

# CYCLOPENTANE

CYP

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Pentamethylene		Watery liquid	Colorless	Mild, sweet odor
Floats on water. Flammable, irritating vapor is produced.				
<p>Keep people away. Avoid inhalation. Shut off ignition sources. Call fire department. Evacuate area in case of large discharge. Notify local health and pollution control agencies. Protect water intakes.</p>				
<b>Fire</b>	<p>FLAMMABLE. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemicals, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>			
<b>Exposure</b>	<p>Call for medical aid.</p> <p>VAPOR Irritating to eyes, nose and throat. If inhaled will cause dizziness, nausea, vomiting, difficult breathing, or loss of consciousness. Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Irritating to 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. DO NOT INDUCE VOMITING.</p>			
<b>Water Pollution</b>	<p>Effect of low concentrations on aquatic life is unknown. Fouling to shoreline. 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

Dilute and disperse  
Stop discharge  
Contain  
Collection Systems: Skim  
Chemical and Physical Treatment: Burn  
Clean shore line  
Salvage waterfowl

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.  
2.2 **Formula:** C<sub>5</sub>H<sub>10</sub>  
2.3 **IMO/UN Designation:** 3.1/1146  
2.4 **DOT ID No.:** 1146  
2.5 **CAS Registry No.:** 287-92-3  
2.6 **NAERG Guide No.:** 128  
2.7 **Standard Industrial Trade Classification:** 51129

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Hydrocarbon canister, supplied-air, or hose mask; rubber or plastic gloves; chemical goggles or face shield.
- 3.2 **Symptoms Following Exposure:** Inhalation causes dizziness, nausea, and vomiting; concentrated vapor may cause unconsciousness and collapse. Vapor causes slight smarting of eyes. Contact with liquid causes irritation of eyes and may irritate skin if allowed to remain. Ingestion causes irritation of stomach. Aspiration produces severe lung irritation and rapidly developing pulmonary edema; central nervous system excitement followed by depression.
- 3.3 **Treatment of Exposure:** INHALATION: remove to fresh air; if breathing stops, apply artificial respiration and administer oxygen. EYES: flush with water for at least 15 min.; call a physician. SKIN: flush well with water, then wash with soap and water. INGESTION: do NOT induce vomiting; guard against aspiration into lungs. ASPIRATION: enforced bed rest; give oxygen; get medical attention.
- 3.4 **TLV-TWA:** 600 ppm  
3.5 **TLV-STEL:** Not listed.  
3.6 **TLV-Ceiling:** Not listed.  
3.7 **Toxicity by Ingestion:** Grade 2; LD<sub>50</sub> = 0.5 to 5 g/kg  
3.8 **Toxicity by Inhalation:** Currently not available.  
3.9 **Chronic Toxicity:** None  
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. 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 the skin.  
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:** < 20°F C.C.  
4.2 **Flammable Limits in Air:** (approx.) 1.1%-8.7%  
4.3 **Fire Extinguishing Agents:** Dry chemical, foam, carbon dioxide  
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.  
4.5 **Special Hazards of Combustion Products:** Not pertinent  
4.6 **Behavior in Fire:** Containers may explode.  
4.7 **Auto Ignition Temperature:** 682°F  
4.8 **Electrical Hazards:** Not pertinent  
4.9 **Burning Rate:** 7.9 mm/min.  
4.10 **Adiabatic Flame Temperature:** Currently not available  
4.11 **Stoichiometric Air to Fuel Ratio:** 35.7 (calc.)  
4.12 **Flame Temperature:** Currently not available  
4.13 **Combustion Molar Ratio (Reactant to Product):** 10.0 (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:** Currently not available  
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: 3  
Human Oral hazard: (1)  
Human Contact hazard: 1  
Reduction of amenities: X

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Commercial; 60% (remainder consists of hydrocarbons of similar boiling point); Research: 99+%  
7.2 **Storage Temperature:** Ambient  
7.3 **Inert Atmosphere:** No requirement  
7.4 **Venting:** Pressure-vacuum  
7.5 **IMO Pollution Category:** (C)  
7.6 **Ship Type:** 3  
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:**
- | Category                  | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 1              |
| Flammability (Red).....   | 3              |
| Instability (Yellow)..... | 0              |
- 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:** 70.1  
9.3 **Boiling Point at 1 atm:** 120.7°F = 49.3°C = 322.5°K  
9.4 **Freezing Point:** -137.0°F = -93.9°C = -179.3°K  
9.5 **Critical Temperature:** 461.5°F = 238.6°C = 511.8°K  
9.6 **Critical Pressure:** 654 psia = 44.4 atm = 4.51 MN/m<sup>2</sup>  
9.7 **Specific Gravity:** 0.74 at 20°C (liquid)  
9.8 **Liquid Surface Tension:** 23 dynes/cm = 0.023 N/m at 20°C  
9.9 **Liquid Water Interfacial Tension:** (est.) 28 dynes/cm = 0.028 N/m at 20°C  
9.10 **Vapor (Gas) Specific Gravity:** 2.4  
9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.1217  
9.12 **Latent Heat of Vaporization:** 170 Btu/lb = 94 cal/g = 3.9 X 10<sup>5</sup> J/kg  
9.13 **Heat of Combustion:** -19,900 Btu/lb = -11,110 cal/g = -465 X 10<sup>5</sup> 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:** 2.07 cal/g  
9.18 **Limiting Value:** Currently not available  
9.19 **Reid Vapor Pressure:** Currently not available

### NOTES

# CYCLOPENTANE

CYP

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
35	47.340	35	0.409	64	0.920	35	0.546
40	47.160	40	0.411	66	0.918	40	0.526
45	46.990	45	0.414	68	0.915	45	0.508
50	46.820	50	0.417	70	0.913	50	0.490
55	46.640	55	0.420	72	0.910	55	0.473
60	46.470	60	0.423	74	0.907	60	0.457
65	46.300	65	0.425	76	0.905	65	0.442
70	46.120	70	0.428	78	0.902	70	0.427
75	45.950	75	0.431	80	0.900	75	0.414
80	45.780	80	0.434	82	0.897	80	0.401
85	45.600	85	0.436	84	0.894	85	0.389
90	45.430	90	0.439	86	0.892	90	0.377
95	45.260	95	0.442	88	0.889	95	0.366
100	45.080	100	0.445	90	0.886	100	0.355
		105	0.448	92	0.884	105	0.345
		110	0.450	94	0.881	110	0.335
		115	0.453	96	0.879	115	0.326
		120	0.456	98	0.876	120	0.317
				100	0.873		
				102	0.871		
				104	0.868		
				106	0.866		
				108	0.863		
				110	0.860		
				112	0.858		
				114	0.855		

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	0	0.963	0	0.01368	0	0.218
	N	5	1.108	5	0.01558	20	0.231
	S	10	1.272	10	0.01769	40	0.243
	O	15	1.455	15	0.02002	60	0.256
	L	20	1.660	20	0.02260	80	0.269
	U	25	1.889	25	0.02546	100	0.281
	B	30	2.144	30	0.02859	120	0.294
	L	35	2.427	35	0.03204	140	0.307
	E	40	2.740	40	0.03581	160	0.320
		45	3.087	45	0.03994	180	0.332
		50	3.469	50	0.04445	200	0.345
		55	3.889	55	0.04935	220	0.358
		60	4.351	60	0.05468	240	0.370
		65	4.858	65	0.06046	260	0.383
		70	5.412	70	0.06672	280	0.396
		75	6.017	75	0.07349	300	0.408
		80	6.677	80	0.08079	320	0.421
		85	7.395	85	0.08866	340	0.434
		90	8.174	90	0.09712	360	0.446
		95	9.020	95	0.10620	380	0.459
		100	9.936	100	0.11590	400	0.472
		105	10.930	105	0.12640	420	0.484
		110	11.990	110	0.13750	440	0.497
		115	13.150	115	0.14940	460	0.510
		120	14.390	120	0.16210	480	0.522
		125	15.720	125	0.17560	500	0.535