

PROPANE

PRP

CAUTIONARY RESPONSE INFORMATION			
Common Synonyms Dimethylmethane	Liquefied flammable gas	Colorless	Odorless-may have skunk odor added
Liquid floats and boils on water. Flammable visible vapor cloud is produced.			
Evacuate. Keep people away. Avoid contact with liquid and gas. Avoid inhalation. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies.			
Fire	FLAMMABLE. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Stop flow of gas if possible. Cool exposed containers and protect men effecting shut-off with water. Let fire burn.		
Exposure	CALL FOR MEDICAL AID. VAPOR Not irritating to eyes, nose or throat. If inhaled, will cause dizziness, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID May cause frostbite. Flush affected areas with plenty of water. DO NOT RUB AFFECTED AREAS.		
Water Pollution	Not harmful to aquatic life.		

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Stop discharge Chemical and Physical Treatment: Burn	2.1 CG Compatibility Group: 31; Paraffin 2.2 Formula: CH ₃ CH ₂ CH ₃ 2.3 IMO/UN Designation: 2.0/1978 2.4 DOT ID No.: 1978 2.5 CAS Registry No.: 74-98-6 2.6 NAERG Guide No.: 115 2.7 Standard Industrial Trade Classification: 51114
3. HEALTH HAZARDS	
<p>3.1 Personal Protective Equipment: Self-contained breathing apparatus for high concentrations of gas.</p> <p>3.2 Symptoms Following Exposure: Vaporizing liquid may cause frostbite. Concentrations in air greater than 10% cause dizziness in a few minutes. 1% concentrations give the same effect in 10 min. High concentrations cause asphyxiation.</p> <p>3.3 Treatment of Exposure: Remove to open air. If victim is overcome by gas, apply artificial respiration. Guard against self-injury if confused.</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: Not pertinent</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: None</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapors are nonirritating to the eyes and throat.</p> <p>3.11 Liquid or Solid Characteristics: No appreciable hazard. Practically harmless to the skin because it evaporates quickly.</p> <p>3.12 Odor Threshold: 5,000-20,000 ppm</p> <p>3.13IDLH Value: 2,100 ppm</p> <p>3.14 OSHA PEL-TWA: 1,000 ppm</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>	

4. FIRE HAZARDS	7. SHIPPING INFORMATION
4.1 Flash Point: -156°F C.C. (gas)	7.1 Grades of Purity: Research; instrument, or Pure: 99.35+ % Technical: 97.50 %
4.2 Flammable Limits in Air: 2.1%-9.5%	7.2 Storage Temperature: Ambient
4.3 Fire Extinguishing Agents: Stop flow of gas. For small fires use dry chemicals. Cool adjacent areas with water spray.	7.3 Inert Atmosphere: No requirement
4.4 Fire Extinguishing Agents Not to Be Used: Water	7.4 Venting: Safety relief
4.5 Special Hazards of Combustion Products: Not pertinent	7.5 IMO Pollution Category: Currently not available
4.6 Behavior in Fire: Containers may explode. Vapor is heavier than air and may travel a long distance to a source of ignition and flash back.	7.6 Ship Type: 2
4.7 Auto Ignition Temperature: 842°F	7.7 Barge Hull Type: Currently not available
4.8 Electrical Hazards: Class I, Group D	8. HAZARD CLASSIFICATIONS
4.9 Burning Rate: 8.2 mm/min.	8.1 49 CFR Category: Flammable gas
4.10 Adiabatic Flame Temperature: 2419. (Est.)	8.2 49 CFR Class: 2.1
4.11 Stoichiometric Air to Fuel Ratio: 23.8 (calc.)	8.3 49 CFR Package Group: Not pertinent.
4.12 Flame Temperature: Currently not available	8.4 Marine Pollutant: No
4.13 Combustion Molar Ratio (Reactant to Product): 7.0 (calc.)	8.5 NFPA Hazard Classification:
4.14 Minimum Oxygen Concentration for Combustion (MOCC): N ₂ diluent: 11.4-11.5%; CO ₂ diluent: 14.5%	Category Classification Health Hazard (Blue)..... 1 Flammability (Red)..... 4 Instability (Yellow)..... 0
5. CHEMICAL REACTIVITY	8.6 EPA Reportable Quantity: Not listed.
5.1 Reactivity with Water: No reaction	8.7 EPA Pollution Category: Not listed.
5.2 Reactivity with Common Materials: No reaction	8.8 RCRA Waste Number: Not listed
5.3 Stability During Transport: Stable	8.9 EPA FWPCA List: Not listed
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent	9. PHYSICAL & CHEMICAL PROPERTIES
5.5 Polymerization: Not pertinent	9.1 Physical State at 15° C and 1 atm: Gas
5.6 Inhibitor of Polymerization: Not pertinent	9.2 Molecular Weight: 44.09
6. WATER POLLUTION	9.3 Boiling Point at 1 atm: -43.8°F = -42.1°C = 231.1°K
6.1 Aquatic Toxicity: None	9.4 Freezing Point: -305.9°F = -187.7°C = 85.5°K
6.2 Waterfowl Toxicity: None	9.5 Critical Temperature: 206.0°F = 96.67°C = 369.87°K
6.3 Biological Oxygen Demand (BOD): None	9.6 Critical Pressure: 616.5 psia = 41.94 atm = 4,249 MN/m ²
6.4 Food Chain Concentration Potential: None	9.7 Specific Gravity: 0.590 at -50°C (liquid)
6.5 GESAMP Hazard Profile: Not listed	9.8 Liquid Surface Tension: 16 dynes/cm = 0.016 N/m at -47°C
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
-180	41.480				N	-145	0.433
-175	41.290				T	-140	0.413
-170	41.100				P	-135	0.395
-165	40.910				E	-130	0.378
-160	40.720				R	-125	0.362
-155	40.530				I	-120	0.347
-150	40.340				N	-115	0.333
-145	40.150				E	-110	0.321
-140	39.960				N	-105	0.309
-135	39.770				E	-100	0.297
-130	39.580				N	-95	0.287
-125	39.390				T	-90	0.277
-120	39.190					-85	0.268
-115	39.000					-80	0.259
-110	38.810					-75	0.251
-105	38.620					-70	0.243
-100	38.430					-65	0.236
-95	38.240					-60	0.229
-90	38.050					-55	0.222
-85	37.860					-50	0.216
-80	37.670					-45	0.210
-75	37.480						
-70	37.290						
-65	37.100						
-60	36.910						
-55	36.720						

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
I		-230	0.002	-230	0.00003	0	0.349
N		-220	0.004	-220	0.00007	25	0.365
S		-210	0.009	-210	0.00015	50	0.381
O		-200	0.019	-200	0.00031	75	0.397
L		-190	0.039	-190	0.00060	100	0.413
U		-180	0.074	-180	0.00109	125	0.429
B		-170	0.134	-170	0.00190	150	0.444
L		-160	0.230	-160	0.00315	175	0.459
E		-150	0.380	-150	0.00504	200	0.474
		-140	0.605	-140	0.00777	225	0.489
		-130	0.931	-130	0.01160	250	0.504
		-120	1.393	-120	0.01685	275	0.519
		-110	2.029	-110	0.02384	300	0.533
		-100	2.886	-100	0.03296	325	0.548
		-90	4.017	-90	0.04463	350	0.562
		-80	5.480	-80	0.05929	375	0.576
		-70	7.344	-70	0.07741	400	0.590
		-60	9.680	-60	0.09948	425	0.603
		-50	12.570	-50	0.12600	450	0.617
		-40	16.090	-40	0.15750	475	0.630
		-30	20.340	-30	0.19440	500	0.643
		-20	25.400	-20	0.23730	525	0.657
						550	0.669
						575	0.682
						600	0.695