CALCIUM POLYPHOSPHATE

Prepared at the 26th JECFA (1982), published in FNP 25 (1982) and in FNP 52 (1992 Metals and arsenic specifications revised at the 55th JECFA (2000) A group MTDI of 70 mg/kg bw, as phosphorus from all food sources, was established at the 26th JECFA (1982)

SYNONYMS INS No. 452(iv)

DEFINITION A heterogeneous mixture of calcium salts of polyphosphoric acids of general formula $H_{n+2}P_nO_{n+1}$.

Assay Not less than 50.0 and not more than 71.0% of P_2O_5 on the ignited basis

DESCRIPTION Odourless, colourless crystals or powder

FUNCTIONAL USES Emulsifier, moisture-retaining agent, sequestrant, texturizer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Usually incompletely soluble in water; soluble in acid medium

Test for phosphate (Vol. 4) Mix 0.5 g of the sample with 10 ml of nitric acid and 50 ml of water, boil for about 30 min and cool. The resulting solution is used for the test

Test for calcium (Vol. 4) The solution of the test for phosphate gives positive tests for calcium

PURITY

Loss on ignition (Vol. 4) Not more than 2% after drying (105°, 4 h) followed by ignition (550°, 30 min)

Cyclic phosphate (Vol. 4) Not more than 8% calculated on P_2O_5 content

Fluoride (Vol. 4) Not more than 10 mg/kg

Arsenic (Vol. 4) Not more than 3 mg/kg
Dissolve 1 g of the sample in 15 ml dilute hydrochloric acid TS, add 20 ml of water. Test this solution as directed in the Limit Test (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 Mix about 300 mg of the sample, accurately weighed, with 15 ml of nitric acid and 30 ml of water, boil for 30 min and dilute with water to about 100 ml. Heat at 60°, and add excess of ammonium molybdate TS, and heat at 50° for 30 min. Filter, and wash the precipitate with dilute nitric acid (1 in 36), followed by potassium nitrate solution (1 in 100) until the filtrate is no longer acid to litmus.

Dissolve the precipitate in 50 ml of 1 N sodium hydroxide, add phenolphtalein TS, and titrate the excess of sodium hydroxide with 1 N sulfuric acid. Each ml of 1 N sodium hydroxide is equivalent to 3.086 mg of P_2O_5.