



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

GB 1886.101-2016

**National Food Safety Standard -- Food Additives -- Stearic acid
(also known as octadecanoic acid)
(English Translation)**

Issued on: August 31, 2016

Implemented on: January 1, 2017

Issued by: National Health and Family Planning Commission

Table of Contents

- 1 Scope
- 2 Formula, Structure and molecular weight
 - 2.2 Structure
 - 2.3 Molecular Weight
- 3 Technical requirements
 - 3.1 Sensory requirements
 - 3.2 Physical and Chemical Indicators

1 Scope

This standard applies to mainly stearic and palmitic acids prepared fatty food additive stearic acid (octadecanoic acid also known).

2 Formula, Structure and molecular weight

Formula 2.1

C₁₈H₃₆O₂

2.3 Molecular Weight

284.48 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements in Table 1.

Table 1 Sensory requirements

Project requires test methods Color white to pale yellow Rigid solid state the sample was placed in a clean, dry white porcelain plate, under natural light, was observed its color 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) 196 ~ 211 Appendix A A.2 Iodine value (in terms I)/(g/100g) ≤ 7.0 Appendix A A.3 Saponification value (as KOH)/(mg/g) 197

~ 212 Appendix A A.4 Water, w /% ≤ 0.2 GB/T 6283 Residue on ignition, w /% ≤ 0.1 GB/T 9741a Unsaponifiables, w /% ≤ 1.5 A.5 Appendix A Crystallization point/°C 54.5 ~ 69 GB/T 7533 Lead (Pb)/(mg/kg) ≤ 2.0 GB 5009.12 a 2g sample firing temperature was 675 °C ± 25 °C.

Appendix A

Testing method

A.1 General Provisions this standard reagent in the absence of water and other requirements stated, refer to three analytical reagent water and GB/T 6682 provisions. test Used in the standard solution, the standard solution, the determination of impurities, formulations and products, in the absence of other requirements specified are by GB/T 601, GB/T 602, GB/T 603 of the predetermined prepared. The test does not indicate when the solution which is formulated with a solvent, refer to the aqueous solution.

A.2 Determination of the acid value (as KOH) in A.2.1 Reagents and materials A.2.1.1 ethanol. pre-boiled, and neutralized with sodium hydroxide.

A.2.1.2 sodium hydroxide standard titration solution. $c(\text{NaOH}) = 0.5\text{mol/L}$.

A.2.1.3 phenolphthalein indicator solution. 10g/L.

A.2.2 Analysis step

Weigh about 5g samples, accurate to 0.0002g, placed in 500mL Erlenmeyer flask with 75mL ~ 100mL hot ethanol dissolved, add 0.5mL phenolphthalein indicator solution, titrated to standard titration with sodium hydroxide solution reddish solution, kept not fade as the end 30s.

A.2.3 calculation results Acid number (as KOH) mass fraction w_1 , in milligrams per gram (mg/g), calculated according to formula (A.1).

$V \times c \times M$

Where.

Volume V --- sodium hydroxide standard titration solution in milliliters (mL);

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

--- molar mass M potassium hydroxide, in units of grams per mole (g/mol), [$M(\text{KOH}) = 56.109$];

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

A.3 measured iodine value (the I basis) A.3.1 Reagents and materials A.3.1.1 carbon tetrachloride.

A.3.1.2 Webster solutions. All glassware and materials required to dry. Take iodine chloride 19.00g, was dissolved in 700mL of acetic acid and 300mL four Carbochlorination formulated in a mixture of 1000mL. The solution is not clarified, and filtered. Store in a cool dark place.

A.3.1.3 potassium iodide solution. 100g/L.

A.3.1.4 sodium thiosulfate standard titration solution. 0.1mol/L.

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

A.3.2 Analysis step

Weigh about 0.5g samples, accurate to 0.0002g, which was placed in a glass stoppered Erlenmeyer flask with 300mL, added in 10mL glass sleeve Carbon tetrachloride, with a pipette solution Webster intake 25mL shake. Plug plugged, in a cool (20 °C ~ 25 °C) dark place 30min.

Potassium iodide solution was added 15mL and 100mL water. Under vigorous shaking with sodium thiosulfate to near extinction yellow, plus 1mL ~ 2mL starch indicator solution and continue the titration to the blue disappeared.

The same blank test.

A.3.3 calculation results Iodine value (in terms I) mass fraction w_2 , in grams per hundred grams (g/100g), according to equation (A.2) is calculated.

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

Where.

--- consumption volume V_0 blank test standard sodium thiosulfate titration solution in milliliters (mL);

V_1 --- standard sample consumption of sodium thiosulfate titration solution volume in milliliters (mL);

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

Molar mass M iodine ---Units of grams per mole (g/mol), [$M (I_2) = 12.69$];

--- m sample mass in grams (g).

A.4 saponification value measured (as KOH) in A.4.1 Reagents and materials A.4.1.1 ethanol.

Potassium hydroxide ethanol solution A.4.1.2. 40g/L.

A.4.1.3 hydrochloric standard titration solution. $c (HCl) = 0.5\text{mol/L}$.

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

A.4.2 Analysis step

Weigh about 2g samples, accurate to 0.0001g, was placed 250mL grinding mouth Erlenmeyer flask was added 25mL $\pm$ 0.02mL potassium acetate Alcohol solution, connected to a condenser, placed in a water bath heated at reflux 1H, rinsed with a little cold condenser after 10mL of anhydrous ethanol is removed conical flask, add Into 5 drops of phenolphthalein indicator solution, titration with standard hydrochloric acid solution was titrated to red solution just disappeared, the test solution was heated to boiling. If there is pink, Continue titration to the disappearance of the red is the end.

At the same time a blank test.

A.4.3 calculation results Saponification number (KOH basis) the mass fraction w_3 , milligrams per gram (mg/g), is calculated according to equation (A.3).

$$(V_0 - V_2) \times c \times M$$

Where.

--- V_0 standard volume of hydrochloric acid consumed blank titration solution in milliliters (mL);

--- V_2 sample consumption volume of standard HCl titration solution in milliliters (mL);

C --- hydrochloric acid standard titrant concentration in mol per liter (mol/L);

--- molar mass M potassium hydroxide, in units of grams per mole (g/mol), [M (KOH) = 56.109];

m_2 --- sample mass, in grams (g).

Determination of unsaponifiable A.5 A.5.1 Reagents and materials A.5.1.1 potassium hydroxide.

Never calibration unsaponifiable subtracting the amount of fatty acid, is the amount of sample material is not saponified.