



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

GB 1886.6-2016

Replacing GB 1892-2007

Food additive -- Calcium sulfate

食品安全国家标准 食品添加剂 硫酸钙

(English Translation)

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Foreword

This standard replaces GB 1892-2007 "food additive calcium sulfate." this standard compared with GB 1892-2007, the main changes are as follows.

--- Standard name was changed to "national food safety standards for food additives calcium sulfate." National Food Safety Standard Food additive calcium sulfate

1 Scope

This standard applies to food additives, natural gypsum calcium sulfate impurity after preparation.

2 Molecular formula and relative molecular mass

Formula 2.1

Anhydrous calcium sulfate CaSO_4 Calcium sulfate dihydrate $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

2.2 Relative molecular mass

Anhydrous calcium sulfate CaSO_4 . 136.14 (according to 2007 international relative atomic mass) Calcium sulfate dihydrate $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. 172.14 (according to 2007 international relative atomic mass)

3.1 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 a clean, dry white porcelain dish, under natural light, observe its color and status

3.2 Physical and Chemical Indicators

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

Table 2. Physical and chemical indicators

project

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Anhydrous calcium sulfate (CaSO_4) Calcium sulfate dihydrate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) Testing method Calcium sulfate (CaSO_4) (dry basis), w /% ≥ 98.0 98.0 Appendix A A.4 Lead (Pb)/(mg/kg) ≤ 2.0 2.0 GB 5009.12 Arsenic (As)/(mg/kg) ≤ 2.0 2.0 GB 5009.76 Fluoride (F), w /% ≤ 0.005 0.003 A.5 Appendix A Selenium (Se), w /% ≤ 0.003 0.003 Appendix A A.6 Loss on drying, w /% ≤ 1.5 19.0 ~ 23.0 Appendix A A.7 Appendix A Testing method A.1 Safety Tips Reagents used in this test method are toxic or corrosive, care should be taken. Such as water splashed on the skin should immediately Flushing, severe cases should be treated immediately.

A.2 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 the required standard solution, impurity standard solution, preparations and products, did not indicate when the other requirements according to GB/T 601, GB/T 602, GB/T 603 provisions of the preparation. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.3 Identification Test A.3.1 Reagents and materials A.3.1.1 hydrochloric acid.

A.3.1.2 ammonium oxalate.

A.3.1.3 glacial acetic acid.

A.3.1.4 nitrate.

A.3.1.5 barium chloride solution. 100g/L.

A.3.1.6 Lead acetate solution. 100g/L, dropping ice acetic acid solution is clarified.

A.3.1.7 ammonium acetate solution. 100g/L.

A.3.1.8 ammonia solution. 23.

A.3.2 character identification method Sample Weigh about 2g, $\pm 2^\circ\text{C}$ drying 20min at 140°C , add 1.5mL of water was stirred, placed 5min, was sticky solid.

A.3.3 Identification of calcium Weigh 0.2g sample plus 10mL hydrochloric acid, dissolved by heating the sample solution as A. A proper amount of sample solution added ammonia was adjusted to a base Sex, plus ammonium oxalate solution which occurred in a white

precipitate, this precipitate was dissolved in hydrochloric acid, but does not dissolve in acetic acid.

A.3.4 Identification of Sulfate Take sample solution A, plus barium chloride solution a white precipitate which happened, not dissolved in hydrochloric acid or nitric acid.

A.4 calcium sulfate (CaSO_4) (dry basis) of the Determination A.4.1 Method summary Triethanolamine masking with a small amount of trivalent iron, trivalent aluminum and divalent manganese ions at a pH of 12.5, the calcium reagent indicator, Disodium edetate calcium titrate.

A.4.2 Reagents and materials A.4.2.1 hydrochloric acid solution. 23.

A.4.2.2 methyl red indicator solution. 0.1% ethanol solution.

A.4.2.3 potassium hydroxide solution. 100g/L.

A.4.2.4 triethanolamine solution. chemically pure, 23.

A.4.2.5 calcium reagent. Weigh 10g at $105^\circ\text{C} \sim 108^\circ\text{C}$ under dry sodium chloride in a mortar finely 2h, and then weighed 0.1g calcium acid Reagent in the same mortar mix with sodium chloride, stored in a brown bottle lid. Placed on a silica gel drier save.

A.4.2.6 disodium EDTA standard titration solution. $c(\text{EDTA}) \sim 0.05\text{mol/L}$.

A.4.3 Analysis step

It weighs about 0.1g previously dried to a constant mass of the sample $250^\circ\text{C} \pm 5^\circ\text{C}$, accurate to 0.0002g, placed in 300mL flasks, Add 4mL hydrochloric acid solution, add 20mL water, dissolved by heating. Add 1 drop of methyl red indicator solution, potassium hydroxide solution dropwise until the solution was orange Color, and excess 5mL. Add 10mL triethanolamine and a small amount of calcium reagent solution with disodium edetate standard titration solution titration to dissolve Liquid from the wine red to pure blue.

A.4.4 Calculation Results Calcium sulfate (CaSO_4) (dry basis) of the mass fraction w_1 , according to equation (A.1) Calculated.

$c \times V \times M$

$m \times 1000 \times$

100% (A.1)

Where.

Concentration c --- disodium edetate standard titration solution, expressed in moles per liter (mol/L);

Volume V --- titration consumed disodium edetate standard titration solution, in milliliters (mL);

--- The M molar mass of calcium sulfate, in units of grams per mole (g/mol), [M (CaSO₄) = 136.1];

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

1000 --- conversion factor.

The results parallel arithmetic mean of the measurement results shall prevail. In two independent determination results obtained under repeatability conditions absolute difference not more than 0.2%.

A.5 fluoride (F) is measured A.5.1 Method summary in perchloric acid medium, by steam distillation sample isolated from fluorine, and Alizarin and lanthanum nitrate mixture formed blue Complex color, the color of the test solution with the standard for comparison.

A.5.2 Reagents and materials A.5.2.1 perchloric acid.

A.5.2.2 silver nitrate solution. 17g/L.

A.5.2.3 glacial acetic acid. 116.

A.5.2.4 sodium acetate solution. 250g/L.

A.5.2.5 phenolphthalein indicator solution. 10g/L.

A.5.2.6 acetone.

A.5.2.7 glass beads.

A.5.2.8 sodium hydroxide solution. 40g/L.

A.5.2.9 hydrochloric acid solution. 110.

A.5.2.10 Alizarin. Weigh 0.1925g Alizarin, add a small amount of water and sodium hydroxide solution to dissolve. plus 0.125g of sodium acetate, pH of the solution was adjusted with glacial acetic acid solution was 5.0 (at this red solution), diluted with water to 500mL shake in a refrigerator Saved. When precipitation occurs, it should be re-prepared.

A.5.2.11 lanthanum nitrate solution. Weigh 0.2165g lanthanum nitrate, dissolved in a small amount of glacial acetic acid, add water to 450mL, sodium acetate solution Adjusted to pH 5.0 (with a precision pH test paper test), diluted with water to 500mL, stored in a refrigerator. After re-prepared mildew.

A.5.2.12 buffer solution. Weigh 44g of sodium acetate dissolved in 400mL of water, add 22mL glacial acetic acid, acetic acid and then adjusted to pH of the solution drops ice 4.7 (with a precision pH test paper test), then diluted with water to 500mL.

A.5.2.13 fluoride standard solution. 1mL solution of fluorine (F) 0.01mg. Pipette Pipette 10.0mL fluoride standard solution (0.1g/L), placed in 100mL flask, diluted with water to the mark.