

DIMETHYL SULFOXIDE

DMS

CAUTIONARY RESPONSE INFORMATION				7. SHIPPING INFORMATION	
Common Synonyms DMSO Methyl sulfoxide	Liquid	Colorless	Mild garlic odor	7.1 Grades of Purity: 99%	
<p>Sinks and mixes with water.</p> <p>Call fire department. Avoid inhalation. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.</p>				7.2 Storage Temperature: Ambient	
<p>Fire</p> <p>Combustible. POISONOUS GASES MAY BE PRODUCED IN FIRE. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Extinguish with water, dry chemical, alcohol foam, or carbon dioxide.</p>				7.3 Inert Atmosphere: No requirement	
<p>Exposure</p> <p>CALL FOR MEDICAL AID.</p> <p>LIQUID Irritating to skin and eyes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water.</p>				7.4 Venting: Open (flame arrester) or pressure-vacuum	
<p>Water Pollution</p> <p>Dangerous to aquatic life in high concentrations. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>				7.5 IMO Pollution Category: Currently not available	
<p>1. CORRECTIVE RESPONSE ACTIONS</p> <p>Dilute and disperse Stop discharge Do not burn</p>				7.6 Ship Type: Currently not available	
<p>2. CHEMICAL DESIGNATIONS</p> <p>2.1 CG Compatibility Group: Not listed. 2.2 Formula: CH₃SOCH₃ 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: Not listed 2.5 CAS Registry No.: 67-68-5 2.6 NAERG Guide No.: Not listed 2.7 Standard Industrial Trade Classification: 51549</p>				7.7 Barge Hull Type: Currently not available	
<p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Butyl rubber gloves, safety goggles. Respiratory filter if airborne sprays or drops are present.</p> <p>3.2 Symptoms Following Exposure: Slight eye irritation.</p> <p>3.3 Treatment of Exposure: Wash eyes and skin with water.</p> <p>3.4 TLV-TWA: Not listed.</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 0; LD₅₀ above 15 g/kg</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Causes damage to eye in dogs, pigs, rats, and rabbits.</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.</p> <p>3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.</p> <p>3.12 Odor Threshold: Currently not available</p> <p>3.13 IDLH Value: Not listed.</p> <p>3.14 OSHA PEL-TWA: Not listed.</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA AEGL: Not listed</p>					
<p>4. FIRE HAZARDS</p> <p>4.1 Flash Point: 203°F O.C. 190°F C.C.</p> <p>4.2 Flammable Limits in Air: 3%-63%</p> <p>4.3 Fire Extinguishing Agents: Water, foam, dry chemical, or carbon dioxide</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent</p> <p>4.5 Special Hazards of Combustion Products: Sulfur dioxide, formaldehyde, and methyl mercaptan can form</p> <p>4.6 Behavior in Fire: Not pertinent</p> <p>4.7 Auto Ignition Temperature: 419°F</p> <p>4.8 Electrical Hazards: Not pertinent</p> <p>4.9 Burning Rate: 2.0 mm/min.</p> <p>4.10 Adiabatic Flame Temperature: Currently not available</p> <p>4.11 Stoichiometric Air to Fuel Ratio: 19.0 (calc.)</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): 6.0 (calc.)</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>					
<p>5. CHEMICAL REACTIVITY</p> <p>5.1 Reactivity with Water: No reaction</p> <p>5.2 Reactivity with Common Materials: No reaction</p> <p>5.3 Stability During Transport: Stable</p> <p>5.4 Neutralizing Agents for Acids and Caustics: Not pertinent</p> <p>5.5 Polymerization: Not pertinent</p> <p>5.6 Inhibitor of Polymerization: Not pertinent</p>					
<p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: 33,500 ppm/48 hr/bluegill/TL₅₀/fresh water</p> <p>6.2 Waterfowl Toxicity: Currently not available</p> <p>6.3 Biological Oxygen Demand (BOD): Currently not available</p> <p>6.4 Food Chain Concentration Potential: None</p> <p>6.5 GESAMP Hazard Profile: Not listed</p>					
<p>7. PHYSICAL & CHEMICAL PROPERTIES</p> <p>9.1 Physical State at 15° C and 1 atm: Liquid</p> <p>9.2 Molecular Weight: 78.13</p> <p>9.3 Boiling Point at 1 atm: 372°F = 189°C = 462°K</p> <p>9.4 Freezing Point: 65.5°F = 18.6°C = 291.8°K</p> <p>9.5 Critical Temperature: Not pertinent</p> <p>9.6 Critical Pressure: Not pertinent</p> <p>9.7 Specific Gravity: 1.101 at 20°C (liquid)</p> <p>9.8 Liquid Surface Tension: Not pertinent</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: Not pertinent</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent</p> <p>9.12 Latent Heat of Vaporization: 259 Btu/lb = 144 cal/g = 6.03 X 10⁵ J/kg</p> <p>9.13 Heat of Combustion: -10,890 Btu/lb = -6050 cal/g = 253.3 X 10⁵ J/kg</p> <p>9.14 Heat of Decomposition: Not pertinent</p> <p>9.15 Heat of Solution: -97 Btu/lb = -54 cal/g = 2.3 X 10⁵ J/kg</p> <p>9.16 Heat of Polymerization: Not pertinent</p> <p>9.17 Heat of Fusion: Currently not available</p> <p>9.18 Limiting Value: Currently not available</p> <p>9.19 Reid Vapor Pressure: Currently not available</p>					
<p>NOTES</p>					

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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
66	68.730	70	0.468		N		N
68	68.660	80	0.471		O		O
70	68.599	90	0.473		T		T
72	68.530	100	0.475				
74	68.459	110	0.477		P		P
76	68.389	120	0.480		E		E
78	68.320	130	0.482		R		R
80	68.250	140	0.484		T		T
82	68.179	150	0.486		I		I
84	68.110	160	0.488		N		N
86	68.040	170	0.491		E		E
88	67.969	180	0.493		N		N
90	67.900	190	0.495		E		E
92	67.830	200	0.497		N		N
94	67.759	210	0.500		E		E
96	67.690	220	0.502		N		N
98	67.620	230	0.504		E		E
100	67.559	240	0.506		N		N
102	67.490	250	0.508		E		E
104	67.419	260	0.511		N		N
		270	0.513		E		E
		280	0.515		N		N
		290	0.517		E		E
		300	0.520		N		N

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		70	0.010	70	0.00013		N
I		80	0.014	80	0.00019		O
S		90	0.020	90	0.00027		T
C		100	0.029	100	0.00037		
I		110	0.040	110	0.00051		
B		120	0.056	120	0.00070		P
L		130	0.076	130	0.00094		E
E		140	0.103	140	0.00124		N
		150	0.137	150	0.00164		O
		160	0.182	160	0.00214		T
		170	0.239	170	0.00276		
		180	0.311	180	0.00354		
		190	0.402	190	0.00451		P
		200	0.516	200	0.00569		E
		210	0.656	210	0.00713		N
		220	0.829	220	0.00888		O
		230	1.041	230	0.01099		T
		240	1.298	240	0.01350		
		250	1.609	250	0.01650		
		260	1.982	260	0.02004		
		270	2.427	270	0.02421		
		280	2.957	280	0.02909		