

DIETHYLENE GLYCOL MONOBUTYL ETHER

DME

CAUTIONARY RESPONSE INFORMATION

Common Synonyms	Liquid Butoxydiglycol 2-(2-Butoxyethoxy) ethanol Butyl "carbitol" Diethylene glycol monoethyl ether Diglycol monobutyl ether Dowanol DB Poly-solv DB	Colorless Mixes with water.	Mild pleasant odor
Keep people away. Call fire department. Notify local health and pollution control agencies. Protect water intakes.			
Fire	Combustible. Extinguish with water, dry chemicals, alcohol foam, or carbon dioxide. Cool exposed containers with water.		
Exposure	Call for medical aid. LIQUID Irritating to skin and eyes. 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. 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: C4H9OCH2CH2OCH2CH2OH
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: Not listed
- 2.5 CAS Registry No.: 112-34-5
- 2.6 NAERG Guide No.: Not listed
- 2.7 Standard Industrial Trade Classification: 51616

3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Safety goggles or face shield.
- 3.2 Symptoms Following Exposure: Inhalation for brief periods has no significant effect. Contact with liquid causes moderate irritation of eyes and corneal injury. Prolonged contact with skin causes only minor irritation.
- 3.3 Treatment of Exposure: INHALATION: remove to fresh air; if ill effects are observed, call a doctor. EYES: immediately flush with plenty of water for at least 15 min. SKIN: wash well with soap and water. INGESTION: give large amounts of 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 2; oral LD₅₀ = 2 g/kg (guinea pig)
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Currently not available.
- 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.
- 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 A EGL: Not listed

4. FIRE HAZARDS

- 4.1 Flash Point: 230°F O.C. 172°F C.
- 4.2 Flammable Limits in Air: Not pertinent
- 4.3 Fire Extinguishing Agents: Water, "alcohol" foam, carbon dioxide, dry chemical
- 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
- 4.5 Special Hazards of Combustion Products: Not pertinent
- 4.6 Behavior in Fire: Not pertinent
- 4.7 Auto Ignition Temperature: 442°F
- 4.8 Electrical Hazards: Not pertinent
- 4.9 Burning Rate: 3.3 mm/min.
- 4.10 Adiabatic Flame Temperature: Currently not available
- 4.11 Stoichiometric Air to Fuel Ratio: 52.4 (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: 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): 34% of theoretical in 5 days
- 6.4 Food Chain Concentration Potential: None
- 6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 0
Human Oral hazard: 1
Human Contact hazard: I
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 Grades of Purity: Commercial
- 7.2 Storage Temperature: Ambient
- 7.3 Inert Atmosphere: No requirement
- 7.4 Venting: Open
- 7.5 IMO Pollution Category: D
- 7.6 Ship Type: Data 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).....	2
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: 162.2
- 9.3 Boiling Point at 1 atm: 448°F = 231°C = 504°K
- 9.4 Freezing Point: -90°F = -68°C = 205°K
- 9.5 Critical Temperature: Not pertinent
- 9.6 Critical Pressure: Not pertinent
- 9.7 Specific Gravity: 0.954 at 20°C (liquid).
- 9.8 Liquid Surface Tension: 34 dynes/cm = 0.034 N/m at 25°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: 130 Btu/lb = 74 cal/g = 3.1 X 10⁵ J/kg
- 9.13 Heat of Combustion: (est.) -14,000 Btu/lb = -7,900 cal/g = -330 X 10⁵ J/kg
- 9.14 Heat of Decomposition: Not pertinent
- 9.15 Heat of Solution: (est.) -36 Btu/lb = -20 cal/g = -0.84 X 10⁵ J/kg
- 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

DIETHYLENE GLYCOL MONOBUTYL ETHER

DME

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
35	60.410	35	0.504	85	1.119	35	10.920
40	60.280	40	0.507	90	1.116	40	10.000
45	60.150	45	0.509	95	1.113	45	9.177
50	60.020	50	0.511	100	1.110	50	8.433
55	59.890	55	0.514	105	1.107	55	7.762
60	59.760	60	0.516	110	1.103	60	7.155
65	59.630	65	0.518	115	1.100	65	6.607
70	59.500	70	0.520	120	1.097	70	6.109
75	59.370	75	0.523	125	1.094	75	5.658
80	59.240	80	0.525	130	1.091	80	5.247
85	59.110	85	0.527	135	1.088	85	4.873
90	58.980	90	0.530	140	1.085	90	4.531
95	58.850	95	0.532	145	1.082	95	4.219
100	58.720	100	0.534	150	1.079	100	3.933
		105	0.537	155	1.076	105	3.672
		110	0.539	160	1.073	110	3.432
		115	0.541	165	1.070	115	3.211
		120	0.544	170	1.067	120	3.008
		125	0.546	175	1.064	125	2.821
		130	0.548	180	1.061	130	2.649
		135	0.550	185	1.058	135	2.489
		140	0.553			140	2.342
						145	2.206
						150	2.079
						155	1.962

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	220	0.159	220	0.00354	N	O	T
I	230	0.207	230	0.00453	I	E	R
S	240	0.266	240	0.00575	S	N	E
C	250	0.341	250	0.00726	C	I	N
I	260	0.434	260	0.00910	I	N	E
B	270	0.547	270	0.01134	B	E	T
L	280	0.687	280	0.01404	L	R	T
E	290	0.857	290	0.01727	E	N	T
	300	1.063	300	0.02114		I	N
	310	1.310	310	0.02572		N	E
	320	1.607	320	0.03115		O	N
	330	1.961	330	0.03752		T	E
	340	2.381	340	0.04499		P	R
	350	2.877	350	0.05369		E	T
	360	3.460	360	0.06379		R	N
	370	4.143	370	0.07546		I	E
	380	4.940	380	0.08889		N	N
	390	5.865	390	0.10430		O	N
	400	6.936	400	0.12190		T	E
	410	8.171	410	0.14200		P	R
	420	9.591	420	0.16470		E	T
	430	11.220	430	0.19050		R	N
	440	13.070	440	0.21950		I	E