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

GB 25545-2010

**The national food safety standards of food additives -- L(+)
-tartaric acid**

(English Translation)

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Foreword

Appendix A of this standard is a normative appendix.

National standards for food safety Food additive L () - tartaric acid

1 Scope

This standard applies to maleic anhydride and hydrogen peroxide as raw materials by oxidation, enzymatic hydrolysis and the preparation of food additives L () - wine Stone acid.

2 Normative reference documents

The documents cited in this standard are indispensable for the application of this standard. Any reference to the date of the document, only the date of the edition this applies to this standard. For undated references, the latest edition (including all amendments) applies to this standard.

3.1 Chemical name

L-2,3-dihydroxy succinic acid

3.2 Molecular formula

C₄H₆O₆

3.4 Relative molecular mass

150.09 (according to 2007 international relative atomic mass)

4 Technical requirements

4.1

sensory requirements. should be consistent with the provisions of Table 1.

Table 1 sensory requirements

The project requires a test method Color and tissue state Colorless translucent crystal or white powder Odor is sour Take appropriate laboratory samples, placed in a clean, dry white porcelain dish, in natural light Under the visual observation, smell the smell

4.2

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

Table 2 Physical and chemical indicators

Item Index Test Method L () - tartaric acid (based on $C_4H_6O_6$, dry basis), w /% 99.7 to 100.5 Appendix A, A.4 Specific rotation $\alpha_D(25^\circ C)$ /[(°) · dm² · kg⁻¹] 12.0 to 13.0 Appendix A A.5 Arsenic (As)/(mg/kg) ≤ 2 Appendix A A.6 Lead (Pb)/(mg/kg) ≤ 2 Appendix A A.7 Burning residue, w /% ≤ 0.05 Appendix A A.8 Dry reduction, w /% ≤ 0.5 Appendix A A.9 the oxalate test was tested by Appendix A. A.10 Sulfate Test Pass Test Appendix A in A.11 Appendix A (Normative appendix) Testing method A.1 Warning Some of the test procedures specified in the test method may result in a hazardous situation. Operators should take appropriate safety and protective measures.

A.2 General provisions Unless otherwise stated, only the reagents identified as analytical reagents and the tertiary water specified in GB/T 6682-2008 are used in the analysis.

Standard titration solution used in the test method, standard solution for the determination of impurities, preparations and articles, in the absence of other requirements, GB/T 601, GB/T 602 and GB/T 603.

A.3 Identification test A.3.1 Reagents and materials A.3.1.1 Pyridine.

A.3.1.2 Acetic anhydride.

A.3.2 Analysis steps Weigh about 10 mg of laboratory samples, add to 15mL pyridine and 5mL acetic anhydride in a mixed solution, the solution should be green.

A.4 L () - Determination of tartaric acid A.4.1 Methodological Summary the aqueous solution of the dried sample was titrated with sodium titanate titration solution with phenolphthalein as the indicator, and the solution was titrated according to the standard of sodium hydroxide Consumption, calculated to $C_4H_6O_6$ total acid content of L () - tartaric

acid content.

A.4.2 Reagents and materials A.4.2.1 Sodium hydroxide standard titration solution. c (NaOH) = 1.0 mol/L.

A.4.2.2 phenolphthalein indicator solution. 10g/L.

A.4.3 Analysis steps A.4.3.1 Weigh 2.0g A.9 in dry matter A, accurate to 0.0002g, add 40mL of water without carbon dioxide dissolved, add 2 drops of phenolphthalein Indicator solution, titration with sodium hydroxide titration solution to reddish, keep 30s do not fade for the end.

A.4.3.2 At the same time as the determination, the same amount of reagent solution was used as a blank test in the same procedure as for the measurement.

A.4.4 Calculation of results L () - tartaric acid (based on $C_4H_6O_6$, dry basis) mass fraction w_1 , the value in%, calculated according to formula (A.1).

$$[(V-V_0)/1000] \text{ cM}$$

$$m \times 100\%$$

Where.

V --- sample consumption of sodium hydroxide standard titration solution (A.4.2.1) volume of the value in milliliters (mL);

V_0 --- blank test consumption of sodium hydroxide standard titration solution (A.4.2.1) volume of the value in milliliters (mL);

c - the exact value of sodium hydroxide standard titration solution concentration in moles per liter (mol/L);

m - the mass of the sample, in grams (g);

M - tartaric acid ($1/2C_4H_6O_6$) in grams per mole (g/mol) ($M = 75.04$).

The arithmetic mean of the results of two parallel measurements is the result of the report. The absolute difference between the two parallel determinations is not more than 0.2%.

A.5 Determination of specific rotation A.5.1 Weigh 10g of laboratory samples, accurate to 0.001g, dissolved in water and transferred to 50mL volumetric flask, diluted with water to the mark, Shake, the measured temperature of $25^\circ\text{C} \pm 0.5^\circ\text{C}$.

The value of the specific rotation $\alpha_m(25^\circ\text{C}, D)$ is expressed by $(^\circ) \cdot \text{dm}^2 \cdot \text{kg}^{-1}$, calculated according to the formula (A.2) $\alpha_m(25^\circ\text{C}, D) = \alpha_l \rho / \alpha$ (A.2) where.

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

l - the length of the rotating tube in dm (dm);

rhoalpha - Mass concentration of the effective components in solution, in grams per milliliter (g/mL).

A.5.2 Other according to GB/T 613.

A.6 Determination of arsenic A.6.1 Weigh 1.0g of laboratory samples, accurate to 0.01g, into the arsenic device into the conical flask, add 5mL of water dissolved, add 1 drop Bromophenol blue indicator solution (0.4g/L), dropping ammonia solution (14) and the solution was purple, replenishment to about 35mL, then add 20mL sulfur Acid solution (1 5), shake, as the sample solution. Use Absorbent Solution B. Limit the preparation of standard solution. with a pipette to remove $2\text{mL} \pm 0.02\text{mL}$ arsenic (As) standard solution (equivalent to $2.0\mu\text{gAs}$), the same treatment with the same sample.

A.6.2 other according to GB/T 5009.76 diethylamino dithiocarbamate colorimetric method.

A.7 Determination of lead A.7.1 Atomic Absorption Spectrometry Specimen treatment according to GB/T 5009.75 dry digestion method. Others are carried out according to GB 5009.12.

A.7.2 Colorimetric method (arbitration law) According to GB/T 5009.75. The sample treatment was carried out by dry digestion. Before use, 1mg/mL lead (Pb) standard solution dilute Release $5\mu\text{g/mL}$ lead (Pb) standard solution. Measure $25\text{mL} \pm 0.02\text{mL}$ sample solution (equivalent to 2.5g laboratory samples) And 1mL of $\pm 0.02\text{mL}$ lead (Pb) standard solution (equivalent to $5\mu\text{g}$ of Pb) were placed in a 125 mL separatory funnel, respectively. Lead standard solution Add 1% nitric acid solution to 25mL.

A.8 Determination of burning residue Weigh about 4g of laboratory samples, accurate to 0.0001g. The burning temperature is $800^\circ\text{C} \pm 25^\circ\text{C}$. Other according to GB/T 9741.

The arithmetic mean of the results of two parallel measurements is the result of the report. The absolute difference between the two parallel determinations is not more than 0.01%.

A.9 Determination of dry reduction Weigh about 2g of laboratory samples, accurate to 0.0002g. Others according to GB/T 6284. Keep some dry matter (this is dry A) for the determination of L () - tartaric acid content.

The arithmetic mean of the results of two parallel measurements is the result of the report. The absolute difference between the two parallel determinations is not more than 0.05%.

A.10 oxalate test

A.10.1 Reagents and materials A.10.1.1 Ammonia solution. 10%.

A.10.1.2 Calcium Sulfate Saturated Solution.

A.10.2 Analysis steps Weigh about 1g of laboratory samples, accurate to 0.01g, dissolved in 10mL water, neutralized with ammonia solution to neutral, plus 10mL sulfur Calcium saturated solution, shake after observation, shall not appear turbidity.