

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1551

withdrawn 1981

POTASSIUM HYDROXIDE FOR INDUSTRIAL USE

DETERMINATION OF SODIUM

GRAVIMETRIC METHOD USING URANYL ACETATE

AND MAGNESIUM ACETATE

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1551, *Potassium hydroxide for industrial use – Determination of sodium – Gravimetric method using uranyl acetate and magnesium acetate*, was drawn up by Technical Committee ISO/TC 47, *Chemistry*, the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1551, which was circulated to all the ISO Member Bodies for enquiry in July 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	Israel	South Africa, Rep. of
Belgium	Italy	Spain
Colombia	Korea, Rep. of	Switzerland
Czechoslovakia	Netherlands	Thailand
Germany	New Zealand	Turkey
Hungary	Poland	U.A.R.
India	Portugal	U.S.S.R.
Iran	Romania	

The following Member Bodies opposed the approval of the Draft :

France
United Kingdom

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

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POTASSIUM HYDROXIDE FOR INDUSTRIAL USE

DETERMINATION OF SODIUM

GRAVIMETRIC METHOD USING URANYL ACETATE

AND MAGNESIUM ACETATE *

1. SCOPE

This ISO Recommendation describes a gravimetric method for the determination of sodium in potassium hydroxide for industrial use (solid or dissolved product), as uranyl-magnesium and sodium acetate.

2. FIELD OF APPLICATION

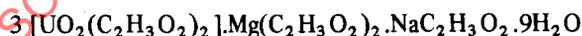
The method can be applied to the determination of sodium contents (expressed as NaOH) which are greater than or equal to 0.01 % (m/m) (based on KOH).

Two possibilities should be considered :

- (a) NaOH/KOH ratio greater than or equal to 1/100;
- (b) NaOH/KOH ratio less than 1/100.

3. PRINCIPLE

Precipitation of the sodium in the form of the triple acetate of uranyl-magnesium and sodium, insoluble in 95 % (V/V) ethanol, of the formula



Elimination of the 9H₂O by drying at 110 to 120 °C to constant mass, and weighing.

4. REAGENTS

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

4.1 Uranyl-magnesium acetate solution

- 4.1.1 Dissolve 100 g of uranyl acetate [$\text{UO}_2(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$] in water. Add 60 g of glacial acetic acid (4.3), transfer to a 1000 ml volumetric flask, dilute to the mark and mix.

* This method is intended to permit the determination when no flame spectrophotometer is available or when the content to be determined is smaller than 0.1 % (m/m).

- 4.1.2 Mix 100 g of magnesium carbonate, 200 g of glacial acetic acid (4.3) and 500 ml of water in a 1000 ml beaker.

When all the carbon dioxide has been liberated, transfer quantitatively to a 1000 ml volumetric flask. Dilute to the mark and mix.

- 4.1.3 After the solutions 4.1.1 and 4.1.2 have been left standing for between 2 and 3 hours, mix them together in a flask.

A precipitate should form; if not, add a few drops of a 10 g/l sodium chloride solution. Keep the solution in the dark and *filter off the necessary volume at the time of use.*

- 4.2 *Hydrochloric acid*, ρ 1.19 (g/ml) approximately 38 % (m/m) or 12 N solution.

- 4.3 *Glacial acetic acid*, ρ 1.05 (g/ml) approximately.

- 4.4 *Perchloric acid*, ρ 1.54 (g/ml), approximately 60 % (m/m) solution.

- 4.5 *Ethanol*, 95 % (V/V).

5. APPARATUS

Ordinary laboratory apparatus and

- 5.1 *Microburette*, 5 ml, graduated in 0.01 ml.

- 5.2 *Glass crucible* having a sintered plate with a porosity between 5 and 15 μm .

- 5.3 *Glass crucible* having a sintered plate with a porosity between 15 and 40 μm , or between 40 and 90 μm .

6. PROCEDURE

6.1 Test portion and preparation of the sample solution

Weigh, to the nearest 0.01 g, in a weighing vessel with a ground glass stopper, a suitable amount of the test sample (solid or dissolved product) and prepare as follows a sample solution such that 5 ml contain from 1.5 to 3 mg of Na.

- 6.1.1 *Solid product.* Dissolve the test portion (6.1) in water and transfer the solution quantitatively into a volumetric flask of suitable capacity. Dilute to the mark and mix.

- 6.1.2 *Dissolved product.* Transfer the test portion (6.1) quantitatively, directly into a volumetric flask of suitable capacity. Dilute to the mark and mix.