

# ETHYLENE GLYCOL MONOMETHYL ETHER

EME

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Dowanol EM Glycol monomethyl ether 2-Methoxyethanol Methyl cellosolve Poly-solv EM		Liquid	Colorless	Odorless
		Floats and mixes with water.		
<p>Call fire department. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.</p>				
<b>Fire</b>	Combustible. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Cool exposed containers with water.			
<b>Exposure</b>	CALL FOR MEDICAL AID.  LIQUID Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED, and victim is CONSCIOUS, have victim drink water or milk.			
<b>Water Pollution</b>	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.			

<b>1. CORRECTIVE RESPONSE ACTIONS</b> Dilute and disperse Stop discharge	<b>2. CHEMICAL DESIGNATIONS</b> 2.1 CG Compatibility Group: 40; Glycol ether 2.2 Formula: CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> OH 2.3 IMO/UN Designation: 3.3/1188 2.4 DOT ID No.: 1188 2.5 CAS Registry No.: 109-86-4 2.6 NAERG Guide No.: 127 2.7 Standard Industrial Trade Classification: 51616
<b>3. HEALTH HAZARDS</b>	
3.1 <b>Personal Protective Equipment:</b> Chemical safety goggles; protective clothing; supplied-air respirator for high concentrations; safety shower and eye bath. 3.2 <b>Symptoms Following Exposure:</b> Irritation of skin and eyes. Chronic exposure may also cause weakness, sleepiness, headache, gastrointestinal upset, weight loss, change of personality. 3.3 <b>Treatment of Exposure:</b> SKIN OR EYES: wash affected area with water for 15 min. 3.4 <b>TLV-TWA:</b> 5 ppm 3.5 <b>TLV-STEL:</b> Not listed. 3.6 <b>TLV-Ceiling:</b> Not listed. 3.7 <b>Toxicity by Ingestion:</b> Grade 2; LD <sub>50</sub> = 0.5 to 5g/kg (rat, rabbit, guinea pig) 3.8 <b>Toxicity by Inhalation:</b> Currently not available. 3.9 <b>Chronic Toxicity:</b> Causes blood disorders and damage to central nervous system in humans. 3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary. 3.11 <b>Liquid or Solid Characteristics:</b> Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin. 3.12 <b>Odor Threshold:</b> 0.9 ppm 3.13 <b>IDLH Value:</b> 200 ppm 3.14 <b>OSHA PEL-TWA:</b> 25 ppm 3.15 <b>OSHA PEL-STEL:</b> Not listed. 3.16 <b>OSHA PEL-Ceiling:</b> Not listed. 3.17 <b>EPA AEGL:</b> Not listed	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** 120°F O.C. 107°F C.C.
- 4.2 **Flammable Limits in Air:** 2.5%-19.8%
- 4.3 **Fire Extinguishing Agents:** Dry chemical, carbon dioxide or alcohol foam
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
- 4.5 **Special Hazards of Combustion Products:** Not pertinent
- 4.6 **Behavior in Fire:** Not pertinent
- 4.7 **Auto Ignition Temperature:** 551°F
- 4.8 **Electrical Hazards:** Not pertinent
- 4.9 **Burning Rate:** 1.8 mm/min.
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 19.0 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 7.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

## 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** No reaction
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

## 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Currently not available
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** 15% (theor.), 1-10 days
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:**  
 Bioaccumulation: 0  
 Damage to living resources: 0  
 Human Oral hazard: 1  
 Human Contact hazard: II  
 Reduction of amenities: XXX

## 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Commercial
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Open (flame arrester)
- 7.5 **IMO Pollution Category:** D
- 7.6 **Ship Type:** 3
- 7.7 **Barge Hull Type:** 3

## 8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
- 8.2 **49 CFR Class:** 3
- 8.3 **49 CFR Package Group:** III
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	2
Flammability (Red).....	2
Instability (Yellow).....	0
- 8.6 **EPA Reportable Quantity:** Not listed.
- 8.7 **EPA Pollution Category:** Not listed.
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

## 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 76.10
- 9.3 **Boiling Point at 1 atm:** 256.1°F = 124.5°C = 397.7°K
- 9.4 **Freezing Point:** -121.2°F = -85.1°C = 188.1°K
- 9.5 **Critical Temperature:** 557.6°F = 292°C = 565.2°K
- 9.6 **Critical Pressure:** 735 psia = 50 atm = 5.1 MN/m<sup>2</sup>
- 9.7 **Specific Gravity:** 0.966 at 20°C (liquid)
- 9.8 **Liquid Surface Tension:** 33 dynes/cm = 0.033 N/m at 20°C
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.079
- 9.12 **Latent Heat of Vaporization:** 223 Btu/lb = 124 cal/g = 5.19 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** -9460 Btu/lb = -5250 cal/g = -220 X 10<sup>5</sup> J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Currently not available
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** 0.39 psia

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
40	61.220	35	0.552	85	1.298		
50	60.890	40	0.554	90	1.291		N
60	60.560	45	0.557	95	1.283		O
70	60.230	50	0.560	100	1.276		T
80	59.900	55	0.563	105	1.268		
90	59.580	60	0.565	110	1.260		P
100	59.250	65	0.568	115	1.253		E
110	58.920	70	0.571	120	1.245		R
120	58.590	75	0.574	125	1.238		T
130	58.260	80	0.577	130	1.230		I
140	57.930	85	0.579	135	1.223		N
150	57.600	90	0.582	140	1.215		E
160	57.270	95	0.585	145	1.207		N
170	56.940	100	0.588	150	1.200		T
180	56.610						
190	56.280						
200	55.950						
210	55.620						

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	M	60	0.088	60	0.00120	0	0.332
	I	70	0.129	70	0.00173	25	0.341
	S	80	0.186	80	0.00245	50	0.350
	C	90	0.264	90	0.00341	75	0.359
	I	100	0.368	100	0.00467	100	0.368
	B	110	0.506	110	0.00630	125	0.377
	L	120	0.685	120	0.00837	150	0.385
	E	130	0.914	130	0.01099	175	0.394
		140	1.205	140	0.01424	200	0.402
		150	1.570	150	0.01825	225	0.411
		160	2.022	160	0.02314	250	0.419
		170	2.579	170	0.02903	275	0.427
		180	3.256	180	0.03609	300	0.435
		190	4.074	190	0.04445	325	0.443
		200	5.053	200	0.05430	350	0.451
		210	6.216	210	0.06581	375	0.458
		220	7.589	220	0.07915	400	0.466
		230	9.197	230	0.09453	425	0.474
		240	11.070	240	0.11220	450	0.481
		250	13.240	250	0.13220	475	0.488
		260	15.730	260	0.15490	500	0.495
		270	18.580	270	0.18050	525	0.502
		280	21.830	280	0.20920	550	0.509
		290	25.510	290	0.24120	575	0.516
		300	29.660	300	0.27680	600	0.523