

1,1-DICHLOROPROPANE

DPB

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Propane, 1,1-dichloro-Propylidene chloride		Watery liquid	Colorless	Sweet odor
Sinks in water. Flammable, irritating vapor is produced.				
<p>Keep people away. Avoid inhalation. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Avoid contact with liquid and vapor. Notify local health and pollution control agencies. Protect water intakes.</p>				
Fire	<p>FLAMMABLE. POISONOUS GASES ARE PRODUCED 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 foam, dry chemical, or carbon dioxide. Cool exposed containers with water.</p>			
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose and throat. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</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.</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

Stop discharge
Contain
Collection Systems: Pump; Dredge
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** 36; Halogenated hydrocarbon
2.2 **Formula:** C₃H₆Cl₂
2.3 **IMO/UN Designation:** 3.2/1279
2.4 **DOT ID No.:** 1279
2.5 **CAS Registry No.:** 78-99-9
2.6 **NAERG Guide No.:** 130
2.7 **Standard Industrial Trade Classification:** 51138

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Rubber gloves, self-contained breathing apparatus, coveralls or laboratory coat.
3.2 **Symptoms Following Exposure:** INHALATION: May cause some central nervous system depression. EYES: May cause some pain and irritation. SKIN: Mild irritation.
3.3 **Treatment of Exposure:** Call a doctor. INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. EYES: Flush with running water for 15 minutes. SKIN: Wash thoroughly with soap and water. INGESTION: Gastric lavage or emesis and catharsis.
3.4 **TLV-TWA:** Not listed.
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** Not listed.
3.7 **Toxicity by Ingestion:** Grade 1; LD₅₀ = 5 to 15 g/kg.
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Currently not available
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. 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 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:** (est.) 60°F O.C.; 70°F C.C.
4.2 **Flammable Limits in Air:** (est.) 3.4% - 14.5%
4.3 **Fire Extinguishing Agents:** Foam, carbon dioxide, dry chemical.
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
4.5 **Special Hazards of Combustion Products:** Emits fumes of phosgene
4.6 **Behavior in Fire:** Currently not available
4.7 **Auto Ignition Temperature:** (est.) 1035°F
4.8 **Electrical Hazards:** Not pertinent
4.9 **Burning Rate:** Currently not available
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):** 7.0 (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:** (est.) Threshold range 1 to 100 ppm.
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** Currently not available
6.4 **Food Chain Concentration Potential:** Currently not available
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: 0
Damage to living resources: 2
Human Oral hazard: 0
Human Contact hazard: 1
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Pressure-vacuum
7.5 **IMO Pollution Category:** C
7.6 **Ship Type:** 2
7.7 **Barge Hull Type:** 3

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:** No
8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|----------------------|----------------|
| Health Hazard (Blue) | 2 |
| Flammability (Red) | 3 |
| Instability (Yellow) | 0 |
- 8.6 **EPA Reportable Quantity:** 1000 pounds
8.7 **EPA Pollution Category:** C
8.8 **RCRA Waste Number:** Not listed
8.9 **EPA FWPCA List:** Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
9.2 **Molecular Weight:** 112.99
9.3 **Boiling Point at 1 atm:** 190.6°F = 88.1°C = 361.3°K
9.4 **Freezing Point:** Currently not available
9.5 **Critical Temperature:** (est.) 511°F = 266.1°C = 539.25°K
9.6 **Critical Pressure:** (est.) 563 psia = 38.3 atm = 3.88 MN/m²
9.7 **Specific Gravity:** 1.1321 at 20°C
9.8 **Liquid Surface Tension:** (est.) 26.1 dynes/cm = 0.0261 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** (est.) 46.9 dynes/cm = 0.0469 N/m at 20°C
9.10 **Vapor (Gas) Specific Gravity:** 3.90
9.11 **Ratio of Specific Heats of Vapor (Gas):** (est.) 1.094 at 20°C (68°F)
9.12 **Latent Heat of Vaporization:** Currently not available
9.13 **Heat of Combustion:** (est.) -6667 Btu/lb = -3704 cal/g = -155 X 10³ 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:** 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
50	71.337		C		C		C
52	71.261		U		U		U
54	71.183		R		R		R
56	71.108		R		R		R
58	71.030		E		E		E
60	70.955		N		N		N
62	70.877		T		T		T
64	70.801		L		L		L
66	70.724		L		L		L
68	70.648		Y		Y		Y
70	70.572		N		N		N
72	70.495		O		O		O
74	70.419		T		T		T
76	70.342		A		A		A
			V		V		V
			A		A		A
			I		I		I
			L		L		L
			A		A		A
			B		B		B
			L		L		L
			L		L		L
			E		E		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	-40	-1.111	20	0.00543	1350	0.390
	N	-30	-1.702	30	0.00698	1375	0.392
	S	-20	-0.293	40	0.00897	1400	0.393
	O	-10	-0.884	50	0.01154	1425	0.395
	L	0	0.525	60	0.01483	1450	0.397
	U	10	0.065	70	0.01907	1475	0.398
	B	20	0.656	80	0.02451	1500	0.400
	L	30	1.247	90	0.03151	1525	0.401
	E	40	1.838	100	0.04051	1550	0.403
		50	2.428	110	0.05207	1575	0.404
		60	3.019	120	0.06694	1600	0.405
		70	3.610	130	0.08605	1625	0.407
		80	4.201	140	0.11063	1650	0.408
		90	4.791			1675	0.410
		100	5.382			1700	0.411
		110	5.973			1725	0.412
		120	6.564			1750	0.414
		130	7.155			1775	0.415
		140	7.745			1800	0.416
		150	8.336			1825	0.418
		160	8.927			1850	0.419
		170	9.518			1875	0.420
		180	10.108			1900	0.421
		190	10.699			1925	0.423
						1950	0.424
						1975	0.425