

# SODIUM FUMARATE

*Prepared at the 30th JECFA (1986), published in FNP 37 (1986) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002). An ADI 'Not specified' for fumaric acid and its salts was established at the 35<sup>th</sup> JECFA (1989).*

**SYNONYMS** Monosodium fumarate; INS No. 365

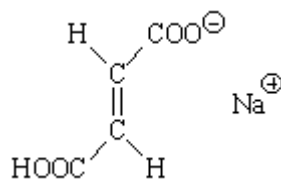
## DEFINITION

Chemical names Monosodium fumarate, monosodium trans-butenedioic acid, monosodium trans-1,2-ethylenedicarboxylate; monosodium trans-1,2-ethylenedicarboxylic acid

C.A.S. number 7704-73-6

Chemical formula  $C_4H_3NaO_4$

Structural formula



Formula weight 138.06

Assay Not less than 98.0% and not more than 102.0% on the dried basis

**DESCRIPTION** Odourless, white crystalline powder

**FUNCTIONAL USES** Buffering agent, acidulant, flavouring enhancer

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4) Soluble in water

pH (Vol. 4) 3 - 4 (1 in 30 solution)

1,2-Dicarboxylic acid Place 50 mg of the sample in a test tube, add 2 to 3 mg of resorcinol and 1 ml of sulfuric acid, shake, heat at 130° for 5 min. and cool. Dilute with water to 5 ml and add sodium hydroxide solution (2 in 5) dropwise to render the solution alkaline, cool and dilute with water to 10 ml. A greenish blue

fluorescence is observed under an ultraviolet lamp.

Test for double bond Add 10 ml of water to 0.5 g of the sample and dissolve by boiling. Add 2 or 3 drops of bromine TS to the hot solution. The colour of bromine TS disappears.

Test for sodium (Vol. 4) Passes test

#### PURITY

Loss on drying (Vol. 4) Not more than 0.5% (120°, 4 h)

Sulfates (Vol. 4) Not more than 0.01%  
Add 30 ml of water to 1 g of the sample, shake, add 1 drop of phenolphthalein TS, and add ammonia TS dropwise until a slight pink colour is produced. Add 1 ml of dilute hydrochloric acid TS. Perform the test for the Limit Test. The solution corresponds to not more than 0.2 ml of 0.01 N sulfuric acid.

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 0.3 g of the dried sample and dissolve in 30 ml of water. Titrate with 0.1 N sodium hydroxide, using 2 drops of phenolphthalein TS as the indicator. Each ml of 0.1 N sodium hydroxide is equivalent to 13.81 mg of  $C_4H_3NaO_4$ .