

ICS 67.220.20

CCS X 42



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

GB 1903.1-2015

Replacing GB 10794-2009

**National Food Safety Standard -- Food Nutrition Enhancer --
L-Lysine monohydrochloride
(English Translation)**

Issued on: November 13, 2015

Implemented on: May 13, 2016

**Issued by: National Health and Family Planning Commission of the
People's Republic of China**

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Foreword

This standard replaces GB 10794-2009 "Food Additive L- lysine monohydrochloride." this standard compared with GB 10794-2009, the main changes are as follows.

--- Standard name was changed to "national food safety standards of food nutrition fortifier L- lysine monohydrochloride." National Food Safety Standard Fortified Food L- lysine monohydrochloride

1 Scope

This standard applies to the starch or sugar feedstock, obtained by fermentation of purified food fortifier L- lysine monohydrochloride.

2.1 Chemical Name

L-2,6- two-aminocaproic acid hydrochloride Formula 2.2 $C_6H_{14}N_2O_2 \cdot HCl$

2.4 Relative molecular mass

182.65 (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 crystal or crystalline powder, no visible

impurities Odour odorless Take the right amount of sample is placed in a clean, dry white porcelain dish, self Observe the color and state of natural light, smell the smell

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 20D 20.3 ° ~ 21.5 ° Appendix Specific rotation $[\alpha]_D^{20}$ A in A.3 Content (dry matter basis), w /% 98.5 ~ 101.5 Appendix A A.4 Transmittance /% ≥ 95.0 Appendix A A.5 Loss on drying, w /% ≤ 1.0 A.6 in Appendix A pH 5.0 ~ 6.0 in Appendix A A.7 Ash, w /% ≤ 0.2 Appendix A A.8 Lead (Pb)/(mg/kg) ≤ 5.0 GB 5009.12 Total arsenic (As)/(mg/kg) ≤ 1.0 GB 5009.11 Salt, w /% ≤ 0.02 A.9 in Appendix A Appendix A Testing method A.1 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 prepared. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test Confirm A.2.1 amino acids A.2.1.1 Reagents and materials Ninhydrin solution. 1g/L.

A.2.1.2 Test procedure A sample was weighed 0.1g (accurate to 0.01g), dissolved in water and diluted to 100mL. Take 5mL of this solution, add 1mL ninhydrin solution Fluid, mixed, heated in a water bath 3min.

A.2.1.3 results found If the final solution was purple, it is recognized as an amino acid.

Confirm A.2.2 chloride A.2.2.1 Reagents and materials A.2.2.1.1 nitrate.

A.2.2.1.2 silver nitrate solution (0.1mol/L). Weigh 17.5g of silver nitrate, dissolved in water and diluted to 1000mL.

A.2.2.1.3 aqueous ammonia solution (10%).

A.2.2.2 Test procedure Weigh the sample 1g (accurate to 0.1g), dissolved in water. To this solution was added silver nitrate solution (A.2.2.1.2) 5mL, and mix.

A.2.2.3 results found If immediately generated a white emulsion precipitation, the precipitate insoluble in nitric acid, and slightly soluble in excess of ammonia, it is determined chlorides.

A.2.3 solubility

Soluble in water, very slightly soluble in ethanol, insoluble in ether.

A.3 Determination of specific optical rotation $[\alpha]_D^{20}$ of A.3.1 Reagents and materials

Hydrochloric acid solution. 6mol/L.

A.3.2 Instruments and Equipment Automatic polarimeter.

A.3.3 Analysis step

He said drying to constant weight of the sample 5g (accurate to 0.0001g), was dissolved in hydrochloric acid solution taken at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, and transferred to 50mL capacity Flask, hydrochloric acid solution to near the mark, the temperature of the solution was adjusted to $20\text{ }^{\circ}\text{C}$, with a hydrochloric acid solution volume to 50mL, and mix. With the long 2dm Optical tube measuring its optical rotation. Also recorded sample liquid temperature.

A.3.4 Calculation Results the use of the sodium D line spectrum, 2dm optical tube when the sample was measured at $20\text{ }^{\circ}\text{C}$, according to equation (A.1) sample calculation L- lysine monohydrochloride Specific rotation.

$[\text{Alpha}]_{20D} =$

$a_1 \times 50$

Where.

a_1 --- $20\text{ }^{\circ}\text{C}$ sample solution when measured optical rotation in degrees ($^{\circ}$);

2 --- Polarimetry length in decimeters (DM);

m --- called lysine hydrochloride L- taken after drying mass in grams (g).

When using the sodium D line spectrum, 2DM offer Polarimetry, when the sample liquid temperature $t\text{ }^{\circ}\text{C}$ measured, according to equation (A.2) and formula (A.3) calculated L- lysine hydrochloride Specific rotation acid sample.

$[\text{Alpha}]_{tD} =$

$a_2 \times 50$

$[\text{Alpha}]_{20D} = [\text{alpha}]_{tD} - 0.02 (20-t)$ (A.3) where.

Measured sample solution a_2 --- $t\text{ }^{\circ}\text{C}$ when optical rotation in degrees ($^{\circ}$);

2 --- Polarimetry length in decimeters (DM);

m --- Weigh quality L- lysine hydrochloride, in units of grams (g);

0.02 --- L- lysine monohydrochloride temperature correction coefficient;

t --- measuring the temperature of the sample solution, in degrees Celsius ($^{\circ}\text{C}$).

The results parallel arithmetic mean of the measurement results shall prevail. Twice under the same condition of independent determination results obtained absolute difference Value should not be more than 0.3% of the arithmetic mean.

A.4 Determination of content (dry matter basis) A.4.1 Reagents and materials A.4.1.1 acid.

A.4.1.2 glacial acetic acid.

A.4.1.3 mercuric acetate - acetic acid solution. Weigh 6.0g mercuric acetate, acetic acid plus 100mL dissolve, and mix.

A.4.1.4 alpha- naphthol phenyl alcohol indicator solution. Weigh 0.2g phenyl alpha-naphthol methanol, add 100mL glacial acetic acid dissolve, mix and set aside.

A.4.1.5 perchloric acid standard titration solution. $c(\text{HClO}_4) = 0.1\text{mol/L}$.

A.4.2 Analysis step

Weigh at $105\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$ drying to constant weight of the sample 0.2g (accurate to 0.0001g), add formic acid 3mL, dissolved, ice acetic acid 50mL, mercuric acetate - acetic acid solution 5mL, then add 10 drops of alpha- naphthol benzhydrol indicator solution, titration with perchloric acid standard solution titration to dissolve VIS green, record volume consumed perchloric acid standard titration solution, while a blank titration test. If the sample is titrated with perchloric acid droplets standards when the temperature of the solution set difference exceeds $10\text{ }^\circ\text{C}$, should be re-calibrated concentration of perchloric acid solution, calibration temperature If a sample is titrated with perchloric acid solution when Difference does not exceed $10\text{ }^\circ\text{C}$, according to equation (A.4) calibration concentration perchloric acid solution.

$$1\ 0.0011 \times (t_1 - t_0)$$

Where.

Perchloric acid concentration of the solution during C_0 --- calibrated in units of moles per liter (mol/L);

0.0011 --- expansion coefficient of acetic acid;

t_1 perchloric acid solution temperature when --- titration sample, in degrees Celsius ($^\circ\text{C}$);

t_0 --- perchloric acid solution temperature during calibration, in degrees Celsius ($^\circ\text{C}$).

A.4.3 Calculation Results L- lysine hydrochloride (dry matter basis) of the mass fraction w_1 , according to equation (A.5,) Calculated.

$$c_1 \times (V - V_0) \times M$$

$$m_1 \times 1000 \times$$

$$100\% \text{ (A.5)}$$

Where.

Concentration c_1 --- perchlorate standard solution, the unit is mol per liter (mol/L);

V --- sample titration consumption of perchloric acid standard titration solution volume in milliliters (mL);