

Monoethylene glycol dimethyl ether

Technical Datasheet

Chemical Characterization

Monoethylene glycol dimethyl ether
1,2-Dimethoxyethane (DME)
Dimethylglycol
Monoglyme (DMG)

CAS-No.: 110-71-4

EINECS-No.: 203-794-9

Registrations: EINECS (Europe), TSCA (USA), AICS (Australia),
DSL (Canada), ECL (Korea), PICCS (Philippines), ENCS (Japan),
ASIA-PAC

Product Description

Monoethylene glycol dimethyl ether is a neutral, slightly volatile colorless liquid. Because of the free electron pairs at the oxygen atoms monoethylene glycol dimethyl ether has high solvating power and is miscible with water and all common solvents in any ratio. As a result of its chemical stability and the absence of reactive groups, monoethylene glycol dimethyl ether can be used as an inert reaction medium for many organic and organometallic reactions (e.g. Suzuki-coupling, Simmon-Smith-reactions, Grignard reactions) and for polymerizations. Because of its aprotic abilities monoethylene glycol dimethyl ether is also used as electrolytic solvent for lithium batteries (in combination with other solvents). For further informations please ask for our technical bulletins.

Dissolving Power

Monoethylene glycol dimethyl ether readily dissolves the following: alkyd resins, bitumens, cellulose nitrate, cellulose aceto butyrate, chlorinated rubber, coumarone resins, dammar resins, diphenyls (chlorinated), epoxy resins, formaldehyde resins, ketone resins, phenolic resins, mineral oils, [®]Mowilith, nitrocellulose, vegetable oils, polyvinyl acetate, chlorinated propylene, polysty-

rene paints, polyvinyl chloride (post-chlorinated), stand oils, and vinyl chloride.

Waxes and cresols are soluble at elevated temperatures.

Insoluble in monoethylene glycol dimethyl ether are: shellac, cellulose nitrate (alcohol-soluble types), polyvinyl carbazole, PTFE, polyethylene, polypropylene, polyamide, polyacrylonitrile, polyterephthalic acid glycol ester.

Substances that swell in monoethylene glycol dimethyl ether include natural and synthetic rubber and polyacrylates.

Storage Advices

Monoethylene glycol dimethyl ether is supplied in road tankers, rail tankers and polyethylene drums.

Glycol ethers and their derivatives can form peroxides in the presence of oxygen. Therefore monoethylene glycol dimethyl ether is storage stabilized with 100 mg/kg 2,6-Di-tert-butyl-4-methylphenol (BHT). The product is hygroscopic and must be properly stored in order to prevent water absorption. This can be done by storing the product under a dry nitrogen blanket. If stored in a breathable tank, drying agents such as silica gel should be utilized. For further informations please refer to the safety data sheet.

Azeotropic Mixtures

Monoethylene glycol dimethyl ether - abbreviated to M in the table - forms an azeotropes with water, ethanol, chloroform and n-hexane.

	composition [% m/m]	boiling point [°C/1013 hPa]
water	90 M 10 water	78,5°C
ethanol	50 M 50 ethanol	77,3°C
chloroform	78 M 22 chloroform	85,7°C
n-hexane	21 M 79 n-hexane	67,9°C

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molar mass	g/mol	90
boiling range /1013 hPa (ASTM D1120)	°C	84-86
freezing point (DIN 51583)	°C	-69
flash point (DIN 51755)	°C	-6
Ignition temperature (DIN 51794)	°C	200
density/20°C (DIN 51757)	g/cm ³	0,866-0,868
kinematic viscosity/25°C (DIN 51562)	mm ² /s	ca. 0,455
vapor pressure /20°C	mbar	67
heat of evaporation	kJ/mol	28,1
evaporation number (DIN 53170, diethylether = 1)		ca. 3
refractive number n _D 20 (DIN 51423, part 2)		1,380
dipole moment /25°C	Debye	1,71
surface tension /20°C	mN/m	20
dielectric constant (DIN 53483)	ε	5,5
specific electrical conductivity /20°C	S/cm	6 10 ⁻⁸
specific heat /20°C	kJ/kg K	2,19
critical temperature	°C	263
critical pressure	bar	39,9
critical density	g/cm ³	0,333
Hansen solubility parameter		δ _d /Dispersion) δ _p (Polar) δ _h (Hydrogen bonding)
solubility with water/25°C		miscible

Physical Data Series

temperature	density	dynamic viscosity	Vapor pressure	thermal conductivity	spezific heat
°C	g/cm ³	mPa s	mbar	W/m K	kJ/kg K
0	0,885	0,60	27	0,1484	2,0026
20	0,864	0,46	80	0,1421	2,0547
40	0,843	0,38	200	0,1357	2,1067
60	0,821	0,32	443	0,1293	2,1588
80	0,798	0,27	887	0,1230	2,2109
100	0,775	0,23	1636	0,1166	2,2629
160	0,696	0,16	7070	0,0975	2,4191
200	0,627	0,13	14995	0,0848	2,5232

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