

TETRAETHYLENE GLYCOL

TTG

CAUTIONARY RESPONSE INFORMATION

Common Synonyms		Liquid	Colorless to straw color	Mild odor
Hi-dry Bis-[2-(2-Hydroxyethoxy) ethyl ether 3,6,9-Trioxaundecan-1, 11-diol		Sinks and mixes with water.		
Keep people away. Avoid contact with liquid. Notify local health and pollution control agencies.				
Fire	Combustible. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.			
Exposure	LIQUID Not harmful.			
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: HO(C₂H₄O)₄H
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: Not listed
- 2.5 CAS Registry No.: 112-60-7
- 2.6 NAERG Guide No.: Not listed
- 2.7 Standard Industrial Trade Classification: 51617

3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Goggles or face shield and rubber gloves.
- 3.2 Symptoms Following Exposure: Compound is nonirritating. No symptoms observed by any exposure route.
- 3.3 Treatment of Exposure: INGESTION: if large amounts are swallowed, induce vomiting; treat symptomatically. EYES: flush with water; get medical attention if ill effects develop. SKIN: wash with soap and water.
- 3.4 TLV-TWA: Not listed.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 Toxicity by Ingestion: Grade 0; oral rat LD₅₀ = 28-34 g/kg
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Currently not available
- 3.10 Vapor (Gas) Irritant Characteristics: Vapors are nonirritating to eyes and throat.
- 3.11 Liquid or Solid Characteristics: No appreciable hazard. Practically harmless to the skin.
- 3.12 Odor Threshold: Currently not available
- 3.13 IDLH Value: Not listed.
- 3.14 OSHA PEL-TWA: Not listed.
- 3.15 OSHA PEL-STEL: Not listed.
- 3.16 OSHA PEL-Ceiling: Not listed.
- 3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

- 4.1 Flash Point: 360°F O.C.
- 4.2 Flammable Limits in Air: Currently not available
- 4.3 Fire Extinguishing Agents: Alcohol foam, dry chemical, or carbon dioxide
- 4.4 Fire Extinguishing Agents Not to Be Used: Water or foam may cause frothing.
- 4.5 Special Hazards of Combustion Products: Currently not available
- 4.6 Behavior in Fire: Currently not available
- 4.7 Auto Ignition Temperature: Currently not available
- 4.8 Electrical Hazards: Currently not available
- 4.9 Burning Rate: Currently not available
- 4.10 Adiabatic Flame Temperature: Currently not available
- 4.11 Stoichiometric Air to Fuel Ratio: 47.6 (calc.)
- 4.12 Flame Temperature: Currently not available
- 4.13 Combustion Molar Ratio (Reactant to Product): 17.0 (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: May attack some forms of plastics
- 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): 50%, 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

7. SHIPPING INFORMATION

- 7.1 Grades of Purity: Commercial, 99+%
- 7.2 Storage Temperature: Ambient
- 7.3 Inert Atmosphere: No requirement
- 7.4 Venting: Open (flame arrester)
- 7.5 IMO Pollution Category: Currently not available
- 7.6 Ship Type: Currently not available
- 7.7 Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

- 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:

Category	Classification
Health Hazard (Blue).....	1
Flammability (Red).....	1
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: 194.23
- 9.3 Boiling Point at 1 atm: 621°F = 327°C = 600°K
- 9.4 Freezing Point: 24.8°F = 4.0°C = 269.0°K
- 9.5 Critical Temperature: Not pertinent
- 9.6 Critical Pressure: Not pertinent
- 9.7 Specific Gravity: 1.12 at 20°C (liquid)
- 9.8 Liquid Surface Tension: 18.81 dynes/cm = 0.01881 N/m at 327°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): Not pertinent
- 9.12 Latent Heat of Vaporization: Not pertinent
- 9.13 Heat of Combustion: -10,530 Btu/lb = -5,850 cal/g = -245 X 10³ J/kg
- 9.14 Heat of Decomposition: Not pertinent
- 9.15 Heat of Solution: Not pertinent
- 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: Low

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
34	71.089		N		N	77	44.600
36	71.020		O		O		
38	70.950		T		T		
40	70.879						
42	70.809		P		P		
44	70.750		E		E		
46	70.679		R		R		
48	70.610		T		T		
50	70.540		I		I		
52	70.469		N		N		
54	70.400		E		E		
56	70.330		N		N		
58	70.259		T		T		
60	70.190						
62	70.120						
64	70.049						
66	69.980						
68	69.910						
70	69.839						
72	69.770						
74	69.700						
76	69.639						
78	69.570						
80	69.500						
82	69.429						
84	69.360						

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	575	12.130	575	0.21220		N
	I	580	13.270	580	0.23090		O
	S	585	14.500	585	0.25110		T
	C	590	15.830	590	0.27290		
	I	595	17.270	595	0.29630		P
	B	600	18.830	600	0.32150		E
	L	605	20.510	605	0.34850		R
	E	610	22.320	610	0.37750		T
		615	24.270	615	0.40860		I
		620	26.370	620	0.44190		N
		625	28.630	625	0.47760		E
		630	31.060	630	0.51580		T
		635	33.670	635	0.55660		I
		640	36.480	640	0.60020		N
		645	39.490	645	0.64680		E
		650	42.720	650	0.69660		T
		655	46.180	655	0.74960		
		660	49.890	660	0.80620		
		665	53.850	665	0.86640		