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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 31631-2014

**National Food Safety Standard -- Food Additives -- Ammonium
chloride**

食品安全国家标准 食品添加剂 氯化铵

(English Translation)

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1 Scope

This standard applies to the combined alkali method, and the direct method, a double decomposition method or the production of food additives chloride ion exchange.

Molecular formula and relative molecular mass 2 Formula 2.1 NH_4Cl

2.2 Relative molecular mass

53.49 (according to 2011 international relative atomic mass)

3.1 Sensory requirements

Shall comply with the requirements in Table 1.

Table 1 Sensory requirements

Project requires test methods Color status white or a crystalline powder Proper amount of sample is placed in a 50mL beaker, under natural light Concept Color and state police

3.2 Physical and Chemical Indicators

Shall be in accordance with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Ammonium chloride (NH_4Cl) content (dry basis, w) /% ≥ 99.5
Appendix A A.4 Loss on drying (w) /% ≤ 0.5 A.5 Residue on ignition (w) /% ≤ 0.4 A.6
Lead (Pb)/(mg/kg) ≤ 2 GB 5009.12 Inorganic arsenic (As)/(mg/kg) ≤ 2 GB 5009.11 or GB
5009.76 Clarity through test A.7 Appendix A Testing method A.1 Warning Reagents used in
the present test method is corrosive, the operator should be careful as splashed on the skin
immediately wash with water, Yan in severe cases should be treated immediately.

A.2 General Provisions this standard reagents and water, in the absence of other
requirements specified, refer to three predetermined water analytical reagents and GB/T

6682 in.

Used in the test standard titration solution, standard solution, the determination of impurities, products and preparations, in the absence of other requirements specified, are by GB/T 601, GB/T 602, GB/T 603 specified prepared. When used in a solution prepared with a solvent which is not specified, refer to an aqueous solution.

A.3 Identification Test A.3.1 Reagents and materials A.3.1.1 nitric acid.

Ammonia solution A.3.1.2. 23.

A.3.1.3 silver nitrate solution. 42g/L.

Sodium hydroxide solution A.3.1.4. 40g/L.

A.3.1.5 red Shi Rui paper.

A.3.2 identification method A.3.2.1 Identification of chloride ions Take a sample of about 0.2g, was added 20mL of water to dissolve, i.e. silver nitrate solution was added to produce a white precipitate, this precipitate insoluble in nitric acid, dissolved in an excess of Ammonia solution.

A.3.2.2 Identification of ammonium Take a sample of about 0.2g, was added 20mL of water was dissolved by adding sodium hydroxide solution, the release of a pungent gas, the humidified gas can Red Shi Rui paper turns blue.

Determination A.4 ammonium chloride (NH₄Cl) content (dry basis) of A.4.1 Reagents and materials Sodium hydroxide solution A.4.1.1. 400g/L.

Sulfuric acid solution A.4.1.2. $c(2H_2SO_4) = 0.5mol/L$.

A.4.1.3 sodium hydroxide standard titration solution. $c(NaOH) = 0.5mol/L$.

A.4.1.4 methyl red - Methylene Blue mixed indicator solution.

A.4.1.5 wide pH test paper.

A.4.1.6 ammonia-free water.

A.4.2 Instruments and Equipment A.4.2.1 distillation apparatus. distillation apparatus according to Figure A.1 equipment, or other device with the same distillation Nitrogen distillation capacity, the instrument port grinding Grease sealed connection should be painted.

In millimeters

Description.

A --- retort;

B --- splash ball bottle;

--- C condenser tube (7 goals);

D --- absorption bottle;

E --- draft tube.

Figure A.1 distillation apparatus of FIG.

A.4.2.2 heating means Distillation. 1000W ~ 1500W electric furnace, placed on lifting the carriage, the height can be adjusted. Electric thermostat can also be used Furnace or other form capable of adjusting the intensity of the heating source.

A.4.2.3 proof Boiling particles. zeolite or glass capillary.

A.4.3 Analysis step

Weigh about 0.9g sample, accurate to 0.0002g, placed in a distillation flask. No ammonia was added 300mL of water, swirling the sample was dissolved. Join Boiling a few grains of explosion particles, connected to the distillation flask to the distillation apparatus. Absorbent flask with 50.0mL pipetted into the sulfuric acid solution was added 4 drops ~ 5 drops of methyl red - Methylene Blue mixed indicator solution, add water, the outlet flow conduit is located about 1.5cm at the absorption liquid surface.

Sodium hydroxide solution was added 20mL distilled off from the bottle, immediately splash plug tube. Opening of cooling water, the heating means is turned on distillation, boiling when adjusting the heating intensity depending on the degree of foam generated, to avoid overflow of foam or droplets out. After distilling off the at least 150mL distillate, widely used Check pH paper effluent droplets, such as the end of the distillation was not alkaline. Rinsed with a small amount of water to the lower end of the draft tube, remove the absorption bottle.

The absorption flask was titrated with standard sodium hydroxide solution was titrated to end point was grayish green.

At the same time a blank test. Blank test (excluding standard titration solution) kind and amount of addition of reagents and other operations except that no sample addition the same assay.

A.4.4 calculation results Ammonium chloride (NH₄Cl) content (dry basis) by the mass fraction w₁ of formula (A.1) is calculated.

$V_0 - V_1$ () $\times c \times M$

$m \times (1 - w_2) \times 1000 \times$

100% (A.1)

Where.

V_0 standard titration volume of sodium hydroxide consumed --- blank test solution, in

milliliters (mL);

Standard titration volume V_I --- NaOH solution consumed titration solution in milliliters (mL);

C --- sodium hydroxide concentration standard titration solution in units of moles per liter (mol/L);

--- M ammonium chloride molar mass in grams per mole (g/mol) [$M(\text{NH}_4\text{Cl}) = 53.49$];

--- m sample mass in grams (G);

--- w_2 of mass loss on drying measured A.5 fraction;

1000 --- conversion factor.

The test result to the arithmetic mean of replicates results. Obtained in two independent determination results under repeatability conditions of absolute difference Value is not more than 0.3%.

Determination of loss on drying A.5 A.5.1 Instruments and Equipment A.5.1.1 electric oven. 100 °C ~ 105 °C.

A.5.1.2 weighing bottle. $\phi 50\text{mm} \times 30\text{mm}$.

A.5.2 Analysis step

Weigh about 5g sample, accurate to 0.0002g, previously placed in the electric oven 100 °C ~ 105 °C dried to constant mass Given a weighing bottle at 100 °C ~ 105 °C dried to constant mass.

A.5.3 calculation results Loss on drying of the mass fraction w_2 by the formula (A.2) is calculated.

$m_1 - m_2$

$m \times 100\%$

Where.

M_1 --- weighing bottle and the sample mass before the drying units of grams (G);

--- M_2 weighing bottle and the sample after drying mass in grams (G);

--- m sample mass, in grams (g).

The test result to the arithmetic mean of replicates results. Obtained in two independent determination results under repeatability conditions of absolute difference is not greater than 0.05%.

Determination of residue on ignition A.6 A.6.1 Instruments and Equipment A.6.1.1 porcelain evaporating dish. a volume of 50mL.

A.6.1.2 temperature furnace. to control the temperature of 500 °C ~ 600 °C.