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

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Food Additives silicone

食品添加剂 硅胶

(English Translation)

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1 Scope

This standard applies to the sodium silicate solution and the reaction of acid production of food additives silica gel.

2.1 Molecular formula

SiO₂

2.2 Relative molecular mass

60.08 (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 State powder or particles 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

Item Index Test Method Silica (SiO₂) content (after burning), w /% ≥ 94.0 Appendix A A.4
Burning loss, w /% ≤ 70.0 Appendix A A.5 Heavy metals (Pb)/(mg/kg) ≤ 30 GB/T
5009.74 Arsenic (As)/(mg/kg) ≤ 3.0 GB/T 5009.76 Water soluble, w /% ≤ 5.0 Appendix A
A.6 Appendix A Testing method A.1 Warning Some of the reagents in this method are toxic

and corrosive and should be handled with appropriate 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 solutions, preparations and articles for the determination of impurities used in the tests shall be in accordance with GB/T 602, GB/T 603 when no other requirements are specified the provisions of the preparation. 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 anhydrous potassium carbonate.

A.3.1.2 Ammonia.

A.3.1.3 Ammonia solution. 1 1.

A.3.1.4 Nitric acid solution. 4 5.

A.3.1.5 Sodium hydrogen phosphate solution. Weigh 12 g of disodium hydrogen phosphate ($\text{Na}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}$) and dissolve in 100 mL of water.

A.3.1.6 ammonium molybdate solution. Weigh 6.5g ammonium molybdate, dissolved in 30mL ammonia solution, cooling, stirring slowly added to 70mL of nitrate Acid solution, placed 48h. Filter, the filtrate stored in the dark. The solution was quenched for a long time, and 2 mL of phosphorus was added to 5 mL of the solution Disodium hydrogen acid solution, do not immediately produce a large number of yellow precipitate, that is, the solution failure.

A.3.1.7 Glacial acetic acid saturated solution of o-toluidine.

A.3.2 Identification method A.3.2.1 Weigh about 5g of the sample In the platinum crucible, add.200mg anhydrous potassium carbonate mixture, in the red hot electric furnace burning about 10min, Cooling, add 2mL water to dissolve, if necessary, heating, and then slowly add 2mL ammonium molybdate solution, with dark yellow.

A.3.2.2 Add 1 drop of yellow silicomolybdate solution in A.3.2.1 on the filter paper, dry the solvent in water bath, then add 1 drop Aniline glacial acetic acid saturated solution, the test paper on the ammonia, should be blue and green spots appear.

A.4 Determination of silica (SiO_2) content A.4.1 Methodological Summary After the sample was fired at $950^\circ\text{C} \pm 50^\circ\text{C}$ for 1 h, the silica was decomposed by heating with excess hydrofluoric acid to escape the fluorosilicic acid. Burning Burned after weighing, the quality of the loss is the silica content.

A.4.2 Reagents and materials A.4.2.1 Hydrofluoric acid.

A.4.2.2 Sulfuric acid.

A.4.2.3 Ethanol.

A.4.3 Instruments and equipment A.4.3.1 Platinum crucible. 30 mL.

A.4.3.2 High temperature furnace. Controlled temperature $950\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$.

A.4.4 Analysis steps Approximately 1 g of the burned sample A (A.5.2) was weighed and placed in a platinum crucible which had been calcined at $950\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$ until the mass was constant.

2mL ethanol wetting, adding 5 to 6 drops of sulfuric acid, adding 10mL hydrofluoric acid submerged sample. Placed in the electric furnace evaporated to just a large amount of white After the smoke, cool, then add 5mL of hydrofluoric acid, carefully turn the crucible to rinse the inner wall, and then evaporate to dry. At $950\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$ burning to quality Constant volume.

A.4.5 Calculation of results the mass fraction w_1 of the silica (SiO_2) content is calculated according to the formula (A.1) $w_1 = \frac{m_1 - m_2}{m_1 - m_0} \times 100\%$ (A.1) where.

m_1 --- the mass of sample A and platinum crucible in grams (g);

m_2 - the mass of the residue and platinum crucible in grams (g);

m_0 --- quality value of platinum crucible in grams (g).

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 Determination of burning reduction A.5.1 Instruments and equipment A.5.1.1 Electric thermostat oven. Controlled temperature $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$.

A.5.1.2 High temperature furnace. Controlled temperature $950\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$.

A.5.1.3 Platinum crucible. 30 mL.

A.5.2 Analysis steps A sample of 3 g to 5 g previously dried at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 2 hours was weighed to 0.0002 g and placed at a temperature of $950\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$ Under the burning to the quality of the platinum crucible, at $950\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$ burning 30min. Remove, cool in the dryer, and weigh. Keep this the burned sample is Sample A and is used for A.4 to determine the silica content.

A.5.3 Calculation of results the mass fraction w_2 of the burn reduction is calculated according to equation (A.2) $w_2 = \frac{m_1 - m_2}{m_1 - m_0} \times 100\%$ (A.2) where.

m_1 - the mass of the sample and the quality of the platinum crucible before burning, in grams (g);

m_2 - the mass of the sample and the quality of the platinum crucible after burning, in grams (g);

m_0 --- the mass of the platinum crucible, in grams (g).

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.6 Determination of water-soluble substances A.6.1 Instruments and equipment A.6.1.1 Conductivity meter.

A.6.1.2 glass sand core funnel. filter plate diameter $5\mu\text{m} \sim 15\mu\text{m}$, the volume of 100mL.

A.6.2 Analysis steps Weigh the sample of $5.00\text{ g} \pm 0.01\text{ g}$ at $105^\circ\text{C} \pm 2^\circ\text{C}$ for 2 h, placed in a 250 mL beaker, add 100 mL of water, stir 15min. Standing, to be insoluble precipitated down, with a glass sand core funnel for filtration, the filtrate into the 250mL volumetric flask. With hot water the insoluble material was washed three times with about 20 mL of water each time, and finally the funnel and the filter flask were washed with about 20 mL of hot water. The filtrate was cooled to room temperature, Combined into the filtrate into the volumetric flask, diluted with water to the mark, shake. The specific resistance of the test solution was measured by a conductivity meter, and the test solution was charged the resistance should not be less than the specific resistance of the corresponding reference solution. The reference solution contained 250 mg of anhydrous sodium sulfate per 250 mL of water.