

DIMETHYL SULFOXIDE

DMS

CAUTIONARY RESPONSE INFORMATION

Common Synonyms DMSO Methyl sulfoxide	Liquid	Colorless	Mild garlic odor
Sinks and mixes with water.			
Call fire department. Avoid inhalation. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.			
Fire	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.		
Exposure	CALL FOR MEDICAL AID. 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.		
Water Pollution	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.		

1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge Do not burn	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: Not listed. 2.2 Formula: CH ₃ SOCH ₃ 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
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Butyl rubber gloves, safety goggles. Respiratory filter if airborne sprays or drops are present. 3.2 Symptoms Following Exposure: Slight eye irritation. 3.3 Treatment of Exposure: Wash eyes and skin with 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; LD ₅₀ above 15 g/kg 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Causes damage to eye in dogs, pigs, rats, and rabbits. 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary. 3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of 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: 203°F O.C. 190°F C.C. 4.2 Flammable Limits in Air: 3%-63% 4.3 Fire Extinguishing Agents: Water, foam, dry chemical, or carbon dioxide 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent 4.5 Special Hazards of Combustion Products: Sulfur dioxide, formaldehyde, and methyl mercaptan can form 4.6 Behavior in Fire: Not pertinent 4.7 Auto Ignition Temperature: 419°F 4.8 Electrical Hazards: Not pertinent 4.9 Burning Rate: 2.0 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 19.0 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 6.0 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7. SHIPPING INFORMATION 7.1 Grades of Purity: 99% 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								
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	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: <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="text-align: right;">Category</td> <td style="text-align: right;">Classification</td> </tr> <tr> <td style="text-align: right;">Health Hazard (Blue).....</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="text-align: right;">Flammability (Red).....</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="text-align: right;">Instability (Yellow).....</td> <td style="text-align: right;">0</td> </tr> </table> 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	Category	Classification	Health Hazard (Blue).....	1	Flammability (Red).....	1	Instability (Yellow).....	0
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Health Hazard (Blue).....	1								
Flammability (Red).....	1								
Instability (Yellow).....	0								
6. WATER POLLUTION 6.1 Aquatic Toxicity: 33,500 ppm/48 hr/bluegill/TL _m /fresh water 6.2 Waterfowl Toxicity: Currently not available 6.3 Biological Oxygen Demand (BOD): Currently not available 6.4 Food Chain Concentration Potential: None 6.5 GESAMP Hazard Profile: Not listed	9. PHYSICAL & CHEMICAL PROPERTIES 9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 78.13 9.3 Boiling Point at 1 atm: 372°F = 189°C = 462°K 9.4 Freezing Point: 65.5°F = 18.6°C = 291.8°K 9.5 Critical Temperature: Not pertinent 9.6 Critical Pressure: Not pertinent 9.7 Specific Gravity: 1.101 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: 259 Btu/lb = 144 cal/g = 6.03 X 10 ⁵ J/kg 9.13 Heat of Combustion: -10,890 Btu/lb = -6050 cal/g = 253.3 X 10 ⁵ J/kg 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: -97 Btu/lb = -54 cal/g = 2.3 X 10 ⁵ 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									

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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		T		T
92	67.830	200	0.497				
94	67.759	210	0.500				
96	67.690	220	0.502				
98	67.620	230	0.504				
100	67.559	240	0.506				
102	67.490	250	0.508				
104	67.419	260	0.511				
		270	0.513				
		280	0.515				
		290	0.517				
		300	0.520				

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		P
	B	120	0.056	120	0.00070		E
	L	130	0.076	130	0.00094		R
	E	140	0.103	140	0.00124		T
		150	0.137	150	0.00164		I
		160	0.182	160	0.00214		N
		170	0.239	170	0.00276		E
		180	0.311	180	0.00354		N
		190	0.402	190	0.00451		T
		200	0.516	200	0.00569		
		210	0.656	210	0.00713		
		220	0.829	220	0.00888		
		230	1.041	230	0.01099		
		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		