

# THIODIPROPIONIC ACID

*Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 61st JECFA (2003). An ADI of 0-3 mg/kg bw was established at the 17th JECFA (1973)*

## SYNONYMS

INS No. 388

## DEFINITION

Chemical names 3,3'-Thiodipropionic acid, diethyl sulfide 2,2'-dicarboxylic acid, thiodihydracrylic acid,  $\beta,\beta'$ -thiodipropionic acid

C.A.S. number 111-17-1

Chemical formula  $C_6H_{10}O_4S$

Structural formula

$$\begin{array}{c} \text{CH}_2 - \text{CH}_2 - \text{COOH} \\ | \\ \text{S} \\ | \\ \text{CH}_2 - \text{CH}_2 - \text{COOH} \end{array}$$

Formula weight 178.21

Assay Not less than 98.5%

## DESCRIPTION

White crystalline solid having a slight characteristic odour

**FUNCTIONAL USES** Antioxidant

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4) Soluble in water; freely soluble in ethanol

Melting range (Vol. 4) 130 - 134°

Sulfur Between 17.5% and 18.5%  
See description under TESTS

### PURITY

Sulfated ash (Vol. 4) Not more than 0.2%

Selenium (Vol. 4) Not more than 30 mg/kg

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."

## TESTS

### IDENTIFICATION TESTS

#### Sulfur

Weigh 0.700 g of the sample and add 100 ml of acetic acid and 50 ml of ethanol and heat the mixture gently until the sample dissolves completely. Add 3 ml of hydrochloric acid and add 4 drops of p-ethoxychrysoidin TS and immediately titrate with 0.1 N bromide-bromate TS. As the end point is approached (pink colour) add 4 more drops of the indicator solution and continue the titration dropwise, to a colour change from red to pale yellow. Perform a blank determination and make any necessary correction. Each ml of 0.1 N bromide-bromine TS is equivalent to 1.603 mg of S.

#### **METHOD OF ASSAY**

Dissolve 0.350 g of the sample in 40 ml of water, add phenolphthalein TS and titrate with 0.1 N sodium hydroxide to the first appearance of a faint pink colour that persists for at least 30 sec. Each ml of 0.1 N sodium hydroxide is equivalent to 8.910 mg of  $C_6H_{10}O_4S$ .