



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

GB/T 6009-2014

Replacing GB/T 6009-2003

Anhydrous sodium sulfate for industrial use

工业无水硫酸钠

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 6009-2003 "Anhydrous sodium sulfate for industrial use". As compared with GB/T 6009-2003, in addition to editorial changes, the main technical changes are as follows: - ADJUST the technical requirements of the product to improve the requirements of category-I superior products; ADD the pH requirement of the aqueous solution of product (50 g/L) (see 5.2;

4.2 of the 2003 edition); - In the determination method of calcium and magnesium content, ADD the atomic absorption method (see 6.5;

5.5 of the 2003 edition); - In the determination of chloride content, ADD the silver amount method (see 6.6;

5.6 of the 2003 edition); - ADD the determination method of pH (see 6.10). This standard was proposed by the China Petroleum and Chemical Industry Federation. This standard shall be under the jurisdiction of the Inorganic Chemical Branch of the National Chemical Standardization Technical Committee (SAC/TC 63/SC 1). Drafting organizations of this standard. Hunan Hengyang Xinyi Chemical Co., Ltd., CNOOC Tianjin Chemical Research and Design Institute, Nanfeng Chemical Group Co., Ltd., Sichuan Chuanmei Mirabilite Co., Ltd., Sichuan Hongyaqing Yijiang Yuanming Powder Co., Ltd., Tongbai Star Chemical Co., Ltd., Hechang (Pengshan) Chemical Co., Ltd., Jiangsu Yinzhu Chemical Group Co., Ltd., National Salt Chemical Product Quality Supervision and Inspection Center (Jiangsu). The main drafters of this standard. Liu Jian, Lu Siwei, Chen Aibing, Zou Huarong, Huang Guifang, Wu Guoyu, Zhou Zhaogang, Wang Yigui, Chen Changyi. This standard replaces the standard previously issued as follows: - GB 6009-1985, GB/T 6009-1992, GB/T 6009-2003. Anhydrous sodium sulfate for industrial use

1 Scope

GB/T 6009-2014 is the Chinese product standard for industrial anhydrous sodium sulfate, the salt cake used in enormous tonnages by the detergent, glass, textile dyeing, paper and tanning industries. Much of it is a by-product of other chemical processes rather than a mined mineral, which is precisely why the impurity limits carry the weight in this standard: the sodium sulfate content itself varies little, while the chloride, the iron, the water-insoluble matter, the calcium and magnesium and the moisture vary with the source and are what determine whether the material can be used in a glass furnace or in a dye bath. The document sets the grades and the requirements on each of those, the whiteness and the appearance, the test methods for each determination, the inspection rules including the sampling and the acceptance, and the requirements on marking, packaging, transport and storage. The 2014 edition replaces GB/T 6009-2003. For a producer, a trader or an industrial buyer verifying a delivery in China, this is the acceptance text.

This standard specifies the classification, requirements, test methods, inspection rules, marking, labeling, packaging, transportation, storage of anhydrous sodium sulfate for industrial use. This standard applies to anhydrous sodium sulfate for industrial use. This product is mainly used as the industrial raw materials such as battery, optical glass, printing-dyeing, synthetic detergent, vinylon, dye, ordinary glass, paper industry, fiber production, inorganic salt, etc.

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) are applicable to this standard.

GB/T 191-2008 Packaging - Pictorial marking for handling of goods

GB/T 3049-2006 Chemical products for industrial use - General method for determination of iron content - 1 10-Phenanthroline spectrophotometric method

GB/T 3051-2000 Inorganic chemical products for industrial use - General method for determination of chloride content - Mercurimetric method

GB/T 6678 General principles for sampling chemical products

GB/T 6682-2008 Water for analytical laboratory use - Specification and test methods

GB/T 8170 Rules for rounding off for numerical values & expression and judgement of limiting values

GB/T 23769-2009 Inorganic chemical products - General method for the determination of pH values

3 Molecular formula and relative molecular mass Molecular formula. Na_2SO_4 .

Relative molecular mass. 142.02 (according to 2011 international relative atomic mass).

4 Classification

According to the use of anhydrous sodium sulfate for industrial use, it is divided into three categories.

5 Requirements

5.1 Appearance. Anhydrous sodium sulfate for industrial use is white crystalline particles.

5.2 Anhydrous sodium sulfate for industrial use shall meet the requirements of Table 1.

6 Test methods

Warning. Some of the reagents used in this test method are toxic or corrosive. The operator shall be careful! If splashed on the skin, rinse immediately with water. In severe cases, treat immediately. When using flammable products, it is strictly forbidden to use an open flame to heat it.

6.2 Appearance inspection The appearance is visually judged on a white-surface watch glass or a white porcelain plate under natural light.

6.3.1 Weight method (arbitration method)

6.3.1.5 Calculation of results The sodium sulfate content is calculated based on the mass

fraction w_1 of sodium sulfate (Na_2SO_4) through the formula (1).

6.3.2 Calculation method

6.3.2.1 Summary of method The mass fractions of water insoluble, magnesium sulfate, sodium chloride, iron sulfate, moisture, acidity or alkalinity are subtracted from 100 to obtain the sodium sulfate content.

6.4.1 Instruments

6.4.1.1 Glass mortar. The filter plate has a pore size of $5\ \mu\text{m} \sim 15\ \mu\text{m}$.

6.4.1.2 Electrothermal constant temperature drying oven. The temperature can be controlled at $105\ ^\circ\text{C} \pm 2\ ^\circ\text{C}$.

6.5.1 Atomic absorption method (arbitration method)

6.5.1.1 Summary of method After the sample is dissolved, in a nitric acid medium, use the release agent cesium chloride and the deionization agent cesium chloride to eliminate the ionization interference. The calcium and magnesium ions are determined by a flame atomic absorption spectrophotometer at wavelengths of 422.6 nm and 286.2 nm, respectively.

6.5.1.2 Reagents 6.5.1.2.1 Nitric acid solution. 1 + 9.

6.5.1.3 Instruments Flame atomic absorption spectrophotometer. It is equipped with calcium and magnesium cathode hollow lamps.

6.5.1.4 Analytical procedures 6.5.1.4.1 Preparation of test solution Weigh a certain amount of specimen (about 10 g for category-I superior products; about 1 g for category-II products; about

0.5 g for category-III products; about

0.3 g for category-III products), accurate to

0.01 g. Place it in a 250 mL beaker. Add 50 mL of water and 20 mL of nitric acid solution. Heat to dissolve it. Continue boiling it for 5 min. After cooling it, transfer it all into a 500 mL (V1) volumetric flask. Use water to dilute it to the mark. Shake it uniformly. Dry filter it. Prepare for use.

6.6.2 Silver quantity method

6.6.2.1 Summary of method The chloride ions in the test solution are titrated by a silver nitrate standard titration solution under neutral or slightly alkaline conditions by the use of potassium chromate as an indicator.

6.6.2.2 Reagents