SODIUM HYDROGEN DL-MALATE

Prepared at the 67th JECFA (2006) and published in FAO JECFA Monographs 3 (2006), superseding specifications prepared at the 26th JECFA (1982) and published in FNP 52 (1992) and in the Combined Compendium of Food Additive Specifications, FAO JECFA Monographs 1 (2005). Heavy metals and arsenic specifications were revised at the 59th JECFA (2002). An ADI 'not specified' was established at the 26th JECFA (1982).

SYNONYMS Malic acid monosodium salt; INS No. 350(i)

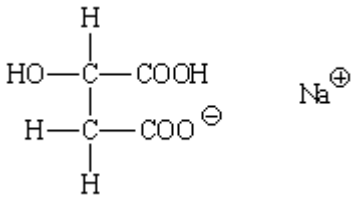
DEFINITION

Chemical names: Monosodium DL-malate, 2-hydroxybutanedioic acid monosodium salt

C.A.S. number: 58214-38-3

Chemical formula: $C_4H_5NaO_5$

Structural formula:



Formula weight: 156.1

Assay: Not less than 99.0% on the dried basis

DESCRIPTION Odourless white powder

FUNCTIONAL USES Buffering agent, humectant

CHARACTERISTICS

IDENTIFICATION

Test for sodium (Vol. 4): Passes test

Test for malate (Vol. 4): Passes test
Test 5 ml of a 1 in 20 solution of the sample

PURITY

Loss on drying (Vol. 4): Not more than 2% (110°, 3 h)

Fumaric and maleic acid (Vol. 4)	Not more than 1.0% of fumaric acid and not more than 0.05% of maleic acid
Lead (Vol. 4)	Not more than 2 mg/kg Determine using an AAS/ICP-AES technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the methods described in Volume 4.

METHOD OF ASSAY

Weigh accurately about 1.5 g of the dried sample and transfer into a platinum or porcelain crucible of 20 to 30 mm in diameter. Heat very gently, and gradually raise the temperature. Continue heating for 2 h, and carbonize thoroughly. The heating temperature is between 300° and 400°, at which the crucible shows a dull red colour. If a gas burner is used, the flame should not contact with the carbonized mass. After allowing the carbonized mass to cool, disintegrate with a glass rod, and transfer the mass and crucible into a beaker. Add 50 ml of water and 50 ml of 0.5 N sulfuric acid, cover the beaker with a watch glass, heat the contents on a water bath for 1 h, and filter. If the filter is coloured, weigh the sample again, and carbonize it thoroughly. Wash the beaker, the crucible and the residue on the filter paper with hot water until the washings become neutral to blue litmus paper. Combine the washings to the filtrate. Titrate an excess of sulfuric acid with 0.5 N sodium hydroxide, using 3 drops of methyl red TS as the indicator. Each ml of 0.5 N sulfuric acid is equivalent to 78.04 mg of $C_4H_5NaO_5$.