

# COPPER NITRATE

CNI

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Cupric nitrate trihydrate Gerhardite	Solid	Blue	Odorless
Sinks and mixes with water.			
Keep people away. Avoid contact with solid and dust. Shut off ignition sources and call fire department. Notify local health and pollution control agencies. Protect water intakes.			
<b>Fire</b>	Not flammable. Will increase the intensity of a fire. Irritating gases may be produced when heated. Floor discharge area with water.		
<b>Exposure</b>	CALL FOR MEDICAL AID. DUST Irritating to eyes, nose and throat. If inhaled will cause coughing or difficult breathing. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  SOLID Will burn eyes. If swallowed will cause nausea, vomiting or loss of consciousness. 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.		
<b>Water Pollution</b>	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.		

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
Stop discharge

### 2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed.
- 2.2 Formula:  $Cu(NO_3)_2 \cdot 3H_2O$
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: Not listed
- 2.5 CAS Registry No.: 3251-23-8
- 2.6 NAERG Guide No.: Not listed.
- 2.7 Standard Industrial Trade Classification: 52359

### 3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Dust mask; goggles or face shield; protective gloves
- 3.2 Symptoms Following Exposure: Inhalation causes irritation of throat and lungs. Ingestion of large amounts causes violent vomiting and purging, intense pain, collapse, coma, convulsions, and paralysis. Solutions irritate eyes; contact with solid causes severe eye surface injury and skin irritation.
- 3.3 Treatment of Exposure: INHALATION: move to fresh air. INGESTION: give large amounts of water; induce vomiting; get medical attention. EYES: flush with water for at least 15 min.; get medical attention if injury was caused by solid. SKIN: flush with water.
- 3.4 TLV-TWA: Notice of intended change: 0.05 mg Cu/m<sup>3</sup> respirable particles
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 Toxicity by Ingestion: Grade 2; LD<sub>50</sub> = 0.5-5 g/kg
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Currently not available
- 3.10 Vapor (Gas) Irritant Characteristics: Currently not available
- 3.11 Liquid or Solid Characteristics: Currently not available
- 3.12 Odor Threshold: Currently not available
- 3.13 IDLH Value: 100 mg Cu/m<sup>3</sup> (dusts, mists, fumes)
- 3.14 OSHA PEL-TWA: 0.1 mg/m<sup>3</sup> as copper
- 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: Toxic and irritating oxides of nitrogen may form in fire.
- 4.6 Behavior in Fire: Can increase intensity of fire if in contact with combustible material.
- 4.7 Auto Ignition Temperature: Not pertinent
- 4.8 Electrical Hazards: Not pertinent
- 4.9 Burning Rate: Not pertinent
- 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: Mixtures with wood, paper, and other combustibles may catch fire.
- 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: 5 ppm/11 hr/rainbow trout/killed/fresh water  
0.22-1.0 ppm/48-240 hr/barnacles & related species/killed/salt water  
1.9 ppm/96 hr/oyster/TL<sub>50</sub>/salt water
- 6.2 Waterfowl Toxicity: Currently not available
- 6.3 Biological Oxygen Demand (BOD): None
- 6.4 Food Chain Concentration Potential: Copper known to be accumulated by shellfish. Can be concentrated by food chain. Hazard to humans unknown.
- 6.5 GESAMP Hazard Profile: Not listed

### 7. SHIPPING INFORMATION

- 7.1 Grades of Purity: Pure, 100%; Technical; Reagent. May also be shipped as anhydrous grade.
- 7.2 Storage Temperature: Ambient
- 7.3 Inert Atmosphere: No requirement
- 7.4 Venting: Open
- 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: Not listed
- 8.2 49 CFR Class: Not pertinent
- 8.3 49 CFR Package Group: Not listed.
- 8.4 Marine Pollutant: No
- 8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	0 1
Flammability (Red).....	0 0
Instability (Yellow).....	0 0
Special (White).....	OX OX

\* First column refers to non-fire situation.

- 8.6 EPA Reportable Quantity: 100 pounds
- 8.7 EPA Pollution Category: B
- 8.8 RCRA Waste Number: Not listed
- 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: 241.60
- 9.3 Boiling Point at 1 atm: Not pertinent (decomposes)
- 9.4 Freezing Point: 238.1°F = 114.5°C = 387.7°K
- 9.5 Critical Temperature: Not pertinent
- 9.6 Critical Pressure: Not pertinent
- 9.7 Specific Gravity: 2.32 at 20°C (solid)
- 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: Not pertinent
- 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

# COPPER NITRATE

CNI

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
34	85.330		N O T		N O T		N O T
36	87.660		P E R T I N E N T		P E R T I N E N T		P E R T I N E N T
38	90.000						
40	92.330						
42	94.660						
44	97.000						
46	99.330						
48	101.700						
50	104.000						
52	106.299						
54	108.700						
56	111.000						
58	113.299						
60	115.700						
62	118.000						
64	120.299						
66	122.700						
68	125.000						
70	127.299						
72	129.699						
74	132.000						
76	134.299						
78	136.699						
80	139.000						
82	141.299						
84	143.699						