

DIMETHYL SULFIDE

DSL

CAUTIONARY RESPONSE INFORMATION

Common Synonyms	Liquid Colorless to light yellow Unpleasant odor
DMS Methanethioimethane Methyl sulfide 2-Thiopropane	Floats and mixes slowly with water. Irritating vapor is produced. Boiling point is 99°F.
<p style="color: red; margin: 0;">Keep people away. Avoid inhalation. Shut off ignition sources. Call fire department. Evacuate area in case of large discharge. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. POISONOUS GASES ARE PRODUCED IN FIRE. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>
Exposure	<p>Call for medical aid.</p> <p>VAPOR Irritating to eyes, nose and throat. Move victim to fresh air.</p> <p>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 and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>
Water Pollution	<p>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.</p>

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Contain
Collection Systems: Skim
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.
2.2 **Formula:** (CH₃)₂S
2.3 **IMO/UN Designation:** 3.1/1164
2.4 **DOT ID No.:** 1164
2.5 **CAS Registry No.:** 75-18-3
2.6 **NAERG Guide No.:** 130
2.7 **Standard Industrial Trade Classification:** 51549

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Respirator with organic vapor canister; rubber or plastic gloves; goggles or face shield.
- 3.2 **Symptoms Following Exposure:** Inhalation causes moderate irritation of upper respiratory system. Contact of liquid with eyes causes moderate irritation. Repeated contact with skin may extract oils and result in irritation. Ingestion causes nausea and irritation of mouth and stomach.
- 3.3 **Treatment of Exposure:** INHALATION: move victim to fresh air at once; enforce rest, and keep warm; get medical attention immediately. EYES: flush with water for at least 15 min.; if irritation persists, get medical attention. SKIN: flush with plenty of water and wash thoroughly; get treatment for any lasting irritation. INGESTION: if large amounts are swallowed, induce vomiting by tickling the back of the throat with the finger or by giving an emetic such as two tablespoons of common salt in a glass of warm water; 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 = 535 mg/kg (rat)
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Currently not available
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are moderately irritating such that personnel will not usually tolerate moderate or high vapor concentrations.
3.11 **Liquid or Solid Characteristics:** Causes smarting of the skin and first-degree burns on short exposure and may cause second-degree burns on long exposure.
3.12 **Odor Threshold:** 0.001 ppm
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:** -36°F C.C.
- 4.2 **Flammable Limits in Air:** 2.2%-19.7%
- 4.3 **Fire Extinguishing Agents:** Dry chemical, foam, alcohol foam, carbon dioxide.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
- 4.5 **Special Hazards of Combustion Products:** Toxic and irritating sulfur dioxide is formed.
- 4.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to source of ignition and flash back.
- 4.7 **Auto Ignition Temperature:** 403°F
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** 4.8 mm/min.
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 21.4 (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

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):** Approximately 1 lb/lb
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:**
Bioaccumulation: T
Damage to living resources: -
Human Oral hazard: 1
Human Contact hazard: I
Reduction of amenities: XX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99.8%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** 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

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
- 8.2 **49 CFR Class:** 3
- 8.3 **49 CFR Package Group:** II
- 8.4 **Marine Pollutant:** Yes
- 8.5 **NFPA Hazard Classification:**
- | | |
|---------------------------|----------------|
| Category | Classification |
| Health Hazard (Blue)..... | 2 |
| Flammability (Red)..... | 4 |
| 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:** 62.1
- 9.3 **Boiling Point at 1 atm:** 99°F = 37°C = 310°K
- 9.4 **Freezing Point:** -144°F = -98°C = 175°K
- 9.5 **Critical Temperature:** 444.2°F = 229°C = 502.2°K
- 9.6 **Critical Pressure:** 826 psia = 56.1 atm = 5.69 MN/m²
- 9.7 **Specific Gravity:** 0.85 at 20°C (liquid)
- 9.8 **Liquid Surface Tension:** 26.5 dynes/cm = 0.0265 N/m at 11°C
- 9.9 **Liquid Water Interfacial Tension:** (est.) 30 dynes/cm = 0.030 N/m at 20°C
- 9.10 **Vapor (Gas) Specific Gravity:** 2.14
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.1277 at 16°C
- 9.12 **Latent Heat of Vaporization:** 194 Btu/lb = 108 cal/g = 4.52 X 10⁵ J/kg
- 9.13 **Heat of Combustion:** -13,200 Btu/lb = -7,340 cal/g = -307 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:** 30.73 cal/g
- 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
35	54.180	35	0.440	35	0.953	0	0.419
40	53.970	40	0.441	40	0.943	5	0.406
45	53.770	45	0.442	45	0.933	10	0.394
50	53.560	50	0.443	50	0.923	15	0.382
55	53.350	55	0.444	55	0.913	20	0.371
60	53.140	60	0.445	60	0.903	25	0.361
65	52.930	65	0.446	65	0.893	30	0.351
70	52.730	70	0.447	70	0.883	35	0.341
75	52.521	75	0.448	75	0.873	40	0.332
80	52.310	80	0.448	80	0.863	45	0.324
85	52.100	85	0.449	85	0.853	50	0.315
90	51.890	90	0.450	90	0.842	55	0.308
95	51.690	95	0.451	95	0.832	60	0.300
						65	0.293
						70	0.286
						75	0.279
						80	0.273
						85	0.267

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
77	2.000	-50	0.261	-50	0.00368	0	0.252
		-40	0.374	-40	0.00516	25	0.258
		-30	0.528	-30	0.00710	50	0.265
		-20	0.733	-20	0.00964	75	0.272
		-10	1.003	-10	0.01290	100	0.278
		0	1.354	0	0.01704	125	0.285
		10	1.805	10	0.02223	150	0.292
		20	2.377	20	0.02867	175	0.299
		30	3.095	30	0.03657	200	0.305
		40	3.988	40	0.04618	225	0.312
		50	5.088	50	0.05776	250	0.319
		60	6.431	60	0.07159	275	0.325
		70	8.057	70	0.08799	300	0.332
		80	10.010	80	0.10730	325	0.339
		90	12.340	90	0.12980	350	0.346
		100	15.090	100	0.15600	375	0.352
		110	18.330	110	0.18620	400	0.359
		120	22.120	120	0.22080	425	0.366
						450	0.372
						475	0.379
						500	0.386
						525	0.393
						550	0.399
						575	0.406
						600	0.413