

BUTYRONITRILE

BNI

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Butanenitrile Butyric acid nitrile Cyanopropane Propyl cyanide	Liquid	Colorless	Sharp suffocating odor
<p>AVOID CONTACT WITH LIQUID OR VAPOR. EVACUATE AREA. Shut off all sources of ignition, call fire department. Wear self-contained breathing apparatus and protective clothing. Notify local health and pollution control agencies. Protect water intakes.</p>			
Fire	<p>FLAMMABLE Toxic fumes are released in fire. Flashback may occur along vapor trail. Containers may explode under fire conditions. Extinguish with dry chemical, alcohol foam, CO₂. Wear self-contained breathing apparatus and protective clothing.</p>		
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose, throat and skin. IF INHALED: remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give oxygen.</p> <p>LIQUID Irritating to the skin. 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 induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS: do nothing except keep victim warm.</p>		
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN LOW CONCENTRATIONS May be dangerous if it enters water intakes. Fouling to shoreline. Notify local health and wildlife officials. Notify operators of local water intakes.</p>		

1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge Contain Collection Systems: Skim Do not burn	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: Not listed. 2.2 Formula: C ₃ H ₃ CN 2.3 IMO/UN Designation: 3.2/2411 2.4 DOT ID No.: 2411 2.5 CAS Registry No.: 109-74-0 2.6 NAERG Guide No.: 131 2.7 Standard Industrial Trade Classification: 51484
3. HEALTH HAZARDS	
<p>3.1 Personal Protective Equipment: Goggles, rubber gloves, self-contained respirator, protective clothing.</p> <p>3.2 Symptoms Following Exposure: Dizziness, rapid respirations, headache, drowsiness, drop in blood pressure and pulse, delayed symptoms. May cause cyanosis (blue-grey coloring of skin and lips due to lack of oxygen)</p> <p>3.3 Treatment of Exposure: INHALATION: Remove to fresh air; if breathing is stopped, give form of artificial respiration other than mouth to mouth; if breathing difficult, give oxygen. EYES: Hold eyelids open and flush with water for 15 minutes. INGESTION: If victim is conscious, have victim induce vomiting; if victim is unconscious, do nothing except keep victim warm. SKIN: Wash affected area with plenty of water.</p> <p>3.4 TLV-TWA: Not listed. 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 4; LD₅₀ = 28 mg/kg (mouse) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Currently not available 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations. 3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of 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</p>	

4. FIRE HAZARDS

- 4.1 **Flash Point:** 62°F O.C.
- 4.2 **Flammable Limits in Air:** 1.65% (LFL)
- 4.3 **Fire Extinguishing Agents:** Dry chemical, alcohol foam, CO₂, water.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
- 4.5 **Special Hazards of Combustion Products:** Toxic cyanide fumes
- 4.6 **Behavior in Fire:** Currently not available
- 4.7 **Auto Ignition Temperature:** 910°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:** 32.1 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 8.5 (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:** Currently not available
- 6.5 **GESAMP Hazard Profile:**
 Bioaccumulation: 0
 Damage to living resources: -
 Human Oral hazard: 3
 Human Contact hazard: II
 Reduction of amenities: XXX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99 +%
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 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).....	3
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:** 69.10
- 9.3 **Boiling Point at 1 atm:** 244°F = 118°C = 391°K
- 9.4 **Freezing Point:** -171°F = -113°C = 160°K
- 9.5 **Critical Temperature:** 588.2°F = 309°C = 582.2°K
- 9.6 **Critical Pressure:** 549.8 psia = 37.4 atm = 3.9 MN/m²
- 9.7 **Specific Gravity:** 0.7936 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:** 2.4
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
- 9.12 **Latent Heat of Vaporization:** 206.8 Btu/lb = 114.9 cal/g = 4.8 x 10⁵ J/kg
- 9.13 **Heat of Combustion:** -15,975 Btu/lb = -8,875 cal/g = -372 x 10³ J/kg
- 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:** 0.4 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	49.540		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		C U R R E N T L Y N O T A V A I L A B L E

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
	C U R R E N T L Y N O T A V A I L A B L E	0 20 40 60 80 100 120 140 160 180 200 220	0.037 0.062 0.105 0.176 0.298 0.502 0.847 1.429 2.410 4.065 6.858 11.569		C U R R E N T L Y N O T A V A I L A B L E	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	0.322 0.331 0.341 0.350 0.359 0.368 0.378 0.387 0.396 0.405 0.414 0.424 0.433 0.442 0.451 0.461 0.470 0.479 0.488 0.498 0.507 0.516 0.525 0.534 0.544