

PHOSPHORIC ACID

Prepared at the 44th JECFA (1995), published in FNP 52 Add 3 (1995) superseding specifications prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002). No ADI was established, but a group MTDI of 70 mg/kg bw, expressed as phosphorus from all food sources, was established at the 26th JECFA (1982).

SYNONYMS Orthophosphoric acid, INS No. 338

DEFINITION

Chemical names Phosphoric acid, orthophosphoric acid

C.A.S. number 7664-38-20

Chemical formula H_3PO_4

Formula weight 98.00

Assay Not less than 75%, and not less than the minimum or within the range of percent claimed by the vendor

DESCRIPTION Clear, colourless, odourless, viscous liquid

FUNCTIONAL USES Acidulant, sequestrant, synergist for antioxidants

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Miscible with water and with ethanol

Test for acid Strongly acid, even at high dilution

Test for phosphate Neutralize a few ml of phosphoric acid and add dilute nitric acid TS. Then add an equal volume of ammonium molybdate TS and warm. A bright canary-yellow precipitate is obtained which is soluble in dilute ammonia TS.

PURITY

Nitrates Not more than 5 mg/kg
Dilute 3.48 g of the sample to 10 ml with water and add 5 mg of sodium chloride, 0.1 ml of indigo carmine TS, and 10 ml of sulfuric acid. The blue colour shall not disappear entirely within 5 min.

Volatile acids Not more than 10 mg/kg as acetic acid
Dilute 60.05 g of the sample with 75 ml of freshly boiled and cooled water in a distilling flask with a spray trap, and distil 50 ml. To the distillate add phenolphthalein TS and titrate with 0.1N sodium hydroxide. Not more than 0.1 ml of 0.1N sodium hydroxide should be required for neutralization.

Chlorides (Vol. 4) Not more than 200 mg/kg as chlorine
Test 1.78 g of the sample as directed in the Limit Test using 1.0 ml of 0.01 N hydrochloric acid in the control

Sulfates (Vol. 4) Not more than 0.15%
1.25 g of the sample meets the requirements of the Limit Test

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

Arsenic (Vol. 4) Not more than 3 mg/kg
A solution of 1.5 g of sample in 35 ml of water meets the requirements of the Limit Test (Method II) using as control a mixture of 3 ml of Standard Arsenic Solution (3 µg As) and 1.5 g reagent grade phosphoric acid.

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 1.00 g of the sample into a glass-stoppered flask, dilute with about 100 ml of water, add 0.5 ml of thymolphthalein TS, and titrate with 1N sodium hydroxide. Each ml of 1N sodium hydroxide is equivalent to 0.049 g of H₃PO₄.