

# GLYCEROL DIACETATE

Prepared at the 20<sup>th</sup> JECFA (1976), published in FNS 1B (1977) and in FNP 52 (1992). Metals and arsenic specifications revised at the 63<sup>rd</sup> JECFA (2004). An ADI 'not specified' was established at the 20<sup>th</sup> JECFA (1976).

**SYNONYMS** Diacetin; INS No. 1517

## DEFINITION

Chemical names Glyceryl diacetate, 1,2,3-propanetriol diacetate

C.A.S. number 25395-31-7

Chemical formula  $C_7H_{12}O_5$

Structural formula

$\begin{array}{c} \text{CH}_2\text{—OCOCH}_3 \\   \\ \text{CH—OCOCH}_3 \\   \\ \text{CH}_2\text{—OH} \end{array}$	$\begin{array}{c} \text{CH}_2\text{—OCOCH}_3 \\   \\ \text{CH—OH} \\   \\ \text{CH}_2\text{—OCOCH}_3 \end{array}$
1,2-diacetate	1,3-diacetate

Formula weight 176.17

Assay Not less than 94%

**DESCRIPTION** Clear, colourless, hygroscopic, somewhat oily liquid with a slight, fatty odour, consisting predominantly of a mixture of the 1,2- and 1,3-diacetates of glycerol, with minor amounts of the mono- and tri-esters

**FUNCTIONAL USES** Carrier

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4) Soluble in water; miscible with ethanol

Test for glycerol (Vol. 4) Passes test

Test for acetate (Vol. 4) Passes test  
Test the solution resulting from the Assay

### PURITY

Specific gravity (Vol. 4) d (20, 20): 1.175 - 1.195

Total ash (Vol. 4) Not more than 0.02%  
Test 5 g of the sample

Water and glycerol

The material does not show any opalescence when tested as follows: mix 50 ml of benzene with 10 ml of water, and shake vigorously from time to time for 30 min. Allow the mixture to separate into two layers. Remove 25 ml of the clear benzene layer and add it to 10 ml of the sample in a dry glass-stoppered cylinder of about 100 ml capacity. Allow to stand for 30 min, shake vigorously and examine for opalescence, which indicates the presence of water or glycerol or both.

Acidity

Not more than 0.4% (as acetic acid)  
When 25 ml of the sample are diluted with 50 ml of recently boiled and cooled water and 5 drops of bromothymol blue TS are added, not more than 20 ml of 0.1 N sodium hydroxide are required for titration.

Unsaturated compounds

To 10 ml of the sample in a glass-stoppered tube add dropwise a 1 in 100 solution of bromine in carbon tetrachloride until a permanent yellow colour is produced. No turbidity or precipitate appears after standing in the dark for 18 h.

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**

Transfer about 1 g of the sample, accurately weighed, into a suitable pressure bottle, add 25 ml of 1 N potassium hydroxide and 15 ml of isopropanol, stopper the bottle, and wrap securely in a canvas bag. Heat in a water bath maintained at  $98 \pm 2^\circ$  for 1 h, allowing the water in the bath to just cover the liquid in the bottle. Remove the bottle from the bath, cool in air to room temperature, then loosen the wrapper, uncap the bottle to release any pressure, and remove the wrapper. Add 6 to 8 drops of phenolphthalein TS and titrate the excess alkali with 0.5 N sulfuric acid just to the disappearance of the pink colour. Perform a blank determination. Each ml of 0.5 N sulfuric acid is equivalent to 44.04 mg of  $C_7H_{12}O_5$ .