

SORBITAN TRISTEARATE

Prepared at the 39th JECFA (1992), published in FNP 52 Add 1 (1992) superseding specifications prepared at the 17th JECFA, published in FNP 4 (1978). Metals and arsenic specifications revised at the 55th JECFA (2000). A group ADI of 0-25 mg/kg bw as the sum of sorbitan esters of lauric, oleic, palmitic and stearic acids was established at the 26th JECFA (1982)

SYNONYMS

INS No. 492

DEFINITION

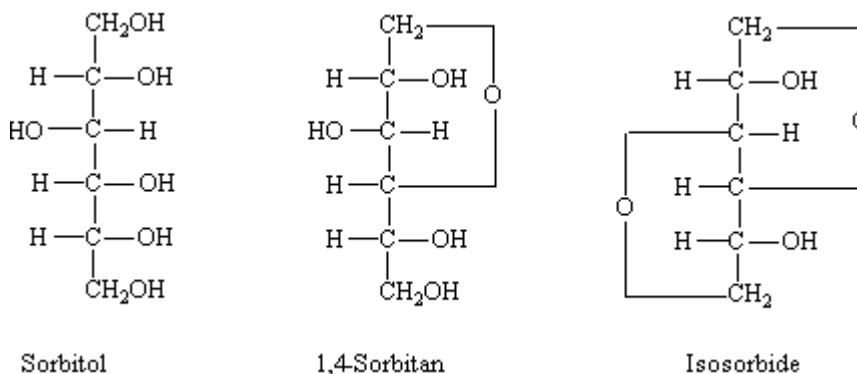
A mixture of the partial esters of sorbitol and its mono- and dianhydrides with edible stearic acid

C.A.S. number

26658-19-5

Structural formula

Contains stearic acid esterified with polyols derived from sorbitol, including the following types:



Assay

Saponification of 100 g of the product shall yield not less than 14 g and not more than 21 g of polyols and not less than 85 g and not more than 92 g of fatty acids; and the polyol content shall be not less than 95% of a mixture of sorbitol, 1,4- sorbitan and isosorbide.

DESCRIPTION

Light cream- to tan beads or flakes or hard, waxy solid

FUNCTIONAL USES

Emulsifier

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)

Slightly soluble in toluene, ether, carbon tetrachloride and ethyl acetate; dispersible in petroleum ether, mineral oil, vegetable oils, acetone and dioxane; insoluble in water, methanol and ethanol.

Congealing range (Vol. 4) 47° - 50°

PURITY

Water (Vol. 4)

Not more than 1.5% (Karl Fischer Method)

<u>Sulfated ash</u> (Vol. 4)	Not more than 0.5%
<u>Acid value</u> (Vol. 4)	Not more than 15
<u>Saponification value</u> (Vol. 4)	Not less than 176 and not more than 188
<u>Hydroxyl value</u> (Vol. 4)	Not less than 66 and not more than 80

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

Transfer about 25 g of the sample, accurately weighed, into a 500-ml round-bottom flask, add 250 ml of alcohol and 7.5 g of potassium hydroxide, and mix. Connect a suitable condenser to the flask, reflux the mixture for 1 to 2 h, and then transfer to an 800-ml beaker, rinsing the flask with about 100 ml of water and adding it to the beaker. Heat on a steam bath to evaporate the alcohol, adding water occasionally to replace the alcohol, and evaporate until the odour of alcohol can no longer be detected. Adjust the final volume to about 250 ml with hot water. Neutralize the soap solution with dilute sulfuric acid (1 in 2), add 10% in excess, and heat, while stirring, until the fatty acid layer separates. Transfer the fatty acids to a 500-ml separator, wash with three or four 20-ml portions of hot water to remove polyols, and combine the washings with the original aqueous polyol layer from the saponification. Extract the combined aqueous layer with three 20-ml portions of petroleum ether, add the extracts to the fatty acid layer, evaporate to dryness in a tared dish, cool and weigh.

Neutralize the polyol solution with a 1 in 10 solution of potassium hydroxide to pH 7 using a suitable pH meter. Evaporate this solution to a moist residue, and separate the polyols from the salts by several extractions with hot alcohol. Evaporate the alcohol extracts on a steam bath to dryness in a tared dish, cool, and weigh. Avoid excessive drying and heating. Assay another 25 g sample by the *Sorbitan Ester Content* procedure to determine percent sorbitan ester.