



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

GB 1886.62-2015

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

食品安全国家标准 食品添加剂 硅酸镁

(English Translation)

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1 Scope

This standard applies to the soluble sodium and magnesium salts precipitated the reaction of a food additive magnesium silicate.

2.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color White State powder Take the right amount of sample is placed in white porcelain dish, viewed in natural light its 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 Magnesium oxide (MgO, with burning base count), w /% ≥ 15.0
 Appendix A A.3 Silica (SiO₂, with burning base count), w /% ≥ 67.0 Appendix A A.4 Loss on drying, w /% in line with GB 5009.3 claiming a direct drying Loss on ignition (dry basis), w /% in line with claims A.5 in Appendix A Soluble salts, w /% ≤ 3.0 A.6 in Appendix A the free base (NaOH in dollars), w /% ≤ 1.0 Appendix A A.7 Fluoride/(mg/kg) ≤ 10 Appendix A A.8 Lead (Pb)/(mg/kg) ≤ 5.0 GB 5009.75 a drying temperature of 105 °C $\pm$ 2 °C, drying time is 2h.

Appendix A

Testing method

A.1 General Provisions Unless otherwise specified in this standard, the use of reagents were of analytical grade purity, the standard titration solution, impurity measurement standard solution preparation and products, should be GB/T 601, GB/T 602 and GB/T 603 provisions of preparation, the test water should comply with GB/T 6682 in three water

Provisions. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 pH test Weighed amount of sample preparation with water to 100g/L slurry solution, pH 7.0 to 11.0.

A.2.2 Identification of magnesium A.2.2.1 Reagents and materials A.2.2.1.1 hydrochloric acid solution. 19.

A.2.2.1.2 ammonia solution. 19.

A.2.2.1.3 ammonium carbonate solution. 20g of ammonium carbonate dissolved in ammonia solution 20mL, diluted with water to 100mL.

A.2.2.1.4 sodium phosphate. disodium hydrogen phosphate ($\text{NaH}_2\text{PO}_4 \cdot 7\text{H}_2\text{O}$) were dissolved in water to prepare a solution of 120g L /.

A.2.2.2 Identification of Weigh a sample of about 0.5g, and hydrochloric acid mixed solution of 10mL, filtered, and the filtrate was collected. With ammonia solution and filtrate to litmus paper Neutral solution of ammonium carbonate was added 5mL, stir, this time should not precipitate. 5mL was added a solution of sodium phosphate, were observed as white the precipitate crystals, 10mL aqueous ammonia solution was added, a white insoluble precipitate crystals.

Identification A.2.3 silicate Platinum wire ring dipped in sodium ammonium phosphate crystallization number of tablets, pellets melted after the colorless flame, hot dipped in the sample, and then melted silica i.e.

Floating on the surface of the ball, let cool, reticular structure opaque pellets.

A.3 Determination of magnesium oxide (MgO , with burning basis) of A.3.1 Reagents and materials A.3.1.1 sulfuric acid standard titration solution. $c \text{ 12H}_2\text{SO}_4 \div = 1\text{mol/L}$.

A.3.1.2 sodium hydroxide standard titration solution. $c (\text{NaOH}) = 1\text{mol/L}$.

A.3.1.3 methyl orange indicator solution. 1g/L.

A.3.2 Analysis step

Weigh a sample of about 1.5g, accurate to 0.0001g, placed in 250mL Erlenmeyer flask with a pipette 50.0mL sulfuric acid standard titration the solution was heated on a steam bath for 1h, cooled to room temperature, add a few drops of methyl orange indicator solution, titration with sodium hydroxide standard solution titration of excess Acid, titrated to a solution from red to orange, 30s without recovery is the primary endpoint of the titration.

A.3.3 Calculation Results Magnesium oxide (MgO , with burning basis) mass fraction w_1 , according to equation (A.1) Calculated.

$(V_0 \times c_0 - V \times c) \times M$

$m \times (1-w_0) \times (1-w_3) \times 1000 \times 2 \times 100\%$ (A.1) where.

V_0 --- volume of sulfuric acid standard titration solution ($V_0 = 50$), in milliliters (mL);

Concentration c_0 --- sulfuric acid standard titration solution, expressed in moles per liter (mol/L);

Volume V --- sample consumption of sodium hydroxide standard titration solution, in milliliters (mL);

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

--- The M molar mass of magnesium oxide in grams per mole (g/mol), [$M(\text{MgO}) = 40.3$];

M --- the quality of the sample, in grams (g);

w_0 --- Loss on drying of the sample mass fraction,%;

w_3 --- sample mass fraction of loss on ignition,%;

1000 --- volume conversion factor;

2 --- molar conversion coefficient.

The results parallel arithmetic mean of the measurement results shall prevail. Twice under the same condition of independent determination results obtained absolute difference not more than 1.0%.

A.4 silicon dioxide (SiO_2 , with burning basis) Determination A.4.1 Reagents and materials

A.4.1.1 hydrofluoric acid.

A.4.1.2 sulfuric acid.

A.4.1.3 sulfuric acid solution. $c \text{ } 12\text{H}_2\text{SO}_4 \div = 1\text{mol/L}$.

A.4.2 Instruments and Equipment A.4.2.1 platinum crucible. 50mL.

A.4.2.2 high-temperature furnace. temperature can be controlled to $900\text{ }^\circ\text{C} \pm 50\text{ }^\circ\text{C}$.

A.4.3 Analysis step

Weigh the sample 0.7g, accurate to 0.0001g, placed in a 150mL beaker, pipetted into 20mL sulfuric acid solution in distilled Gas heating bath on 1.5h, filter ash-free filter paper. With about 100mL $60\text{ }^\circ\text{C} \sim 80\text{ }^\circ\text{C}$ hot water residue was washed three times. The filter paper and a residue shall be transferred to a platinum crucible in an electric furnace heated slowly drying, ashing, and then on the $900\text{ }^\circ\text{C}$ high temperature furnace burning strong 30min, after cooling, said Weight (m_1). The residue was moistened with water, and add 3 drops of sulfuric acid and hydrofluoric acid 6mL, on a hot plate was slowly evaporated to dryness at $900\text{ }^\circ\text{C}$ high temperature furnace on Burning 5min, cooled, weighed (m_2). SiO_2 were weighed twice difference is quality.

A.4.4 Calculation Results Silica (SiO_2 , with burning basis) mass fraction w_2 , according to equation (A.2) Calculated.

$m_1 - m_2$

$m \times (1 - w_0) \times (1 - w_3) \times 100\%$ (A.2) where.

After m_1 --- burning crucible together with residue mass in grams (g);

After m_2 --- acid residue burning crucible together with the mass in grams (g);

M --- the quality of the sample, in grams (g);

w_0 --- Loss on drying of the sample mass fraction,%;

w_3 --- sample mass fraction of loss on ignition,%.

The results parallel arithmetic mean of the measurement results shall prevail. Twice under the same condition of independent determination results obtained absolute difference not more than 1.0%.

A.5 Determination of loss on ignition (dry basis) of A.5.1 Analysis step the sample was dried reduction assay reserved in a hot oven at $900\text{ }^\circ\text{C} \sim 1000\text{ }^\circ\text{C}$ burning 20min.

A.5.2 Calculation Results Loss on ignition (dry basis) of the mass fraction w_3 , according to equation (A.3) Calculated.

$m_3 - m_4$

$m \times 100\%$

Where.

M_3 --- Loss on drying specimens retained along with the determination of the total mass of the crucible, in grams (g);

m_4 --- Residue on ignition crucible together with mass, in grams (g);

Determination of mass m --- Loss on drying retained sample in grams (g).

The results parallel arithmetic mean of the measurement results shall prevail. Twice under the same condition of independent determination results obtained absolute difference not more than 0.5%.

A.6 Determination of soluble salts A.6.1 Preparation of sample solution Weigh 10g sample, accurate to 0.01g, placed in a beaker, was added 150mL of water on a hot plate heated to boiling 15min. Cooled to room Temperature, add water to make up to the original volume. The mixture was allowed to stand for 15min, the filtrate was filtered to clarification. The filtrate 20mL reserved for the free base Determination.

A.6.2 Determination