CALCIUM HYDROGEN PHOSPHATE

Prepared at the 19th JECFA (1975), published in NMRS 55B (1976) and in FNP 52 (1992). Metals and arsenic specifications revised at the 63rd JECFA (2004). A group MTDI of 70 mg/kg bw, as phosphorus from all food sources, was established at the 26th JECFA (1982)

SYNONYMS Dibasic calcium phosphate, dicalcium phosphate, INS No. 341 (ii)

DEFINITION

Chemical names	Calcium monohydrogen phosphate, calcium hydrogen orthophosphate, secondary calcium phosphate
C.A.S. number	7757-93-9
Chemical formula	Anhydrous: $CaHPO_4$ Dihydrate: $CaHPO_4 \cdot 2H_2O$
Formula weight	Anhydrous: 136.06 Dihydrate: 172.09
Assay	Not less than 98.0% and not more than the equivalent of 102.0% after drying

DESCRIPTION White crystals or granules, granular powder or powder

FUNCTIONAL USES Dough conditioner, yeast food

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Sparingly soluble in water; insoluble in ethanol
Test for calcium (Vol. 4)	Passes test
Test for phosphate (Vol. 4)	Passes test

PURITY

Loss on drying (Vol. 4)	Anhydrous: Not more than 2% (200°, 3 h) Dihydrate: Not less than 18% and not more than 22% (200°, 3 h)
Fluoride (Vol. 4)	Not more than 50 mg/kg (Method I or III)
Arsenic (Vol. 4)	Not more than 3 mg/kg (Method II).
Lead (Vol. 4)	Not more than 4 mg/kg Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be

based on the principles of the method described in Volume 4, “Instrumental Methods.”

METHOD OF ASSAY

Weigh accurately about 0.3 g of the sample, previously dried for 3 h at 200°. Dissolve in 10 ml of dilute hydrochloric acid TS, add about 120 ml of water and a few drops of methyl orange TS, and boil for 5 min, keeping the volume and pH of the solution in the beaker constant during the boiling period by adding hydrochloric acid or water as necessary. Add 2 drops of methyl red TS and 30 ml of ammonium oxalate TS. Then add dropwise, with constant stirring, a mixture of equal volumes of ammonia TS and water until the pink colour of the indicator just disappears.

Digest on a steam bath for 30 min, cool to room temperature, allow the precipitate to settle, and filter the supernatant liquid through an asbestos mat in a Gooch crucible, using gentle suction. Swirl the precipitate in the beaker with about 30 ml of a cold (below 20°) wash solution prepared by diluting 10 ml of ammonium oxalate TS to 1000 ml. Allow the precipitate to settle, and pass the supernatant through the filter. Repeat this washing by decantation three more times. Using the wash solution, transfer the precipitate as completely as possible to the filter. Finally, wash the beaker and the filter with to 10 ml portions of cold (below 20°) water. Place the Gooch crucible in the beaker, and add 100 ml of water and 50 ml of cold dilute sulfuric acid (1 in 6). Add from a buret 35 ml of 0.1 N potassium permanganate, and stir until the colour disappears. Heat to about 70°, and complete the titration with 0.1 N potassium permanganate. Each ml of 0.1 N potassium permanganate is equivalent to 6.803 mg of $CaHPO_4$.