



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

GB 1886.21-2016

Replacing GB 6226-2005

Food additive -- Calcium lactate

食品安全国家标准 食品添加剂 乳酸钙

(English Translation)

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Table of Contents

Foreword

1 Scope

2 Chemical name, molecular formula, molecular mass and structural formula

2.1 Chemical Name

2.3 Formula

2.4 Relative molecular mass

3 Technical requirements

3.1 Sensory requirements

3.2 Physical and Chemical Indicators

Foreword

This standard replaces GB 6226-2005 "food additive calcium lactate." this standard compared with GB 6226-2005, the main changes are as follows.

--- Standard name was changed to "national food safety standards for food additives calcium lactate." National Food Safety Standard Food Additives Calcium Lactate

1 Scope

This standard applies to starch, sugar feedstock inoculated with lactic acid bacteria fermented extract obtained directly and lactic acid and calcium hydroxide (or carbonate Calcium) synthetically produced food additive calcium lactate.

2.1 Chemical Name

alpha- hydroxy calcium propionate Formula 2.2 $C_6H_{10}CaO_6 \cdot nH_2O$ ($n = 0 \sim 5$)

2.3 Formula

$H_3C\ COO-$

$Ca_2 \cdot nH_2O$

2.4 Relative molecular mass

218.22 (anhydrous) (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 Status crystalline powder or granules Odour odorless or slight specific odor Take the right amount of sample is placed in a clean, dry white porcelain dish, under natural light, Views Police state and its color and smell its odor

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

Item Index Test Method Calcium lactate ($C_6H_{10}CaO_6$) content (dry basis), w /% 98.0 ~ 101.0 Appendix A A.4 Loss on drying, w /% Pentahydrate 22.0 to 27.0 Trihydrate 15.0 to 20.0 Monohydrate 5.0-8.0 Anhydrous ≤ 3.0 Appendix A A.5 Dissolved in water by testing A.6 in Appendix A Free acid and free base by testing in A.7 in Appendix A Volatile fatty acids by test A.8 in Appendix A Chloride (Cl dollars), w /% ≤ 0.05 A.9 in Appendix A Sulfate (SO_4 dollars), w /% ≤ 0.075 Appendix A A.10 Fluorides (as F), w /% ≤ 0.0015 Appendix A A.11 Magnesium and alkali metal, w /% ≤ 1.0 Appendix A A.12 Iron (Fe), w /% ≤ 0.005 Appendix A A.13 Arsenic (As)/(mg/kg) ≤ 2.0 GB 5009.76 Lead (Pb)/(mg/kg) ≤ 10.0 GB 5009.75 Heavy metals (Pb)/(mg/kg) ≤ 20 GB 5009.74 Appendix A Testing method A.1 Warning Some test procedures prescribed test method can lead to dangerous situations. The operator shall take appropriate safety and health practices.

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 in the standard titration solution, impurity measurement standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 601, GB/T 602 and GB/T 603 provisions prepared. 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 sulfuric acid.

A.3.1.2 potassium permanganate solution. 3.2g/L.

A.3.1.3 ammonium oxalate solution. 40g/L.

A.3.1.4 acetic acid solution. 120.

A.3.1.5 hydrochloric acid solution. 13.

A.3.2 Identification method A.3.2.1 Identification of lactate Take about 0.5g sample was dissolved in 10mL water, a solution of sulfuric acid to make it acidic, add appropriate amount of potassium permanganate solution is heated, which produce acetaldehyde odor.

A.3.2.2 Identification of calcium A.3.2.2.1 taking about 0.5g sample was dissolved in 10mL water, a solution of ammonium oxalate solution, namely a white precipitate. The precipitate was isolated, in acetic acid was added Solution, insoluble precipitate, hydrochloric acid solution was added, the precipitate was completely dissolved.

A.3.2.2.2 wetted with hydrochloric acid after the platinum wire dipped samples, red yellow colorless flame.

A.4 Determination of calcium lactate ($C_6H_{10}CaO_6$) content (dry basis) of A.4.1 Method summary Under basic conditions to the sample (in terms of dry goods) the volume of consumption of complexing agent disodium edetate standard titration solution to calculate the milk Calcium content, calcium reagent color change indicator to determine carboxylate end of the titration.

A.4.2 Reagents and materials A.4.2.1 hydrochloric acid solution. 14.

A.4.2.2 sodium hydroxide solution. 100g/L.

A.4.2.3 disodium EDTA standard titration solution. $c(EDTA) = 0.05\text{mol/L}$.

A.4.2.4 calcium carboxylate indicator reagent. Weigh 0.1g of calcium reagent carboxylic acid sodium salt, sodium chloride plus 10g grinding dried at about 110 °C, Mix well.

A.4.3 Analysis step

Weigh about 0.3g samples, accurate to 0.0002g, was dissolved in 2mL of hydrochloric acid solution was added 50mL of water, was added dropwise with stirring 15mL disodium EDTA standard titration solution, plus 5mL sodium hydroxide solution and 0.1g calcium indicator reagent carboxylate with acetic Diamine tetra acetic acid disodium standard titration solution titrated to a solution blue color as the end point.

A.4.4 Calculation Results Calcium lactate ($C_6H_{10}CaO_6$) content (dry basis) of the mass fraction w_1 , according to equation (A.1) Calculated.

$$1000 \times c_1 \times M_1$$

$$m_1 \times (1-w_2) \times$$

$$100\% \text{ (A.1)}$$

Where.

V_1 --- sample consumption volume of disodium EDTA standard titration solution, in milliliters (mL);

1000 --- conversion factor;

Concentration c_1 --- disodium edetate standard titration solution, expressed in moles per liter (mol/L);

Molar mass M_1 --- calcium lactate, in units of grams per mole (g/mol), [M_1 ($C_6H_{10}CaO_6$) = 218.2];

M_1 --- the quality of the sample, in grams (g);

w_2 --- A.5.2 Loss on drying mass fraction, %.

Take two parallel determination results of the arithmetic average of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.3%.

A.5 Determination of loss on drying A.5.1 Analysis step Weigh about 1.5g sample, accurate to 0.0002g, placed in a pre dried to a constant mass of $120\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ weighing bottle, paved Layer of 3mm or less. At $120\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ constant temperature drying oven 4h, placed in a desiccator to cool 30min weighing.

A.5.2 Calculation Results Loss on drying mass fraction w_2 , according to equation (A.2) Calculated.

$m_2 - m_3$

100% (A.2)

Where.

M_2 --- dried before the mass of the sample, in grams (g);

Quality, unit m_3 --- after drying the sample in grams (g).

Take two parallel determination results of the arithmetic average of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.1%.

A.6 Determination of water soluble A.6.1 Method summary the sample is dissolved in water, and to compare the standard turbidity solution.

A.6.2 Reagents and materials A.6.2.1 nitric acid solution. 12.

A.6.2.2 dextrin solution. 20g/L.

A.6.2.3 silver nitrate solution. 17g/L.

A.6.2.4 turbidity standard solution. chlorine (Cl) 0.01mg/mL. Measure 14.10mLc (HCl) = 0.1mol/L hydrochloric acid standard solution, set in 50mL volumetric flask, diluted with water to the mark. The solution was weighed 10.00mL placed 1000mL volumetric flask, dilute with water to Scale.

A.6.3 Analysis step

Weigh 1.0g sample accurate to 0.01g, placed in 25mL colorimetric tube, add 20mL of water on a water bath heated to dissolve, as the sample Solution; other single 25mL colorimetric