TRIETHYL CITRATE


SYNONYMS
Ethyl citrate; INS No. 1505

DEFINITION
Chemical names Triethyl 2-hydroxypropan-1,2,3-tricarboxylate
C.A.S. number 77-93-0
Chemical formula C₁₂H₂₀O₇
Structural formula

\[
\begin{align*}
\text{CH}_2 & \quad \text{COOC}_2 \text{H}_5 \\
\text{HO} & \quad \text{COOC}_2 \text{H}_5 \\
\text{CH}_2 & \quad \text{COOC}_2 \text{H}_5
\end{align*}
\]

Formula weight 276.29

Assay Not less than 99% w/w

DESCRIPTION Odourless, practically colourless, oily liquid

FUNCTIONAL USES Carrier solvent, sequestrant

CHARACTERISTICS

IDENTIFICATION
Solubility (Vol. 4) Slightly soluble in water; miscible with ethanol and ether
Refractive index (Vol. 4) \( n \) (20, D): 1.439 - 1.441
Specific gravity (Vol. 4) \( d \) (25, 25): 1.135 - 1.139

PURITY

Water (Vol. 4) Not more than 0.25% w/w (Karl Fischer Method)

Acidity Not more than 0.02% w/w (as citric acid)

Dissolve 32 g of the sample, accurately weighted, in 30 ml of neutralized ethanol, add phenolphthalein TS, and titrate with 0.1 N sodium hydroxide. Not more than 1.0 ml is required.

Lead (Vol. 4) Not more than 2 mg/kg

Determine using an AAS/ICP-AES technique appropriate to the
specified level. The selection of sample size and method of sample preparation may be based on principles of methods described in Volume 4 (under “General Methods, Metallic Impurities”).

**METHOD OF ASSAY**

Weigh accurately about 1.5 g of the sample into a 500-ml flask equipped with a standard taper ground joint, and add 25 ml of isopropanol and 25 ml of water. Pipet 50 ml of 0.5 N sodium hydroxide into the mixture, add a few boiling chips, and attach a suitable water-cooled condenser. Reflux for 1.5 h, then cool, wash down the condenser with about 20 ml of water, add 5 drops of bromothymol blue TS, and titrate the excess alkali with 0.5 N sulfuric acid. Perform a blank determination. Each ml of 0.5 N sulfuric acid is equivalent to 46.05 mg of C₁₂H₂₂O₇.