



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

GB 1886.15-2015

**National food safety standard - Food additives - Phosphoric
Acid**

食品安全国家标准 食品添加剂 磷酸

(English Translation)

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Foreword

This Standard replaced GB 3149-2004 Food Additives - Phosphoric Acid.

Compared with GB 3149-2004, this Standard made the major changes as follows.

- Modify the standard name into "National Food Safety Standard - Food Additives - Phosphoric Acid".

National Food Safety Standard

- Food Additives - Phosphoric Acid

1 Scope

This Standard is applicable to food additive of phosphoric acid produced by thermal method.

2.1 Molecular formula

H₃PO₄

3.1 Sensory requirements

The sensory requirements shall meet the requirements of Table 1.

Table 1 -- Sensory Requirements

Item Requirements Test Methods

Color Colorless, transparent, or with slight light color

Take an appropriate amount of sample and

place it in a clean, dry colorimetric tube, and

visually observe its color and state under

natural light State Viscous liquid

Appendix A

Test Methods

A.1 Safety tips

Some reagents used in this test method are toxic, corrosive and flammable. Operators should be careful. Rinse immediately with water if splashed on the skin, and treat immediately, if injured severely. When using flammable materials, it is strictly prohibited to use open flames for heating.

A.2 General provisions

The reagents and water used in this Standard refer to analytical reagents and Grade-III water specified in GB/T 6682 when no other requirements are specified. The standard solutions used in the test, the standard solutions for the determination of impurities, preparations and products shall be prepared in accordance with GB/T 601 and GB/T 602, and GB/T 603 when no other requirements are specified. When the solution used in the test is not specified with which solvent, it refers to an aqueous solution.

A.3 Identification test

A.3.1 Reagents and materials

A.3.2 Identification method

Take about 1g of the sample; put it in a 100mL beaker; add 10mL of water, a drop of phenolphthalein indicator solution; adjust to neutral by sodium hydroxide solution; add silver nitrate solution drop-by-drop; form the yellow precipitate; and the precipitate can be dissolved in diluted nitric acid (5%) or ammonia.

A.4 Determination of phosphoric acid (H_3PO_4) content

A.4.1 Weight method (Arbitration method)

A.4.1.1 Method summary

In the hydrochloric acid medium, the specimen and the added quimociac precipitant

produce quinoline phosphomolybdate to precipitate. After filtering, washing, drying and weighing, the phosphoric acid content was determined.

A.4.1.2 Reagents and materials

A.4.1.2.1 Hydrochloric acid.

A.4.1.2.2 Preparation of quimociac solution

A.4.1.3 instruments and equipment

A.4.1.3.1 Glass sand crucible. filter plate pore size $5\mu\text{m}\sim 15\mu\text{m}$.

A.4.1.3.2 Electric oven. the temperature can be controlled at $180^{\circ}\text{C}\pm 5^{\circ}\text{C}$ or $250^{\circ}\text{C}\pm 10^{\circ}\text{C}$.

A.4.1.4 Analysis procedures

A.4.1.4.3 Determination

Pipette 10mL of test solution and blank test solution into 250mL beakers respectively; add water to a total volume of about 100mL; add 50mL of quimociac solution; cover the watch glass; and heat in the water bath until the contents of the beaker reach $75^{\circ}\text{C}\pm 5^{\circ}\text{C}$, keep it for 30s (in the process of adding reagents and heating, open flames shall not be used, and stirring shall not be performed to avoid condensation and agglomeration). Take it out and cool to room temperature. Stir for 3~4 times during cooling. Filter in a glass sand crucible with a constant weight made at $180^{\circ}\text{C}\pm 5^{\circ}\text{C}$ or $250^{\circ}\text{C}\pm 10^{\circ}\text{C}$.

A.4.1.5 Calculation of results

The mass fraction, w_1 , of phosphoric acid (H_3PO_4) content is calculated according to Formula (A.1).

A.4.2 Capacity method

A.4.2.1 Method summary

According to the nature of phosphoric acid, take the thymol phthalein as the indicator liquid; directly titrate by and the sodium hydroxide standard titration solution to determine the phosphoric acid content.

A.4.2.2 Reagents and materials

A.4.2.2.1 Sodium hydroxide standard titration solution. $c(\text{NaOH}) = 1 \text{ mol/L}$.

A.4.2.2.2 Thymol phthalein indicator liquid. 1 g/L .

A.4.2.3 Analysis procedures

A.5 Determination of fluoride (by F)

A.5.1 Method summary

Under neutral conditions, take a saturated calomel electrode as a reference electrode; and use a fluoride ion selective electrode to directly measure the electrode potential of the solution. The standard curve method was used to determine the fluorine content.

A.5.2 Reagents and materials

A.5.2.1 Hydrochloric acid solution. 1+1.

A.5.2.5 Bromocresol green indicator liquid. 1 g/L .

A.5.2.6 Fluoride standard solution. 1mL of such solution contains $2\mu\text{g}$ of fluorine (F).

Prepare just before use. Pipette 2mL of the fluoride standard solution prepared according to GB/T 602; place it in a 100mL volumetric flask; dilute with water to the mark; and shake well.

A.5.3 Instruments and equipment

A.5.3.1 Fluoride ion selective electrode.

A.5.4 Analysis procedures

A.5.4.1 Drawing of working curve

Pipette 0.00mL, 1.00mL, 3.00mL, 5.00mL, 7.00mL, 10.00mL of fluoride standard solutions into the 50mL volumetric flasks, respectively; add 1mL hydrochloric acid solution, 5 drops of citric acid - trisodium citrate buffer solution and 2 drops of bromocresol green indicator liquid; adjust the solution to blue by sodium hydroxide solution;

A.5.4.2 Preparation of test solution

Take about 10g of specimen, accurate to 0.01g; put in a 100mL beaker; dilute with a small amount of water; adjust to neutral by sodium hydroxide solution; transfer to a 100mL volumetric flask, dilute to the mark by water; and shake well.