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

GB 15571-2010

Replacing GB 15571-1995

**National food safety standards -- Food additives -- Calcium
gluconate**

(English Translation)

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Foreword

This standard replaces GB 15571-1995 "food additive calcium gluconate." this standard compared with GB 15571-1995, the main changes are as follows.

- Cancel the differential response of ferric chloride;
- Added identification of an infrared absorption spectrum;
- Cancellation of the second law of arsenic test method;
- Cancel the first normal heavy metal content test method.
- Modify the loss on drying test methods;
- Modify the test method for reducing substances;
- Revision of the test method for determination of chloride;
- Revision of the test method for the determination of sulphate.

The Standard Annexes A and B are normative appendix.

This standard replaces the standards previously issued as follows.

--GB 15571-1995.

National Food Safety Standard Food additives calcium gluconate

1 Scope

This standard applies to starch as a starting material, obtained by fermentation of glucose by the reaction of the calcium source of food additives Calcium gluconate.

2 Normative references

The standard file referenced in the application of this standard is essential. For dated references, only the note Version Date apply to this standard. For undated references, the latest edition (including all amendments) fitness for this standard.

3.1 Chemical Name

D- gluconate monohydrate Formula 3.2 $C_{12}H_{22}CaO_{14} \cdot H_2O$

3.3 Formula

HOH₂C C

CCC COO

2 H₂O

3.4 Relative molecular mass

448.39 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with Table 1.

Table 1 Sensory requirements

Project requires test methods Color White take appropriate sample is placed in a clean, dry white porcelain dish, natural Light, observe its color and texture. Odour odorless
Organizational status crystalline powder or granular powder

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Calcium gluconate (to $C_{12}H_{22}CaO_{14} \cdot H_2O$ meter, dry basis), w /% 99.0 ~ 102.0 Appendix A A.4 pH (50.0g/L solution) 6.0 ~ 8.0 GB/T 9724 Chloride (Cl dollars), w /% ≤ 0.05 Appendix A A.5 Sulfate (SO₄ dollars), w /% ≤ 0.05 A.6 in Appendix A Reducing sugars (C₆H₁₂O₆ to count), w /% ≤ 1.0 Appendix A A.7 Loss on drying, w /% ≤ 2.0 Appendix A A.8 Heavy metals (Pb)/(mg/kg) ≤ 10 Appendix A A.9 Arsenic (As)/(mg/kg) ≤ 2 Appendix A A.10 Appendix A (Normative) Testing method A.1 Safety Tips
Reagents The standard test methods used for toxic or corrosive, according to the relevant provisions of the operation, should be used with caution cautious. If splashed on the skin

should immediately wash with water, severe cases should be treated immediately. When using a volatile acid, to a fume hood Carried out.

A.2 General Provisions Unless otherwise indicated in the analysis using only recognized as analytical reagents and GB/T 6682-2008 stipulated three water.

Test methods used in the standard titration solution, impurities measured by standard solution, preparations and products, the other did not indicate to when evaluated, according to GB/T 601, GB/T 602, GB /603 provisions of the preparation T.

A.3 Identification

A.3.1 Reagents and materials A.3.1.1 glacial acetic acid.

A.3.1.2 phenylhydrazine. When you use distillation.

A.3.2 Identification Test A.3.2.1 Identification of calcium A.3.2.1.1 principle of the method Calcium and ammonium oxalate test solution reaction, a white precipitate, the precipitate was not dissolved in acetic acid, but soluble in dilute hydrochloric acid.

A.3.2.1.2 analysis step Take about 1.0 g laboratory samples, accurate to 0.01 g, add 40 mL of water to dissolve, if necessary, heated to dissolve, take this solution Hydraulic press, "People's Republic of China Pharmacopoeia" 2005 edition two Appendix III general identification test calcium item (2), should be significantly calcium Salts differential response.

A.3.2.2 Identification of glucose A.3.2.2.1 principle of the method Sample in acetic acid medium, and phenylhydrazine were hot, a yellow crystalline glucose acid phenylhydrazine.

A.3.2.2.2 analysis step Take about 0.5 g laboratory samples, accurate to 0.01 g, set 10 mL test tube, add 5 mL of water and dissolved (if necessary, add Hot), add 0.7 mL of glacial acetic acid and 1 mL of phenylhydrazine, in a water bath heated 30min, to room temperature, friction test tube with a glass rod Wall, yellow crystals are precipitated.

A.3.2.3 Identification of the infrared absorption spectrum Determination of potassium bromide tablet method, infrared absorption spectrum of laboratory samples should map "Drug IR control Set "465 Figure) consistent with the control map in Appendix B.

A.4 Determination of calcium gluconate A.4.1 Method summary Purpurin as calcium indicator, disodium edetate standard titration droplet given sample solution, based on ethylene diamine tetra the amount of standard disodium titrant, calculate the content to $C_{12}H_{22}CaO_{14} \cdot H_2O$ meter calcium gluconate.

A.4.2 Reagents and materials A.4.2.1 purpurin calcium indicator.

A.4.2.2 sodium hydroxide solution. 40g/L.

A.4.2.3 disodium edetate standard titration solution. $c(EDTA) = 0.05mol/L$.

A.4.3 Analysis step

0.5g of laboratory samples, accurate to 0.000 1g, add 100 mL of water to dissolve (heating if necessary), put to Room temperature, and 15mL of sodium hydroxide solution, 0.1g purpurin calcium indicator, disodium edetate standard solution to titrate Solution from purple into a pure blue, and titration with blank test correction, each 1mL of disodium edetate drops Was given the equivalent 22.42mg $C_{12}H_{22}CaO_{14} \cdot H_2O$.

A.4.4 Calculation Results Calcium gluconate (to $C_{12}H_{22}CaO_{14} \cdot H_2O$ meter) mass fraction w_1 , expressed in%, according to formula (A.1) Calculated.

() 0113

() 100%

$VV \propto M_w$

- $x \propto x - x$ (A.1) where.

V - laboratory sample consumption disodium edetate standard titrant volume values in milliliters (mL);

OV - blank test value disodium edetate standard titrant volume consumed in milliliters (mL);

c - accurate disodium edetate standard titration solution concentration value in units of moles per liter (mol/L);

1m - Numerical laboratory sample mass, in grams (g);

3w - Press A.8 measured for the sample drying loss mass fraction, expressed in%;

Numerical M -- $C_{12}H_{22}CaO_{14} \cdot H_2O$ molar mass in grams per mole (g/mol) (M = 448.39).

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 0.2%.

A.5 Determination of chloride A.5.1 Reagents and materials A.5.1.1 nitric acid solution. 25 -> 100.

A.5.1.2 silver nitrate solution. 17g/L.

A.5.1.3 sodium chloride standard solution. 0.01mg per ml of Cl.

A.5.2 Analysis step

Weigh $1.0g \pm 0.01g$ laboratory sample set 100mL flask, add water to dissolve 80mL, diluted with water to the mark, shake, is the laboratory sample solution. Pipette 10.0 mL laboratory sample solution 5mL $\pm 0.05mL$ chloride Sodium standard solution, according to GB/T 9729 Determination.