

ETHYLENE GLYCOL MONOBUTYL ETHER

EGM

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms 2-Butoxyethanol Butyl cellosolve Dowanol EB Glycol butyl ether Poly-solv EB	Oily liquid Floats and mixes with water.	Colorless	Mild rancid odor	<p>4.1 Flash Point: 165°F O.C. 155°F C.C.</p> <p>4.2 Flammable Limits in Air: 1.1%-10.6%</p> <p>4.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires; alcohol-type foam for large fires.</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Currently not available</p> <p>4.5 Special Hazards of Combustion Products: Not pertinent</p> <p>4.6 Behavior in Fire: Not pertinent</p> <p>4.7 Auto Ignition Temperature: 472°F</p> <p>4.8 Electrical Hazards: Not pertinent</p> <p>4.9 Burning Rate: 6.7 mm/min.</p> <p>4.10 Adiabatic Flame Temperature: Currently not available</p> <p>4.11 Stoichiometric Air to Fuel Ratio: 40.5 (calc.)</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): 13.0 (calc.)</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7.1 Grades of Purity: Commercial</p> <p>7.2 Storage Temperature: Ambient</p> <p>7.3 Inert Atmosphere: No requirement</p> <p>7.4 Venting: Open (flame arrester)</p> <p>7.5 IMO Pollution Category: D</p> <p>7.6 Ship Type: 3</p> <p>7.7 Barge Hull Type: 3</p>								
	Call fire department. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.				8. HAZARD CLASSIFICATIONS								
Fire	Combustible. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Cool exposed containers with water.				<p>8.1 49 CFR Category: Keep Away From Food</p> <p>8.2 49 CFR Class: 6.1</p> <p>8.3 49 CFR Package Group: III</p> <p>8.4 Marine Pollutant: No</p> <p>8.5 NFPA Hazard Classification:</p> <table> <thead> <tr> <th>Category</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td>2</td> </tr> <tr> <td>Flammability (Red)</td> <td>2</td> </tr> <tr> <td>Instability (Yellow)</td> <td>0</td> </tr> </tbody> </table> <p>8.6 EPA Reportable Quantity: Not listed.</p> <p>8.7 EPA Pollution Category: Not listed.</p> <p>8.8 RCRA Waste Number: Not listed</p> <p>8.9 EPA FWC List: Not listed</p>	Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	2	Instability (Yellow)	0
Category	Classification												
Health Hazard (Blue)	2												
Flammability (Red)	2												
Instability (Yellow)	0												
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.				9. PHYSICAL & CHEMICAL PROPERTIES								
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.				<p>9.1 Physical State at 15°C and 1 atm: Liquid</p> <p>9.2 Molecular Weight: 118.18</p> <p>9.3 Boiling Point at 1 atm: 340.2°F = 171.2°C = 444.4°K</p> <p>9.4 Freezing Point: -103°F = -75°C = 198°K</p> <p>9.5 Critical Temperature: 694.4°F = 368°C = 641.2°K</p> <p>9.6 Critical Pressure: 470 psia = 32 atm = 3.2 MN/m²</p> <p>9.7 Specific Gravity: 0.902 at 20°C (liquid)</p> <p>9.8 Liquid Surface Tension: Not pertinent</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: Not pertinent</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): 1.047</p> <p>9.12 Latent Heat of Vaporization: 157 Btu/lb = 87.1 cal/g = 3.65 X 10⁵ J/kg</p> <p>9.13 Heat of Combustion: -13,890 Btu/lb = -7720 cal/g = -323 X 10⁵ J/kg</p> <p>9.14 Heat of Decomposition: Not pertinent</p> <p>9.15 Heat of Solution: (est.) -9 Btu/lb = -5 cal/g = -0.2 X 10⁵ J/kg</p> <p>9.16 Heat of Polymerization: Not pertinent</p> <p>9.17 Heat of Fusion: Currently not available</p> <p>9.18 Limiting Value: Currently not available</p> <p>9.19 Reid Vapor Pressure: 2.2 psia</p>								
1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge				3. HEALTH HAZARDS									
				<p>2. CHEMICAL DESIGNATIONS</p> <p>2.1 CG Compatibility Group: 40; Glycol ether</p> <p>2.2 Formula: <chem>CH3(CH2)2OCH2CH2OH</chem></p> <p>2.3 IMO/UN Designation: Not listed</p> <p>2.4 DOT ID No.: 2369</p> <p>2.5 CAS Registry No.: 111-76-2</p> <p>2.6 NAERG Guide No.: 152</p> <p>2.7 Standard Industrial Trade Classification: 51616</p>									
				<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>									
				<p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: 1000 ppm/24 hr/brine shrimp/TL_m</p> <p>6.2 Waterfowl Toxicity: Currently not available</p> <p>6.3 Biological Oxygen Demand (BOD): 26% of theoretical in 5 days, fresh water</p> <p>6.4 Food Chain Concentration Potential: None</p> <p>6.5 GESAMP Hazard Profile:</p> <ul style="list-style-type: none"> Bioaccumulation: 0 Damage to living resources: 1 Human Oral hazard: 2 Human Contact hazard: II Reduction of amenities: XX 									
				<p>NOTES</p>									

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

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	0.008	60	0.00018		0	0.344
I	70	0.013	70	0.00026		25	0.355
S	80	0.018	80	0.00038		50	0.366
C	90	0.027	90	0.00054		75	0.378
I	100	0.038	100	0.00076		100	0.389
B	110	0.054	110	0.00105		125	0.399
L	120	0.076	120	0.00145		150	0.410
E	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			