

# BUTYL CHLORIDE

BYC

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> n-Butyl chloride 1-Chlorobutane NCl-C06155 n-Propylcarbonyl chloride	Liquid  Colorless  Characteristic chlorine odor
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Floats on water.	
<p style="color: red;">Avoid contact with liquid and vapor. Keep people away. Wear self-contained positive pressure breathing apparatus and full protective clothing. Shut off sources of ignition. Call fire department. Notify local health and pollution control agencies.</p>	
<b>Fire</b>	<p><b>FLAMMABLE</b> Poison gas is produced when heated. Containers may explode in fire. Water may be ineffective against fire. Wear self-contained positive pressure breathing apparatus and full protective clothing. Use water spray to cool exposed containers. Extinguish with CO<sub>2</sub>, dry chemical, or foam.</p>
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.</p> <p><b>VAPOR</b> May be harmful if inhaled or absorbed through the skin. Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p><b>LIQUID</b> May be harmful if swallowed or absorbed through the skin. IF IN EYES: Immediately flush with plenty of water for 15 minutes. IF SWALLOWED and victim is CONSCIOUS: have victim drink water or milk and induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS: do nothing except keep victim warm.</p>
<b>Water Pollution</b>	<p>Effect of low concentrations on aquatic life are not known. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>

<p><b>1. CORRECTIVE RESPONSE ACTIONS</b> Stop discharge Contain Collection Systems: Skim Do not burn</p>	<p><b>2. CHEMICAL DESIGNATIONS</b> 2.1 CG Compatibility Group: Not listed. 2.2 Formula: C<sub>4</sub>H<sub>9</sub>Cl 2.3 IMO/UN Designation: 3.2/1127 2.4 DOT ID No.: 1127 2.5 CAS Registry No.: 109-69-3 2.6 NAERG Guide No.: 130 2.7 Standard Industrial Trade Classification: 51136</p>
<p><b>3. HEALTH HAZARDS</b></p> <p>3.1 <b>Personal Protective Equipment:</b> Approved respirator, chemical safety goggles, rubber gloves, other protective clothing.</p> <p>3.2 <b>Symptoms Following Exposure:</b> Mildly irritating to the skin and eyes, liquid may cause rash due to removal of skin oils. Ingestion or skin absorption may cause intestinal upset, cramping, and central nervous system depression.</p> <p>3.3 <b>Treatment of Exposure:</b> Call a physician. EYES: Flush with water for at least 15 minutes. SKIN: Remove contaminated clothing and shoes, flush affected areas with water. Wash with soap and water. INHALATION: Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. INGESTION: If victim is conscious, have victim drink water or milk and have victim induce vomiting. If victim is unconscious or having convulsions, do nothing except keep victim warm.</p> <p>3.4 <b>TLV-TWA:</b> Not listed. 3.5 <b>TLV-STEL:</b> Not listed. 3.6 <b>TLV-Ceiling:</b> Not listed. 3.7 <b>Toxicity by Ingestion:</b> Grade 2; LD<sub>50</sub> = 2.67 g/kg (rat) 3.8 <b>Toxicity by Inhalation:</b> Currently not available. 3.9 <b>Chronic Toxicity:</b> Currently not available 3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary. 3.11 <b>Liquid or Solid Characteristics:</b> Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin. 3.12 <b>Odor Threshold:</b> Currently not available 3.13 <b>IDLH Value:</b> Not listed. 3.14 <b>OSHA PEL-TWA:</b> Not listed. 3.15 <b>OSHA PEL-STEL:</b> Not listed. 3.16 <b>OSHA PEL-Ceiling:</b> Not listed. 3.17 <b>EPA AEGL:</b> Not listed</p>	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** 14°F C.C.  
4.2 **Flammable Limits in Air:** 1.8-10.1%  
4.3 **Fire Extinguishing Agents:** Foam, CO<sub>2</sub>, dry chemical  
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective against fire.  
4.5 **Special Hazards of Combustion Products:** May produce phosgene gas in fire  
4.6 **Behavior in Fire:** Currently not available  
4.7 **Auto Ignition Temperature:** 860°F  
4.8 **Electrical Hazards:** Currently not available  
4.9 **Burning Rate:** Currently not available  
4.10 **Adiabatic Flame Temperature:** Currently not available  
4.11 **Stoichiometric Air to Fuel Ratio:** 28.6 (calc.)  
4.12 **Flame Temperature:** Currently not available  
4.13 **Combustion Molar Ratio (Reactant to Product):** 9.0 (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:** Air, metals, oxidizers, and alkalis.  
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:** Currently not available  
6.5 **GESAMP Hazard Profile:**  
Bioaccumulation: Z  
Damage to living resources: -  
Human Oral hazard: 1  
Human Contact hazard: 1  
Reduction of amenities: X

## 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99.5+%  
7.2 **Storage Temperature:** Currently not available  
7.3 **Inert Atmosphere:** None  
7.4 **Venting:** None  
7.5 **IMO Pollution Category:** Currently not available  
7.6 **Ship Type:** Currently not available  
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)..... | 2              |
| 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:** 92.58  
9.3 **Boiling Point at 1 atm:** 173°F = 78.4°C = 352°K  
9.4 **Freezing Point:** -190°F = -123°C = 150°K  
9.5 **Critical Temperature:** Currently not available  
9.6 **Critical Pressure:** Currently not available  
9.7 **Specific Gravity:** 0.8862 at 20°C  
9.8 **Liquid Surface Tension:** Currently not available  
9.9 **Liquid Water Interfacial Tension:** Currently not available  
9.10 **Vapor (Gas) Specific Gravity:** 3.20  
9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available  
9.12 **Latent Heat of Vaporization:** Currently not available  
9.13 **Heat of Combustion:** Currently not available  
9.14 **Heat of Decomposition:** Currently not available  
9.15 **Heat of Solution:** Currently not available  
9.16 **Heat of Polymerization:** Currently not available  
9.17 **Heat of Fusion:** Currently not available  
9.18 **Limiting Value:** Currently not available  
9.19 **Reid Vapor Pressure:** 3.6 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
68	55.320		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	59	0.469

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
54	0.070	-50	0.040		C	0	0.270
		-40	0.053		U	25	0.279
		-30	0.070		R	50	0.287
		-20	0.093		R	75	0.295
		-10	0.123		E	100	0.303
		0	0.163		N	125	0.311
		10	0.217		T	150	0.319
		20	0.288		L	175	0.327
		30	0.382		Y	200	0.335
		40	0.507			225	0.344
		50	0.673		N	250	0.352
		60	0.893		O	275	0.360
		70	1.185		T	300	0.368
		80	1.572			325	0.376
		90	2.087		A	350	0.384
		100	2.770		V	375	0.392
		110	3.676		A	400	0.400
		120	4.879		I	425	0.408
		130	6.476		L	450	0.417
		140	8.595		A	475	0.425
		150	11.408		B	500	0.433
					L	525	0.441
					E	550	0.449
						575	0.457
						600	0.465