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JIS

JAPANESE INDUSTRIAL STANDARD

Potassium Hydroxide

JIS K 1431 —1970

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Investigated by: Japanese Industrial Standards Committee
Technical Committee on Potassium Salts
(Chairman: SHIBA Koreshige)
Divisional Council on Chemistry
(Chairman: FUJISAKI Tatsuo)

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JAPANESE INDUSTRIAL STANDARD JIS

Potassium Hydroxide

K 1431-1970

KOH Mol.wt. = 56.11

1. Scope

This standard specifies potassium hydroxide for industrial use.

2. Requirements

Potassium hydroxide shall conform to the following requirements when tested in accordance with 4.

	Liquid	Solid		
		No. 1	No. 2	No. 3
Potassium hydroxide (KOH) %	45 min.	95 min.	90 min.	80 min.
Potassium carbonate (K_2CO_3) %	0.5 max.	3 max.	3 max.	2 max.
Potassium chloride (KCl) %	0.01 max.	0.02 max.	0.02 max.	0.02 max.
Iron (Fe) %	0.0015 max.	0.15 max.	0.10 max.	0.004 max.

Remark: If the sodium content is required to report, it shall be determined by means of a flame spectrophotometer specified in 4.6.

3. Method of Sampling

The sample shall be taken by a rationally designed method agreed upon between parties concerned so as to represent the whole quality.

Reference Standards:

JIS K 0050-General Considerations for Chemical Analysis
JIS K 0115-General Rules for Absorptiometric Analysis
JIS K 8005-Primary Standard Substances for Volumetric Determination
JIS K 8102-Ethyl Alcohol
JIS K 8121-Potassium Chloride
JIS K 8155-Barium Chloride
JIS K 8180-Hydrochloric Acid
JIS K 8201-Hydroxylamine Hydrochloride
JIS K 8312-Potassium Chromate
JIS K 8355-Acetic Acid (99 - 100 %)
JIS K 8359-Ammonium Acetate
JIS K 8541-Nitric Acid
JIS K 8550-Silver Nitrate
JIS K 8576-Sodium Hydroxide
JIS K 8723-Nitrobenzene
JIS K 8789-o-Phenanthroline
JIS K 8799-Phenolphthalein
JIS K 8844-Bromophenol Blue
JIS K 8982-Ferric Ammonium Sulfate (Iron Alum)
JIS K 9000-Ammonium Thiocyanate
JIS R 3503-Glass Apparatus for Chemical Analysis

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The liquid sample shall be stored in a ground-stoppered polyethylene bottle, and the solid sample in a ground-stoppered wide-mouthed bottle until they are tested.

Remark: The sampling shall be made under utmost precaution as potassium hydroxide tends to absorb atmospheric carbon dioxide.

4. Method of Test

4.1 General Description on Analysis General articles common to chemical analysis shall be in accordance with JIS K 0050-General Considerations for Chemical Analysis.

4.2 Preparation of Sample Solution Weigh accurately proper amount of the sample (about 50 g for liquid potassium hydroxide and about 25 g for solid potassium hydroxide) to the nearest 1 mg and add about 100 ml of CO_2-free water. After allowed to cool to room temperature, transfer the solution to a 250 ml volumetric flask and dilute with CO_2-free water to the mark. Transfer the solution to a polyethylene bottle to serve as the sample solution and immediately subject to the tests. Shake the solution well prior to use.

4.3 Potassium Hydroxide and Potassium Carbonate

4.3.1 Summary of Method Barium chloride solution is added to the sample solution and titrated with hydrochloric acid using ethyl alcoholic phenolphthalein solution as the indicator to determine potassium hydroxide content. The excess of hydrochloric acid is added and back titrated with sodium hydroxide solution to determine potassium carbonate content.

4.3.2 Reagents

(1) Barium Chloride Solution (10 w/v) Dissolve 11.7 g of barium chloride (dihydrate) in water and dilute to 100 ml.

(2) Ethyl Alcoholic Phenolphthalein Solution (1 w/v %) Dissolve 1.0 g of phenolphthalein in 90 ml of ethyl alcohol (95 v/v %) and dilute with water to 100 ml.

(3) 1 N Hydrochloric Acid Add 1 litre of water to 95 to 100 ml of hydrochloric acid.

Standardization Heat proper amount of sodium carbonate (primary standard substance) in a platinum crucible at 500 to 650° C for 40 to 50 minutes and allow to cool in a desiccator. Weigh accurately about 2 g of the sodium carbonate to the nearest 0.1 mg and add about 25 ml of water to dissolve it. Titrate with the hydrochloric acid using ethyl alcoholic bromophenol blue solution (0.1 w/v %)* as the indicator until end point is reached. Add about 1 ml (exactly) of the hydrochloric acid in excess, and then boil for about 5 minutes to expel carbon dioxide. After cooling to room temperature, back titrate with N/10 sodium hydroxide solution prepared in (5).

* Ethyl alcoholic bromophenol blue solution (0.1 w/v %): Dissolve 0.10 g of bromophenol blue in 20 ml of ethyl alcohol (95 v/v %) and dilute with water to 100 ml.

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