

GLYCERINE

GCR

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS		7. SHIPPING INFORMATION											
Common Synonyms Glycerol 1,2,3-Propanetriol 1,2,3-Trihydroxypropane		Oily liquid	Colorless	Odorless Sinks and mixes with water. Freezing point is 64°F.		4.1 Flash Point: 350°F O.C. 320°F C.C. 4.2 Flammable Limits in Air: Not pertinent 4.3 Fire Extinguishing Agents: Alcohol foam, dry chemical, carbon dioxide, water fog 4.4 Fire Extinguishing Agents Not to Be Used: Water or foam may cause frothing. 4.5 Special Hazards of Combustion Products: Not pertinent 4.6 Behavior in Fire: Not pertinent 4.7 Auto Ignition Temperature: 698°F 4.8 Electrical Hazards: Not pertinent 4.9 Burning Rate: 0.9 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 16.7 (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											
Call fire department. Notify local health and pollution control agencies.						7.1 Grades of Purity: CP: 99.5%; USP: 96% 7.2 Storage Temperature: Ambient 7.3 Inert Atmosphere: No requirement 7.4 Venting: Open (flame arrester) or pressure-vacuum 7.5 IMO Pollution Category: Currently not available 7.6 Ship Type: Currently not available 7.7 Barge Hull Type: Currently not available											
Fire Combustible. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.						8. HAZARD CLASSIFICATIONS											
Exposure Not harmful.						8.1 49 CFR Category: Not listed 8.2 49 CFR Class: Not pertinent 8.3 49 CFR Package Group: Not listed 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification:											
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.						Category Classification Health Hazard (Blue)..... 1 Flammability (Red)..... 1 Instability (Yellow)..... 0											
1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge		2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 20; Alcohols, glycols 2.2 Formula: HOCH ₂ CH(OH)CH ₂ OH 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: Not listed 2.5 CAS Registry No.: 56-81-5 2.6 NAERG Guide No.: Not listed 2.7 Standard Industrial Trade Classification: 51222															
3. HEALTH HAZARDS <p>3.1 Personal Protective Equipment: Rubber gloves, goggles. 3.2 Symptoms Following Exposure: No hazard 3.3 Treatment of Exposure: No hazard 3.4 TLV-TWA: 10 mg/m³ (mist) 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 0; LD₅₀ above 15 g/kg 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: None 3.10 Vapor (Gas) Irritant Characteristics: Vapors are nonirritating to the eyes and throat. 3.11 Liquid or Solid Characteristics: No appreciable hazard. Practically harmless to the skin. 3.12 Odor Threshold: Odorless 3.13 IDLH Value: Not listed. 3.14 OSHA PEL-TWA: 15 mg/m³ total dust; 5 mg/m³ respirable fraction. 3.15 OSHA PEL-STEL: Not listed. 3.16 OSHA PEL-Ceiling: Not listed. 3.17 EPA AEGL: Not listed</p>																	
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5. CHEMICAL REACTIVITY <p>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</p>																	
6. WATER POLLUTION <p>6.1 Aquatic Toxicity: Currently not available 6.2 Waterfowl Toxicity: Currently not available 6.3 Biological Oxygen Demand (BOD): 20% (theor.), 5 days 6.4 Food Chain Concentration Potential: None 6.5 GESAMP Hazard Profile: Bioaccumulation: 0 Damage to living resources: 0 Human Oral hazard: 0 Human Contact hazard: 0 Reduction of amenities: 0</p>																	
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Health Hazard (Blue).....	1																
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9. PHYSICAL & CHEMICAL PROPERTIES <p>9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 92.10 9.3 Boiling Point at 1 atm: 554°F = 290°C = 563°K 9.4 Freezing Point: 64.2°F = 17.9°C = 291.1°K 9.5 Critical Temperature: Not pertinent 9.6 Critical Pressure: Not pertinent 9.7 Specific Gravity: 1.261 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): Not pertinent 9.12 Latent Heat of Vaporization: 288 Btu/lb = 160 cal/g = 6.70 X 10⁵ J/kg 9.13 Heat of Combustion: -7758 Btu/lb = -4310 cal/g = -180.5 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: 47.95 cal/g 9.18 Limiting Value: Currently not available 9.19 Reid Vapor Pressure: Very low</p>																	
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
70	78.709	70	0.623	65	1.977		N
80	78.500	80	0.629	70	1.978		O
90	78.290	90	0.635	75	1.980		T
100	78.080	100	0.641	80	1.981		
110	77.860	110	0.647	85	1.983		P
120	77.641	120	0.653	90	1.984		ERT
130	77.410	130	0.659	95	1.986		
140	77.179	140	0.665	100	1.987		
150	76.940	150	0.671	105	1.989		
160	76.709	160	0.677	110	1.990		
170	76.459	170	0.683	115	1.992		
180	76.219	180	0.689	120	1.994		
190	75.969	190	0.695	125	1.995		
200	75.721	200	0.701	130	1.997		
210	75.459	210	0.707	135	1.998		
		220	0.713	140	2.000		
		230	0.719	145	2.001		
		240	0.725	150	2.003		
		250	0.731	155	2.004		
		260	0.737	160	2.006		
		270	0.743	165	2.007		
		280	0.749	170	2.009		
				175	2.010		
				180	2.012		
				185	2.014		

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	150	0.001		N		N
	I	160	0.001		O		O
	S	170	0.001		T		T
	C	180	0.002				
	I	190	0.003		P		P
	B	200	0.004		E		E
	L	210	0.006		R		R
	E	220	0.009		I		I
		230	0.013		N		N
		240	0.019		T		T
		250	0.027				
		260	0.038				
		270	0.052				
		280	0.072				
		290	0.097				
		300	0.131				
		310	0.176				
		320	0.234				
		330	0.308				