DISODIUM PYROPHOSPHATE

Prepared at the 41st JECFA (1993), published in FNP 52 Add 2 (1993) superseding specifications prepared at the 37th JECFA (1990), published 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 Disodium dihydrogen diphosphate, disodium dihydrogen pyrophosphate, acid sodium pyrophosphate, INS No. 450 (i)

DEFINITION

Chemical names	Disodium dihydrogen diphosphate, disodium dihydrogen pyrophosphate
C.A.S. number	7758-16-9
Chemical formula	$Na_2H_2P_2O_7$
Formula weight	221.94
Assay	Not less than 95.0%

DESCRIPTION White, crystalline powder, or granules

FUNCTIONAL USES Raising agent, buffering agent, sequestrant

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Soluble in water
Test for phosphate (Vol. 4)	Passes test
Test for sodium (Vol. 4)	Passes test
pH (Vol. 4)	3.7 - 5.0 (1 in 100 soln)

PURITY

Loss on drying (Vol. 4)	Not more than 0.5% (105°, 4 h)
Water-insoluble matter	Not more than 1% Dissolve 10 g of the sample in 100 ml of hot water, and filter through a tared filtering crucible. Wash the insoluble residue with hot water, dry at 105° for 2 h, cool and weigh.
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

Weigh accurately about 400 mg of the sample, previously dried at 105° for 4 h, and dissolve in 100 ml of water in a 400-ml beaker. Adjust the pH of the solution to 3.8 with dilute hydrochloric acid TS or sodium hydroxide TS, using a pH meter, then add 50 ml of a 1 in 8 solution of zinc sulfate (125 g of $ZnSO_4 \cdot 7\ H_2O$ dissolved in water, diluted to 1000 ml, filtered, and adjusted to pH 3.8) and allow to stand for 2 min. Titrate the liberated acid with 0.1 N sodium hydroxide until a pH of 3.8 is again reached. After each addition of sodium hydroxide near to the end-point, time should be allowed for any precipitated zinc hydroxide to redissolve. Each ml of 0.1 N sodium hydroxide is equivalent to 11.10 mg of $Na_2H_2P_2O_7$.