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PEOPLE'S REPUBLIC OF CHINA**

GB 29205-2012

Sulfuric acid food additives

食品添加剂 硫酸

(English Translation)

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1 Scope

This standard applies to contact with sulfuric acid after refining the production of food additives sulfuric acid.

2.1 Molecular formula

H₂SO₄

2.2 Relative molecular mass

98.08 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Shall comply with the provisions of Table 1.

Table 1 sensory requirements

The project requires a test method Color white or light brown State clear, oily liquid Take appropriate sample in a 50 mL beaker and observe the color and state under natural light

3.2 Physical and chemical indicators

Shall comply with the provisions of Table 2.

Table 2 Physical and chemical indicators

project

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92 Acid 98 acid

Testing method

Sulfuric acid (H₂SO₄) content, w /% $\geq$ 92.5 98.0 Appendix A A.4 Nitrate (in NO₃), w /% $\leq$ 0.001 A.5 in Appendix A.

Restorative substances are passed through Test A.3 in Appendix A.

Chloride (in Cl), w /% $\leq$ 0.005 Appendix A A.7

Table 2 (continued)

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92 acid 98 acid

Testing method

Iron (Fe), w /% $\leq$ 0.020 Appendix A A.8 Selenium (Se)/(mg/kg) $\leq$ 20 GB 5009.93 Lead (Pb)/(mg/kg) $\leq$ 5 GB 5009.12 Arsenic (As)/(mg/kg) $\leq$ 3 GB/T 5009.76 Appendix A Testing method A.1 Warning the samples of this standard are highly corrosive and some of the reagents used in the test methods are toxic or corrosive and should be taken in proper operation Safety and protective measures.

A.2 General provisions the reagents and water used in this standard, when not specified in other requirements, refer to the analytical reagent and the third class specified in GB/T 6682-2008 water. Standard titration solution used in the test, the standard solution for the determination of impurities, preparations and products, without any other requirements, GB/T 601, GB/T 602, GB/T 603. The solution used refers to an aqueous solution when it is not specified with any solvent formulation.

A.3 Identification test A.3.1 Reagents and materials A.3.1.1 barium chloride solution. 100 g/L.

A.3.1.2 Hydrochloric acid solution. 1 1.

A.3.1.3 Lead acetate solution. 80 g/L.

A.3.1.4 Ammonium acetate solution. 100 g/L.

A.3.2 Identification method A.3.2.1 Take about 1g sample, dissolve in 20mL water, add barium chloride solution, which produces a white precipitate, this white precipitate is insoluble in hydrochloric acid Solution.

A.3.2.2 Take about 1g sample, dissolve in 20mL water, add lead acetate solution, which produces white precipitate, this white precipitate dissolved in ammonium acetate Solution.

A.3.2.3 Take about 1g sample, dissolve in 20mL water, add hydrochloric acid does not produce precipitation.

A.4 Determination of sulfuric acid (H₂SO₄) content A.4.1 Methodological Summary

Titration with sodium hydroxide standard titration solution, according to sodium hydroxide standard titration solution consumption, to determine the content of sulfuric acid.

A.4.2 Reagent

A.4.2.1 sodium hydroxide standard titration solution. $c(\text{NaOH}) = 1\text{mol/L}$.

A.4.2.2 methyl orange indicator solution. 1g/L.

A.4.3 Analysis steps Remove about 1 mL of sample, placed in a known mass with a small conical flask, accurately called the quality, accurate to 0.0002g, carefully added 30mL water, after cooling drop 2 drops of methyl orange indicator solution, titration with sodium hydroxide titration solution to yellow.

At the same time as a blank test. Blank test in addition to no sample, the other operation and the type and amount of reagents (except for the standard titration solution) Same as the assay test.

A.4.4 Calculation of results Sulfuric acid (H₂SO₄) content of the mass fraction w_1 , according to formula (A.1) calculation.

$$[(V-V_0)/1000] \text{ cM}$$

$$m \times 100\%$$

Where.

V --- titration sample solution consumed by sodium hydroxide standard titration solution volume value in milliliters (mL);

V₀ --- titration of the blank sample solution consumed by sodium hydroxide standard titration solution volume value in milliliters (mL);

c - the exact value of sodium hydroxide standard titration solution concentration in moles per liter (mol/L);

m - the mass of the sample, in grams (g);

1000 --- conversion factor;

M - sulfuric acid (1/2H₂SO₄) molar mass in grams per mole (g/mol) (M = 49.04).

The experimental results are based on the arithmetic mean of the parallel measurement results, and the absolute difference between the two independent determinations obtained under the repeatability condition Value is not greater than 0.2%.

A.5 Nitrate (measured as NO₃) A.5.1 Reagents and materials A.5.1.1 Sulfuric acid.

A.5.1.2 Nitrate (NO_3) standard solution. 0.100 mg/mL.

Weigh 8.022 g of potassium nitrate dried at $105^\circ\text{C} \pm 2^\circ\text{C}$ for 1 hour, placed in a 500 mL volumetric flask, dissolved in water and diluted Degree, shake well. Remove the 5mL of the solution, the dropper into the 400mL sulfuric acid liquid below the surface, slowly dripping, cooling to room temperature. Transfer to 500 mL Volume bottle, diluted with sulfuric acid to the scale.

A.5.1.3 ferrous sulfate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) solution. 100g/L, that is used with the use.

A.5.2 Analysis steps Were transferred to 50 mL of sulfuric acid in two (A, B) 100 mL colorimetric tubes, 5 mL of ferrous sulfate solution was slowly added, Mix well and cool with ice bath to 10°C to 15°C . A colorimetric tube, add 10 g of the sample, cool to room temperature and dilute to 100 mL with sulfuric acid Scale. B in the middle of the color tube dropping 1.0mL nitrate standard solution and then diluted with sulfuric acid to the scale. In the background of white light from above and the next observation A colorimetric solution in the color of the color contrast with the B color tube. A colorimetric color should not be deeper than the B color tube was presented Colour.

A.6 Determination of reducing substances A sample of $8.00\text{ g} \pm 0.01\text{ g}$ was weighed, placed in a 100 mL beaker, diluted with 50 mL of ice water, cooled, 0.10 mL of potassium permanganate Solution [$c(1/5\text{KMnO}_4) = 0.1\text{mol/L}$], the solution was pink to maintain 5min.

A.7 Determination of chloride (in terms of Cl) A.7.1 Reagents and materials A.7.1.1 95% ethanol.

A.7.1.2 Nitric acid solution. 1 2.

A.7.1.3 Silver nitrate solution. 17 g/L.

A.7.1.4 Chloride (Cl) Standard solution. 0.010 mg/mL.

A.7.2 Analysis steps Weigh $1.00\text{g} \pm 0.01\text{g}$ sample, placed in 50mL beaker, add the appropriate amount of water to dissolve, all transferred to 100mL capacity Bottle, diluted with water to the mark, shake. 10 mL of the above sample solution was removed from the pipette, placed in a 50 mL colorimetric tube, and 4 mL was added Nitric acid solution and 2mL silver nitrate solution, diluted with water to the mark, gently shake. After standing for 10min, in the dark background from top to bottom view Compared with the standard turbid solution, the resulting turbidity should not be deeper than the standard turbid solution.

The standard turbid solution is a solution of 5.00 mL of chloride standard solution, which is the same as the sample.

A.8 Determination of iron (Fe) A.8.1 Reagents and materials A.8.1.1 hydrochloric acid solution. 1 3.

A.8.1.2 Other reagents and materials are the same as those in GB/T 3049-2006.