

MONOCHLOROTRIFLUOROMETHANE

MCM

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION
Common Synonyms Chlorotrifluoromethane F-13 Freon 13 Trifluorochloromethane Trifluoromethyl chloride	Gas	Colorless	Odorless	<p>4.1 Flash Point: Not flammable</p> <p>4.2 Flammable Limits in Air: Not pertinent</p> <p>4.3 Fire Extinguishing Agents: Not pertinent</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent</p> <p>4.5 Special Hazards of Combustion Products: Toxic fumes of Cl and F</p> <p>4.6 Behavior in Fire: Currently not available</p> <p>4.7 Auto Ignition Temperature: Not pertinent</p> <p>4.8 Electrical Hazards: Non hazardous</p> <p>4.9 Burning Rate: Not pertinent</p> <p>4.10 Adiabatic Flame Temperature: Not pertinent</p> <p>4.11 Stoichiometric Air to Fuel Ratio: Not pertinent</p> <p>4.12 Flame Temperature: Not pertinent</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7.1 Grades of Purity: 99 + %</p> <p>7.2 Storage Temperature: Below 130°F</p> <p>7.3 Inert Atmosphere: Not pertinent</p> <p>7.4 Venting: Currently not available</p> <p>7.5 IMO Pollution Category: Currently not available</p> <p>7.6 Ship Type: Currently not available</p> <p>7.7 Barge Hull Type: Currently not available</p>
Keep people away. Avoid contact with vapors. Stay upwind; keep out of low areas. Wear self-contained positive pressure breathing apparatus and full protective clothing.				<p>8. HAZARD CLASSIFICATIONS</p> <p>8.1 49 CFR Category: Nonflammable Gas</p> <p>8.2 49 CFR Class: 2.2</p> <p>8.3 49 CFR Package Group: Not pertinent</p> <p>8.4 Marine Pollutant: No</p> <p>8.5 NFPA Hazard Classification: Not listed</p> <p>8.6 EPA Reportable Quantity: Not listed</p> <p>8.7 EPA Pollution Category: Not listed</p> <p>8.8 RCRA Waste Number: Not listed</p> <p>8.9 EPA FWPCA List: Not listed</p>	
<p>Fire Not flammable. Container may explode in heat of fire. Move container from fire area if you can do it without risk. Stay away from ends of tanks. Cool containers that are exposed to flames with water from the side until well after fire is out. Withdraw immediately in case of rising sounds from safety device or any discoloration of tanks due to fire.</p> <p>Exposure CALL FOR MEDICAL AID. VAPORS Vapors may be harmful if inhaled. Vapors may cause dizziness or suffocation. Move victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Contact with liquid may cause frostbite. Remove contaminated clothing and shoes. Flush affected areas with plenty of lukewarm water. DO NOT USE HOT WATER.</p> <p>Water Pollution Not pertinent.</p>				<p>5. CHEMICAL REACTIVITY</p> <p>5.1 Reactivity with Water: No reaction</p> <p>5.2 Reactivity with Common Materials: No reaction</p> <p>5.3 Stability During Transport: Stable</p> <p>5.4 Neutralizing Agents for Acids and Caustics: Not pertinent</p> <p>5.5 Polymerization: Not pertinent</p> <p>5.6 Inhibitor of Polymerization: Not pertinent</p> <p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: Currently not available</p> <p>6.2 Waterfowl Toxicity: Currently not available</p> <p>6.3 Biological Oxygen Demand (BOD): Currently not available</p> <p>6.4 Food Chain Concentration Potential: Currently not available</p> <p>6.5 GESAMP Hazard Profile: Not listed</p>	
<p>1. CORRECTIVE RESPONSE ACTIONS Stop discharge</p> <p>2. CHEMICAL DESIGNATIONS</p> <p>2.1 CG Compatibility Group: Not listed. 2.2 Formula: <chem>CClF3</chem> 2.3 IMO/UN Designation: 2.2/1022 2.4 DOT ID No.: 1022 2.5 CAS Registry No.: 75-72-9 2.6 NAERG Guide No.: 126 2.7 Standard Industrial Trade Classification: 51137</p> <p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Approved respirator, safety goggles, rubber gloves, safety shoes.</p> <p>3.2 Symptoms Following Exposure: Exposure may cause nausea, dizziness, and headache, and rapid suffocation. Contact with skin may cause frostbite.</p> <p>3.3 Treatment of Exposure: INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. SKIN: Wash affected areas with warm water. DO NOT USE HOT WATER.</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: Currently not available</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Currently not available</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapors are non-irritating to eyes and throat.</p> <p>3.11 Liquid or Solid Characteristics: Minimum hazard. Contact may cause frostbite.</p> <p>3.12 Odor Threshold: Currently not available</p> <p>3.13 IDLH Value: Not listed.</p> <p>3.14 OSHA PEL-TWA: Not listed.</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>				<p>9. PHYSICAL & CHEMICAL PROPERTIES</p> <p>9.1 Physical State at 15°C and 1 atm: Gas</p> <p>9.2 Molecular Weight: 104.46</p> <p>9.3 Boiling Point at 1 atm: -114°F = -81°C = 192°K</p> <p>9.4 Freezing Point: -294°F = -181°C = 92°K</p> <p>9.5 Critical Temperature: 83.9°F = 28.85°C = 302.05°K</p> <p>9.6 Critical Pressure: 561.4 psia = 38.2 atm = 3.9 MN/m²</p> <p>9.7 Specific Gravity: 1.298 at -30°C</p> <p>9.8 Liquid Surface Tension: 14 dyne/cm = .014 N/m at -73.3°C</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: 3.60</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available</p> <p>9.12 Latent Heat of Vaporization: 76.1 Btu/lb = 42.3 cal/g = 1.77 x 10⁵ J/kg</p> <p>9.13 Heat of Combustion: Currently not available</p> <p>9.14 Heat of Decomposition: Currently not available</p> <p>9.15 Heat of Solution: Currently not available</p> <p>9.16 Heat of Polymerization: Not pertinent</p> <p>9.17 Heat of Fusion: Currently not available</p> <p>9.18 Limiting Value: Currently not available</p> <p>9.19 Reid Vapor Pressure: 480 psia</p>	
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
	C U R R E N T L Y N O T A V A I L A B L E		C U R R E N T L Y N O T A V A I L A B L E	77	0.240	77	0.016

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
77	0.009	-230 -220 -210 -200 -190 -180 -170 -160 -150 -140 -130	0.053 0.089 0.151 0.255 0.431 0.728 1.230 2.078 3.511 5.932 10.023	-114	0.44000	0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600	0.099 0.101 0.104 0.106 0.108 0.111 0.113 0.116 0.118 0.121 0.123 0.126 0.128 0.130 0.133 0.135 0.138 0.140 0.143 0.145 0.148 0.150 0.153 0.155 0.157