NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 29201-2020

National food safety standard - Food additive - Ammonia solution and liquid ammonia

Issued on: September 11, 2020 **Implemented on: March 11, 2021**

Issued by: National Health Commission and State Administration for Market Regulation

Table of Contents

Foreword

This Standard replaces GB 29201-2012, "National Food Safety Standard - Food Additive - Ammonia".

Compared with GB 29201-2012, the major changes of this Standard are as follows:

-- Change the standard name into "National food safety standard - Food additive - Ammonia solution and liquid ammonia";

-- Add the physical and chemical indicators and inspection methods of liquid ammonia;

-- Adopt the method that is specified in GB 5009.75 or GB 5009.12 for the determination and inspection of lead in ammonia solution.

National food safety standard - Food additive - Ammonia solution and liquid ammonia

1 Scope

This Standard applies to the food additive ammonia solution that is produced from liquid ammonia, and the food additive liquid ammonia that is produced after the liquid ammonia is purified.

2.1 Molecular formula

Ammonia solution: $NH_3.H_2O$

Liquid ammonia: NH_3

2.2 Relative molecular mass

Ammonia solution: 35.04 (according to the international relative atomic mass in 2016)

Liquid ammonia: 17.03 (according to the international relative atomic mass in 2016)

3.1 Sensory requirements

Sensory requirements shall be in accordance with Table 1.

Table 1 -- Sensory requirements

Appendix A

Inspection method

A.1 Warning

Some reagents that are used in this test method are corrosive; the operator must be careful! If it is splashed on the skin, use water to rinse immediately; in severe cases, seek medical attention immediately. When flammable products are used, it is strictly forbidden to use an open flame for heating.

A.2 General provisions

The reagents and water that are used in this Standard, when no other requirements are specified, refer to analytical reagents and grade-III water which is specified in GB/T 6682. The standard titration solution, the standard solutions, preparations and products for impurity determination, which are used in the test, are all prepared in accordance with the provisions of GB/T 601, GB/T 602, and GB/T 603, when no other requirements are specified. The used solution, if not indicated which solvent is used, refers to aqueous solution.

A.3 Identification test

A.3.1 Reagents and materials

Hydrochloric acid.

A.3.2 Identification method

A.3.2.1 Identification of ammonia solution

Use a glass rod to dip the hydrochloric acid; close it to the sample, and there shall be white smoke.

A.3.2.2 Identification of liquid ammonia

Take liquid ammonia samples according to the provisions of GB/T 8570.1; use a glass rod to dip the hydrochloric acid; close it to the sample, and there shall be white smoke.

A.4 Determination of ammonia (NH_3) content

A.4.1 Method summary

Pipette an appropriate amount of sample into the sulfuric acid solution; use sodium hydroxide standard titration solution to titrate the excess acid; use methyl red as the indicator to determine the end point.

m1 -- sample mass, in grams (g).

The test result is based on the arithmetic mean of the parallel determination results. The absolute difference between two independent determination results that are obtained under repeatability conditions is not more than 0.2%.

A.5 Determination of lead (Pb)

Perform the determination according to the method that is specified in GB **5009.75 or GB 5009.12; the water that is used in the test is grade-II water that** is specified in GB/T 6682.

A.6 Determination of evaporation residue

A.6.1 Instruments and apparatuses

Electrothermal constant-temperature drying oven: Control the temperature at **105 °C +/- 2 °C.**

A.6.2 Analysis steps

Use an evaporating dish that is dried to a constant mass at 105 °C +/- 2 °C; weigh about 10 g of sample, accurate to 0.000 2 g. After it is evaporated to dryness on a water bath, place it in the electrothermal constant-temperature drying oven, to dry at 105 °C +/- 2 °C for 1 h; take out and cool to room temperature; weigh.

A.6.3 Result calculation

Calculate the mass fraction w2 of the evaporation residue according to Formula (A.2):

Where:

m2 -- mass of the evaporating dish and residue after evaporation, in grams (g);

m3 -- mass of the empty evaporating dish before evaporation, in grams (g);

m4 -- sample mass, in grams (g).

The test result is based on the arithmetic mean of the parallel determination results. The absolute difference between two independent determination results that are obtained under repeatability conditions is not more than 0.005%.

A.7 Determination of readily oxidizable substance

A.7.1 Reagents and materials

.....