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

GB 29945-2013

Food additive -- Locust bean gum (locust bean gum)

食品添加剂 槐豆胶(刺槐豆胶)

(English Translation)

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Table of Contents

- 1 Scope
- 2 Formula
- 3 Technical requirements
 - 3.1 Sensory requirements
 - 3.2 Physical and Chemical Indicators
 - 3.3 Microbial indicators

1 Scope

This standard applies to locust bean seed *Ceratonia siliqua* (L.) Taub. (Fam.Leguminosae) endosperm or endosperm flour as raw material, Processing the resulting food additive locust bean gum (locust bean gum). Commercialization of locust bean gum (locust bean gum) may contain dextrin for normalization purposes and carbohydrates.

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color white to pale yellow proper amount of sample is placed within the white porcelain plate, observe its color under natural light Status and powder

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

3.3 Microbial indicators

Microbiological indicators comply with Table 3.

Table 3 microbiological indicators

Item Index Test Method Loss on drying, w /% ≤ 14.0 GB 5009.3 a direct drying Ash, w /% ≤ 1.2 GB 5009.4b Acid insoluble, w /% ≤ 4.0 Appendix A A.3 Protein, w /% ≤ 7.0 GB 5009.5c Residual solvent (ethanol and isopropanol), w /% ≤ 1.0 Appendix A A.4 Starch test by test A.5 in Appendix A Lead (Pb)/(mg/kg) ≤ 2 GB 5009.12 a drying temperature and time are 105 °C ± 2 °C and 5 h, respectively.

b firing temperature and time were $800\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$ and 3 h ~ 4 h.

c protein factor of 6.25.

Item Index Test Method CfU/(CFU/g) ≤ 5000 GB 4789.2 Escherichia coli/(MPN/g)
Appendix A Testing method A.1 General Provisions Unless otherwise specified in this standard, the use of analytical reagent purity should be more than the standard titration solution, standard solution for measuring impurities, Preparations and products, should be GB/T 601, GB/T 602, the provisions of the preparation of GB/T 603, the test water should be consistent with GB/T 6682-2008 in three water Provisions. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 Solubility Test Insoluble in ethanol.

A.2.2 gel test

Add a small amount of sodium borate test solution (10 g/L) in the sample solution, the solution to form a gel.

A.2.3 stickiness test Weigh 2 g sample was placed in a 400 mL beaker, add about 4 mL of isopropyl alcohol, the sample is completely wet. Was added 200 mL of water, in strong Force stirring until completely homogeneous sample dispersion to form a milky white, slightly viscous solution. Of this solution 100 mL, 400 mL placed in another beaker, Heated for about a boiling water bath for 10 min, cooled to room temperature. Solution viscosity will be significantly increased (this is different from the locust bean gum, guar gum place).

A.3 Determination of acid-insoluble matter A.3.1 Reagents and materials A.3.1.1 sulfuric acid.

A.3.1.2 filter aid. diatomite, after $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, 3 h drying.

A.3.2 Instruments and Equipment A.3.2.1 filter crucible (after $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, 3 h drying).

A.3.2.2 dryer.

A.3.3 Analysis step

Weigh 2.0 g sample is dissolved in a water containing 150 mL of sulfuric acid and 1.5 mL 250 mL beaker. Cover with a watch glass beaker on a steam bath Heating 6 h, the heating process at any time lost from evaporation of water. After heating, said aid 500 mg of dried processed, added to the sample solution by filtration weighed filter crucible. Residue washed with hot water several times, then the crucible together with the residue at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ Dried 3h, cooled in a desiccator and weighed.

A.3.4 Calculation Results the mass fraction of acid insoluble w1 according to formula (A.1) Calculated.

mmm

w (A.1)

Where.

After drying m1-- crucible together with the total mass of the residue, expressed in grams (g);

m2-- aid mass in grams (g);

m3-- crucible mass in grams (g);

m4-- sample mass, in grams (g).

A.4 Determination of residual solvents (ethanol and isopropyl alcohol) A.4.1 Reagents and materials A.4.1.1 ethanol. chromatography.

A.4.1.2 isopropanol. chromatography.

A.4.1.3 tert-butanol. HPLC grade.

A.4.2 Instruments and Equipment Gas chromatograph equipped with a flame ionization detector.

A.4.3 reference chromatographic conditions A.4.3.1 Column. biphenyl filler is 25% -75% dimethicone, 60 m x 0.25mm (internal diameter), a thickness of 0.25 μ m. Or other equivalent Separation columns and chromatographic conditions.

A.4.3.2 carrier gas. helium or nitrogen.

A.4.3.3 flow rate. 1.5 mL/min.

A.4.3.4 inlet temperature. 280 °C.

A.4.3.5 Column temperature. 40 °C kept 6 min, with 4 °C/min was raised to 110 °C, then to 25 °C/min was raised to 250 °C, maintained 10 min.

A.4.3.6 detector temperature. 250 °C.

A.4.4 Analysis step

A.4.4.1 Preparation of standard solution of solvent Weigh 100 mg ethanol and isopropanol, placed in a 90 mL of water containing about 100 mL volumetric flask, dilute with water to 100 mL, mix uniform.

A.4.4.2 Preparation of standard solution of tert-butyl alcohol Weigh 100 mg tert-butyl alcohol, placed in a 90 mL of water containing about 100 mL volumetric flask, dilute with water to 100 mL, and mix.

A.4.4.3 Preparation of mixed standard solution Draw 1 mL, 2 mL, 3 mL, 4 mL and 5 mL solvent standard solution (A.4.4.1), were placed in five 100 mL volumetric flask, respectively Tert-butanol was added 4 mL standard solution (A.4.4.2), then diluted with

water to 100 mL, and mix.

A.4.4.4 Preparation of sample solution in one containing 200 mL distilled water 1000 mL round bottom flask, 1 mL Suitable defoamers, and dispersed. Add about 4 g sample (Accurate to 0.000 1 g), shaken for 1 h. This is connected to the flask and fractionating column, adjust the temperature, so that the foam does not enter the column, then the distillate was about 95 mL.

Added distillate 4 mL tert-butyl alcohol standard solution, add water added to 100 mL, this was a sample solution.

A.4.4.5 Drawing standard curve 1 μ L were injected into the mixed standard solution in A.4.3 reference chromatographic conditions were determined, ethanol, isopropanol and tert-butanol peaks were recorded Area value. In each solvent (ethanol or isopropanol) and tert-butanol peak area ratio of the peak area of each solvent (ethanol or isopropanol) in a mixed standard Solution concentration (mg/mL) standard curve, standard curves were obtained ethanol and isopropanol standard curve.

A.4.4.6 Determination Injection of 1 μ L of the sample solution in A.4.3 reference chromatographic conditions were determined, record the peak area value of ethanol, isopropanol and tert-butanol. Compute each solvent (ethanol or isopropanol) and the peak area ratio of the peak area of tert-butanol. According to the standard curve to determine the concentration of each solvent.

A.4.5 Calculation Results Ethanol or isopropanol mass fraction w_2 according to formula (A.2) Calculated.

w (A.2)

Where.

c -- depending on the concentration of the sample solution standard curve obtained in each solvent (ethanol or isopropanol), expressed in milligrams per milliliter (mg/mL);

100-- volume of the sample solution, in milliliters (mL);

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

1000-- mass conversion factor.

The mass fraction of ethanol and isopropanol and the residual solvent (ethanol and isopropanol) mass fraction.

A.5 starch test

A.5.1 Reagents and materials Iodine solution. Weigh iodine 14.0 g, containing potassium iodide was dissolved in 100 mL of an aqueous solution of 36.0 g was added three drops of hydrochloric acid, diluted with water to 1000 mL.