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

GB 12595-2008

Working chemical - Silver nitrate

工作基准试剂 硝酸银

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Foreword

The standard Chapter 4,

5.2.2 are mandatory, other provisions are recommended. This standard replaces GB 12595-1990 "job reference reagent (capacity) of silver nitrate," major changes compared with the GB 12595-1990 as follows:

--- Standard name was changed to "work reference reagent silver nitrate";

--- Modify the Content Measurement (1990 version 4.1, this version 5.3);

--- Project Name "reaction solution" to "pH value" (the 1990 edition 3.3,4.3, 4, 5.4 this edition);

--- Modified iron, copper, determination of lead (4.4.6,4.4.7,

4.4.8 the 1990 edition, this edition 5.10,5.11,5.12) ;

--- Abolition of the "standard solution formulated Appendix A (Supplement)" (1990 edition Appendix A). The standard proposed by China Petroleum and Chemical Industry Association. This standard by the National Standardization Technical Committee Chemistry Chemicals Branch (SAC/TC63/SC3) centralized. This standard is drafted by: Beijing Institute of chemical reagents. The main drafters of this standard. Han Baoying, strong Jing Lin. This standard replaces the standards previously issued as follows:

--- GB 12595-1977, GB 12595-1990. Working Standard reagent silver nitrate Warning. some of the test procedure specified in this standard can lead to dangerous situations, the user has the responsibility to take appropriate safety and health practices. Formula. AgNO

3 Molecular weight. 169.87 (according to 2005 international relative atomic mass).

1 Scope

China's mandatory national standard for silver nitrate as a working chemical. Silver nitrate is the titrant of argentometry - the determination of chloride, bromide, iodide, cyanide and thiocyanate - and there is no substitute for it, because no other cation forms sparingly soluble halides so cleanly and so quantitatively. Chloride determination is one of the most frequently run analyses anywhere: it governs drinking water, boiler feed water, food, cement and the corrosion assessment of concrete. Two practical facts shape the specification. Silver nitrate is expensive, so purity is priced rather than assumed; and its solutions are light-sensitive and reduce to metallic silver, which is why the requirements extend to the packaging and why the reagent lives in amber bottles. The standard specifies the requirements, the impurity limits and the test methods for the working grade.

This standard specifies the characteristics, specifications, testing, inspection rules, and packaging and marking work reference reagent silver nitrate. This standard applies to titration analysis work reference reagent silver nitrate test.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard. Preparation of

GB/T 601 chemical reagent standard titration solution

GB/T 602 Determination of impurities in chemical reagents prepared standard solution (GB/T 602-2002,

ISO 6353-1. 1982, NEQ) with

GB/T 603 chemical reagent test method Preparations of articles (GB/T 603-2002,

ISO 6353-1 with. 1982, NEQ)

GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD)

GB/T 9723-2007 Chemicals flame atomic absorption spectrometry General

GB/T 9724 General rule for determination of pH chemical reagent (GB/T 9724-2007,

ISO 6353-1. 1982, NEQ) Determination of working reference reagent content

GB 10737-2007 General Weighing potentiometric titration

GB 15258 rules for preparation of chemical safety labels

GB 15346 chemical reagent packaging and marking

HG/T 3484 standard chemical reagents glass emulsion and clarity standards

3 Characters

This reagent is colorless or white crystals, soluble in water, easily oxidized in air, protected from light, the case of organic black.

4 Specification

Silver nitrate as shown in Table 1. Table

1 Name reference work Content (AgNO_3) /% 99.95 ~ 100.05 Appearance of compliance pH value (50g/L, 25 °C) 5.0 ~

5 Test

5.1 General provisions Unless specified otherwise in this chapter, the use of the standard solution, preparations and products, according to GB/T 602, the provisions of the preparation of GB/T 603, the experimental Water should be consistent with GB/T 6682 specifications in three water samples according to precise weighing 0.01g, the solution to the "%" are represented by quality fraction.

5.2 Determination of content Measured according to the provisions of GB 10737-2007. GB 10737-2007 accordance with the provisions of Appendix A formulated.

5.2.2 Determination Said take 0.5g sample was measured after drying loss to the nearest 0.00001g, placed in a reaction flask, dissolved in 70mL water, add 10mL lake Powder solution (10g/L), with 216 type silver electrode as indicator electrode, 217 double salt bridge with a saturated calomel electrode (outer casing built saturated salt bridge Potassium nitrate solution) as a reference electrode, with a standard solution of sodium chloride [Chou (NaCl) = 0.1mol/kg] titrated to the end point. Weighing the reference solution of sodium chloride Quality liquid should be accurate to 0.0001g. Silver nitrate content and its value is "%" means, according to equation (1). (1) Where. Content b

--- standard substance of sodium chloride (mass fraction), the value to "%" means;

--- The MG numerical molar mass of silver nitrate in grams per mole (g/mol) [$M(\text{AgNO}_3) = 169.87$];

--- MB of standard numerical molar mass of sodium chloride material in grams per mole (g/mol) [$M(\text{NaCl}) = 58.44$]. Silver acid density is 4.45g/cm³.

5.3 Appearance Colorless or white crystals, without dark. According to GB/T 9724 provisions of the assay in which the reference electrode 217 double salt bridge with a saturated calomel electrode (outer casing built saturated nitrate salt bridge Or ammonium

nitrate solution).

5.5 Clarity test Weigh 10g sample was dissolved in 100mL of water, add 0.1mL solution of nitric acid (25%), shaken, turbidity is not greater than HG/T 3484 Clarity No. 2 standard stipulated.

5.6 Loss on drying Weigh 5.5g sample to the nearest 0.0001g, it has been placed in the weighing bottle constant in sulfuric acid dryer, drying in the sulfuric acid desiccator To constant weight. Samples retained after constant for determination. Loss on drying mass fraction of 1, the value in the "%" means, according to equation (2). 100 (2) Where.

5.7 hydrochloric acid does not precipitate 25g samples were weighed, dissolved in 200mL of water (25%) nitric acid solution was added 0.25mL, diluted to 250mL, dissolved nitrate added 4mL Solution (25%), diluted to 400mL, boiled, with stirring was added dropwise a solution of 30mL of hydrochloric acid (20%), heated on a water bath, and stirring was continued until Curd-like precipitate to form larger particles. Is $\pm 2^{\circ}\text{C}$ at 105°C in dark for 2h, diluted to 500mL, filter, take 400mL, placed The constant evaporating dish, evaporated to dryness at $105^{\circ}\text{C} \pm 2^{\circ}\text{C}$ in an electric oven dried to constant weight. While doing the blank test. Sample residue and blank The residue of the poor quality of the test shall not exceed 1.0mg.

5.8 Chloride

5.8.1 Preparation of chloride-free silver nitrate solution Weigh 10g sample was dissolved in 80mL of water, add 5mL nitric acid, diluted to 100mL, shake, in the dark place for 10min, chlorine-free Filter paper.

5.8.2 Determination Weigh 2g sample was dissolved in 20mL water, 1mL plus nitric acid, diluted to 25mL, shake, in the dark place for 10min. Solution Turbidity was no larger than a standard turbidity solution. Preparation of standard turbidity solution is to take the silver nitrate solution 20mL chloride free and contains 0.01mg chloride (Cl) standard solution, Diluted to 25mL, and the same volume of test solution placed simultaneously 10min, turbidity.

5.9 sulfate 1g sample was weighed, dissolved in 20mL of water, add 0.5mL acetic acid solution (30%) was acidified. The 0.25mL ethanol solution of potassium sulfate (0.2g/L) and 1mL of saturated barium nitrate solution was mixed (seed liquid), accurate placement 1min. Added to the test solution has been acidified, diluted to 25mL, shake for 5min. The turbidity of the solution was not greater than the standard turbidity solution. Standard preparation turbid solution is to take the ratio of 0.02mg containing sulfate (SO_4) standard solution, and treated in the same sample at the same time.

5.10 Iron Determined according to the provisions of GB/T 9723-2007 of.

5.10.1 instrument conditions. Source. iron hollow cathode lamp; Wavelength. 248.3nm;