CITRIC ACID

Prepared at the 53rd JECFA (1999) and published in FNP 52 Add 7 (1999), superseding specifications prepared at the 51st JECFA (1998), published in FNP 52 Add 6 (1998). Group ADI "Not limited" for citric acid and its calcium, potassium, sodium and ammonium salts established at the 17th JECFA in 1973.

SYNONYMS INS No. 330

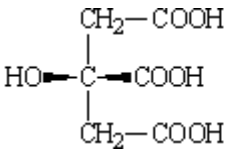
DEFINITION Citric acid may be produced by recovery from sources such as lemon or pineapple juice or fermentation of carbohydrate solutions or other suitable media using *Candida* spp. or non-toxicogenic strains of *Aspergillus niger*

Chemical names 2-hydroxy-1,2,3-propanetricarboxylic acid

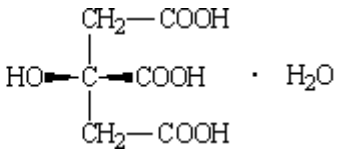
C.A.S. number 77-92-9 (anhydrous)
5949-29-1 (monohydrate)

Chemical formula $C_6H_8O_7$ (anhydrous)
$C_6H_8O_7 \cdot H_2O$ (monohydrate)

Structural formula



Anhydrous



Monohydrate

Formula weight 192.13 (anhydrous)
210.14 (monohydrate)

Assay Not less than 99.5% and not more than 100.5% on the anhydrous basis

DESCRIPTION White or colourless, odourless, crystalline solid; the monohydrate form effloresces in dry air

FUNCTIONAL USES Acidulant; sequestrant; antioxidant synergist; flavouring agent (see "Flavouring agents" monograph)

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol.4) Very soluble in water; freely soluble in ethanol; slightly soluble in ether

Test for citrate (Vol. 4) Passes test

PURITY

Water (Vol. 4) Anhydrous: Not more than 0.5% (Karl Fischer Method)
Monohydrate: Not less than 7.5% and not more than 8.8% (Karl Fischer

	Method)
Sulfated ash (Vol. 4)	Not more than 0.05%
Oxalate (Vol. 4)	Not more than 100 mg/kg Test 1.0 g of the sample by the Oxalate Limit Test (Volume 4). Measure absorbance at 520 nm in a 10 mm cell. The test solution should have less than 0.023 absorbance units.
Sulfates (Vol. 4)	Not more than 150 mg/kg Test 20 g of the sample by the Sulfates Limit Test (Volume 4) using 6.0 ml of 0.01N sulfuric acid in the standard
Readily carbonizable substances	Heat 1.0 g of sample with 10 ml of 98% sulfuric acid in a water bath at 90±1° for 60 min. No colour darker than *MatchingFluid K* (25°) should be produced (not more than 0.5 absorbance units at 470 nm in a 10 mm cell).
Lead (Vol. 4)	Not more than 0.5 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, to the nearest mg, 2.5 g of the sample and place in a tared flask. Dissolve in 40 ml of water and titrate with 1 N sodium hydroxide, using phenolphthalein TS as the indicator. Each ml of 1 N sodium hydroxide is equivalent to 64.04 mg of $C_6H_8O_7$.