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Replacing GB/T 1396-1993

Chemical reagent - Ammonium sulfate

化学试剂 硫酸铵

(ISO 6353-3:1987, Reagents for chemical analysis - Part 3: Specifications -
Second series, NEQ)

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Chemical reagent - Ammonium sulfate

1 Scope

This standard specifies the properties, specifications, tests, inspection rules, packaging, storage, transportation, marking of the chemical reagent - ammonium sulfate.

This standard applies to the inspection of the chemical reagent - ammonium sulfate.

Molecular formula: $(\text{NH}_4)_2\text{SO}_4$

Relative molecular mass: 132.12 (according to the 2011 international relative atomic mass)

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 601 Chemical reagent - Preparations of standard volumetric solutions

GB/T 602 Chemical reagent – Preparations of standard solutions for impurity

GB/T 603 Chemical reagent – Preparations of reagent solution for use in test methods

GB/T 610-2008 Chemical reagent - General method for the determination of arsenic

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 9723-2007 Chemical reagent - General rule for flame atomic absorption spectrometry analysis

GB/T 9724 Chemical reagent - General rule for the determination of pH

GB/T 9727 Chemical reagent - General method for the determination of phosphate

5 Test

Warning - Some reagents used in this test method are toxic or corrosive. Some test procedures may lead to dangerous situations. The operator shall take appropriate safety and health measures.

5.1 General provisions

Unless otherwise specified in this chapter, the standard titration solutions, standard solutions, preparations and products, which are used in this chapter, are all prepared in accordance with the provisions of GB/T 601, GB/T 602, GB/T 603. The experimental water shall meet the requirements of grade III water in GB/T 6682. Samples are weighed to the nearest 0.01 g. For the solutions, which are expressed by "%", it means mass fraction.

5.2 Contents

5.2.1 Preparation of neutral formaldehyde solution

Measure 20 mL of formaldehyde solution. Add 20 mL of water. Add 2 drops of phenolphthalein indicator solution (10 g/L). Use sodium hydroxide standard titration solution [$c(\text{NaOH}) = 1 \text{ mol/L}$] to titrate the solution, until it becomes pink. Prepare it before use.

5.2.2 Determination method

Weigh 2 g of sample, accurate to 0.0001 g. Dissolve it in 40 mL of water. Add 40 mL of neutral formaldehyde solution. Shake well. Place for 30 min. Use sodium hydroxide standard titration solution [$c(\text{NaOH}) = 1 \text{ mol/L}$] to titrate it, until the solution is pink. Heat slightly to 50 °C. Continue titration, until the solution is pink. Keep it for 5 min.

The mass fraction w of ammonium sulfate is calculated according to formula (1):

$$w = \frac{V \times c \times M}{m \times 1\,000} \times 100\% \quad \dots\dots\dots (1)$$

Where:

V - the volume of sodium hydroxide standard titration solution, in milliliters (mL);

c - The concentration of sodium hydroxide standard titration solution, in moles per liter (mol/L);

M - The molar mass of ammonium sulfate, in grams per mole (g/mol) { M

the sample at the same time.

Analytically pure: 0.01 mg; chemically pure: 0.05 mg.

5.9 Phosphate

Weigh 1 g of the sample. Dissolve it in 5 mL of water. Add 2 drops of saturated 2,4-dinitrophenol indicator solution. Add nitric acid solution (13%) dropwise, until the yellow color just disappears. After diluting to 10 mL, follow the requirements of GB/T 9727 to make determination. The blue of the organic phase shall not be deeper than the standard colorimetric solution.

For the preparation of the standard colorimetric solution: take the phosphate (PO_4) standard solution, which contains the following amount; process it the same as the sample at the same time.

Analytically pure: 0.005 mg; chemically pure: 0.020 mg.

5.10 Arsenic

Weigh 5 g of the sample. Dissolve it in 30 mL of water. Determine it in accordance with 4.2 in GB/T 610-2008. The purple-red color of the absorption solution shall not be deeper than the standard colorimetric solution.

For the preparation of the standard colorimetric solution: take the arsenic (As) standard solution, which contains the following amount; process it the same as the sample at the same time.

Analytically pure: 0.001 mg; chemically pure: 0.010 mg.

5.11 Calcium

5.11.1 Reagents, materials and instruments

According to the provisions of Chapter 5 and Chapter 6 of GB/T 9723-2007.

5.11.2 Instrument conditions

Light source: Calcium hollow cathode lamp.

Wavelength: 422.7 nm.

Flame: Acetylene-air.

5.11.3 Determination method

Add 2 mL of hydrochloric acid solution (10%), in the residue after measuring the ignition residue (5.6), to dissolve it. Dilute it to 100 mL. Take 20 mL. Dilute it to 100 mL. Determine it according to 7.2.1 in GB/T 9723-2007. The result is

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