

# BUTYLENE GLYCOL

BUG

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Butanediol Dihydroxybutane	Liquid or Solid (depending upon temperature)	Colorless	Odorless
<p>Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>			
<b>Fire</b>	Combustible. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire.		
<b>Exposure</b>	CALL FOR MEDICAL AID.  LIQUID OR SOLID Irritating to skin or eyes. Harmful if swallowed. Flush affected areas 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 pollution control 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 <b>CG Compatibility Group:</b> 20; Alcohols, glycols 2.2 <b>Formula:</b> HOCH <sub>2</sub> (CH <sub>2</sub> ) <sub>2</sub> CH <sub>2</sub> OH (1,4-) 2.3 <b>IMO/UN Designation:</b> 3.3/1987 (1,4-) 2.4 <b>DOT ID No.:</b> Not listed. 2.5 <b>CAS Registry No.:</b> 110-63-4 (1,4-) 107-88-0 (1,3-) 513-85-9 (2,3-) 2.6 <b>NAERG Guide No.:</b> Not listed 2.7 <b>Standard Industrial Trade Classification:</b> 51229
<b>3. HEALTH HAZARDS</b>	
3.1 <b>Personal Protective Equipment:</b> Eye protection and rubber gloves. 3.2 <b>Symptoms Following Exposure:</b> Ingestion of large amounts needed to produce any symptoms. 3.3 <b>Treatment of Exposure:</b> SKIN OR EYES: wash off immediately with plenty of water. 3.4 <b>TLV-TWA:</b> Not listed. 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 5 g/kg (rat) (1,4-) Grade 1; LD <sub>50</sub> = 23 g/kg (rat) (1,3-) Grade 2; LD <sub>50</sub> = 5.462 g/kg (mouse) (2,3-) 3.8 <b>Toxicity by Inhalation:</b> Currently not available. 3.9 <b>Chronic Toxicity:</b> None. 3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Vapors are non-irritating to eyes and throat. 3.11 <b>Liquid or Solid Characteristics:</b> No appreciable hazard. Practically harmless to the skin. 3.12 <b>Odor Threshold:</b> Odorless. 3.13 <b>IDLH Value:</b> Not listed. 3.14 <b>OSHA PEL-TWA:</b> Not listed. 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	

<b>4. FIRE HAZARDS</b>	<b>7. SHIPPING INFORMATION</b>								
4.1 <b>Flash Point:</b> 185 - 311°F O.C. 4.2 <b>Flammable Limits in Air:</b> Lel: 1.9% 4.3 <b>Fire Extinguishing Agents:</b> Alcohol foam, dry chemical or carbon dioxide. 4.4 <b>Fire Extinguishing Agents Not to Be Used:</b> Water or foam may cause frothing. 4.5 <b>Special Hazards of Combustion Products:</b> Carbon dioxide and carbon monoxide may be produced in fire. 4.6 <b>Behavior in Fire:</b> Unstable with heat; may form flammable tetrahydrofuran at 300°F. 4.7 <b>Auto Ignition Temperature:</b> 671°F (1,4-) 4.8 <b>Electrical Hazards:</b> Not listed. 4.9 <b>Burning Rate:</b> Currently not available 4.10 <b>Adiabatic Flame Temperature:</b> Currently not available 4.11 <b>Stoichiometric Air to Fuel Ratio:</b> 26.2 (calc.) 4.12 <b>Flame Temperature:</b> Currently not available 4.13 <b>Combustion Molar Ratio (Reactant to Product):</b> 9.0 (calc.) 4.14 <b>Minimum Oxygen Concentration for Combustion (MOCC):</b> Not listed	7.1 <b>Grades of Purity:</b> Regular and anhydrous grades; technical. 7.2 <b>Storage Temperature:</b> Ambient. 7.3 <b>Inert Atmosphere:</b> No requirement. 7.4 <b>Venting:</b> Not listed. 7.5 <b>IMO Pollution Category:</b> D 7.6 <b>Ship Type:</b> Data not available 7.7 <b>Barge Hull Type:</b> Currently not available								
<b>5. CHEMICAL REACTIVITY</b>	<b>8. HAZARD CLASSIFICATIONS</b>								
5.1 <b>Reactivity with Water:</b> No reaction. 5.2 <b>Reactivity with Common Materials:</b> Incompatible with strong acids and strong oxidizers. 5.3 <b>Stability During Transport:</b> Stable. 5.4 <b>Neutralizing Agents for Acids and Caustics:</b> Not pertinent. 5.5 <b>Polymerization:</b> Will not polymerize. 5.6 <b>Inhibitor of Polymerization:</b> Not pertinent.	8.1 <b>49 CFR Category:</b> Not listed. 8.2 <b>49 CFR Class:</b> Not pertinent. 8.3 <b>49 CFR Package Group:</b> Not listed. 8.4 <b>Marine Pollutant:</b> No 8.5 <b>NFPA Hazard Classification:</b> <table border="1"> <tr> <th>Category</th> <th>Classification</th> </tr> <tr> <td>Health Hazard (Blue).....</td> <td>1</td> </tr> <tr> <td>Flammability (Red).....</td> <td>2</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>-</td> </tr> </table> 8.6 <b>EPA Reportable Quantity:</b> Not listed. 8.7 <b>EPA Pollution Category:</b> Not listed. 8.8 <b>RCRA Waste Number:</b> Not listed 8.9 <b>EPA FWPCA List:</b> Not listed	Category	Classification	Health Hazard (Blue).....	1	Flammability (Red).....	2	Instability (Yellow).....	-
Category	Classification								
Health Hazard (Blue).....	1								
Flammability (Red).....	2								
Instability (Yellow).....	-								
<b>6. WATER POLLUTION</b>	<b>9. PHYSICAL &amp; CHEMICAL PROPERTIES</b>								
6.1 <b>Aquatic Toxicity:</b> Currently not available 6.2 <b>Waterfowl Toxicity:</b> Currently not available 6.3 <b>Biological Oxygen Demand (BOD):</b> Currently not available 6.4 <b>Food Chain Concentration Potential:</b> None. 6.5 <b>GESAMP Hazard Profile:</b> Bioaccumulation: 0 Damage to living resources: 0/BOD Human Oral hazard: 0 Human Contact hazard: 0 Reduction of amenities: 0	9.1 <b>Physical State at 15° C and 1 atm:</b> Solid or liquid 9.2 <b>Molecular Weight:</b> 90.12 9.3 <b>Boiling Point at 1 atm:</b> 442°F = 228°C = 501°K (1,4-) 406°F = 207.5°C = 480.5°K (1,3-) 356°F = 180°C = 453°K (2,3-) 9.4 <b>Freezing Point:</b> 66 - 68°F = 18.9 - 20°C = 291.9 - 293°K (1,4-) -58°F = -50°C = 223°K (1,3-) 66°F = 19°C = 292°K (2,3-) 9.5 <b>Critical Temperature:</b> 716°F = 380°C = 653°K (1,4-) 9.6 <b>Critical Pressure:</b> 720 psia = 49 atm = 5.0 MN/m <sup>2</sup> (1,4-) 9.7 <b>Specific Gravity:</b> 1.017 at 20°C (liquid) 9.8 <b>Liquid Surface Tension:</b> Currently not available 9.9 <b>Liquid Water Interfacial Tension:</b> Currently not available 9.10 <b>Vapor (Gas) Specific Gravity:</b> 3.2 9.11 <b>Ratio of Specific Heats of Vapor (Gas):</b> Currently not available 9.12 <b>Latent Heat of Vaporization:</b> Currently not available 9.13 <b>Heat of Combustion:</b> (est.) (1,4-) -11,900 Btu/lb = -6630 cal/g = -277 X 10 <sup>5</sup> J/kg 9.14 <b>Heat of Decomposition:</b> Currently not available 9.15 <b>Heat of Solution:</b> Currently not available 9.16 <b>Heat of Polymerization:</b> Not pertinent. 9.17 <b>Heat of Fusion:</b> Currently not available 9.18 <b>Limiting Value:</b> Currently not available 9.19 <b>Reid Vapor Pressure:</b> Currently not available								

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
68	8.430		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E

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	68	0.003	68	0.00005		C U R R E N T L Y  N O T  A V A I L A B L E