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Potassium hydroxide for industrial use — Method of assay

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FOREWORD

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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 990 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in September 1971.

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

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

No Member Body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 990-1969.

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Potassium hydroxide for industrial use — Method of assay

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of assay of potassium hydroxide for industrial use. This assay can be expressed conventionally as a percentage by mass of KOH in three different ways :

A — Total alkalinity (KOH equiv.);

B — Caustic alkalinity (KOH c.) corresponding to the total alkalinity less the alkalinity due to carbonates;

C — Actual potassium hydroxide (KOH) corresponding to the total alkalinity less the alkalinity due to carbonates and any sodium hydroxide which may be present.

2 REFERENCES

ISO/R 991, *Potassium hydroxide for industrial use — Determination of carbon dioxide content, expressed as potassium carbonate — Gas-volumetric method.*

ISO 1550, *Potassium hydroxide for industrial use — Determination of sodium content — Flame emission spectrophotometric method.*

ISO 2466, *Potassium hydroxide for industrial use — Sampling — Test sample — Preparation of the main solution for carrying out certain determinations.*

3 PRINCIPLE

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

4 REAGENTS

Distilled water, or water of equivalent purity, shall be used in the test.

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, *One-mark pipettes,* class A.)

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

6 PROCEDURE

6.1 Test portion

Transfer 50,0 ml of the main solution A[1)], by means of the pipette (5.1), to a 500 ml conical flask.

6.2 Titration

Add to the conical flask containing the test portion (6.1), about 50 ml of water, 5 drops of the methyl orange solution (4.2) 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 (KOH equiv.)

The total alkalinity (*A*), expressed as potassium hydroxide (KOH), is given, as a percentage by mass, by the formula

$$A = V \times \frac{1\,000}{50} \times \frac{100}{m} \times 0{,}056\,11 = 112{,}22\frac{V}{m}$$

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.[1)]

The result should be expressed to one place of decimals.

1) See 4.3 of ISO 2466.

7.2 Caustic alkalinity (KOH c.)

The caustic alkalinity (B), expressed as potassium hydroxide (KOH), is given, as a percentage by mass, by the formula

$$B = A - 2{,}550\,b$$

where

A is the percentage by mass of total alkalinity (7.1), expressed as potassium hydroxide (KOH equiv.);

b is the percentage by mass of carbon dioxide, determined according to ISO/R 991.

The result should be expressed to one place of decimals.

7.3 Actual potassium hydroxide (KOH)

The assay (C), as actual potassium hydroxide, is given as a percentage by mass by the formula

$$C = A - 2{,}550\,b - 2{,}440\,c$$

where

A is the percentage by mass of total alkalinity (7.1), expressed as potassium hydroxide (KOH equiv.);

b is the percentage by mass of carbon dioxide, determined according to ISO/R 991;

c is the percentage by mass of sodium, determined according to 7.2 of ISO 1550.

The result should be expressed to one place of decimals.

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 those to which reference is made or regarded as optional.