

# CHLOROFORM

CRF

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms Trichloromethane	Watery liquid Sinks in water. Irritating vapor is produced.	Colorless	Sweet odor	<p><b>4.1 Flash Point:</b> Not flammable</p> <p><b>4.2 Flammable Limits in Air:</b> Not flammable</p> <p><b>4.3 Fire Extinguishing Agents:</b> Not pertinent</p> <p><b>4.4 Fire Extinguishing Agents Not to Be Used:</b> Not pertinent</p> <p><b>4.5 Special Hazards of Combustion Products:</b> Poisonous and irritating gases are produced when heated.</p> <p><b>4.6 Behavior in Fire:</b> Decomposes, producing toxic gases</p> <p><b>4.7 Auto Ignition Temperature:</b> Not flammable</p> <p><b>4.8 Electrical Hazards:</b> Not pertinent</p> <p><b>4.9 Burning Rate:</b> Not flammable</p> <p><b>4.10 Adiabatic Flame Temperature:</b> Currently not available</p> <p><b>4.11 Stoichiometric Air to Fuel Ratio:</b> Not pertinent</p> <p><b>4.12 Flame Temperature:</b> Currently not available</p> <p><b>4.13 Combustion Molar Ratio (Reactant to Product):</b> Not pertinent</p> <p><b>4.14 Minimum Oxygen Concentration for Combustion (MOCC):</b> Not listed</p>	<p><b>7.1 Grades of Purity:</b> Technical, USP</p> <p><b>7.2 Storage Temperature:</b> Ambient</p> <p><b>7.3 Inert Atmosphere:</b> No requirement</p> <p><b>7.4 Venting:</b> Open</p> <p><b>7.5 IMO Pollution Category:</b> B</p> <p><b>7.6 Ship Type:</b> 3</p> <p><b>7.7 Barge Hull Type:</b> 3</p>								
<b>Fire</b>	Not flammable. POISONOUS AND IRRITATING GASES ARE PRODUCED WHEN HEATED. Wear goggles and self-contained breathing apparatus.	<p>Keep people away. Avoid inhalation. Avoid contact with liquid and vapor. Stay upwind. Wear goggles and self-contained breathing apparatus. Notify local health and pollution control agencies. Protect water intakes.</p>											
<b>Exposure</b>	CALL FOR MEDICAL AID.  VAPOR Irritating to eyes, nose and throat. If inhaled, will cause headache, nausea, dizziness, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  LIQUID Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing. Flush affected area 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 AND HAVING CONVULSIONS, do nothing except keep victim warm.	<p><b>8. HAZARD CLASSIFICATIONS</b></p> <p><b>8.1 49 CFR Category:</b> Keep Away From Food</p> <p><b>8.2 49 CFR Class:</b> 6.1</p> <p><b>8.3 49 CFR Package Group:</b> III</p> <p><b>8.4 Marine Pollutant:</b> No</p> <p><b>8.5 NFPA Hazard Classification:</b></p> <table> <thead> <tr> <th>Category</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td>2</td> </tr> <tr> <td>Flammability (Red)</td> <td>0</td> </tr> <tr> <td>Instability (Yellow)</td> <td>0</td> </tr> </tbody> </table> <p><b>8.6 EPA Reportable Quantity:</b> 10 pounds</p> <p><b>8.7 EPA Pollution Category:</b> A</p> <p><b>8.8 RCRA Waste Number:</b> U044/D022</p> <p><b>8.9 EPA FWCRA List:</b> Yes</p>				Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	0	Instability (Yellow)	0
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Health Hazard (Blue)	2												
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Instability (Yellow)	0												
<b>Water Pollution</b>	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and pollution control officials. Notify operators of nearby water intakes.	<p><b>9. PHYSICAL &amp; CHEMICAL PROPERTIES</b></p> <p><b>9.1 Physical State at 15° C and 1 atm:</b> Liquid</p> <p><b>9.2 Molecular Weight:</b> 119.39</p> <p><b>9.3 Boiling Point at 1 atm:</b> 142°F = 61.2°C = 334.4°K</p> <p><b>9.4 Freezing Point:</b> -82.3°F = -63.5°C = 209.7°K</p> <p><b>9.5 Critical Temperature:</b> 505.8°F = 263.2°C = 536.4°K</p> <p><b>9.6 Critical Pressure:</b> 790 psia = 54 atm = 5.5 MN/m<sup>2</sup></p> <p><b>9.7 Specific Gravity:</b> 1.49 at 20°C (liquid)</p> <p><b>9.8 Liquid Surface Tension:</b> 27.1 dynes/cm = 0.0271 N/m at 20°C</p> <p><b>9.9 Liquid Water Interfacial Tension:</b> 32.8 dynes/cm = 0.0328 N/m at 20°C</p> <p><b>9.10 Vapor (Gas) Specific Gravity:</b> 4.1</p> <p><b>9.11 Ratio of Specific Heats of Vapor (Gas):</b> 1.146</p> <p><b>9.12 Latent Heat of Vaporization:</b> 106.7 Btu/lb = 59.3 cal/g = 2.483 X 10<sup>7</sup> J/kg</p> <p><b>9.13 Heat of Combustion:</b> Not pertinent</p> <p><b>9.14 Heat of Decomposition:</b> Not pertinent</p> <p><b>9.15 Heat of Solution:</b> Not pertinent</p> <p><b>9.16 Heat of Polymerization:</b> Not pertinent</p> <p><b>9.17 Heat of Fusion:</b> 17.62 cal/g</p> <p><b>9.18 Limiting Value:</b> Currently not available</p> <p><b>9.19 Reid Vapor Pressure:</b> 6.39 psia</p>											
<p><b>1. CORRECTIVE RESPONSE ACTIONS</b></p> <p>Stop discharge Contain Collection Systems: Pump; Dredge Do not burn</p> <p><b>2. CHEMICAL DESIGNATIONS</b></p> <p>2.1 CG Compatibility Group: 36; Halogenated hydrocarbon</p> <p>2.2 Formula: CHCl<sub>3</sub></p> <p>2.3 IMO/UN Designation: 9.0/1888</p> <p>2.4 DOT ID No.: 1888</p> <p>2.5 CAS Registry No.: 67-66-3</p> <p>2.6 NAERG Guide No.: 151</p> <p>2.7 Standard Industrial Trade Classification: 51138</p>				<p><b>5. CHEMICAL REACTIVITY</b></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><b>6. WATER POLLUTION</b></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): None</p> <p>6.4 Food Chain Concentration Potential: None</p> <p>6.5 GESAMP Hazard Profile:</p> <p>Bioaccumulation: 0 Damage to living resources: 2 Human Oral hazard: 2 Human Contact hazard: II Reduction of amenities: XX</p>									
<p><b>3. HEALTH HAZARDS</b></p> <p>3.1 Personal Protective Equipment: Chemical goggles, 50 ppm to 2%; suitable full-face gas mask. Above 2%; suitable self-contained system.</p> <p>3.2 Symptoms Following Exposure: Headache, nausea, dizziness, drunkenness, narcosis.</p> <p>3.3 Treatment of Exposure: INHALATION: if ill effects develop, get victim to fresh air, keep him warm and quiet, and get medical attention. If breathing stops, start artificial respiration. INGESTION: induce vomiting and get medical attention. No known antidote; treat symptoms. EYES: flush with plenty of water for at least 15 minutes and get medical attention. SKIN: wash with soap and water, remove contaminated clothing and free of chemical.</p> <p>3.4 TLV-TWA: 10 ppm</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 2; LD<sub>50</sub> = 0.5 to 5 g/kg</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: None</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.</p> <p>3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.</p> <p>3.12 Odor Threshold: 205-307 ppm</p> <p>3.13 IDLH Value: 500 ppm</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: 50 ppm</p> <p>3.17 EPA AEGL: Not listed</p>				<p><b>7. NOTES</b></p>									

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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	100.799	0	0.216	-70	0.938	0	0.847
-40	100.200	10	0.217	-60	0.920	10	0.791
-30	99.549	20	0.219	-50	0.911	20	0.741
-20	98.910	30	0.221	-40	0.902	30	0.697
-10	98.259	40	0.222	-30	0.893	40	0.656
0	97.610	50	0.224	-20	0.875	50	0.620
10	96.950	60	0.226	0	0.866	60	0.586
20	96.299	70	0.227	10	0.857	70	0.556
30	95.639	80	0.229	20	0.848	80	0.528
40	94.980	90	0.231	30	0.839	90	0.503
50	94.320	100	0.232	40	0.830	100	0.479
60	93.650	110	0.234	50	0.821	110	0.458
70	92.990	120	0.236	60	0.812	120	0.438
80	92.320	130	0.237	70	0.804	130	0.420
90	91.650	140	0.239	80	0.795	140	0.403
100	90.980			90	0.786		
110	90.309			100	0.777		
120	89.629			110	0.768		
130	88.950			120	0.759		
140	88.270			130	0.750		

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	0.800	-30	0.150	-30	0.00387	0	0.123
		-20	0.217	-20	0.00548	25	0.126
		-10	0.309	-10	0.00763	50	0.129
		0	0.433	0	0.01047	75	0.131
		10	0.598	10	0.01417	100	0.134
		20	0.816	20	0.01892	125	0.137
		30	1.099	30	0.02496	150	0.139
		40	1.462	40	0.03255	175	0.142
		50	1.924	50	0.04198	200	0.144
		60	2.505	60	0.05361	225	0.146
		70	3.229	70	0.06781	250	0.148
		80	4.124	80	0.08499	275	0.150
		90	5.220	90	0.10560	300	0.152
		100	6.551	100	0.13020	325	0.154
		110	8.157	110	0.15930	350	0.156
		120	10.080	120	0.19340	375	0.158
						400	0.160
						425	0.161
						450	0.162
						475	0.164
						500	0.165
						525	0.166
						550	0.167
						575	0.168
						600	0.169