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 \( \text{Na}_2\text{H}_2\text{P}_2\text{O}_7 \)
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%

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

Test for phosphate (Vol. 4) Passes test
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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 ZnSO₄·7 H₂O 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 Na₂H₂P₂O₇.