VINYL CHLORIDE

VCM

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Chlorethylene
VCL
VCM
Vinyl C monomer

Gas | Colorless | Sweet odor

Liquid floats and boils on water. Flammable, irritating visible vapor cloud is produced.

Keep people away.
Evacuate.
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 and vapor.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

FLAMMABLE.
POISONOUS GAS IS PRODUCED IN FIRE.
Flashback along vapor trail may occur.
May explode if ignited in an enclosed area.
Wear self-contained breathing apparatus.
Cool exposed containers and protect men effecting shutoff with water.
Stop flow of gas if possible.
Let fire burn.
Extinguish small fires with dry chemical.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause dizziness or difficult breathing.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will 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

Dilute and disperse
Stop discharge

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 35; Vinyl halides
2.2 Formula: CH_2=CHCl
2.3 IMO/UN Designation: 2.0/1086
2.4 DOT ID No.: 1086
2.5 CAS Registry No.: 75-01-4
2.6 NAERG Guide No.: 116P
2.7 Standard Industrial Trade Classification: 51139

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Rubber gloves and shoes; gas-tight goggles; organic vapor canister or self-contained breathing apparatus.
3.2 Symptoms Following Exposure: INHALATION: high concentrations cause dizziness, anesthesia, lung irritation. SKIN: may cause frostbite; phenol inhibitor may be absorbed through skin if large amounts of liquid evaporate.
3.3 Treatment of Exposure: INHALATION: remove patient to fresh air and keep him quiet and warm; call a doctor; give artificial respiration if breathing stops. EYES AND SKIN: flush with plenty of water for at least 15 min.; for eyes, get medical attention; remove contaminated clothing.
3.4 TLV-TWA: 5 ppm
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: Chronic exposure may cause liver damage.
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. 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. May cause frostbite.
3.12 Odor Threshold: 260 ppm
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: 1 ppm
3.15 OSHA PEL-STEL: 5 ppm average not exceeding any 15 min.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: –110°F O.C.
4.2 Flammable Limits in Air: 3.6 - 33%
4.3 Fire Extinguishing Agents: For small fires use dry chemical or carbon dioxide. For large fires stop flow of gas. Cool exposed containers with water.
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: Forms highly toxic combustion products such as hydrogen chloride, phosgenic, and carbon monoxide.
4.6 Behavior in Fire: Container may explode in fire. Gas is heavier than air and may travel considerable distance to a source of ignition and flash back.
4.7 Auto Ignition Temperature: 882°F
4.8 Electrical Hazards: Class I, Group D
4.9 Burning Rate: 4.3 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 11.9 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 4.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): N_2 diluent: 10.0-13.4%

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: Polymerizes in presence of air, sunlight, or heat unless stabilized by inhibitors.
5.6 Inhibitor of Polymerization: Not normally used except when high temperatures are expected. Then 40-100 ppm of phenol used.

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:
Bioaccumulation: 0
Damage to living resources: MA
Human Oral hazard: MA
Human Contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

7.1 Grades of Purity: Commercial or technical 99+%
7.2 Storage Temperature: Under pressure; ambient At atm. pressure; low
7.3 Inert Atmosphere: No requirement
7.4 Venting: Under pressure; safety relief At atm. pressure; pressure-vacuum
7.5 IMO Pollution Category: Currently not available
7.6 Ship Type: 2
7.7 Barge Hull Type: 2

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).....	2
Flammability (Red).....	4
Instability (Yellow).....	2

8.6 EPA Reportable Quantity: 1 pound
8.7 EPA Pollution Category: X
8.8 RCRA Waste Number: U043/D043
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: 62.50
9.3 Boiling Point at 1 atm: 7.2°F = 13.8°C = 259.4°K
9.4 Freezing Point: –244.8°F = –153.8°C = –119.4°K
9.5 Critical Temperature: 317.1°F = 158.4°C = 431.6°K
9.6 Critical Pressure: 775 psia = 52.7 atm = 5.34 MN/m^2
9.7 Specific Gravity: 0.969 at –13°C (liquid)
9.8 Liquid Surface Tension: 16.0 dynes/cm = 0.0160 N/m at 25°C
9.9 Liquid Water Interfacial Tension: (est.) 30 dynes/cm = 0.03 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: 2.2
9.11 Ratio of Specific Heats of Vapor (Gas): 1.186
9.12 Latent Heat of Vaporization: 160 Btu/lb = 88 cal/g = 3.7 X 10^5 J/kg
9.13 Heat of Combustion: –8136 Btu/lb = –4520 cal/g = –189.1 X 10^5 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: –729 Btu/lb = –405 cal/g = 16.9 X 10^5 J/kg
9.17 Heat of Fusion: 18.14 cal/g
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: 75 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
0	61.000	-30	0.259		NOT PERTINENT	-10	0.287
5	60.710	-20	0.265			-5	0.281
		-10	0.272			0	0.276
		0	0.279			5	0.271

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
68	0.600	-50	3.384	-50	0.04810	0	0.185
		-40	4.501	-40	0.06245	25	0.192
		-30	5.908	-30	0.08005	50	0.198
		-20	7.658	-20	0.10140	75	0.205
		-10	9.814	-10	0.12710	100	0.211
		0	12.440	0	0.15760	125	0.217
		10	15.610	10	0.19360	150	0.224
		20	19.410	20	0.23560	175	0.230
		30	23.920	30	0.28440	200	0.235
		40	29.220	40	0.34050	225	0.241
		50	35.430	50	0.40470	250	0.247
		60	42.630	60	0.47760	275	0.252
		70	50.940	70	0.56000	300	0.257
		80	60.480	80	0.65250	325	0.263
		90	71.349	90	0.75570	350	0.268
		100	83.669	100	0.87050	375	0.273
		110	97.580	110	0.99740	400	0.277
		120	113.200	120	1.13700	425	0.282
						450	0.286
						475	0.291
						500	0.295
						525	0.299
						550	0.303
						575	0.307
						600	0.311