



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

GB 1886.337-2021

**National food safety standard - Food additives - Potassium
dihydrogen phosphate**

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1 Scope

This Standard applies to the food additive potassium dihydrogen phosphate that is produced with potassium hydroxide and the food additive phosphoric acid (including wet-process phosphoric acid) as raw materials.

2.1 Molecular formula

KH_2PO_4

2.2 Relative molecular mass

136.08 (according to the international relative atomic mass in 2018)

3.1 Sensory requirements

Sensory requirements shall be in accordance with Table 1.

Table 1 - Sensory requirements

3.2 Physical and chemical indicators

Physical and chemical indicators shall be in accordance with Table 2.

Table 2 - Physical and chemical indicators

Appendix A Inspection method

WARNING: Some reagents which are used in the test method of this Standard are toxic or corrosive; appropriate safety and protective measures shall be taken during operation. When necessary, it shall be carried out in a fume hood. If it is splashed on the skin, use water to rinse it immediately. If it is serious, seek medical attention immediately.

A.1 General provisions The reagents and water that are used in this Standard, when no other requirements are specified, refer to analytical reagents and grade-III water which is

specified in GB/T 6682. The standard solutions, preparations and products for impurity determination, which are used in the test, are all prepared in accordance with the provisions of GB/T 601, GB/T 602, and GB/T 603, when no other requirements are specified. The used solution, if not indicated which solvent is used, refers to aqueous solution.

A.2 Identification test A.2.1 Reagents and materials A.2.1.1 Nitric acid solution: 1+8.

A.2.1.2 Ammonia solution: 2+3.

A.2.1.3 Silver nitrate solution: 17 g/L.

A.2.2 Identification method A.2.2.1 Identification of phosphate radical Weigh 1.0 g of the sample; dissolve it in 20 mL of water; add silver nitrate solution, to produce a yellow precipitate. This precipitate is soluble in ammonia solution or nitric acid solution.

A.2.2.2 Potassium ion identification Weigh 1 g of the sample; add 20 mL of water to dissolve. Dip a platinum wire ring in hydrochloric acid; burn it to colorless on the flame. Dip the test solution and burn it on the flame. The flame shall be purple when viewed with cobalt glass.

Calculate the volume (V_1) of the hydrochloric acid standard titration solution that is consumed by the sample according to Formula (A.1).

Where:

5.0 - volume of the added hydrochloric acid standard titration solution, in milliliters (mL);

c_1 - concentration of the hydrochloric acid standard titration solution, in moles per liter (mol/L);

V - volume of sodium hydroxide standard titration solution that is consumed when the sudden jump occurs at pH ~ 4.0, in milliliters (mL);

c_2 - concentration of the sodium hydroxide standard titration solution, in moles per liter (mol/L);

When $V_1 < 0$, the mass fraction w_1 of potassium dihydrogen phosphate (KH_2PO_4) is calculated according to Formula (A.2).

When $V_1 \geq 0$, the mass fraction w_1 of potassium dihydrogen phosphate (KH_2PO_4) is calculated according to Formula (A.3).

Where:

V_2 - volume of sodium hydroxide standard titration solution that is consumed in titration between pH~4.0 and pH~8.8, in milliliters (mL);

c_2 - concentration of the sodium hydroxide standard titration solution, in moles per liter

(mol/L);

M - molar mass of potassium dihydrogen phosphate (KH_2PO_4), in grams per mole (g/mol)
($M = 136.08$);

10-3 - conversion factor;

m1 - mass of the sample, in grams (g);

A.5.1.2 Electrothermal constant-temperature dry box: The temperature control range is $105\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$.

A.5.2 Analysis steps Weigh about 10 g of the sample, accurate to 0.01 g; place it in a 400 mL beaker;

add 100 mL of water and heat it to boil; while it is hot, use a glass sand crucible, which has been pre-heated in an electrothermal constant-temperature dry box at $105\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$ to constant mass, for suction filtration; use 200 mL of hot water to wash the water-insoluble matter 10 times. Put the glass sand crucible, together with the water-insoluble matter, in an electrothermal constant-temperature dry box at $105\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$ until the mass is constant.

A.5.3 Result calculation Calculate the mass fraction w_3 of the water insoluble matter according to Formula (A.5).

Where:

m4 - mass of the water insoluble matter and the glass sand crucible, in grams (g);

m5 - mass of the glass sand crucible, in grams (g);

m6 - sample mass, in grams (g).

The test result is based on the arithmetic mean of the parallel determination results. The absolute difference between two independent determination results that are obtained under repeatability conditions is not more than 0.002%.

A.6 Determination of pH (10 g/L solution)

A.6.1 Reagents and materials Carbon dioxide-free water.

A.6.2 Instruments and apparatuses Acidity meter: resolution of 0.01 pH, equipped with glass electrode and saturated calomel electrode (or composite electrode).

A.6.3 Analysis steps