

ETHYLENE GLYCOL MONOBUTYL ETHER

EGM

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 2-Butoxyethanol Butyl cellosolve Dowanol EB Glycol butyl ether Poly-solv EB	Oily liquid Colorless Mild rancid odor
Oily liquid Colorless Mild rancid odor Floats and mixes with water.	
<p>Call fire department. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	Combustible. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Cool exposed containers with water.
Exposure	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.
Water Pollution	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.

1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 40; Glycol ether 2.2 Formula: CH ₂ (CH ₂) ₃ OCH ₂ CH ₂ OH 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2369 2.5 CAS Registry No.: 111-76-2 2.6 NAERG Guide No.: 152 2.7 Standard Industrial Trade Classification: 51616
3. HEALTH HAZARDS	
<p>3.1 Personal Protective Equipment: Air pack or organic canister respirator; rubber gloves; goggles; clothing to prevent body contact with liquid.</p> <p>3.2 Symptoms Following Exposure: Vapors irritate eyes and nose. Ingestion or skin contact causes headache, nausea, vomiting, dizziness.</p> <p>3.3 Treatment of Exposure: INHALATION: remove to fresh air and call a physician. SKIN OR EYES: immediately flush with plenty of water; get medical care for eyes.</p> <p>3.4 TLV-TWA: 25 ppm</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 2; LD₅₀ = 0.5 to 5 g/kg (rat)</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Currently not available</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.</p> <p>3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.</p> <p>3.12 Odor Threshold: Currently not available</p> <p>3.13 IDLH Value: 700 ppm</p> <p>3.14 OSHA PEL-TWA: 50 ppm</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA AEGL: Not listed</p>	

4. FIRE HAZARDS

- 4.1 **Flash Point:** 165°F O.C. 155°F C.C.
 4.2 **Flammable Limits in Air:** 1.1%-10.6%
 4.3 **Fire Extinguishing Agents:** Carbon dioxide or dry chemical for small fires;; alcohol-type foam for large fires.
 4.4 **Fire Extinguishing Agents Not to Be Used:** Currently not available
 4.5 **Special Hazards of Combustion Products:** Not pertinent
 4.6 **Behavior in Fire:** Not pertinent
 4.7 **Auto Ignition Temperature:** 472°F
 4.8 **Electrical Hazards:** Not pertinent
 4.9 **Burning Rate:** 6.7 mm/min.
 4.10 **Adiabatic Flame Temperature:** Currently not available
 4.11 **Stoichiometric Air to Fuel Ratio:** 40.5 (calc.)
 4.12 **Flame Temperature:** Currently not available
 4.13 **Combustion Molar Ratio (Reactant to Product):** 13.0 (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:** 1000 ppm/24 hr/brine shrimp/TL_m
 6.2 **Waterfowl Toxicity:** Currently not available
 6.3 **Biological Oxygen Demand (BOD):** 26% of theoretical in 5 days, fresh water
 6.4 **Food Chain Concentration Potential:** None
 6.5 **GESAMP Hazard Profile:**
 Bioaccumulation: 0
 Damage to living resources: 1
 Human Oral hazard: 2
 Human Contact hazard: II
 Reduction of amenities: XX

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:** Keep Away From Food
 8.2 **49 CFR Class:** 6.1
 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:** 118.18
 9.3 **Boiling Point at 1 atm:** 340.2°F = 171.2°C = 444.4°K
 9.4 **Freezing Point:** -103°F = -75°C = 198°K
 9.5 **Critical Temperature:** 694.4°F = 368°C = 641.2°K
 9.6 **Critical Pressure:** 470 psia = 32 atm = 3.2 MN/m²
 9.7 **Specific Gravity:** 0.902 at 20°C (liquid)
 9.8 **Liquid Surface Tension:** Not pertinent
 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):** 1.047
 9.12 **Latent Heat of Vaporization:** 157 Btu/lb = 87.1 cal/g = 3.65 X 10⁵ J/kg
 9.13 **Heat of Combustion:** -13,890 Btu/lb = -7720 cal/g = -323 X 10⁵ J/kg
 9.14 **Heat of Decomposition:** Not pertinent
 9.15 **Heat of Solution:** (est.) -9 Btu/lb = -5 cal/g = -0.2 X 10⁵ J/kg
 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:** 2.2 psia

NOTES

ETHYLENE GLYCOL MONOBUTYL ETHER

EGM

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	57.180	15	0.440	85	1.106		N O T P E R T I N E N T
50	56.860	20	0.443	90	1.099		
60	56.540	25	0.446	95	1.092		
70	56.230	30	0.449	100	1.084		
80	55.910	35	0.452	105	1.077		
90	55.600	40	0.454	110	1.070		
100	55.280	45	0.457	115	1.063		
110	54.970	50	0.460	120	1.056		
120	54.650	55	0.463	125	1.049		
130	54.340	60	0.465	130	1.041		
140	54.020	65	0.468	135	1.034		
150	53.700	70	0.471	140	1.027		
160	53.390	75	0.474	145	1.020		
170	53.070	80	0.477	150	1.013		
180	52.760	85	0.479				
190	52.440						
200	52.130						
210	51.810						

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 I S C I B L E	60	0.008	60	0.00018	0	0.344
		70	0.013	70	0.00026	25	0.355
		80	0.018	80	0.00038	50	0.366
		90	0.027	90	0.00054	75	0.378
		100	0.038	100	0.00076	100	0.389
		110	0.054	110	0.00105	125	0.399
		120	0.076	120	0.00145	150	0.410
		130	0.105	130	0.00197	175	0.420
		140	0.144	140	0.00265	200	0.431
		150	0.195	150	0.00352	225	0.441
		160	0.262	160	0.00465	250	0.451
		170	0.348	170	0.00608	275	0.461
		180	0.458	180	0.00788	300	0.470
		190	0.598	190	0.01013	325	0.480
		200	0.774	200	0.01292	350	0.489
		210	0.995	210	0.01635	375	0.498
		220	1.269	220	0.02055	400	0.507
		230	1.607	230	0.02566	425	0.516
		240	2.022	240	0.03182	450	0.525
		250	2.528	250	0.03921	475	0.534
		260	3.140	260	0.04804	500	0.542
		270	3.878	270	0.05851	525	0.550
		280	4.761	280	0.07087	550	0.559
		290	5.815	290	0.08539	575	0.567
		300	7.064	300	0.10240	600	0.575
		310	8.538	310	0.12210		