SODIUM METAPHOSPHATE, INSOLUBLE

Prepared at the 46th JECFA (1996), published in FNP 52 Add 4 (1996). 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)

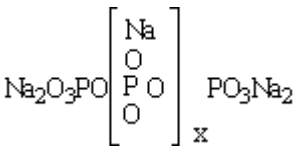
SYNONYMS Insoluble sodium polyphosphate; IMP; Maddrell's salt

DEFINITION A high molecular weight sodium polyphosphate composed of two long metaphosphate chains $(NaPO_3)_x$ that spiral in opposite directions about a common axis; the Na_2O/P_2O_5 ratio is about 1.0; the pH of a 1 in 3 slurry in water is about 6.5.

Chemical names: Sodium metaphosphate

C.A.S. number: 50813-16-6

Structural formula



where $x \geq 20$

Assay: Not less than 68.7% and not more than 70.0% of P_2O_5

DESCRIPTION White crystalline powder

FUNCTIONAL USES Emulsifier, sequestrant, texturizer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Insoluble in water, soluble in mineral acids and in solutions of potassium and ammonium (but not sodium) chlorides

Gel test: Finely powder about 1 g of the sample, and add slowly to 100 ml of a 1 in 20 solution of potassium chloride while stirring vigorously. A gelatinous mass is formed.

Test for sodium (Vol. 4): Prepare the test solution by mixing 500 mg of the sample with 10 ml of nitric acid and 50 ml of water. Boil for about 30 min and cool

Test for phosphate (Vol. 4): Prepare the test solution by mixing 500 mg of the sample with 10 ml of nitric acid and 50 ml of water. Boil for about 30 min and cool

PURITY

Fluoride (Vol. 4): Not more than 10 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

Transfer about 800 mg of the sample, accurately weighed, into a 400-ml beaker. Add 100 ml of water and 25 ml of nitric acid, cover with a watch glass, and boil for 10 min on a hot plate. Rinse any condensate from the watch glass into the beaker; cool the solution to room temperature; transfer it quantitatively to a 500-ml volumetric flask; dilute to volume with water; and mix thoroughly. Pipet 20.0 ml of this solution into a 500-ml Erlenmeyer flask, add 100 ml of water, and heat just to boiling. Add with stirring 50 ml of quimociac TS, then cover with a watch glass, and boil for 1 min in a well-ventilated hood. Cool to room temperature, swirling occasionally while cooling, then filter through a tared, sintered-glass filter crucible of medium porosity, and wash with five 25-ml portions of water. Dry at about 225^{o} for 30 min, cool, and weigh. Each mg of precipitate thus obtained is equivalent to 32.074 µg of P_2O_5.