

# ZINC CYANIDE

ZCN

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Cyanide of zinc Zinc dicyanide		Solid-powder	Greyish white to white	Odorless
		Sinks in water.		
<p>Keep people away. AVOID CONTACT WITH SOLID.                  Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).                  Notify local health and pollution control agencies.                  Protect water intakes.</p>				
<b>Fire</b>	Not flammable.			
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.                  DUST                  POISONOUS IF INHALED OR IF SKIN IS EXPOSED.                  Move to fresh air.                  If breathing has stopped, give artificial respiration.                  If breathing is difficult, give oxygen.</p> <p>SOLID                  POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.                  Irritating to eyes.                  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>			
<b>Water Pollution</b>	<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: Dredge

### 2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed.
- 2.2 Formula: Zn(CN)<sub>2</sub>
- 2.3 IMO/UN Designation: 6.1/1713
- 2.4 DOT ID No.: 1713
- 2.5 CAS Registry No.: 557-21-1
- 2.6 NAERG Guide No.: 151
- 2.7 Standard Industrial Trade Classification: 52381

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Approved dust respirator, air or oxygen mask in emergencies, chemical safety goggles, dry cotton gloves for handling solids and rubber gloves for solutions, hard hat or brimmed felt hat, rubber or leather safety shoes, long sleeved shirt.
- 3.2 **Symptoms Following Exposure:** EYES: Causes eye burns. SKIN: Irritation. INGESTION OR INHALATION: A bitter, acrid burning taste is sometimes noted followed by a feeling of constriction or numbness in the throat. Salivation and nausea are not unusual, but vomiting is rare. Anxiety, confusion, vertigo, giddiness and often a sensation of stiffness in the lower jaw. Hypernea and dyspnea. Rapid respiration, then slow and irregular. Unconsciousness, convulsions, death from respiratory arrest.
- 3.3 **Treatment of Exposure:** Call a physician. INHALATION: Remove to well-ventilated place. Remove contaminated clothing. Keep patient quiet and warm. Administer by inhalation amyl nitrate for 15 seconds. Repeat about five times at 15-second intervals. Repeat procedure three or four times at 5-minute intervals. If breathing stops apply artificial respiration. When breathing starts use amyl nitrate. EYES: Flush with plenty of water for 15 minutes. SKIN: Remove clothing. Wash with soap and water. INGESTION: Induce vomiting and give 1% sodium thiosulfate solution. Then proceed with treatment as described for inhalation.
- 3.4 TLV-TWA: Not listed.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: 5 mg/m<sup>3</sup> as cyanide.
- 3.7 Toxicity by Ingestion: Grade 4; LD<sub>50</sub> below 50 mg/kg.
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Chronic exposure may cause headache, lack of appetite, weakness and inflammation of the skin with small pimples or blister spots.
- 3.10 Vapor (Gas) Irritant Characteristics: Not pertinent
- 3.11 Liquid or Solid Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause second-degree burns on long exposure.
- 3.12 Odor Threshold: Odorless
- 3.13 IDLH Value: 25 mg/m<sup>3</sup> as cyanide
- 3.14 OSHA PEL-TWA: 5 mg/m<sup>3</sup> as cyanide
- 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: Not flammable
- 4.2 Flammable Limits in Air: Not flammable
- 4.3 Fire Extinguishing Agents: Not pertinent
- 4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
- 4.5 Special Hazards of Combustion Products: Not pertinent
- 4.6 Behavior in Fire: Not pertinent
- 4.7 Auto Ignition Temperature: Not flammable
- 4.8 Electrical Hazards: Currently not available
- 4.9 Burning Rate: Not flammable
- 4.10 Adiabatic Flame Temperature: Currently not available
- 4.11 Stoichiometric Air to Fuel Ratio: Not pertinent.
- 4.12 Flame Temperature: Currently not available
- 4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent.
- 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: Contact with acids or acid salts will liberate highly toxic and flammable hydrogen cyanide gas.
- 5.3 Stability During Transport: Stable
- 5.4 Neutralizing Agents for Acids and Caustics: Hypochlorite solution to destroy the cyanide.
- 5.5 Polymerization: Will not occur.
- 5.6 Inhibitor of Polymerization: Not pertinent

### 6. WATER POLLUTION

- 6.1 Aquatic Toxicity: Toxic to fish in range 0.05 to 10 ppm (as Cn). Toxicity increases with acidity, temperature, low oxygen tensions and Zn content.
- 6.2 Waterfowl Toxicity: Currently not available
- 6.3 Biological Oxygen Demand (BOD): 62.4 mg/l Zn will cause a 50% drop in five day BOD.
- 6.4 Food Chain Concentration Potential: Zn may accumulate slightly.
- 6.5 GESAMP Hazard Profile: Bioaccumulation: 0  
 Damage to living resources: 4  
 Human Oral hazard: 3  
 Human Contact hazard: 1  
 Reduction of amenities: 0

### 7. SHIPPING INFORMATION

- 7.1 Grades of Purity: 55% Zn 40% Cn
- 7.2 Storage Temperature: Ambient
- 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: Poison
- 8.2 49 CFR Class: 6.1
- 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).....	0
Instability (Yellow).....	1
- 8.6 EPA Reportable Quantity: 10 pounds
- 8.7 EPA Pollution Category: A
- 8.8 RCRA Waste Number: P121
- 8.9 EPA FWPCA List: Yes

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 Physical State at 15° C and 1 atm: Solid
- 9.2 Molecular Weight: 117.42
- 9.3 Boiling Point at 1 atm: Not pertinent
- 9.4 Freezing Point: Decomposes at 800°C
- 9.5 Critical Temperature: Currently not available
- 9.6 Critical Pressure: Currently not available
- 9.7 Specific Gravity: 1.85 at room temperature
- 9.8 Liquid Surface Tension: Not pertinent
- 9.9 Liquid Water Interfacial Tension: Not pertinent
- 9.10 Vapor (Gas) Specific Gravity: Not pertinent
- 9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
- 9.12 Latent Heat of Vaporization: Not pertinent
- 9.13 Heat of Combustion: Not pertinent
- 9.14 Heat of Decomposition: Currently not available
- 9.15 Heat of Solution: Not pertinent
- 9.16 Heat of Polymerization: Not pertinent
- 9.17 Heat of Fusion: Currently not available
- 9.18 Limiting Value: Currently not available
- 9.19 Reid Vapor Pressure: Currently not available

### 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
	N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T

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 N S O L U B L E		N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T