

2,3-DICHLOROPROPENE

DPF

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 2-Chloroallyl chloride 2,3-Dichloro-1-propane 2,3-Dichloropropylene		Liquid Colorless to yellow Chloroform
Sinks in water. Flammable, irritating vapor is produced.		
Keep people away. Avoid contact with liquid and vapor. Avoid inhalation. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Shut off ignition sources and call fire department. Notify local health and pollution control agencies. Protect water intakes.		
Fire	FLAMMABLE. POISONOUS GASES ARE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with water, dry chemical, foam or carbon dioxide. Cool exposed containers with water.	
Exposure	CALL FOR MEDICAL AID. VAPOR. Irritating to eyes, nose and throat. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID. Will burn 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.	
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW 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 Stop discharge Collection Systems: Pump; Dredge	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: Not listed. 2.2 Formula: CH ₂ CClCH ₂ Cl 2.3 IMO/UN Designation: 3.2/2047 2.4 DOT ID No.: 2047 2.5 CAS Registry No.: 78-88-6 2.6 NAERG Guide No.: 132 2.7 Standard Industrial Trade Classification: 51138
3. HEALTH HAZARDS 3.1 Personal Protective Equipment: Rubber gloves, self-contained breathing apparatus, protective clothing. 3.2 Symptoms Following Exposure: INHALATION: Vapors are poisonous, painful and irritating. Headache and dizziness may occur. Overexposure may cause liver and kidney damage and even death. EYES: Irritation and lacrimation. May cause transient corneal injury. SKIN: Slight irritation, readily absorbed in toxic amounts causing headache and dizziness and other systematic symptoms. INGESTION: Acute gastrointestinal distress with pulmonary congestion and edema. CNS Depression. 3.3 Treatment of Exposure: INHALATION: Get medical aid. Remove from exposure. Administer oxygen to relieve cyanosis and pulmonary edema. If respiration stops give mouth- to-mouth resuscitation. EYES: Flush with water for 15 min. SKIN: Remove and discard contaminated clothing. Wash contaminated skin with soap and water. INGESTION: Remove gastric aspiration and lavage. Use water as lavage fluid. Demulcents like alumina gels. 3.4 TLV-TWA: Not listed. 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 3; LD ₅₀ = 50 to 500 mg/kg. 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Mutagenic, can injure liver, kidneys and heart. 3.10 Vapor (Gas) Irritant Characteristics: Vapors are moderately irritating such that personnel will not usually tolerate moderate or high concentrations. 3.11 Liquid or Solid Characteristics: Fairly severe skin irritant. May cause pain and second-degree burns after a few minutes contact. 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: 59-62°F C.C.
- 4.2 Flammable Limits in Air: 2.6%-7.8%.
- 4.3 Fire Extinguishing Agents: Small fires: dry chemical or CO₂. Large fires: water fog or spray, or foam.
- 4.4 Fire Extinguishing Agents Not to Be Used: None noted.
- 4.5 Special Hazards of Combustion Products: Highly toxic vapors.
- 4.6 Behavior in Fire: Emits highly toxic vapors.
- 4.7 Auto Ignition Temperature: Currently not available
- 4.8 Electrical Hazards: Currently not available
- 4.9 Burning Rate: Currently not available
- 4.10 Adiabatic Flame Temperature: Currently not available
- 4.11 Stoichiometric Air to Fuel Ratio: 16.7 (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: Reacts with aluminum, amines and ammonia.
- 5.3 Stability During Transport: Stable
- 5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
- 5.5 Polymerization: Will not occur.
- 5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

- 6.1 Aquatic Toxicity: 10-100 ppm/96 hr/finfish/TL₅₀ 40 ppm/fish toxicity/critical concentration
- 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: 3
Human Oral hazard: 2
Human Contact hazard: 1
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 Grades of Purity: 98% minimum.
- 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: No
- 8.5 NFPA Hazard Classification: Not listed
- 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: 110.98
- 9.3 Boiling Point at 1 atm: 196–201°F = 92–94°C = 364.2–366.2°K.
- 9.4 Freezing Point: –115°F = –81.7°C = 191.5°K.
- 9.5 Critical Temperature: (est.) 526.7°F = 274.8°C = 548°K.
- 9.6 Critical Pressure: (est.) 513 psia = 34.9 atm = 3.54 MN/m²
- 9.7 Specific Gravity: 1.211 at 20°C/4°C
- 9.8 Liquid Surface Tension: (Calculated) 29.9 dynes/cm = 0.029 N/m at 20°C
- 9.9 Liquid Water Interfacial Tension: (Calculated) 45.1 dynes/cm = 0.0451 N/m at 20°C.
- 9.10 Vapor (Gas) Specific Gravity: 3.8.
- 9.11 Ratio of Specific Heats of Vapor (Gas): (est.) Approx. 1.116 at 20°C
- 9.12 Latent Heat of Vaporization: 137.1 Btu/lb = 76.1 cal/g = 3.19 X 10⁵ J/kg.
- 9.13 Heat of Combustion: (est.) –6900 Btu/lb = –3900 cal/g = –160 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: 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
68	75.599		C		C		C
69	75.525		U		U		U
70	75.452		R		R		R
71	75.379		R		R		R
72	75.304		E		E		E
73	75.231		N		N		N
74	75.158		T		T		T
75	75.085		L		L		L
76	75.013		L		L		L
77	74.940		Y		Y		Y
			N		N		N
			O		O		O
			T		T		T
			A		A		A
			V		V		V
			A		A		A
			I		I		I
			L		L		L
			A		A		A
			B		B		B
			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	-30	-1.216	40	0.00897		C
	N	-20	-1.767	50	0.00601		U
	S	-10	-0.317	60	0.00305		R
	O	0	-0.868	70	-0.00008		R
	L	10	0.582	80	0.00288		E
	U	20	0.031	90	0.00584		N
	B	30	0.519	100	0.00881		T
	L	40	1.069	110	0.01177		L
	E	50	1.620	120	0.01473		Y
		60	2.170	130	0.01769		
		70	2.721	140	0.02066		N
		80	3.271	150	0.02362		O
		90	3.822	160	0.02658		T
		100	4.372	170	0.02955		
		110	4.922	180	0.03251		A
		120	5.473	190	0.03547		V
		130	6.023	200	0.03844		A
		140	6.574	210	0.04140		I
		150	7.124				L
		160	7.675				A
		170	8.225				B
		180	8.776				L
		190	9.326				A
		200	9.876				B
							L
							E