



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

GB 1886.90-2015

**National Food Safety Standard -- Food Additives -- Calcium
silicate**

食品安全国家标准 食品添加剂 硅酸钙

(English Translation)

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1 Scope

This standard applies to the synthesis of new lime and silica curing reaction obtained food additive calcium silicate.

2.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods White to off-white color State powder Take the right amount of sample is placed in a clean, dry white porcelain dish, under natural light Observe the color and status

2.2 Physical indicators

Physical and chemical indicators should be consistent with the provisions of Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Silica content, w /% ≥ 40 Appendix A A.2 Calcium oxide content, w /% ≥ 0.75 Appendix A A.3 Fluorine (F)/(mg/kg) ≤ 10.0 Appendix A A.4 Loss on drying, w /% ≤ 10.0 Appendix A A.5 Loss on ignition, w /% ≤ 20.0 A.6 in Appendix A Lead (Pb)/(mg/kg) ≤ 5.0 Appendix A A.7 Appendix A Testing method A.1 General Provisions this standard reagents and water in the absence of other specified requirements, refer to the three water analytical reagent and GB/T 6682 regulations. test Used in the standard solution, standard solution for measuring impurities, formulations and products, did not indicate when the other requirements according to GB/T 601, GB/T 602, GB/T 603 provisions of preparation. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Determination of silica content Note. Operation perchloric and hydrofluoric acid required in a fume hood.

400mg accurately weighed sample (accurate to 0.1mg), placed in a beaker, water was

added 5mL and 10mL of perchloric acid, heated until production Health perchlorate white smoke. Use beaker was covered with a watch glass, and heating was continued for 15min. After cooling, 30mL water, filtered, and Cleaning residue with 200mL water. The combined filtrate and washing liquid for the sample A, for the determination of calcium oxide content. Transfer the filter paper and residue to Platinum crucible, heated slowly until dry, and then heated sufficiently to burn the filter paper. After cooling, a few drops of sulfuric acid, until constant firing at 1300 °C set. Add 5 drops of sulfuric acid moist residue, then add 15mL hydrofluoric acid carefully heated until all volatile, at a temperature of not more than 1000 °C the degree of burning down to a constant. Cooled and weighed in a desiccator. Mass reduction equivalent to the amount of silica in the sample.

A.3 Determination of calcium oxide content Take the sample A, in order to do litmus indicator, with 1mol/L sodium hydroxide solution and then stirring from 50mL tubes Add 30mL 0.05mol/L EDTA disodium L solutions. Sodium hydroxide solution was added 15mL of 1mol/L/300mg and hydroxy Naphthol blue indicator. Continue with disodium EDTA solution was titrated to a blue endpoint. Per milliliter 0.05mol/L EDTA disodium salt solution of L Equivalent to 2.804mg of calcium oxide.

A.4 fluorine (F) is measured Note. All of the fluoride solution in a plastic container.

A.4.1 0.2mol/L EDTA-0.2mol/L TRIS solution. Weigh 18.6g EDTA disodium salt and 6.05g TRIS, moved 250mL beaker. Add 200mL hot deionized water and stirred until all are dissolved. With 5mol/L sodium hydroxide to adjust the pH to 7.5 to 7.6. The solution was cooled, and the pH adjusted to 8.0 with 5mol/L sodium hydroxide. The solution was transferred to a 250mL measuring cylinder and rinsed Diluted with deionized water to the mark. After mixing, store in a plastic container.

A.4.2 fluoro standard stock solution (1000mg/kg). The 2.210g of sodium fluoride dissolved 50mL of deionized water. The solution was transferred to a 1L Graduated cylinder, diluted with water to the mark.

A.4.3 fluoro standard solution (1mg/kg and 10mg/kg). standard stock solution Pipette 10mL to 100mL graduated cylinder with deionized Diluted with water to the mark, and mix well. Pipette 1mL of this solution were 10mL and 100mL graduated cylinder to separate, respectively deionized Diluted with water to the mark.

Note: This solution should be configured day that day.

Sample solution A.4.4. precipitation or other silica-based products. 5g of sample transferred to Teflon beaker. Added 40mL of deionized Ionized water and 20mL of 1mol/L hydrochloric acid. It was heated near boiling 1min, and stirring was continued. Beaker with ice-cooling, transfer the contents to 100mL Measuring cylinder, and diluted with deionized water to the mark.

Note: The sample was not completely dissolved.

Diatomite-based products. 5g of sample transferred to Teflon beaker. Was added 60mL of deionized water and stirred for 1min. Metastasizing Yung was to 100mL graduated cylinder and diluted with deionized water to the mark. The supernatant was transferred to two 50mL centrifuge tubes, centrifuged until clear solution Che, usually not more than 30min.

Note: The sample was not completely dissolved.

A.4.5 Calibration curve. standard solution Pipette above two concentrations of each 20mL to 100mL separate plastic beaker were added 0.2mol/LEDTA-0.2mol/LTRIS solution of 10mL. Use a combination of fluorine Orionmodel96-09 electrode (or other equivalent Products) measuring potential. By standard solution fluoride concentration (mg/kg) on the number of potential and make plans to obtain a standard curve. Or O-rion scalable ion analyzer EA-940 (or other equivalent product) calibrated to read directly the concentration.

A.4.6 Analysis. Pipette 20mL sample solution to 100mL plastic beaker, 10mL of 0.2mol/LEDTA-0.2mol/L TRIS solution, measuring the potential of the solution, and the concentration is calculated by a calibration curve fluoride ion.

A.5 Determination of loss on drying Take 1g samples, accurate to 0.0001g, placed under the same conditions and the specimen is dried to constant flat weighing bottle, dried at 105 °C Dry 2h. Keep this dried sample is a sample B, for use when measuring weight loss on ignition.

Loss on drying mass fraction w_1 , according to equation (A.1) Calculated.

$m_2 - m_0$

$m_1 - m_0$

Where.

m_2 --- weighing bottle quality and drying of the sample, in grams (g);

m_0 --- weighing bottle mass in grams (g);

Mass m_1 --- weighing bottle and sample before drying, in grams (g).

A.6 Determination of weight loss on ignition Weigh 1g ~ 2g sample after drying the above, accurate to 0.0002g, placed in a pre-calcined at 900 °C to constant quality porcelain crucible Crucible burning 2h. Remove, cool in a desiccator, and weigh.

Loss on ignition mass fraction w_2 , according to equation (A.2) Calculated.

$m_4 - m_3$

$m_5 - m_3$

Where.

Quality m_4 --- sample and a porcelain crucible ignited in grams (g);

m3 --- porcelain crucible mass in grams (g);

m5 --- sample and a porcelain crucible burning mass before, in grams (g).

A.7 Lead (Pb) Determination A.7.1 standard stock solution (100µg/mL lead ions). The 159.8mg lead nitrate (analytical grade) is dissolved in nitric acid containing 1mL 100mL of water. Mixed and diluted with water to 1L.

Note: This solution should be prepared and stored in a glass container unleaded ions.

A.7.2 Standard solution. prepared by the standard storage solution lead concentration of 0.25µg/mL solution.

A.7.3 Sample solution. 5.0g sample was placed in 250mL beaker, 50mL of 0.5mol/L hydrochloric acid, cover with a watch glass, slow Slowly heated to boiling. Gentle boiling 15min, cooling, the undissolved material was allowed to stand. IV using Whatman filter paper filter paper or other equivalent the supernatant was filtered to 100mL graduated cylinder, maintaining as much insoluble substance in a beaker. Use 10mL hot water slurry mass and burn Cup three times, and the liquid is filtered into a graduated cylinder. Finally, using 15mL hot water filter, and the filtrate was cooled to room temperature, diluted with water to the mark Degrees, mix well.

A.7.4 Analysis. Use appropriate atomic absorption spectrophotometer, set 217nm, using water-zero standard solution and samples were measured the absorbance of the solution. Absorbance of the sample solution should be no greater than the absorbance of the standard solution.