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

GB 14759-2010

Replacing GB 14759-1993

**National food safety standards -- Food additives -- Taurine
(English Translation)**

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Foreword

This standard replaces GB 14759-1993 "food additive taurine." this standard compared with GB 14759-1993, the main changes are as follows.

- Modify the range;
- Sulfate $\leq 0.2\%$ by the index revised to $\leq 0.02\%$;
- Chloride $\leq 0.1\%$ by the index revised to $\leq 0.02\%$;
- Taurine $\geq 98.5\%$ by the index revised to $98.5\% - 101.5\%$;
- Added index and conductivity measurement method;
- Increasing the pH of indicators and measurement methods;
- Added salt of indicators and measurement methods;
- Modify the identification test;
- Determination of taurine increased by potentiometric titration.

The Standard Annexes A and B are normative appendix.

This standard replaces the standards previously issued as follows.

--GB 14759-1993.

National Food Safety Standard Food additives taurine

1 Scope

This standard applies to ethylene oxide or 2-amino-ethanol as a starting material, the chemical synthesis of food additives taurine.

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

2-ethanesulfonic acid Formula 3.2 $C_2H_7NO_3S$

3.4 Relative molecular mass

125.15 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color white sample taken 10 mL, placed in a test tube, under natural light, Observe the color and texture, smell the smell. Odour odorless Organization state crystal or crystalline powder

4.2

Physical indicators. in accordance with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Taurine ($C_2H_7NO_3S$, dry basis) w /% 98.5 ~ 101.5 Appendix A A.4 Conductivity ($\mu s \cdot cm^{-1}$) ≤ 150 Appendix A A.5 pH 4.1 ~ 5.6 in Appendix A A.6 Easy carbonized matter by testing in A.7 in Appendix A Residue on ignition w /% ≤ 0.1 Appendix A A.8 Loss on drying w /% ≤ 0.2 A.9 in Appendix A Arsenic (As)/(mg/kg) ≤ 2 Appendix A A.10 Clarity test by test A.11 in Appendix A Chloride (Cl^- meter) w /% ≤ 0.02 Appendix A A.12 Sulfate (SO_4^{2-} meter) w /% ≤ 0.02 Appendix A A.13 Ammonium (NH_4^+ to count) w /% ≤ 0.02 Appendix A A.14 Heavy metals (Pb)/(mg/kg) ≤ 10 Appendix A A.15 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 this standard reagents and water, did not indicate when the other requirements, refer to analytically pure reagents and GB/T 6682-2008 stipulated three Grade water; test the standard titration solution and other required solution, when it is not specified, according to GB/T 601, GB/T 602, GB/T 603 Regulations formulated.

A.3 Identification Test A.3.1 Reagents and materials A.3.1.1 developing solvent. water - ethanol - n-butanol - acetic acid (1501501001).

A.3.1.2 chromogenic agent. acetone solution of ninhydrin. 20g/L.

A.3.1.3 silica gel G plate.

A.3.1.4 taurine reference.

A.3.2 Analysis step

A.3.2.1 TLC

Take laboratory sample and reference substance, the amount of taurine were dissolved in water and dilution made about each 1mL solution containing 2mg, as the sample solution and reference solution. Draw the two solutions each 5 μ L, respectively banded spotted way point in the same silica gel G Plate, strip width 5mm, with the agent to start, spray reagent, heated at 105 °C for about 5min to spots, and immediately view. kind Solution of the main spots of color and position of the main spots of the reference solution.

A.3.2.2 IR

Using potassium bromide tablet method according to GB/T 6040 test, IR laboratory samples should control profile (see Appendix B taurine infrared absorption spectrum control diagram) consistent.

A.4 Determination of taurine A.4.1 The first method (Arbitration Act) A.4.1.1 Reagents and materials A.4.1.1.1 formaldehyde.

A.4.1.1.2 sodium hydroxide standard titration solution. $c(\text{NaOH}) = 0.1 \text{ mol/L}$.

A.4.1.2 analysis step Weigh about 0.2 g laboratory samples, accurate to 0.000 1 g, add water to dissolve 50 mL, 5 mL of formaldehyde was added with sodium hydroxide Titration standard solution titration, according to GB/T 9725 Chemicals potentiometric titration indicate the end, and blank test using the same method.

A.4.2 Method II

A.4.2.1 Reagents and materials A.4.2.1.1 formaldehyde solution.

A.4.2.1.1 sodium hydroxide standard titration solution. $c(\text{NaOH}) = 0.1 \text{ mol/L}$.

A.4.2.1.2 phenolphthalein indicator. 5g/L ethanol solution.

A.4.2.2 analysis step Weigh about 0.2 g laboratory samples, accurate to 0.000 1 g, add water to dissolve 50 mL, added 5 mL formaldehyde solution hydroxide Sodium standard titration solution titration, add 3 drops of phenolphthalein indicator until pink appears. And blank test using the same method.

A.4.3 Calculation Results Taurine content ($\text{C}_2\text{H}_7\text{NO}_3\text{S}$ meter, dry basis) content to 1w its value is expressed in%, according to equation (A.1) Calculated.

$[(V-V_0)/1000] \times 100\%$

c VV Mw

Where.

V_0 - Numerical titration blank test solution of sodium hydroxide solution consumed by the volume, in milliliters (mL);

V - Numerical laboratory sample titration solution of sodium hydroxide solution consumed by the volume, in milliliters (mL);

c - accurate value of concentration of sodium hydroxide solution, in units of moles per liter (mol/L);

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

2w - as measured by loss on drying laboratory sample mass fraction values;

M - Numerical taurine molar mass in grams per mole (g/mol) [$M(\text{C}_2\text{H}_7\text{NO}_3\text{S}) = 125.15$].

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 conductivity Weigh $1.0 \text{ g} \pm 0.01\text{g}$ laboratory samples, add 20mL of purified water (conductivity of no more than $4\mu\text{s}\cdot\text{cm}^{-1}$) was dissolved, according to GB/T 6908-2008 were determined.

A.6 pH measurement of Weigh $1.0 \text{ g} \pm 0.01\text{g}$ laboratory samples, add freshly boiled and cooled water to dissolve 20mL, according to GB/T 9724 were measured.

Determination A.7 easily charcoals A.7.1 Method summary the sample was dissolved in sulfuric acid solution, and compared with a sulfuric acid solution, not deeper color.

A.7.2 Reagents and materials Sulfuric acid solution. 94.5% - 95.5% (mass fraction).

A.7.3 Analysis step

Take a consistent inner diameter of two colorimetric tube. A tube was added 5 mL sulfuric acid solution; after the tube was added 5 mL of acetic acid solution was slowly added 0.5 g