



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

**GB 1886.53-2015**

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**National Food Safety Standard -- Food Additives -- Adipic acid**

食品安全国家标准 食品添加剂 己二酸

**(English Translation)**

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### 1 Scope

This standard applies to the oxidation of cyclohexane cyclohexanone and cyclohexanol mixture, in the presence of a catalyst and then by nitric oxide after crystallization, Refined prepared food additive adipic acid.

#### 2.1 Chemical Name

Adipic acid, 1,6; 1,4-butane dicarboxylic acid

#### 2.2 Formula

Formula 2.3

C<sub>6</sub>H<sub>10</sub>O<sub>4</sub>

#### 2.4 Relative molecular mass

146.14 (according to 2011 international relative atomic mass)

#### 3.1 Sensory requirements

It shall comply with the technical requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color status white Crystal or crystalline powder Take the right amount of sample is placed in a clean, dry white porcelain dish, self Under natural light, observe its color and status

### 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 Adipic acid content, w /% 99.6 ~ 101.0 Appendix A A.3 Water, w /%  $\leq 0.2$  GB/T 6283 Sulphate ash/(mg/kg)  $\leq 20$  Appendix A A.4 Lead (Pb)/(mg/kg)  $\leq 2.0$  GB 5009.12 Appendix A Testing method A.1 General Provisions this standard reagents and water, did not indicate when the other requirements, refer to the three water analytical reagent and GB/T 6682 regulations. test Test used in the standard solution, impurity standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 601, GB/T 602, GB/T 603 provisions prepared. 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 Slightly soluble in water, soluble in ethanol.

A.2.2 melting range

According to the provisions of GB/T 617 will be a melting point in the range of  $151.5^{\circ}\text{C} \sim 154.0^{\circ}\text{C}$ .

A.3 Determination of adipic acid content A.3.1 Reagents A.3.1.1 methanol.

A.3.1.2 sodium hydroxide standard titration solution.  $c(\text{NaOH}) = 1\text{mol/L}$ .

A.3.1.3 phenolphthalein indicator solution.

A.3.2 Analysis step

Weigh 3g samples, accurate to 0.001g, placed in 250mL conical flask, add 50mL of methanol, water bath heated slightly to dissolve the sample.

After cooling, phenolphthalein indicator solution, titration with standard sodium hydroxide solution was titrated to reddish, maintaining 30s does not fade as the end point. At the same time Blank correction.

A.3.3 Calculation Results Adipic acid content of the mass fraction  $w_1$ , according to equation (A.1) Calculated.

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

$1000 \times 2 \times m \times$

100% (A.1)

Where.

$c$  --- sodium hydroxide standard titration solution and the exact concentration, in units of moles per liter (mol/L);

Volume V1 --- titration sample consumed sodium hydroxide standard titration solution, in milliliters (mL);

V0 --- blank titration volume consumed sodium hydroxide standard titration solution, in milliliters (mL);

--- The M molar mass of adipic acid, in units of grams per mole (g/mol), [M (C<sub>6</sub>H<sub>10</sub>O<sub>4</sub>) = 146.14];

1000 --- conversion factor;

2 --- conversion factor;

M --- the quality of the sample, in grams (g).

The test results mean of two parallel determination results shall prevail (to one decimal place). Twice under repeated condition alone Li absolute difference between the measurement result is not more than 0.5%.

A.4 Determination of sulfated ash A.4.1 Reagents and materials A.4.1.1 coke potassium sulfate or potassium hydrogen sulfate.

A.4.1.2 sulfuric acid solution. 2mol/L. Sulfate 57mL, 100mL slowly into the water, cooled to room temperature, diluted with water to 1000mL.

A.4.2 Instruments and Equipment A.4.2.1 platinum dish. 125mL.

A.4.2.2 Analytical balance. accurate to 1mg.

A.4.2.3 high-temperature furnace.

A.4.2.4 gas burner.

A.4.3 Analysis step

One platinum dish to 5g potassium pyrophosphate or potassium bisulfate melt cleaning, followed by dilute sulfuric acid boil and moist wash constant weight. Accurately weighed into 100g sample was heated on a gas burner to melt it all, and then the torch burning. After removing the combustion flame starts to decrease or avoid boiling the sample Teng, the sample holding slow burning until carbonization. Placed in a high temperature oven 850 °C 30min to continue burning it completely gray, cooled, and weighed.

A.4.4 Calculation Results Sulfated ash w<sub>2</sub>, Values are in mg/kg, according to equation (A.2) Calculated.

$(M_2 - m_1) \times 10^6$

Where.

m<sub>2</sub> --- sample burning, ash tray after completion of platinum mass, in grams (g);

m1 --- added before the sample quality constant weight platinum disc in units of grams (g);

106 --- quality conversion factor;

Quality m3 --- added sample in grams (g).

The test results mean of two parallel determination results shall prevail (reserved bit integer). Twice under repeated condition alone Li absolute difference between the measurement result is not greater than 1mg/kg.