



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

GB 1886.185-2016

**National Food Safety Standard -- Food Additives -- Succinic
acid monoglyceride**

食品安全国家标准 食品添加剂 琥珀酸单甘油酯

(English Translation)

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1 Scope

This standard applies to glycerol and edible fats or oils or edible fatty acids esterified or transesterified, and then to Hu Acylation Perot prepared food additive succinic acid monoglyceride.

2 Structural formula

Wherein, R1, R2 and R3 is a succinic acid group, a fatty acid group, the other may be an acid, a fatty acid, or hydrogen.

3.1 Sensory requirements

Sensory requirements shall comply with the requirements in Table 1.

Table 1 Sensory requirements

Project requires test methods Light beige color to white Waxy solid state Proper amount of sample is placed in a clean, dry porcelain dish, under natural light, the color observed Chak and state

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 Acid number (as KOH)/(mg/g) 70 ~ 120 GB/T 5530 hot ethanol to assay a A hydroxyl value (as KOH)/(mg/g) 138 ~ 152 Appendix A A.3 Iodine value (in terms I)/(g/100g) ≤ 3 GB/T 5532b Free succinic acid, w /% ≤ 3 in Appendix A A.4 TABLE 2 (cont.) Item Index Test Method Binding succinic, w /% ≥ 14.8 Appendix A A.4 Lead (Pb)/(mg/kg) ≤ 2.0 GB 5009.12 a sample weight was 0.1g.

b sample weight was 0.5g.

Appendix A

A.2.3.1.2 ammonium chloride solution. 5g/L.

A.2.3.1.3 filters. with 5% p-dimethylaminobenzaldehyde and 20% benzene solution of trichloroacetic acid wetting.

A.2.3.2 analysis step A.2.2.2 solution to the aqueous layer as a sample solution was added dropwise taking 1 eppendorf tubes, 1 drop of solution of ammonium chloride was added and the number of milligrams of zinc. take Covered with a filter paper tube mouth. Micro flame continued heating tube bottom about 1min. Succinic acid content of the different view, should appear on the filter paper purpurin Color or pink spots.

A.2.4 glycerol test

A.2.4.1 Reagents and materials A.2.4.1.1 calcium hydroxide.

A.2.4.1.2 potassium hydrogen sulfate.

A.2.4.1.3 sodium hydroxide solution. 43g/L.

A.2.4.1.4 filter. (5% five cyanoimino nitro ferrate and 20% aqueous solution of disodium piperidine aqueous acrolein assay reagent, immediately before use Formulated by 1.1) wetted.

A.2.4.2 analysis step A.2.2.2 aqueous layer was heated in a sample solution was taken 5mL placed in a test tube, adding an excess of calcium hydroxide in a boiling water bath Shaken several 5min, period, cooled and filtered. Take a drop of the filtrate was put in a test tube, add approximately 50mg potassium hydrogen sulfate. Tubes covered with filter paper mouth. Flame heating is continued micro bottom of the tube. Filter paper should appear blue, indicating the presence of glycerol. After the addition of sodium hydroxide solution, it is converted to a light red.

A.3 measured hydroxyl value (as KOH) in A.3.1 Reagents and materials A.3.1.1 pyridine. phenolphthalein as indicator, with hydrochloric acid solution (1110) and.

A.3.1.2 neutral butanol. phenolphthalein as an indicator, titration with ethanolic potassium hydroxide standard solution was titrated to appear and remain pink 15s Do not change color.

A.3.1.3 acetylating agent. acetic anhydride and pyridine by mixing 13, stored in a brown bottle.

A.3.1.4 KOH - ethanol standard titration solution. $c(\text{KOH}) = 0.5\text{mol/L}$.

A.3.1.5 phenolphthalein indicator solution. 10g/L.

A.3.2 Analysis step

Weigh about 2g sample, accurate to 0.0001g, was placed 250mL grinding mouth

Erlenmeyer flask, was added 5mL $\pm$ 0.02mL acetylating agent, even Contact condenser, was heated at reflux for 1h in a water bath. Was added 10mL of water from the condenser to the upper end of the conical flask, the heating was continued for 10min, cooled to rt. Rinsed with 15mL of n-butanol neutral condenser, remove the condenser, and then n-butanol 10mL neutral rinse bottle wall. Add 8 drops Phenolphthalein indicator solution, potassium hydroxide - pink ethanol standard solution was titrated to titrate the solution, and maintained without fading is the end 15s. Simultaneously A blank test.

To correct the free acid, it weighs about 10g sample to the nearest 0.01g. Placed in a conical flask, 30mL of pyridine was added 5 drops of phenolphthalein Indicator solution, potassium hydroxide - ethanol standard solution was titrated to titrate the solution pink.

A.3.3 calculation results A hydroxyl value (as KOH) w1, in milligrams per gram (mg/g), calculated according to formula (A.1).

$$(V_0 - V_1) \times c \times M$$

$$V_2 \times c \times M$$

Where.

--- consumption volume V_0 blank ethanolic potassium hydroxide standard titration solution in milliliters (mL);

V_1 --- volume of sample consumed ethanolic potassium hydroxide standard titration solution in milliliters (mL);

C --- concentration of potassium hydroxide in ethanol standard titration solution in units of moles per liter (mol/L);

--- molar mass M potassium hydroxide, in units of grams per mole (g/mol) [M (KOH) = 56.1];

M_1 --- mass of sample, grams (G);

--- V_2 free acid consumption volume correction ethanolic potassium hydroxide standard titration solution in milliliters (mL);

Determination of free acid sample when M_0 --- corrected mass in grams (g).

A.4 Determination of binding free succinic acid and succinic acid A.4.1 Reagents and materials A.4.1.1 benzene.

A.4.1.2 acid. mass fraction of not less than 99.5%, to be dried before formulation solution was titrated to a constant mass.

A.4.1.3 standard titration solution of sodium hydroxide in methanol. c (NaOH) = 0.02mol/L. 4g of sodium hydroxide was dissolved in 1000mL of dry Methanol, the solution was pipetted 200mL to 1000mL volumetric flask, dilute to volume with methanol and dry shake. Phenolphthalein as an indicator, Calibration of an aqueous solution of succinic acid.

A.4.1.4 phenolphthalein indicator solution. 10g/L.

A.4.2 Analysis step

Weigh about 125mg sample, accurate to 0.0001g, placed in a separatory funnel filled with 250mL 100mL benzene, heated with warm water fraction Funnel to dissolve the sample, as a sample solution. Another set 100mL benzene to a separatory funnel, the solution as a blank. Then follows are by Manner. cooling the material in the funnel, add 50mL water, inverted funnel about 20 times, and uniformly mixed. The aqueous layer was allowed to stand for 15min to move 125mL Erlenmeyer flask to a separatory funnel was added 10mL of water, inverted funnel five times, the washings was poured into 125mL Erlenmeyer flask. To taper Flask was added 5 drops of phenolphthalein indicator solution, titrated with sodium hydroxide solution in methanol standard solution was titrated to a pink, i.e. does not fade and is maintained 15s as the end point. A blank solution was treated do the same, and record the net volume consumed, units of mL, represented by V1.

The benzene layer was transferred to 500mL round bottom flask, funnel and washed with 10mL of benzene. In a flask was added a few zeolite, and a portion at about 60 deg.] C Benzene fraction was evaporated under vacuum, preferably using a thin film evaporator, with a 10mL flask to dissolve the residue in methanol, was added 10mL of water and 5 drops of phenolphthalein indicator Solution, titrated with sodium hydroxide solution in methanol standard solution was titrated to a pink, and maintains no fading is the end 15s. To do blank solution the same treatment, and the net consumption volume of the recording units of mL, V2 in FIG.

A.4.3 calculation results the mass fraction of the free acid w2, calculated according to equation (A.2).

$$(V1/2) \times c \times M$$

$$m \times 100\%$$

Where.

VI --- Test net consumption volume of sodium hydroxide in methanol standard titration solution in milliliters (mL);

C --- standard titration solution concentration of sodium hydroxide in methanol, in units of moles per liter (mol/L);

--- M succinic molar mass in grams per mole (g/mol) [M (C₄H₆O₄) = 118.1];

--- m sample mass, in milligrams (mg).