GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

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National Food Safety Standard -

Food Additive - Monosodium Glutamate

食品安全国家标准 食品添加剂 谷氨酸钠

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National Food Safety Standard - Food Additive - Monosodium Glutamate

1 Scope

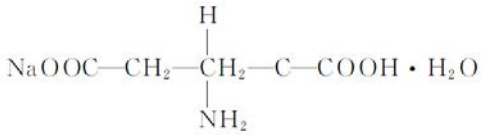
This Standard is applicable to food additive of monosodium glutamate made from carbohydrates (such as starch, corn, molasses and other sugariness) through the fermentation, extraction, neutralization, crystallization, separating and drying by microorganisms such as corynebacterium glutamicum.

2 Chemical Name, Structural Formula, Molecular Formula and Relative Molecular Mass

2.1 Chemical name

L-glutamate monosodium monohydrate (L-α-aminopentanedioic monosodium monohydrate)

2.2 Structural formula



2.3 Molecular formula

$C_5H_8NNaO_4 \cdot H_2O$

2.4 Relative molecular mass

187.13 (according to 2016 international relative atomic mass)

3 Technical Requirements

3.1 Sensory requirements

The sensory requirements shall comply with the provisions of Table 1.

Appendix A

Test Methods

A.1 General rules

The reagents and water used in this standard refer to analytically-pure reagents and Class-III water specified in GB/T 6682 when other requirements are not indicated. The standard solutions used in the test, standard solutions for impurity determination, formulations and products are prepared in accordance with the provisions of GB/T 601, GB/T 602, and GB/T 603 when other requirements are not specified. The solution used in the test refers to an aqueous solution when it is not specified which solvent is used for preparation.

A.2 Identification test

A.2.1 Amino acid test

Prepare 1mg/mL specimen solution; take 5.0mL of specimen solution and add 1.0mL of 1g/L ninhydrin solution; mix well. Heat it in a boiling water bath for 3min; and take it out. The final specimen solution shall appear purple.

A.2.2 Sodium salt test

Take about 0.5g of the specimen; add 1mL of hydrochloric acid to dissolve it; and insert the tip of the platinum needle into the test solution about 5mm. After that, put the platinum needle flat in the colorless or blue flame of the Bunsen burner; and it shall show a yellow flame and last about 4s.

A.3 Determination of light transmittance

A.3.1 Apparatus

Spectrophotometer: equipped with 1cm cuvette.

A.3.2 Analysis procedures

Take 10g of the specimen, accurate to 0.1g; add water to dissolve; make the constant volume to 100mL; shake well. Use a 1cm cuvette with water as a blank control; measure the light transmittance of the specimen solution at a wavelength of 430nm; and record the reading.

The test results are based on the arithmetic mean of the parallel determination results. The absolute difference between two independent determination results obtained under repeatability conditions is no more than 0.2% of the arithmetic mean.

A.5.1 Reagents and materials

A.5.1.1 Nitric acid solution: 1+9.

A.5.1.2 Silver nitrate solution: 17g/L.

A.5.1.3 Chloride standard solution: 0.1mg/mL.

A.5.2 Apparatus

Nessler colorimetric tube.

A.5.3 Analysis procedures

A.5.3.1 Preparation of specimen solution

Take 10.0g of specimen; add water to dissolve and dilute to a constant volume of 100mL; shake well. Pipette 10.00mL of the above solution in a Nessler colorimetric tube; add 13mL of water; and shake well.

A.5.3.2 Preparation of control solution

Pipette 10.00mL of the chloride standard solution and place it in a Nessler colorimetric tube; add 13mL of water; and shake well.

A.5.3.3 Determination

Respectively add 1mL of nitric acid solution and 1mL of silver nitrate standard solution to the specimen solution and the control solution; shake them well. Place them in a dark place for 5min; and place them on a black background. Observe the resulting turbidity from the top of the colorimetric tube.

A.5.4 Judgment of results

The turbidity of the specimen solution is no deeper than the control solution; that is, the chloride content is less than or equal to 0.1%.

A.6 Determination of pH

A.6.1 Reagents and materials

Phosphate standard buffer solution (pH 6.86): take 3.40g of potassium dihydrogen phosphate (KH_2PO_4) and 3.55g of disodium hydrogen phosphate (Na_2HPO_4) that have been dried at 120°C for 2h; and add carbon-dioxide-free water to dissolve and make constant volume to 1000mL; shake well.

A.6.2 Apparatus

pH meter (acidity meter) (accuracy ±0.02pH).

m - the mass of the weighing bottle, in g.

The calculation result is retained to one digit after the decimal point.

The test results are based on the arithmetic mean of the parallel determination results. The absolute difference between two independent determination results obtained under repeatability conditions is no more than 10% of the arithmetic mean.

A.8 Determination of Ferro (Fe)

A.8.1 Principle of the method

Under acidic conditions, the ferric ions in the specimen solution react with ammonium thiocyanate; and its color depth is proportional to the concentration of ferric ions, which can be colorimetrically determined.

A.8.2 Reagents and materials

A.8.2.1 Nitric acid solution: 1+1.

A.8.2.2 Ammonium thiocyanate solution: take 15.0g of ammonium thiocyanate; dissolve and make constant volume by water to 100mL.

A.8.2.3 Iron standard solution I: 0.1g/L.

A.8.2.4 Iron standard solution II: pipette 10 mL of iron standard solution I and dilute to 100 mL by water.

A.8.3 Apparatus

Colorimetric tube with stopper: 50mL.

A.8.4 Analysis procedures

Take 1g of the specimen in a colorimetric tube, accurate to 0.1g; add 10mL of water to dissolve; then add 2mL of nitric acid solution; and shake well. Accurately draw 0.5mL of iron standard solution II in another colorimetric tube; add 9.5mL of water and 2mL of nitric acid solution; and shake well. Place the above two tubes in a boiling water bath and boil for 20min at the same time; take them out; cool to room temperature; and add 10.00mL of ammonium thiocyanate solution to each tube; add water to the 25mL mark; shake well; and perform visual colorimetry.

A.8.5 Judgment of results

The color of the specimen solution is no darker than the standard solution; that is, the iron content is less than or equal to 5mg/kg.

A.9 Determination of sulfate (by SO_4)

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