TRICALCIUM PHOSPHATE

Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). A group MTDI of 70 mg/kg bw, as phosphorus from all food sources, was established at the 26th JECFA (1982)

SYNONYMS Calcium phosphate, tribasic; precipitated calcium phosphate; INS No. 341(iii)

DEFINITION Consists of a variable mixture of calcium phosphates having and approximate composition of $10CaO \cdot 3P_2O_5 \cdot H_2O$. The article of commerce can be specified further as to titration value.

Assay Not less than the equivalent of 90% of $Ca_3(PO_4)_2$, calculated on the ignited basis

DESCRIPTION White, odourless powder which is stable in air

FUNCTIONAL USES Anticaking agent, buffer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Practically insoluble in water; insoluble in ethanol, soluble in dilute hydrochloric and nitric acid

Test for phosphate To a warm solution of the sample in a slight excess of nitric acid add ammonium molybdate TS. A yellow precipitate forms.

Test for calcium Dissolve about 100 mg of the sample by warming with 5 ml of dilute hydrochloric acid TS and 5 ml of water. Add 1 ml of ammonia TS, dropwise, with shaking, and then add 5 ml of ammonium oxalate TS. A white precipitate forms.

PURITY

Loss on ignition (Vol. 4) Not more than 10% after ignition at 825° to constant weight.

Fluoride (Vol. 4) Not more than 50 mg/kg
Weigh 1 g of the sample to the nearest mg and proceed as directed in the Fluoride Limit Test (Method I or III).

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 200 mg of the sample to the nearest 0.1 mg and dissolve in a mixture of 25 ml of water and 10 ml of dilute nitric acid TS. Filter, if necessary, wash any precipitate, add sufficient ammonia TS to the filtrate to produce a slight precipitate, then dissolve the precipitate with the addition of

1 ml of dilute nitric acid TS. Adjust the temperature to about 50°, add 75 ml of ammonium molybdate TS, and maintain the temperature at about 50° for 30 min, stirring occasionally. Wash the precipitate once or twice with water by decantation, using from 30 to 40 ml each time. Transfer the precipitate to a filter, and wash with a 1 in 100 potassium nitrate solution until the last washing is not acid to litmus paper. Transfer the precipitate and filter to the precipitation vessel, add 40.0 ml of N sodium hydroxide, agitate until the precipitate is dissolved, add 3 drops of phenolphthalein TS, and then titrate the excess alkali with N sulfuric acid. Each ml of N sodium hydroxide corresponds to 6.743 mg of $Ca_3(PO_4)_2$.