

# Diethylene glycol dimethyl ether

## Technical Datasheet

### Chemical Characterization

Diethylene glycol dimethyl ether  
Di-(2-methoxyethyl)-ether  
Dimethyl diglycol (DMDG)  
Diglyme

CAS-Nr.: 111-96 -6

EINECS-Nr.: 203-924-4

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

### Product Description

Diethylene glycol dimethyl ether is a neutral, slightly volatile, colorless liquid. Because of the free electron pairs at the oxygen atoms diethylene 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, diethylene glycol dimethyl ether can be used as an inert reaction medium for many organic and organometallic reactions and for polymerizations. For further informations please ask for our technical bulletins.

For example, 8% w/w sodium borohydride solutions can be prepared (at 40-50°C).

Furthermore, diethylene glycol dimethyl ether is used as a ligand for organometallic catalysts and as a solvent for the etching of PTFE with sodium naphthalene.

### Dissolving Power

Diethylene glycol dimethyl ether readily dissolves the following: galipot, mastic gum, colophony resins, shellac, bitumen's, stand oils, vegetable oils, ethyl- and benzyl cellulose, nitrocellulose, polystyrene paints, polyvinyl chloride (post-chlorinated), aldehyde and ketone resins, resoles, terpene and alkyl phenolic resins, epoxy resins, coumarone resins, alkyd resins, diphenyls (chlorinated) and plastizers such as tricresyl phosphate.

### Storage Advice

Diethylene 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 diethylene 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

Diethylene glycol dimethyl ether - abbreviated as D in the table - forms an azeotrope with water and phenol.

	composition [% m/m]	boiling point [°C/1013 hPa]
water	23 D 77 water	99,3°C
phenol	38 D 62 phenol	189,0°C

## Technical Data

molar mass	g/mol	134						
boiling point /1013 hPa (ASTM D1120)	°C	162						
freezing point (DIN 51583)	°C	-64						
flash point (DIN 51755)	°C	51						
ignition temperature (DIN 51794)	°C	190						
density/20°C (DIN 51757)	g/cm <sup>3</sup>	0,943-0,945						
kinematic viscosity/25°C (DIN 51562)	mm <sup>2</sup> /s	1,20						
vapor pressure /20°C	mbar	2,3						
heat of evaporation	kJ/mol	41,6						
evaporation number (DIN 53170, diethylether = 1)		ca. 90						
refractive number n <sub>D20</sub> (DIN 51423, part 2)		1,407-1,409						
surface tension /20°C	mN/m	27						
dipole moment /25°C	Debye	1,97						
dielectric constant (DIN 53483)	ε	5,79						
specific electrical conductivity /20°C	S/cm	3·10 <sup>-8</sup>						
critical temperature	°C	343,85						
Hansen solubility parameter	J/cm <sup>3</sup>	<table border="0"> <tr> <td>δ<sub>d</sub> /Dispersion)</td> <td>15.8</td> </tr> <tr> <td>δ<sub>p</sub> (Polar)</td> <td>6.1</td> </tr> <tr> <td>δ<sub>h</sub> (Hydrogen bonding)</td> <td>9.2</td> </tr> </table>	δ <sub>d</sub> /Dispersion)	15.8	δ <sub>p</sub> (Polar)	6.1	δ <sub>h</sub> (Hydrogen bonding)	9.2
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miscibility with water/25°C		miscible						

## Physical Data

temperature °C	density g/cm <sup>3</sup>	dynamic viscosity mPa s	vapor pressure mbar	thermal conductivity W/m K	specific heat kJ/kg K
0	0,965	1,55	0,3	0,1623	2,0226
20	0,944	1,09	1,5	0,1583	2,0352
40	0,923	0,80	6	0,1544	2,0531
60	0,901	0,61	19	0,1505	2,0761
80	0,878	0,48	51	0,1465	2,1043
100	0,856	0,39	121	0,1426	2,1378
160	0,783	0,23	935	0,1308	2,2692
200	0,729	0,18	2623	0,1230	2,3827

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