

JIS

JAPANESE INDUSTRIAL STANDARD

Ammonium Chloride

 **JIS K 1441** —1986

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JAPANESE INDUSTRIAL STANDARD

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Ammonium Chloride

K 1441-1986

 NH_4Cl *FW*: 53.49

1. Scope

This Japanese Industrial Standard specifies the ammonium chloride to be used as industrial chemicals.

2. Classification

The classification shall be as follows:

- (1) For general use
- (2) For dry cells

Applicable Standards:

JIS K 0050-General Rules for Chemical Analysis

JIS K 8001-General Rules of Testing Methods for Reagents

JIS K 8005-Standard Substances for Volumetric Analysis

JIS K 8102-Ethanol (95)

JIS K 8155-Barium Chloride

JIS K 8180-Hydrochloric Acid

JIS K 8201-Hydroxylamine Hydrochloride

JIS K 8202-o-Phenanthroline Hydrochloride

JIS K 8355-Acetic Acid

JIS K 8359-Ammonium Acetate

JIS K 8541-Nitric Acid

JIS K 8625-Sodium Carbonate, Anhydrous

JIS K 8643-Thymol Blue

JIS K 8872-Formalin, Formaldehyde Solution

JIS K 8982-Ammonium Iron (III) Sulfate 12-Water

JIS Z 8802-Methods for Determination of pH of Aqueous Solutions

3. Quality

Ammonium chloride, when it is tested in accordance with the testing method in 5., shall conform to the requirement specified in following Table:

Table

Item \ Classification	For general use	For dry cells
Ammonium chloride %	98.9 min.	99.0 min.
Water content %	0.7 max.	0.5 max.
Iron %	0.02 max.	0.0005 max.
Heavy metal (as Pb) %	—	0.005 max.
Sulfate ion %	—	0.02 max.
Ignition residue %	0.4 max.	0.4 max.
pH value	4.0 to 6.5	4.0 to 5.5

Remark: Water content is the value measured when shipping from a manufacturing plant.

4. Sampling Method

Taking at random two bags or more from the one lot that is recognized to be the same quality, by using such method as the die for random sampling, the table of random number, or other rational method, then take samples from the bags in order to let them represent whole lot, and, after mixing them uniformly, put the sample in a glass or polyethylene container, to be covered tightly and used for testing. In this case, the time and place for sampling, and the decision of the lot shall be agreed between the parties concerned.

5. Testing Methods

5.1 Generals The generals in common to the testing methods shall be in accordance with JIS K 0050.

5.2 Ammonium Chloride

5.2.1 Summary Add formalin solution to the water solution of the sample, titrate the solution with sodium hydroxide solution with an addition of Thymol Blue as indicator, and then obtain the content of ammonium chloride.

5.2.2 Reagents Reagents shall be as follows:

- (1) **Thymol Blue Solution** Dissolve 0.1 g of Thymol Blue specified in JIS K 8643 in about 20 ml of ethanol (95) specified in JIS K 8102, and dilute with water up to 100 ml.

- (2) 0.1 mol/l (N/10) Sodium Hydroxide Solution The preparation and the standardization of 0.1 mol/l (N/10) sodium hydroxide solution shall be as follows:

- (a) Preparation Dilute about 100 ml of 1 mol/l (1 N) sodium hydroxide solution specified in 4.4 (20) of JIS K 8001 with the water ⁽¹⁾ that is free from carbon dioxide up to about 1 l. Store this solution in a polyethylene or hard-glass bottle equipped with a soda-lime tube.

Note ⁽¹⁾ The water free from carbon dioxide shall be in accordance with 3.8 of JIS K 8001.

- (b) Standardization Dissolve 2 to 2.5 g of the amidosulfuric acid, specified in JIS K 8005, weighed to the nearest 0.1 mg, which has been dried in a vacuum desiccator containing sulfuric acid for about 48 h, in a little of water, and then transfer it to a 250 ml volumetric flask, which is followed by adding water up to the marked line. Take an aliquot of 25 ml from this solution into a 300 ml conical beaker by using a transfer pipette.

Then, after adding a few drops of Thymol Blue indicator specified in 4.3(1) of JIS K 8001, titrate with 0.1 mol/l (N/10) sodium hydroxide solution to find an end point when the color of the liquid turns to blue from yellow.

Calculate the factor of 0.1 mol/l (N/10) sodium hydroxide solution according to the following formula:

$$f = \frac{G \times \frac{P}{100} \times \frac{25}{250}}{V \times 0.009709}$$

where

f : factor of 0.1 mol/l (N/10) sodium hydroxide solution

G : mass of amidosulfuric acid (g)

P : content of amidosulfuric acid (%)

V : consumed volume of 0.1 mol/l (N/10) sodium hydroxide solution for titration (ml)

0.009709 : quantity of amidosulfuric acid equivalent to 1 ml of 0.1 mol/l (N/10) sodium hydroxide solution (g)

- (3) Formalin Solution (1+1) Prepare this solution by making use of the formaldehyde solution specified in JIS K 8872.