TRIPOTASSIUM CITRATE

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). An ADI not limited' was established at the 17th JECFA (1973)

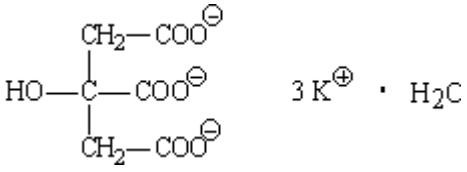
SYNONYMS Potassium citrate; INS No. 332(ii)

DEFINITION

Chemical names: Tripotassium citrate, tripotassium salt of 2-hydroxy-1,2,3-propanetricarboxylic acid, tripotassium salt of ß-hydroxy-tricarballylic acid

C.A.S. number: 866-84-2

Chemical formula:



Structural formula: $C_6H_5K_3O_7 \cdot H_2O$

Formula weight: 324.42

Assay: Not less than 99.0% after drying

DESCRIPTION Deliquescent, odourless, transparent crystals or white, granular powder

FUNCTIONAL USES Sequestrant, stabilizer, buffer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Very soluble in water, insoluble in ethanol

Test for citrate: To 5 ml of a 1 in 10 solution of the sample add 1 ml of calcium chloride TS and 3 drops of bromothymol blue TS, and slightly acidify with dilute hydrochloric acid TS. Add sodium hydroxide TS until the colour changes to a clear blue, then boil the solution for 3 min, agitating gently during the heating period. A white, crystalline precipitate appears which is insoluble in sodium hydroxide TS but dissolves in acetic acid TS.

To 10 ml of a 1 in 10 solution of the sample add 1 ml of mercuric sulfate TS. Heat the mixture to boiling and add a few drops of potassium permanganate TS. A white precipitate is formed.

Test for potassium: When hydrochloric acid is present, a solution of the sample gives with platinum chloride TS a yellow crystalline precipitate (which on ignition leaves a residue of potassium chloride and platinum).

PURITY

Loss on drying (Vol. 4)	Not more than 6% (180^{o}, 4 h)
Alkalinity	A 1 in 20 solution of the sample is alkaline to litmus. After the addition of 0.2 ml of 0.1 N sulfuric acid and 1 drop of phenolphthalein TS to 10 ml of the solution no pink colour is produced.
Oxalate	To 10 ml of a 1 in 10 solution of the sample add 5 drops of dilute acetic acid TS and 2 ml of calcium chloride TS. No turbidity develops within 1 h.
Lead (Vol. 4)	Not more than 2 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 250 mg of the dried sample. Dissolve in 40 ml of glacial acetic acid, warming slightly to effect solution. Cool the solution to room temperature, add 2 drops of crystal violet TS, and titrate with 0.1 N perchloric acid. Perform a blank determination and make any necessary correction. Each ml of 0.1 N perchloric acid is equivalent to 10.21 mg of $C_6H_5K_3O_7$.