POLYOXYETHYLENE (20) SORBITAN MONOLAURATE

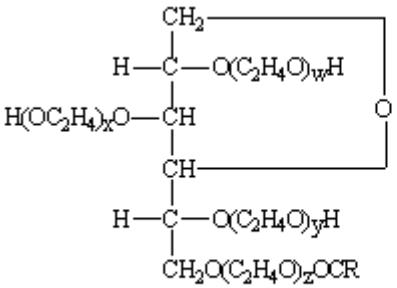
Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 55th JECFA (2000). An ADI of 0-25 mg/kg bw was established at the 17th JECFA (1973).

SYNONYMS Polysorbate 20; INS No. 432

DEFINITION Consists of a mixture of the partial esters of sorbitol and its mono- and dianhydrides (which have an acid value below 7 and a water content below 0.2%) with edible commercial lauric acid and condensed with approximately 20 moles of ethylene oxide per mole of sorbitol and its anhydrides.

Structural formula

Nominal formula and approximate composition:



where w + x + y + z = approx. 20 and RCO- is the fatty acid moiety

Assay

Not less than 70.0 and not more than 74.0% of oxyethylene groups, equivalent to not less than 97.3 and not more than 103.0% of polyoxyethylene (20) sorbitan monolaurate calculated on the anhydrous basis

DESCRIPTION Lemon to amber coloured oily liquid at 25°, with a faint characteristic odour

FUNCTIONAL USES Emulsifier, dispersing agent

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)

Soluble in water, ethanol, methanol, ethyl acetate and dioxane. Insoluble in mineral oil and petroleum ether

Infrared absorption

The infrared spectrum of the sample is characteristic of a partial fatty acid ester of a polyoxyethylated polyol

Colour reaction

To 5 ml of a 5% (w/v) aqueous solution of the sample add 10 ml of ammonium cobaltothiocyanate solution and 5 ml of chloroform, shake well

	and allow to separate; a blue colour is produced in the chloroform layer. (Ammonium cobaltothiocyanate solution: 37.5 g of cobalt nitrate and 150 g of ammonium thiocyanate made up to 100 ml with water - freshly prepared).
Test for fatty acids	To 5 ml of a 5% (w/v) aqueous solution of the sample add 5 ml sodium hydroxide TS. Boil for a few min, cool, and acidify with dilute hydrochloric acid. The solution is strongly opalescent, owing to the fatty acids liberated.
Saponification (Vol. 4)	100 g of the sample yields approximately 16 g of fatty acids and 81 g of polyol
PURITY	
Water (Vol. 4)	Not more than 3% (Karl Fischer Method)
Sulfated ash (Vol. 4)	Not more than 0.25% Test 5 g of the sample
Acid value (Vol. 4)	Not more than 2
Saponification value (Vol. 4)	Not less than 40 and not more than 50
Hydroxyl value (Vol. 4)	Not less than 96 and not more than 108
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	Determine the content of *Oxyethylene groups*.