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

GB 1886.31-2015

Replacing GB 8850-2005

**National Food Safety Standard -- Food Additives -- Ethyl
p-hydroxybenzoate**

食品安全国家标准 食品添加剂 对羟基苯甲酸乙酯

(English Translation)

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Foreword

This standard replaces GB 8850-2005 "food additive ethyl paraben." this standard compared with GB 8850-2005, the main changes are as follows.

--- Standard name was changed to "national food safety standards for food additives ethylparaben." National Food Safety Standard Food Additives Ethylparaben

1 Scope

This standard applies to food additives on ethanol hydroxy acid and sulfuric acid as esterification catalyst made of p-hydroxybenzoic acid Ethyl ester.

2 Molecular formula, relative molecular mass and structural formula

Formula 2.1

C₉H₁₀O₃

2.3 Relative molecular mass

166.17 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color status odor taste white Crystalline powder Odorless or slight special aroma Bitter, burning hemp Take appropriate sample is placed in a clean, dry

white porcelain dish, Concept under natural light Color and state police, smell the smell, taste its flavor

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 Ethylparaben (C₉H₁₀O₃) content (dry basis), w /% 99.0 ~ 100.5
 Appendix A A.4 Melting point/°C 115 ~ 118 Appendix A A.5 Free acid (p-hydroxy benzoic acid), w /% ≤ 0.55 A.6 in Appendix A Sulfate (SO₄ dollars), w /% ≤ 0.024 Appendix A A.7 Loss on drying, w /% ≤ 0.50 Appendix A A.8 Residue on ignition, w /% ≤ 0.05 A.9 in Appendix A Arsenic (As)/(mg/kg) ≤ 1.0 GB 5009.76 Heavy metals (Pb)/(mg/kg) ≤ 10.0
 Appendix A A.10 Appendix A Testing method A.1 Safety Tips Some test procedures prescribed test method can lead to dangerous situations. The operator shall take appropriate safety and health practices.

A.2 General Provisions this standard reagents and water in the absence of other specified requirements, refer to the three water analytical reagent and GB/T 6682 regulations. test the required standard solution, impurity standard solution, preparations and products, did not indicate when the other requirements according to GB/T 601, GB/T 602 and 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.3 Identification Test A.3.1 Reagents and materials A.3.1.1 sodium hydroxide solution. 40g/L.

A.3.1.2 barium chloride solution. 250g/L.

A.3.1.3 sodium hydroxide solution. 80g/L.

A.3.1.4 sulfuric acid solution. 117.

A.3.1.5 iodine solution. 12.7g/L.

A.3.2 Identification method A.3.2.1 Weigh about 0.5g sample accurate to 0.01g, add 10mL of sodium hydroxide solution (A.3.1.1) boiled 30min, evaporated to about 5mL, cooling, adding sulfuric acid into the acid solution, filtered, washed the precipitate with barium chloride solution to the filtrate turbidity test does not occur, then the precipitate at 105 °C ± 2 °C drying 1h, according to GB/T 617 Determination of the melting point, the final melt temperature should be in the range of 213 °C ~ 217 °C.

A.3.2.2 Weigh 0.5g sample accurate to 0.01g, add 5mL sodium hydroxide solution (A.3.1.3), placed in boiling water bath for 5min, add 6mL sulfuric acid solution, cooled, filtered and the filtrate was added 5mL sodium hydroxide solution (A.3.1.3), warmed to 50 °C, then adding iodine dissolved 5mL Solution, methyl iodide appears three odor, followed

by a precipitate.

A.4 Determination of Ethylparaben (C₉H₁₀O₃) content (dry basis) of A.4.1 principle of the method Sample with an amount of sodium hydroxide saponification reaction, excess sodium hydroxide with sulfuric acid standard titration solution titration, pH meter indication end. According to the consumption of sulfuric acid standard titration solution volume calculation Ethylparaben content.

A.4.2 Reagents and materials A.4.2.1 sodium hydroxide solution. 40g/L.

A.4.2.2 buffer solution. 25 °C when, pH 4.01 and 6.86 buffer solution, according to GB/T 9724 in preparation 4.2 and 4.3.

A.4.2.3 sulfuric acid standard titration solution. $c \text{ 12H}_2\text{SO}_4 \div = 1\text{mol/L}$.

A.4.3 Instruments and Equipment pH meter. accuracy pH0.1.

A.4.4 Analysis step

A.4.4.1 according to GB/T 9724 for pH meter debugging.

A.4.4.2 Weigh about 2g samples were dried at 80 °C ± 2h after 2 °C, accurate to 0.0002g, placed in 250mL bottle of iodine, quasi Sodium hydroxide solution was added 40mL indeed, slowly heated to boiling under reflux for 1h, cooled to room temperature, quantitatively transferred to a beaker, moves to advance with a pH = 6.86 buffer solution, a good tune on pH meter, with sulfuric acid standard titration solution was titrated to pH 6.50 and stabilize 30s, is the end.

A.4.4.3 measured at the same time, according to the same procedure and the determination of the sample without using the same amount of reagent blank test solution.

A.4.5 Calculation Results Ethylparaben (C₉H₁₀O₃) content mass fraction w₁, according to equation (A.1) Calculated.

V₁-V₂

1000 x c x M

m x 100%

Where.

V₁ --- blank test volume consumption standards sulfuric acid titration solution (A.4.2.3), expressed in milliliters (mL);

Volume V₂ --- sample consumption standards sulfuric acid titration solution (A.4.2.3), expressed in milliliters (mL);

1000 --- milliliters and liters of conversion factor;

C --- concentration of sulfuric acid standard titration solution, expressed in moles per liter

(mol/L);

The molar mass M --- ethylparaben, in units of grams per mole (g/mol), [M ($C_9H_{10}O_3$) = 166.2];

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

Take two parallel determination results of the arithmetic average of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.2%.

Determination of the melting point A.5 A.5.1 capillary method (Arbitration Act) Conducted in accordance with GB/T 617's. In the end of melting temperature as a measurement result. Arithmetic mean of two parallel determination results for the determination as a result, the results of two parallel determination of the absolute difference is not more than 0.3 °C.

A.5.2 digital melting point apparatus Act A.5.2.1 instruments and equipment Digital Melting Point. temperature control accuracy of ± 0.5 °C.

A.5.2.2 analysis step Operating instructions by the melting point apparatus is adjusted to correct melting point apparatus. Adjust the instrument temperature to 112 °C. The sample was finely dried loaded Clean and dry the melting point of the tube, taking about dried hollow glass tube 800mm upright on the glass or porcelain plate, containing the melting point of the sample tube which drop more than 15 times, until the melting point of the sample tube to tightening 3mm ~ 5mm high or the appropriate height, the temperature of the instrument to be stable, the the melting point of the sample tube containing the sample is inserted into the hole, adjust the zero, at a rate of 1 °C/min heating up, after a few minutes the instrument displays incipient melting of the sample and the final Melting temperature. In the end of melting temperature as a measurement result.

Take two parallel determination results of the arithmetic average of the measurement results, the results of two parallel determination of the absolute difference is not more than 0.5 °C.

A.6 free acid (p-hydroxy benzoic acid) Determination A.6.1 Reagents and materials A.6.1.1 sodium hydroxide standard titration solution. c (NaOH) = 0.1mol/L.

A.6.1.2 methyl red indicator solution. 1g/L.

A.6.2 Analysis step

Weigh 0.75g sample, accurate to 0.01g, 15mL placed in hot water heated to about 80 °C 1min, cooling, filtration, of 10mL Solution, add 2 drops of methyl red indicator solution, titration with sodium hydroxide standard titration solution to yellow, stable 30s is the end, the consumption of sodium hydroxide standard Volume quasi titration solution should not exceed 0.20mL, is equal to the free acid content of less than 0.55%.

A.7 Sulfate (SO_4 meter) measurement A.7.1 Reagents and materials A.7.1.1 hydrochloric