SUCROSE ACETATE ISOBUTYRATE

Prepared at the 46th JECFA (1996), published in FNP 52 Add 4 (1996) superseding specifications prepared at the 41st JECFA (1993), published in FNP 52 Add 2 (1993). Metals and arsenic specifications revised at the 61st JECFA (2003. An ADI of 0-20 mg/kg bw was established at the 46th JECFA (1996))

SYNONYMS SAIB, INS No. 444

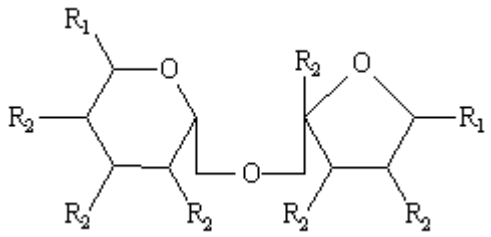
DEFINITION A mixture of the reaction products formed by the esterification of food grade sucrose with acetic anhydride and isobutyric anhydride, followed by distillation. The mixture contains all possible combinations of esters in which the molar ratio of acetate to isobutyrate is about 2:6

Chemical names: Sucrose diacetate hexaisobutyrate (approximate)

C.A.S. number: 137204-24-1; 27216-37-1; 126-13-6

Chemical formula: $C_{40}H_{62}O_{19}$ for sucrose diacetate hexaisobutyrate

Structural formula



where
R_1 = $-CH_2OCOCH_3$, and
R_2 = $-CH_2OCOCH(CH_3)_2$, or $-OCOCH(CH_3)_2$

Formula weight: 832 - 856 (approximate), $C_{40}H_{62}O_{19}$ = 846.9

Assay: Not less than 98.8% and not more than 101.9% of $C_{40}H_{62}O_{19}$

DESCRIPTION Pale straw coloured liquid, clear and free of sediment and having a bland odour

FUNCTIONAL USES Density adjusting agent, cloud-producing agent in non-alcoholic beverages

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Insoluble in water, soluble in most organic solvents

Refractive index (Vol. 4): n (40, D): 1.4492 - 1.4504

Specific gravity (Vol. 4)	d (25, 25): 1.141 - 1.151
Infrared absorption	The infrared spectrum of a potassium bromide dispersion of the sample corresponds with the reference infrared spectrum in the Appendix

PURITY

Acid value (Vol. 4)	Not more than 0.2 Proceed as directed under *Acid Value*, using 50 g of the sample and a microburette
Saponification value (Vol. 4)	Between 524 and 540 Use 1 g of the sample
Triacetin	Not more than 0.1% See description under TESTS
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

PURITY TESTS

Triacetin

Test by the following *gas chromatographic* procedure

Apparatus:

Gas chromatograph equipped with a flame ionization detector
Column: Stainless steel, 1.5 m, 3.2 mm i.d.

Preparation of sample:

Dilute the sample by adding an equal volume of carbon disulfide.

Conditions

Stationary phase: SE-30, 3%
Solid phase: Chromosorb AW-DMCS, 80-100 mesh
Carrier gas: Helium
Flow rate: 20 ml/min
Temperatures
- Column: Programmed at 10° per min from 100° to 300° immediately after injection of the sample
- Injector: 300°

Injected volume: 1 µl

METHOD OF ASSAY

Using the saponification value, calculate the percentage of $C_{40}H_{62}O_{19}$ by the formula:

$$\frac{SV \times 0.10586}{56.1} \times 100$$

where
SV = saponification value

Infrared spectrum Sucrose acetate isobutyrate