

# DIETHYLENE GLYCOL MONOETHYL ETHER

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## SYNONYMS


Ethyl ether of diethylene glycol, ethyldigol, ethylenediglycol

## DEFINITION

Chemical names 2-(2-Ethoxy)-ethoxyethanol

C.A.S. number 111-90-0

Chemical formula  $C_6H_{14}O_3$

Structural formula 

Formula weight 134.18

## DESCRIPTION

Clear, colourless hygroscopic liquid having a mild characteristic odour

**FUNCTIONAL USES** Carrier solvent for flavouring (main use will be in citrus flavouring and as a replacer of ethanol in Islamic countries)

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4) Miscible with water (shows no opalescence) and ethanol

Specific gravity (Vol. 4) 0.989 - 0.995

Refractive index (Vol. 4)  $n(20, D): 1.425 - 1.430$

### PURITY

Distillation range (Vol. 4)  $195^{\circ} - 205^{\circ}$

Water (Vol. 4) Not more than 0.1% (Karl Fischer Method)

Acidity Not more than 0.01% (as acetic acid)  
To 60 g of the sample add a few drops of phenolphthalein TS, and titrate with 0.1 N ethanolic potassium hydroxide to a pink end-point which persists for at least 15 sec. Not more than 1 ml is required.

Ethenediol Not more than 0.3%  
See description under TESTS

1,4-Dioxane (Vol. 4) Not more than 10 mg/kg

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

Ethenediol

Mix about 2 g of the sample, accurately weighed, with 100 ml of water, add 25 ml of potassium periodate solution (3.5 g/l), swirl, and allow to stand in the dark for 30 min. Add 20 ml of potassium iodide TS and 25 ml of 2 N sulfuric acid, and titrate the liberated iodine with 0.1 N sodium thiosulfate TS, adding starch TS when the brown iodine colour is nearly discharged. Titrate to the disappearance of the blue colour. Perform a residual blank titration. Calculate the ethenediol content by the formula:

$$\% \text{ethenediol} = \frac{0.31 \times (V_1 - V_2)}{M}$$

where

$V_1$  = volume (ml) of sodium thiosulfate TS (0.1 N), used in blank titration

$V_2$  = volume (ml) of sodium thiosulfate TS (0.1 N), used in sample titration

M = weight (g) of sample taken