

# SODIUM HYDROGEN DL-MALATE

Prepared at the 26th JECFA (1982), published in FNP 25 (1982) and in FNP 52 (1992). Heavy metals and arsenic specifications revised at the 59<sup>th</sup> JECFA (2002). An ADI 'not specified' was established at the 26<sup>th</sup> JECFA (1982)

## SYNONYMS

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

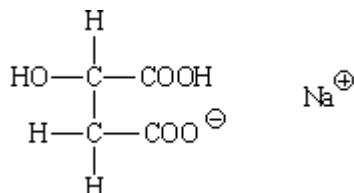
## DEFINITION

Chemical names Monosodium DL-malate, monosodium 2-DL-hydroxysuccinate

C.A.S. number 3105-51-9

Chemical formula  $C_4H_5NaO_5$

Structural formula



Formula weight 156.07

Assay Not less than 99.0% on the dried basis

## DESCRIPTION

Odourless white powder

**FUNCTIONAL USES** Buffering agent, humectant

## CHARACTERISTICS

### IDENTIFICATION

Test for 1,2-dicarboxylic acid Heat a mixture of 1 ml of a 1 in 20 solution of the sample, 2 to 3 mg of resorcinol and 1 ml of sulfuric acid in a test tube at 120 to 130° for 5 min, cool, and add water to 5 ml. Add sodium hydroxide solution (2 in 5) dropwise while cooling to alkalize, and add water to 10 ml. A pale blue fluorescence is observed under the ultraviolet light.

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

Test for sodium (Vol. 4) Passes test

### PURITY

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

Maleic acid (Vol. 4) Not more than 0.05%

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 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  $C_4H_5NaO_5$ .