

ISOPROPYL CITRATE MIXTURE

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 0-14 mg/kg bw was established at the 17th JECFA (1973)

SYNONYMS

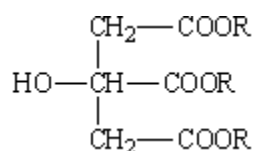
INS No. 384

DEFINITION

Chemical names

Citric acid mixed ester of 2-propanol. The article of commerce, monoisopropyl citrate mixture, is composed of approximately 38 parts by weight of isopropyl citrate in 62 parts by weight of mono- and diglycerides

Structural formula



where R is either hydrogen or a isopropyl group. The major component of the 38 parts of isopropyl citrate mixture is monoisopropyl citrate (approximately 25 parts), the remainder being diisopropyl citrate (approximately 9 parts) and triisopropyl citrate (approximately 4 parts)

Approximate composition:

Monoisopropyl citrate - 27 parts by weight

Diisopropyl citrate - 9 parts by weight

Triisopropyl citrate - 2 parts by weight

DESCRIPTION

Oil miscible semi-solid material. The commercial product, monoisopropyl citrate mixture, is a viscous, colourless syrup exhibiting some crystallization upon standing, and may be further specified as to saponification value, acid value, citric acid and isopropyl content.

FUNCTIONAL USES Antioxidant, sequestrant

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)

Soluble in water and ethanol

Test for citrate

Reflux 3 g of sample with 50 ml of sodium hydroxide TS for 1 h, and let stand to cool. This solution is used for the following tests:

(1) Neutralize the solution with a (1 in 20) sulfuric acid solution, add an excess of mercuric sulfate TS, heat to boil, and add potassium permanganate TS. The permanganate colour of the solution disappears, and a white precipitate forms.

(2) Neutralize the solution with hydrochloric acid, add an excess of calcium chloride TS, and boil. A white crystalline precipitate is formed which is insoluble in sodium hydroxide TS, but soluble in dilute hydrochloric acid

TS.

Test for isopropanol

Reflux 2 g of sample with 50 ml of sodium hydroxide TS for 1 h. Distil off 20 ml. Place 8 g of chromic oxide in a flask, add 15 ml water and 2 ml concentrated sulfuric acid. Provide the flask with a reflux condenser and add 5 ml distillate slowly through the condenser. Reflux for 30 min, then cool and distil off 2 ml. Add 3 ml water and 10 ml mercuric sulfate TS to the distillate. Heat in a boiling water bath for 3 min. A white or yellow precipitate within 3 min indicates the presence of isopropanol.

PURITY

Acids other than citric acid Should be absent

Alcohols other than isopropanol Should be absent

Sulfated ash (Vol. 4) Not more than 0.3%

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."