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

GB 14754-2010

Replacing GB 14754-1993

**National food safety standards -- Food additives -- Vitamin C
(ascorbic acid)
(English Translation)**

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Foreword

This standard replaces GB 14754-1993 "Food additive vitamin C (ascorbic acid)." this standard compared with GB 14754-1993, the main changes are as follows.

- Cancel the methylene blue solution Identification Test;
- Added Infrared Spectroscopy;
- Determine the concentration of vitamin C content of iodine standard solution titration by 0.1 mol/L changed to 0.05 mol/L;
- Increase the lead indicators and test methods;
- Increased iron index and test methods;
- Increased Copper indicators and test methods.

The Standard Annexes A and B are normative appendix.

This standard replaces the standards previously issued as follows.

--GB 14754-1993.

National Food Safety Standard Food additives Vitamin C (ascorbic acid)

1 Scope

This standard applies to D- glucose or sorbitol as the starting material after fermentation chemical synthesis prepared food additive vitamin C.

2 Normative references

The standard file referenced in the application of this standard is essential. For cited documents with dates, only the date of Version applies to this standard. For undated references, the latest edition (including any amendments) applies to this standard.

3.1 Chemical Name

L-2,3,5,6- four-hydroxy-2-hexenoic acid lactone -gamma-Formula 3.2 C₆H₈O₆

3.4 Relative molecular mass

176.12 (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 White or slightly yellow color proper amount of sample is placed in 50mL beaker, in natural light Observed the color and texture, smell the smell.

Odour odorless

Organization state crystal or crystalline powder

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Vitamin C (C₆H₈O₆), w /% >= 99.0 Appendix A A.4 Specific rotation α_D^{20} (20 °C, D)/[(°) · dm² · kg⁻¹] 20.5 to 21.5 A.5 in Appendix A Residue on ignition, w /% <= 0.1 A.6 in Appendix A Arsenic (As)/(mg/kg) <= 3 Appendix A A.7 Heavy metals (Pb)/(mg/kg) <= 10 Appendix A A.8 Lead (Pb)/(mg/kg) <= 2 GB 5009.12 Iron (Fe)/(mg/kg) <= 2 GB/T 15337 Copper (Cu)/(mg/kg) <= 5 GB/T 15337 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, the operation need to be careful.

If splashed on the skin should immediately wash with water, severe cases should be treated immediately. When using a volatile acid, to be carried out in a fume hood.

A.2 General Provisions the reagents used in this standard, unless otherwise noted, only in the analysis confirmed analytically pure reagents and GB/T 6682-2008 in Regulation Given

three water.

Standard Test Method for titration solution required 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.

A.3 Identification

A.3.1 Reagents and materials A.3.1.1 activated carbon.

A.3.1.2 pyrrole.

A.3.1.3 silver nitrate solution. 17.5 g/L.

A.3.1.4 trichloroacetic acid solution. 50 g/L.

A.3.2 Identification Test A.3.2.1 silver nitrate reaction test A.3.2.1.1 principle of the method Vitamin C molecule diene alcohol groups, with a strong reduction, can be oxidized to dehydro ascorbic acid silver nitrate while producing black silver precipitation.

A.3.2.1.2 analysis step Weigh about 0.1 g laboratory samples, accurate to 0.01 g, was dissolved in 5 mL of water, add 0.5 mL of silver nitrate solution, which generates silver black precipitation.

A.3.2.2 carbohydrate nature of the reaction test A.3.2.2.1 principle of the method Vitamin C has a carbohydrate nature of the reaction, in the presence of trichloroacetic acid or hydrochloric acid hydrolysis, decarboxylation, generate pentose, then dehydration, Uronic into, pyrrole was added, heated to 50 °C i.e. blue occur.

A.3.2.2.2 analysis step Weigh about 0.015 g laboratory samples were dissolved in 15 mL trichloroacetic acid solution, add 200 mg of activated carbon, violently shaking 1min, repeatedly Filtering to clarify, add 1 mL pyrrole in 5 mL filtrate, after shaking to dissolve, that is heated to 50 °C blue occur.

A.3.2.2.3 infrared absorption spectrum identification Using potassium bromide tablet method according to GB/T 6040 test, IR spectra laboratory samples should be consistent (for the control of According to Atlas, see Appendix B).

A.4 Determination of Vitamin C A.4.1 Method summary Vitamin C has a strong reduction, can be quantitatively oxidized iodine. Starch as indicator, with standard iodine titration droplet given sample water Solution, based on the amount of iodine standard solution titration, calculated in terms of vitamin C content of C₆H₈O₆.

A.4.2 Reagents and materials A.4.2.1 sulfuric acid solution. 57 -> 1000.

A.4.2.2 standard iodine titration solution. c (I₂) = 0.05 mol/L.

A.4.2.3 starch indicator solution. 10 g/L.

A.4.3 Analysis step

Weigh about 0.2 g laboratory samples, accurate to 0.000 2 g, placed in 250 mL iodine flask, add 20 mL of carbon dioxide-free 25 mL of water and sulfuric acid solution to dissolve immediately with standard iodine titration solution titration, near the end, add 1 mL of starch indicator solution, to drop the solution was blue, holding 30s does not fade as the end point.

Meanwhile blank test, but without addition of the sample, the other steps are determined in the same sample.

A.4.4 Calculation Results Vitamin C (in $C_6H_8O_6$ meter) mass fraction w_1 , expressed in%, according to equation (A.1) Calculated.

() 100%

$VV c Mw$

Where.

V - Numerical laboratory sample consumption standard iodine titration solution volume in milliliters (mL);

V_0 -- blank test standard iodine value titration solution consumption volume in milliliters (mL);

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

M - molar mass values of Vitamin C in units of grams per mole (g/mol) ($M = 176.12$);

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

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

A.5 Determination of specific rotation A.5.1 Analysis step Weigh about 5 g laboratory samples, accurate to 0.000 2 g, placed in 50 mL volumetric flask, dissolved in water and diluted to the mark, shake uniform. Other methods according to GB/T 613-2007 provisions were.

A.5.2 Calculation Results Specific rotation α_m (20 °C, D) according to equation (A.2) Calculated.

Where.

α_{pharho}

α_{α}

$D_{Cm} = ^\circ, 20$

α - measured angle of rotation, in degrees ($^\circ$);