

CARBON DISULFIDE

CBB

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Carbon bisulfide	Watery liquid Colorless to yellow Rotten egg to sweet odor
Sinks in water. Flammable, irritating vapor is produced.	
<p>Evacuate. Keep people away. Avoid contact with liquid and vapor. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Extinguish with dry chemical or carbon dioxide. Water and foam may be ineffective on fire. Cool exposed containers with water.</p>
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose and throat. If inhaled, will cause nausea, vomiting, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>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.</p>
Water Pollution	<p>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.</p>

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Collection Systems: Pump
Do not burn

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** 38; Carbon disulfide
2.2 **Formula:** CS₂
2.3 **IMO/UN Designation:** 3.1/1131
2.4 **DOT ID No.:** 1131
2.5 **CAS Registry No.:** 75-15-0
2.6 **NAERG Guide No.:** 131
2.7 **Standard Industrial Trade Classification:** 52242

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Only approved self-contained breathing mask with full face is recommended. If the vapor concentration exceeds 2% by volume or is unknown, supplied-air respiratory equipment of appropriate design with full face masks should be used by all persons entering contaminated area. Masks should be used only for emergency situations and should be located accordingly. Almost any type of industrial clothing is satisfactory. Splashes of small quantity are not harmful to fabrics, and evaporation from clothing is quite rapid. Clothing should, however, be removed and the skin washed with water. Goggles should be used when there is any danger of CS₂ splashes or spray.
- 3.2 **Symptoms Following Exposure:** ACUTE EXPOSURE: mild to moderate irritation of skin, eyes, and mucous membranes from liquid or concentrated vapors; headache, garlicky breath, nausea, vomiting, diarrhea (even after vapor exposures), and occasionally abdominal pain; weak pulse, palpitations; fatigue, weakness in the legs, unsteady gait, vertigo; mania, hallucinations of sight, hearing, taste, and smell in acute, massive vapor exposures; central nervous depression with respiratory paralysis; death may occur during coma
- 3.3 **Treatment of Exposure:** INHALATION: remove victim promptly from contaminated area. Administer oxygen and artificial respiration if needed. SKIN CONTACT: wash affected areas with copious quantities of water. INGESTION: induce vomiting and follow with gastric lavage and saline cathartics.
- 3.4 **TLV-TWA:** 10 ppm (skin)
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** Not listed.
3.7 **Toxicity by Ingestion:** Grade 2; rat LD₅₀ = 0.1 - 0.99 g/kg
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Non-specific liver cell damage in rats; higher incidence of upper respiratory disease in humans.
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:** Causes smarting of the skin and first-degree burns on short exposure and may cause secondary burns on long exposure.
3.12 **Odor Threshold:** 0.21 ppm
3.13 **IDLH Value:** 500 ppm
3.14 **OSHA PEL-TWA:** 20 ppm.
3.15 **OSHA PEL-STEL:** 100 ppm 30 minute peak per 8 hour shift.
3.16 **OSHA PEL-Ceiling:** 30 ppm.
3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** -22°F C.C.
4.2 **Flammable Limits in Air:** 1.3%-50%
4.3 **Fire Extinguishing Agents:** Dry chemical, carbon dioxide, or foam.
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective on fire.
4.5 **Special Hazards of Combustion Products:** Toxic gases are generated; wear self-contained breathing apparatus.
4.6 **Behavior in Fire:** Not pertinent
4.7 **Auto Ignition Temperature:** 212°F
4.8 **Electrical Hazards:** Contact of the liquid or vapor with the surface of a lighted electric light bulb could result in ignition.
4.9 **Burning Rate:** 2.7 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 14.3 (calc.)
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** 3.0 (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:** 35 ppm/48 hr/mosquito fish/TL_w/fresh water
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** Currently not available
6.4 **Food Chain Concentration Potential:** None
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: 0
Damage to living resources: 2
Human Oral hazard: 3
Human Contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Commercial; technical; USP
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** Inerted
7.4 **Venting:** Pressure-vacuum
7.5 **IMO Pollution Category:** B
7.6 **Ship Type:** 2
7.7 **Barge Hull Type:** 2

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
8.2 **49 CFR Class:** 3
8.3 **49 CFR Package Group:** I
8.4 **Marine Pollutant:** Yes
8.5 **NFPA Hazard Classification:**
- | | |
|----------------------|----------------|
| Category | Classification |
| Health Hazard (Blue) | 2 |
| Flammability (Red) | 3 |
| Instability (Yellow) | 0 |
- 8.6 **EPA Reportable Quantity:** 100 pounds
8.7 **EPA Pollution Category:** B
8.8 **RCRA Waste Number:** P022
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:** 76.14
9.3 **Boiling Point at 1 atm:** 115°F = 46.3°C = 319.5°K
9.4 **Freezing Point:** -168.9°F = -111.6°C = 161.6°K
9.5 **Critical Temperature:** 523.4°F = 273°C = 546.2°K
9.6 **Critical Pressure:** 1100 psia = 76 atm = 7.7 MN/m²
9.7 **Specific Gravity:** 1.26 at 20°C (liquid)
9.8 **Liquid Surface Tension:** 32 dynes/cm = .032 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** 48.4 dynes/cm = .0484 N/m at 20°C
9.10 **Vapor (Gas) Specific Gravity:** 2.6
9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.292
9.12 **Latent Heat of Vaporization:** 153 Btu/lb = 85 cal/g = 3.559 X 10⁵ J/kg
9.13 **Heat of Combustion:** -5814 Btu/lb = -3230 cal/g = -135.2 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:** 13.80 cal/g
9.18 **Limiting Value:** Currently not available
9.19 **Reid Vapor Pressure:** 10.3 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
-30	83.719	-110	0.219	-110	1.030	35	0.421
-20	83.240	-100	0.220	-100	1.021	40	0.412
-10	82.750	-90	0.221	-90	1.012	45	0.403
0	82.270	-80	0.223	-80	1.003	50	0.395
10	81.780	-70	0.224	-70	0.994	55	0.387
20	81.299	-60	0.225	-60	0.985	60	0.379
30	80.809	-50	0.226	-50	0.976	65	0.371
40	80.320	-40	0.227	-40	0.967	70	0.364
50	79.841	-30	0.228	-30	0.958	75	0.357
60	79.349	-20	0.229	-20	0.950	80	0.351
70	78.870	-10	0.230	-10	0.941	85	0.344
80	78.379	0	0.231	0	0.932	90	0.338
90	77.900	10	0.233	10	0.923	95	0.332
100	77.410	20	0.234	20	0.914	100	0.326
110	76.929	30	0.235	30	0.905	105	0.321
		40	0.236	40	0.896	110	0.315
		50	0.237	50	0.887		
		60	0.238	60	0.878		
		70	0.239				
		80	0.240				
		90	0.241				
		100	0.243				
		110	0.244				

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	15	1.595	15	0.02383	0	0.110
	N	20	1.821	20	0.02693	20	0.112
	S	25	2.074	25	0.03036	40	0.113
	O	30	2.356	30	0.03413	60	0.115
	L	35	2.670	35	0.03828	80	0.116
	U	40	3.017	40	0.04283	100	0.118
	B	45	3.402	45	0.04781	120	0.119
	L	50	3.826	50	0.05325	140	0.120
	E	55	4.294	55	0.05918	160	0.122
		60	4.808	60	0.06562	180	0.123
		65	5.372	65	0.07263	200	0.124
		70	5.990	70	0.08021	220	0.125
		75	6.665	75	0.08842	240	0.127
		80	7.402	80	0.09728	260	0.128
		85	8.204	85	0.10680	280	0.129
		90	9.076	90	0.11710	300	0.130
		95	10.020	95	0.12820	320	0.131
		100	11.050	100	0.14000	340	0.132
		105	12.160	105	0.15270	360	0.133
		110	13.360	110	0.16630	380	0.134
		115	14.650	115	0.18080	400	0.135
		120	16.040	120	0.19630	420	0.136
		125	17.540	125	0.21280	440	0.136
		130	19.150	130	0.23030		
		135	20.870	135	0.24900		
		140	22.720	140	0.26880		