

ETHYLENE GLYCOL DIETHYL ETHER

EEE

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 1,2-Diethoxyethane Diethyl "cellosolve"	Liquid Colorless Mild pleasant odor Floats and mixes slowly with water. Irritating vapor is produced.
<p>Keep people away. Avoid inhalation. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	Combustible. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Water may be ineffective on fire.
Exposure	Call for medical aid. VAPOR Irritating to eyes, nose and throat. Move victim to fresh air. 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. Fouling to shoreline. 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
- Contain
- Collection Systems: Skim
- Chemical and Physical Treatment: Burn; Absorb
- 3.4 TLV-TWA: Not listed.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 Toxicity by Ingestion: Grade 2; oral LD₅₀ = 4,390 mg/kg (rat)
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Currently not available
- 3.10 Vapor (Gas) Irritant Characteristics: Currently not available
- 3.11 Liquid or Solid Characteristics: Currently not available
- 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

2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed.
- 2.2 Formula: C₂H₅OCH₂CH₂OCH₂H₅
- 2.3 IMO/UN Designation: 3.3/1153
- 2.4 DOT ID No.: 1153
- 2.5 CAS Registry No.: 16484-86-9
- 2.6 NAERG Guide No.: 127
- 2.7 Standard Industrial Trade Classification: 51616

3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Protective goggles or face shield; rubber gloves.
- 3.2 Symptoms Following Exposure: Inhalation causes irritation of nose and throat. Contact with liquid irritates eyes but has little or no effect on skin. Ingestion causes irritation of mouth and stomach.
- 3.3 Treatment of Exposure: INHALATION: remove from exposure. EYES: flush with water for at least 15 min. SKIN: wash with copious amounts of water. INGESTION: drink water and get medical attention.

- 3.4 TLV-TWA: Not listed.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 Toxicity by Ingestion: Grade 2; oral LD₅₀ = 4,390 mg/kg (rat)
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- 3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

- 4.1 Flash Point: 90°F O.C.
- 4.2 Flammable Limits in Air: Currently not available
- 4.3 Fire Extinguishing Agents: Dry chemical, alcohol foam, carbon dioxide
- 4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective.
- 4.5 Special Hazards of Combustion Products: Not pertinent
- 4.6 Behavior in Fire: Not pertinent
- 4.7 Auto Ignition Temperature: 406°F
- 4.8 Electrical Hazards: Currently not available
- 4.9 Burning Rate: 4.1 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: Currently not available
- 6.2 Waterfowl Toxicity: Currently not available
- 6.3 Biological Oxygen Demand (BOD): 0.10 lb/lb, 10 days
- 6.4 Food Chain Concentration Potential: None
- 6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 1
Human Oral hazard: 1
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: 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: Flammable liquid
- 8.2 49 CFR Class: 3
- 8.3 49 CFR Package Group: III
- 8.4 Marine Pollutant: No
- 8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	1
Flammability (Red).....	3
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 FWCNA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 Physical State at 15° C and 1 atm: Liquid
- 9.2 Molecular Weight: 118.2
- 9.3 Boiling Point at 1 atm: 252°F = 122°C = 395°K
- 9.4 Freezing Point: -101°F = -74°C = 199°K
- 9.5 Critical Temperature: Not pertinent
- 9.6 Critical Pressure: Not pertinent
- 9.7 Specific Gravity: 0.8484 at 20°C (liquid)
- 9.8 Liquid Surface Tension: (est.) 26 dynes/cm = 0.026 N/m at 20°C
- 9.9 Liquid Water Interfacial Tension: Not pertinent
- 9.10 Vapor (Gas) Specific Gravity: 4.1
- 9.11 Ratio of Specific Heats of Vapor (Gas): 1.0504
- 9.12 Latent Heat of Vaporization: 192 Btu/lb = 107 cal/g = 4.48 X 10⁵ J/kg
- 9.13 Heat of Combustion: (est.) 15,000 Btu/lb = -8,100 cal/g = -340 X 10⁵ 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: 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
34	53.820	52	0.411	85	1.016	51	0.954
36	53.770	54	0.412	90	1.010	52	0.945
38	53.720	56	0.413	95	1.004	53	0.937
40	53.680	58	0.414	100	0.998	54	0.928
42	53.630	60	0.416	105	0.992	55	0.920
44	53.580	62	0.417	110	0.986	56	0.912
46	53.530	64	0.418	115	0.980	57	0.904
48	53.480	66	0.419	120	0.974	58	0.896
50	53.430	68	0.420	125	0.968	59	0.888
52	53.380	70	0.421	130	0.963	60	0.880
54	53.340	72	0.422	135	0.957	61	0.872
56	53.290	74	0.423	140	0.951	62	0.865
58	53.240	76	0.424	145	0.945	63	0.857
60	53.190	78	0.426	150	0.939	64	0.850
62	53.140	80	0.427	155	0.933	65	0.842
64	53.090	82	0.428	160	0.927	66	0.835
66	53.040	84	0.429	165	0.921	67	0.828
68	53.000	86	0.430	170	0.915	68	0.821
70	52.950			175	0.910	69	0.814
72	52.900			180	0.904	70	0.807
74	52.850			185	0.898	71	0.800
76	52.800					72	0.794
78	52.750					73	0.787
80	52.700					74	0.780
82	52.660					75	0.774
84	52.610					76	0.768

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
68	2.700	214	5.961	214	0.09744	0	0.319
		216	6.270	216	0.10220	20	0.328
		218	6.592	218	0.10710	40	0.338
		220	6.929	220	0.11230	60	0.347
		222	7.281	222	0.11760	80	0.356
		224	7.649	224	0.12320	100	0.365
		226	8.033	226	0.12900	120	0.374
		228	8.434	228	0.13510	140	0.383
		230	8.853	230	0.14130	160	0.391
		232	9.289	232	0.14790	180	0.400
		234	9.745	234	0.15470	200	0.409
		236	10.220	236	0.16180	220	0.417
		238	10.710	238	0.16910	240	0.425
		240	11.230	240	0.17670	260	0.433
		242	11.770	242	0.18470	280	0.442
		244	12.330	244	0.19290	300	0.450
		246	12.910	246	0.20150	320	0.458
		248	13.520	248	0.21040	340	0.465
		250	14.150	250	0.21960	360	0.473
		252	14.810	252	0.22920	380	0.481
		254	15.500	254	0.23910	400	0.488
		256	16.210	256	0.24940	420	0.496
						440	0.503