DISODIUM HYDROGEN PHOSPHATE

Prepared at the 19th JECFA (1975), published in NMRS 55B (1976) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002). A group MTDI of 70 mg/kg bw, as phosphorus from all food sources, was established at the 26th JECFA (1982)

SYNONYMS Dibasic sodium phosphate, disodium phosphate, disodium acid phosphate, secondary sodium phosphate; INS No. 339(ii)

DEFINITION

Chemical names	Disodium hydrogen phosphate, disodium hydrogen orthophosphate, disodium hydrogen monophosphate
C.A.S. number	7558-79-4
Chemical formula	Anhydrous: Na_2HPO_4 Hydrated: $Na_2HPO_4 \cdot x\ H_2O$
Formula weight	141.98 (anhydrous)
Assay	Not less than 98.0% after drying

DESCRIPTION Anhydrous: White, hygroscopic, odourless powder
Dihydrate: White crystalline, odourless solid
Heptahydrate: White, odourless, efflorescent crystals or granular powder
Dodecahydrate: White, efflorescent, odourless powder or crystals

FUNCTIONAL USES Emulsifier, texturizer, buffer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Freely soluble in water; insoluble in ethanol
pH (Vol. 4)	9.0- 9.6 (1 in 100 soln)
Test for sodium (Vol. 4)	Passes test
Test for phosphate (Vol. 4)	Passes test
Test for orthophosphate (Vol. 4)	Dissolve 0.1 g of the sample in 10 ml water, acidify slightly with dilute acetic acid TS, and add 1 ml of silver nitrate TS. A yellow precipitate is formed.

PURITY

Loss on drying (Vol. 4)	Anhydrous: Not more than 5.0% (40^o, 3 h, then 105^o, 5 h) Dihydrate: Not more than 22.0% (40^o, 3 h, then 105^o, 5 h) Heptahydrate: Not more than 50.0% (40^o, 3 h, then 105^o, 5 h) Dodecahydrate: Not more than 61.0% (40^o, 3 h, then 105^o, 5 h)

Water insoluble substances (Vol. 4)	Not more than 0.2%
Fluoride (Vol. 4)	Not more than 50 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

Into a 250-ml beaker transfer about 6.5 g of the dried sample accurately weighed. Add 50 ml of 1N hydrochloric acid and 50 ml of water, and stir until the sample is completely dissolved. Place the electrodes of a suitable pH meter in the solution and titrate the excess acid with 1N sodium hydroxide to the inflection point occurring at about pH 4. Record the buret reading and calculate the volume (A) of 1N hydrochloric acid consumed by the sample. Continue the titration with 1N sodium hydroxide until the inflection point occurring at about pH 8.8 is reached, record the buret reading, and calculate the volume (B) of 1N sodium hydroxide required in the titration between the two inflection points (pH 4 to pH 8.8). When (A) is equal to, or less than, (B), each ml of the volume (A) of 1N hydrochloric acid is equivalent to 142.0 mg of Na_2HPO_4. When (A) is greater than (B), each ml of the volume 2(B) -(A) of 1N sodium hydroxide is equivalent to 142.0 mg of Na_2HPO_4