

Institute of Medicine
Food and Nutrition Board
Committee on Food Chemicals Codex

Revised Monograph - Sodium Acid Pyrophosphate

Please send comments to the Committee on Food Chemicals Codex, National Academy of Sciences, FO 3042, 2101 Constitution Avenue, N.W., Washington, DC 20418 or email them to fcc@nas.edu. All comments must be received by December 15, 1996, for consideration for the First Supplement.

June 17, 1996

Sodium Acid Pyrophosphate

Disodium Pyrophosphate; Disodium Dihydrogen Pyrophosphate

$\text{Na}_2\text{H}_2\text{P}_2\text{O}_7$

Formula wt 221.94

CAS: [7758-16-9]

DESCRIPTION

White, crystalline powder. It is soluble in water. The pH of a 1 in 100 solution is about 4. It may contain a suitable aluminum and/or calcium salt to control the rate of reaction in leavening systems.

Functional Use in Foods Buffer; leavening agent; sequestrant.

REQUIREMENTS

Identification

A. A 1 in 20 solution gives positive tests for Sodium, Appendix IIIA.

B. Dissolve 100 mg of the sample in 100 mL of 1.7 N nitric acid. Add 0.5 mL of this solution to 30 mL of quimociac TS. A yellow precipitate does not form. Heat the remaining portion of the sample solution for 10 min at 95°, and then add 0.5 mL of the solution to 30 mL of quimociac TS. A yellow precipitate forms immediately.

Assay Not less than ~~93.0%~~ 95.0% and not more than 100.5% of $\text{Na}_2\text{H}_2\text{P}_2\text{O}_7$.

Arsenic (as As) Not more than 3 mg/kg.

Fluoride Not more than 0.005%.

Heavy Metals (as Pb) Not more than 0.0015%.

Insoluble Substances Not more than 1%.

Lead Not more than 2 mg/kg.

TESTS

Assay Dissolve about 500 mg, accurately weighed, in 100 mL of water in a 400-mL beaker. Using a pH meter, adjust the pH of the solution to 3.8 with hydrochloric acid, then add 50 mL of a 1 in 8 solution of zinc sulfate (125 g of $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ 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 the endpoint, 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 $\text{Na}_2\text{H}_2\text{P}_2\text{O}_7$.

Arsenic A solution of 1 g in 10 mL of water meets the requirements of the Arsenic Test, Appendix IIIB.

Fluoride Determine on a 2-g sample as directed in Method IV under the Fluoride Limit Test, Appendix IIIB, using Buffer Solution B and 0.1 mL of Fluoride Standard Solution.

Heavy Metals A solution of 1.33 g in 25 mL of water meets the requirements of the Heavy Metals Test, Appendix IIIB, using 20 µg of lead ion (Pb) in the control (Solution A).

Insoluble Substances Dissolve 10 g 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.

Lead A 10-g sample meets the requirements of the APDC Extraction Method for Lead, Appendix IIIB.

Packaging and Storage Store in tight containers.