

PROPYLENE

PPL

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Methylethylene Propene		Liquefied compressed gas Colorless Mild odor
Floats and boils on water. Flammable, visible vapor cloud is produced.		
<p>Keep people away. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Evacuate area in case of large discharge. Avoid contact with liquid. Notify local health and pollution control agencies.</p>		
Fire	<p>FLAMMABLE. Container may explode in fire. Flashback along vapor trail may occur. May explode if ignited in an enclosed area. Stop flow of gas if possible. Cool exposed containers and protect men effecting shutoff with water. Let fire burn.</p>	
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR If inhaled, will cause dizziness or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Will cause frostbite. Flush affected areas with plenty of water. DO NOT RUB AFFECTED AREAS.</p>	
Water Pollution	Not harmful to aquatic life.	

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Chemical and Physical Treatment: Burn

2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: 30; Olefin
- 2.2 Formula: C_3H_6
- 2.3 IMO/UN Designation: 2.0/1077
- 2.4 DOT ID No.: 1077
- 2.5 CAS Registry No.: 115-07-1
- 2.6 NAERG Guide No.: 115
- 2.7 Standard Industrial Trade Classification: 51119

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Organic vapor canister or air-supplied mask; goggles or face shield (for liquid); protective clothing (for liquid).
- 3.2 **Symptoms Following Exposure:** Moderate concentration in air causes dizziness, drowsiness, and unconsciousness. Contact with liquefied propylene will cause "freezing burn."
- 3.3 **Treatment of Exposure:** INHALATION: remove victim from exposure; if breathing is irregular or has stopped, start resuscitation; give oxygen; call a doctor.
- 3.4 **TLV-TWA:** Asphyxiant
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Not pertinent
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** None
- 3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are nonirritating to the eyes and throat.
- 3.11 **Liquid or Solid Characteristics:** No appreciable hazard. Practically harmless to the skin because it evaporates quickly.
- 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:**
-162°F C.C. (gas)
- 4.2 **Flammable Limits in Air:** 2.0%-11%
- 4.3 **Fire Extinguishing Agents:** Stop flow of gas.
- 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:** Containers may explode. Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.
- 4.7 **Auto Ignition Temperature:** 851°F
- 4.8 **Electrical Hazards:** Class I, Group D
- 4.9 **Burning Rate:** 8 mm/min. (liquid)
- 4.10 **Adiabatic Flame Temperature:** 2518. (Est.)
- 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):** N_2 diluent: 11.5%; CO_2 diluent: 14.0%

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:**
None
- 6.2 **Waterfowl Toxicity:** None
- 6.3 **Biological Oxygen Demand (BOD):** None
- 6.4 **Food Chain Concentration Potential:**
None
- 6.5 **GESAMP Hazard Profile:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Chemical: 92+%; polymerization: 99+%; research: 99+%; propylene concentrate: 80+%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Safety relief
- 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 gas
- 8.2 **49 CFR Class:** 2.1
- 8.3 **49 CFR Package Group:** Not pertinent.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	4
Instability (Yellow)	1
- 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:** Gas
- 9.2 **Molecular Weight:** 42.08
- 9.3 **Boiling Point at 1 atm:** -53.9°F = 47.7°C = 225.5°K
- 9.4 **Freezing Point:** -301.4°F = -185.2°C = 88°K
- 9.5 **Critical Temperature:** 197.2°F = 91.8°C = 365°K
- 9.6 **Critical Pressure:** 670 psia = 45.6 atm = 4.62 MN/m²
- 9.7 **Specific Gravity:** 0.609 at -47°C (liquid)
- 9.8 **Liquid Surface Tension:** 16.7 dynes/cm = 0.0167 N/m at -47°C
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** 1.4
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.152
- 9.12 **Latent Heat of Vaporization:** 187 Btu/lb = 104 cal/g = 4.35 X 10⁵ J/kg
- 9.13 **Heat of Combustion:** -19,692 Btu/lb = -10,940 cal/g = -458.04 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:** 17.06 cal/g
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** 227.2 psia

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
-145	41.760	-70	0.553		C	-92	0.184
-140	41.550	-60	0.561		U	-90	0.182
-135	41.350				R	-88	0.180
-130	41.140				R	-86	0.178
-125	40.930				E	-84	0.176
-120	40.720				N	-82	0.174
-115	40.510				T	-80	0.172
-110	40.300				L	-78	0.170
-105	40.100				Y	-76	0.168
-100	39.890					-74	0.166
-95	39.680				N	-72	0.165
-90	39.470				O	-70	0.163
-85	39.260				T	-68	0.161
-80	39.060					-66	0.160
-75	38.850				A	-64	0.158
-70	38.640				V	-62	0.156
-65	38.430				A	-60	0.155
-60	38.220				I	-58	0.153
-55	38.020				L	-56	0.152
					A	-54	0.150
					B		
					L		
					E		

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	-165	0.251	-165	0.00333	0	0.323
	N	-160	0.325	-160	0.00425	25	0.336
	S	-155	0.417	-155	0.00537	50	0.349
	O	-150	0.531	-150	0.00672	75	0.362
	L	-145	0.669	-145	0.00834	100	0.375
	U	-140	0.837	-140	0.01026	125	0.387
	B	-135	1.037	-135	0.01252	150	0.400
	L	-130	1.276	-130	0.01518	175	0.412
	E	-125	1.559	-125	0.01826	200	0.424
		-120	1.892	-120	0.02183	225	0.436
		-115	2.281	-115	0.02594	250	0.448
		-110	2.732	-110	0.03063	275	0.460
		-105	3.254	-105	0.03597	300	0.472
		-100	3.854	-100	0.04200	325	0.484
		-95	4.540	-95	0.04880	350	0.495
		-90	5.322	-90	0.05643	375	0.507
		-85	6.207	-85	0.06494	400	0.518
		-80	7.207	-80	0.07441	425	0.530
		-75	8.331	-75	0.08489	450	0.541
		-70	9.589	-70	0.09646	475	0.552
		-65	10.990	-65	0.10920	500	0.563
		-60	12.550	-60	0.12310	525	0.574
		-55	14.280	-55	0.13830	550	0.585
		-50	16.190	-50	0.15490	575	0.595
		-45	18.290	-45	0.17290	600	0.606
		-40	20.600	-40	0.19240		