1 Pipette, 50 ml, accurate to ± 0,05 ml (see ISO/R 648, class A).

5.2 Burette, 50 ml (see ISO/R 385, class A), with tapered jet, permitting a delivery of about 30 drops per millilitre.

6 PROCEDURE

6.1 Test portion

Transfer 50,0 ml of the main solution A[2], by means of the pipette (5.1), to a 500 ml conical flask.

6.2 Titration

Add about 50 ml of water and 5 drops of the methyl orange solution (4.2) to the conical flask containing the test portion (6.1) and titrate with the standard volumetric hydrochloric acid solution (4.1) contained in the burette (5.2) until the colour changes from yellow to orange.

7 EXPRESSION OF RESULTS

7.1 Total alkalinity (NaOH equiv.)

The total alkalinity (*A*), expressed as a percentage by mass of sodium hydroxide (NaOH), is given by the formula

$$A = V \times \frac{1\,000}{50} \times \frac{100}{m} \times 0{,}040\,00 = 80\,\frac{V}{m}$$

where

V is the volume, in millilitres, of the standard volumetric hydrochloric acid solution (4.1) used for the titration;

m is the mass, in grams, of the test portion used for the preparation of the main solution A[2].

The result should be expressed to one decimal place.

1) At present at the stage of draft.

2) See 4.3 of ISO 3195.

7.2 Caustic alkalinity (NaOH c.)

The caustic alkalinity (B), expressed as a percentage by mass of sodium hydroxide (NaOH), is given by the formula

$$B = A - 1{,}818\,b$$

where

A is the total alkalinity (7.1), expressed as a percentage by mass of sodium hydroxide (NaOH);

b is the carbonates content, expressed as a percentage by mass of carbon dioxide (CO_2) determined by the method specified in ISO 3196;

1,818 is the conversion factor of CO_2 to 2NaOH.

The results should be expressed to one decimal place.

8 TEST REPORT

The test report shall include the following particulars :

a) the reference of the method used;

b) the results and the method of expression used;

c) any unusual features noted during the determination;

d) any operation not included in this International Standard or the International Standards to which reference is made, or regarded as optional.