

COPPER SULFATE

CSF

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Blue vitriol Copper sulfate pentahydrate Cupric sulfate Sulfate of copper	Solid-granules or crystals Sinks and mixes with water.	White to blue	Odorless
Notify local health and pollution control agencies. Protect water intakes.			
Fire	Not flammable.		
Exposure	CALL FOR MEDICAL AID. SOLID If swallowed, will cause nausea, vomiting or loss of consciousness. 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.		
Water Pollution	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</p> <p>Dilute and disperse Stop discharge Collection Systems: Dredge</p>	<p>2. CHEMICAL DESIGNATIONS</p> <p>2.1 CG Compatibility Group: Not listed. 2.2 Formula: CuSO₄·5H₂O 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 9109 2.5 CAS Registry No.: 7758-98-7 2.6 NAERG Guide No.: 171 2.7 Standard Industrial Trade Classification: 52349</p>
<p>3. HEALTH HAZARDS</p>	
<p>3.1 Personal Protective Equipment: Filtering masks to minimize inhalation of dust.</p> <p>3.2 Symptoms Following Exposure: INGESTION: copper sulfate may induce severe gastroenteric distress (vomiting, gastroenteric pain, and local corrosion and hemorrhages), prostration, anuria, hematuria, anemia, increase in white blood cells, icterus, coma, respiratory difficulties, and circulatory failure.</p> <p>3.3 Treatment of Exposure: INGESTION: induce vomiting and administer gastric lavage; give a saline cathartic, fluid therapy, and transfusions if required; calcium disodium EDTA has been found moderately effective. SKIN AND EYES: wash affected tissues with water.</p> <p>3.4 TLV-TWA: Notice of intended change: 0.05 mg Cu/m³ respirable particles</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 3; LD₅₀ = 50 to 500 mg/kg (rat)</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Causes liver, kidney and testicular damage in rats.</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Not pertinent</p> <p>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.</p> <p>3.12 Odor Threshold: Odorless</p> <p>3.13 IDLH Value: 100 mg Cu/m³ (dust, mist, fume)</p> <p>3.14 OSHA PEL-TWA: 0.1 mg/m³ as copper</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA AEGL: Not listed</p>	

<p>4. FIRE HAZARDS</p> <p>4.1 Flash Point: Not flammable</p> <p>4.2 Flammable Limits in Air: Not flammable</p> <p>4.3 Fire Extinguishing Agents: Not pertinent</p> <p>4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent</p> <p>4.5 Special Hazards of Combustion Products: Not pertinent</p> <p>4.6 Behavior in Fire: Not pertinent</p> <p>4.7 Auto Ignition Temperature: Not flammable</p> <p>4.8 Electrical Hazards: Not pertinent</p> <p>4.9 Burning Rate: Not flammable</p> <p>4.10 Adiabatic Flame Temperature: Currently not available</p> <p>4.11 Stoichiometric Air to Fuel Ratio: Not pertinent</p> <p>4.12 Flame Temperature: Currently not available</p> <p>4.13 Combustion Molar Ratio (Reactant to Product): Not pertinent</p> <p>4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed</p>	<p>7. SHIPPING INFORMATION</p> <p>7.1 Grades of Purity: Currently not available</p> <p>7.2 Storage Temperature: Ambient</p> <p>7.3 Inert Atmosphere: No requirement</p> <p>7.4 Venting: Currently not available</p> <p>7.5 IMO Pollution Category: Currently not available</p> <p>7.6 Ship Type: Currently not available</p> <p>7.7 Barge Hull Type: Currently not available</p>
<p>5. CHEMICAL REACTIVITY</p> <p>5.1 Reactivity with Water: No reaction</p> <p>5.2 Reactivity with Common Materials: No reaction</p> <p>5.3 Stability During Transport: Stable</p> <p>5.4 Neutralizing Agents for Acids and Caustics: Not pertinent</p> <p>5.5 Polymerization: Not pertinent</p> <p>5.6 Inhibitor of Polymerization: Not pertinent</p>	<p>8. HAZARD CLASSIFICATIONS</p> <p>8.1 49 CFR Category: Not listed</p> <p>8.2 49 CFR Class: Not pertinent</p> <p>8.3 49 CFR Package Group: Not listed.</p> <p>8.4 Marine Pollutant: Yes</p> <p>8.5 NFPA Hazard Classification: Not listed</p> <p>8.6 EPA Reportable Quantity: 10 pounds</p> <p>8.7 EPA Pollution Category: A</p> <p>8.8 RCRA Waste Number: Not listed</p> <p>8.9 EPA FWPCA List: Yes</p>
<p>6. WATER POLLUTION</p> <p>6.1 Aquatic Toxicity: 3.8 ppm/24 hr/rainbow trout/TL_m/fresh water 0.14 ppm/48 hr/prawn/LC₅₀/salt water</p> <p>6.2 Waterfowl Toxicity: Currently not available</p> <p>6.3 Biological Oxygen Demand (BOD): None</p> <p>6.4 Food Chain Concentration Potential: None</p> <p>6.5 GESAMP Hazard Profile: Bioaccumulation: + Damage to living resources: 4 Human Oral hazard: 3 Human Contact hazard: 0 Reduction of amenities: 0</p>	<p>9. PHYSICAL & CHEMICAL PROPERTIES</p> <p>9.1 Physical State at 15° C and 1 atm: Solid</p> <p>9.2 Molecular Weight: 249.7</p> <p>9.3 Boiling Point at 1 atm: Not pertinent</p> <p>9.4 Freezing Point: Not pertinent</p> <p>9.5 Critical Temperature: Not pertinent</p> <p>9.6 Critical Pressure: Not pertinent</p> <p>9.7 Specific Gravity: 2.29 at 15°C (solid)</p> <p>9.8 Liquid Surface Tension: Not pertinent</p> <p>9.9 Liquid Water Interfacial Tension: Not pertinent</p> <p>9.10 Vapor (Gas) Specific Gravity: Not pertinent</p> <p>9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent</p> <p>9.12 Latent Heat of Vaporization: Not pertinent</p> <p>9.13 Heat of Combustion: Not pertinent</p> <p>9.14 Heat of Decomposition: Not pertinent</p> <p>9.15 Heat of Solution: Not pertinent</p> <p>9.16 Heat of Polymerization: Not pertinent</p> <p>9.17 Heat of Fusion: Currently not available</p> <p>9.18 Limiting Value: Currently not available</p> <p>9.19 Reid Vapor Pressure: Currently not available</p>
<p>NOTES</p>	

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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
34	14.450		N		N		N
36	14.810		O		O		O
38	15.160		T		T		T
40	15.520		P		P		P
42	15.870		E		E		E
44	16.230		R		R		R
46	16.580		T		T		T
48	16.940		I		I		I
50	17.300		N		N		N
52	17.650		E		E		E
54	18.010		N		N		N
56	18.360		T		T		T
58	18.720		P		P		P
60	19.070		E		E		E
62	19.430		R		R		R
64	19.780		T		T		T
66	20.140						
68	20.500						
70	20.850						
72	21.210						
74	21.560						
76	21.920						
78	22.270						
80	22.630						
82	22.980						
84	23.340						