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

GB 1886.13-2015

Replacing GB 2513-2004

**National Food Safety Standard -- Food Additives -- Potassium
permanganate**

食品安全国家标准 食品添加剂 高锰酸钾

(English Translation)

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Foreword

This standard replaces GB 2513-2004 "food additive potassium permanganate." this standard compared with GB 2513-2004, the main changes are as follows.

--- Standard name was changed to "national food safety standards of food additives potassium permanganate." National Food Safety Standard Food additive potassium permanganate

1 Scope

This standard applies to food additive potassium permanganate.

2 Molecular formula and relative molecular mass

Formula 2.1

KMnO_4

2.2 Relative molecular mass

158.03 (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 Purple, with a metallic sheen Granular, needle-like crystal or quicksand Take appropriate sample is placed in a clean, dry white porcelain dish, Concept under natural light Color and state police

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 Potassium permanganate (KMnO_4) content, w /% 99.0 ~ 100.5
 Appendix A A.4 Chloride (Cl dollars), w /% ≤ 0.01 Appendix A A.5 Sulfate (SO_4 dollars), w /% ≤ 0.05 A.6 in Appendix A Water-insoluble, w /% ≤ 0.20 Appendix A A.7 Arsenic (As)/(mg/kg) ≤ 2.0 GB 5009.76 Appendix A Testing method A.1 Safety Tips Reagents used in this test method has toxic, the operator should be careful. As splashed on the skin should immediately wash with water, Yan in severe cases should be treated immediately. When using flammable, do not use open flame heating.

A.2 General Provisions this standard reagents and water in the absence of other requirements specified, refers to three analytical reagent water and GB/T 6682 stipulated. test Test used in the standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 601, GB/T 602 and GB/T 603 of Regulation Set preparation. 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 ethanol.

A.3.1.2 sodium hydroxide solution. 40g/L.

A.3.1.3 acetic acid solution. 17.

A.3.1.4 sodium nitrite cobalt. 100g/L. Preparation. Weigh 0.1g of sodium nitrite cobalt, a 50mL beaker, add 10mL water-soluble solution. This solution was formulated before use.

A.3.2 Identification method A.3.2.1 said 0.05g sample, add 5mL dissolved in water, ethanol is added 1mL, 0.3mL sodium hydroxide solution. Green solution was heated solution Liquid to boiling, brown-black precipitate.

A.3.2.2 A.3.2.1 The resulting mixture was filtered, the filtrate taken 1mL, and then a solution of acetic acid was added 1mL 1mL sodium nitrite dissolved cobalt Solution, a yellow precipitate immediately.

A.4 Determination of potassium permanganate (KMnO_4) Content A.4.1 Method summary Iodine Method to starch indicator solution, titration with sodium thiosulfate standard titration solution, to determine its content.

A.4.2 Reagents and materials A.4.2.1 potassium iodide.

A.4.2.2 hydrochloric acid solution. 14.

A.4.2.3 sodium thiosulfate standard titration solution. $c(\text{Na}_2\text{S}_2\text{O}_3) = 0.1\text{mol/L}$.

A.4.2.4 starch indicator solution. 5g/L.

A.4.3 Analysis step

Weigh about 0.3g sample, accurate to 0.0002g, placed in 250mL beaker, add water to dissolve the sample solution was transferred to 100mL Volumetric flask, dilute to the mark, shake. Pipette with a pipette 20mL of the solution was placed in 250mL conical flask, add 20mL water, 1g of potassium iodide and 10mL hydrochloric acid solution with sodium thiosulfate standard titration solution titration, near the end add starch indicator solution 3mL, continue to drop Given to the blue color disappeared. Make a blank test simultaneously.

A.4.4 Calculation Results Potassium permanganate (KMnO₄) content mass fraction w₁, according to equation (A.1) Calculated.

$V - V_0$

$1000 \times c \times M$

$\times 100\%$ (A.1)

Where.

Volume of sodium thiosulfate standard titration V --- titration solution consumed solution in milliliters (mL);

Volume of sodium thiosulfate standard titration V₀ --- blank test solution consumed in milliliters (mL);

1000 --- conversion factor;

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

Molar mass M --- of potassium permanganate , In units of grams per mole (g/mol), [M (5KMnO₄) = 31.60];

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

20 --- from the sample dilution pipette volume in milliliters (mL);

After 100 --- volume of the diluted sample solution, in milliliters (mL).

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

A.5 chloride (Cl) Determination A.5.1 Method summary Samples treated in nitric acid medium, chloride ions and silver ions form insoluble silver chloride. When a low chlorine ion content in certain Silver chloride in suspension within the body, the solution was cloudy, chloride can be used for visual turbidimetry.

A.5.2 Reagents and materials A.5.2.1 ethanol.

A.5.2.2 nitric acid solution. 16.

A.5.2.3 silver nitrate solution. 100g/L.

A.5.2.4 chloride standard solution. 1mL containing chloride (Cl) 5 μ g, preparation before use. Pipette 5mL according to GB/T 602 Chloride standard solution system, placed in 100mL flask, diluted with water to the mark.

A.5.3 Analysis step

A.5.3.1 Preparation of test solution Weigh about 1.25g sample, accurate to 0.001g. A 50mL beaker, add 40mL water soluble, add 3mL of ethanol was heated to Boiling 2min ~ 3min. Cooling, all moved into 50mL volumetric flask, diluted with water mark and shake. Dry filter paper with medium speed quantitative close Set filtrate (Discard the first filtrate 10mL), the solution is a sample solution A (solution should be colorless), for chloride, sulfate content determination.

A.5.3.2 Determination Pipette Pipette 20mL sample solution A, placed in 25mL colorimetric tube, add 1mL nitric acid solution, 1mL silver nitrate solution, Diluted with water to the mark. Dark for 5min, the turbidity was not deeper than the standard turbidity solution.

Turbid than the standard preparation solution. pipette Pipette 10mL chloride standard solution, the test and measurement solution, while the same treatment.

A.6 Sulfate (SO₄ meter) measurement A.6.1 Method summary the sample was treated in an acidic medium, barium sulfate ions and ions form insoluble barium sulfate, ion content is low when, Within a certain time was barium sulfate suspension, the solution was cloudy, sulfate can be used for visual turbidimetry.

A.6.2 Reagents and materials A.6.2.1 acetic acid solution. 23.

A.6.2.2 barium chloride solution. 250g/L.

A.6.2.3 sulfate standard solution. 1mL containing sulfate (SO₄) 0.01mg. Pipette Pipette 10mL press GB/T 602 formulated Sulfate standard solution, placed in 100mL flask, diluted with water to the mark.

A.6.2.4 turbidity standard solution preparation. pipette Pipette 15mL sulfate standard solution, placed in 25mL colorimetric tube, add water to About 20mL, add 0.5mL solution of acetic acid, 1mL barium chloride solution, diluted with water to the mark.

A.6.3 Analysis step

Pipette Pipette 12mL sample solution A, pipette Pipette 15mL sulfate standard solution, placed in 25mL colorimetric tube, Water was added to about 20mL, diluted with 0.5mL acetic acid, 1mL barium chloride solution with water to the mark. Place 5min, the cloud was Degree should not be deeper than the standard turbidity solution.

A.7 Determination of insoluble matter A.7.1 Method summary Weigh a certain amount of