



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

GB 1886.3-2021

**National food safety standard - Food additives - Calcium
hydrogen phosphate**

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Foreword

This Standard replaces GB 1886.3-2016 "National Food Safety Standard - Food Additives - DCP".

Compared with GB 1886.3-2016, the main changes in this Standard are as follows.

- modified the scope;
- added the type of anhydrous calcium hydrogen phosphate;
- modified the impurity content index to "on dry basis";
- modified "ignition loss" to "ignition reduction";
- modified "fluoride (in F)" to "fluorine (F)";
- modified the lead (Pb) index value;
- modified the fluorine content inspection method to GB/T 5009.18;
- modified the lead inspection method to Method 1 in GB 5009.75-2014 or Method 2, Method 3, Method 4 in GB 5009.12-2017;
- modified the arsenic inspection method to GB 5009.76 or GB 5009.11;
- modified the inspection method for heavy metals to GB 5009.74.

National food safety standard -

Food additives - Calcium hydrogen phosphate

1 Scope

This Standard is applicable to the food additive calcium hydrogen phosphate

produced with calcium hydroxide (or calcium carbonate, calcium oxide) and food additive phosphoric acid (including wet-process phosphoric acid) as raw materials.

2.1 Molecular formula

Calcium hydrogen phosphate dihydrate. $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$

Anhydrous calcium hydrogen phosphate. CaHPO_4

2.2 Relative molecular mass

Calcium hydrogen phosphate dihydrate. 172.09 (according to 2018 international relative atomic mass)

3.1 Sensory requirements

The sensory requirements shall meet the requirements of Table 1.

Annex A

Inspection methods

WARNING. Some reagents used in this test method are toxic or corrosive.

Appropriate safety and protection measures shall be taken during operation. When necessary, it shall be carried out in a fume hood. If it splashes on the skin, it shall be rinsed with water immediately. The severe cases shall be treated immediately.

A.1 General

The reagents and water used in this Standard refer to analytically-pure reagents and grade three water specified in GB/T 6682 when other requirements are not indicated. All standard solutions, preparations and products used in the test for impurity determination shall be prepared in accordance with the provisions of GB/T 601, GB/T 602, and GB/T 603 when other requirements are not specified. The solution used refers to an aqueous solution when it is not specified which solvent is used for preparation.

A.2 Identification test

A.2.1 Reagents and materials

A.2.1.1 Hydrochloric acid solution. 1+3.

A.2.1.2 Ammonia solution. 1+1.

A.2.2 Identification method

A.2.2.1 Identification of calcium ion

Weigh about 0.1g of specimen. Add 5mL of water, 5mL of hydrochloric acid solution to make the specimen dissolved. Add 2.5mL of ammonia solution dropwise while shaking. Then add 5mL of ammonium oxalate solution to generate white precipitation.

A.2.2.2 Identification of phosphate ion

Weigh about 0.1g of specimen. Add nitric acid solution dropwise until the specimen is dissolved and then exceed by 1mL. Heat to 40°C~50°C. Add 10mL of ammonium molybdate solution to generate yellow precipitation.

A.3 Determination of calcium hydrogen phosphate content

A.3.4.2 Determination

Accurately pipette 25mL of test solution in a 250mL Erlenmeyer flask. Add 100mL of water, 0.5mL of triethanolamine. Add 0.3g of hydroxynaphthol blue indicator. Put it on a magnetic stirrer and stir evenly. Use a burette to add about 23mL of ethylenediaminetetraacetic acid disodium standard titration solution at a normal speed. Add dropwise sodium hydroxide solution from red to bright blue, and finally to purple. Then exceed by 0.5mL. Continue to use ethylenediaminetetraacetic acid disodium standard titration solution to titrate the solution to blue. Keep it unchanged for 60s. At the same time, conduct the blank test.

A.7 Determination of arsenic (As)

Weigh an appropriate amount of the specimen after burning in A.4. Add hydrochloric acid solution (1+1) dropwise until the specimen is dissolved and then exceed by 2mL. Then determine according to the method specified in GB

5009.76 or GB 5009.11. Use hydrochloric acid (or hydrochloric acid solution)

instead of sulfuric acid (or sulfuric acid solution) in the test procedure. The water used in the test is grade two water specified in GB/T 6682.

A.8 Determination of heavy metals (as Pb)

Weigh $2\text{g} \pm 0.01\text{g}$ of the specimen after burning in A.4. Add 5mL of hydrochloric acid solution (1+1), 20mL of water. Heat to dissolve. After cooling, add dropwise ammonia solution (1+5) until white precipitation appears. Add a small amount of hydrochloric acid solution (1+1) until the precipitation disappears. According to the method specified in GB 5009.74, add 5mL of pH3.5 acetate buffer.

Determine. The water used in the test is grade two water specified in GB/T 6682.

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