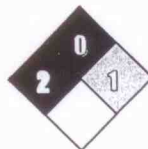


# Material Safety Data Sheet

Substance Identification										
Identity:	Cupric Sulfate Pentahydrate	CAS #:	7758-99-8							
Trade Names:	Copper Sulfate, Copper Sulfate Pentahydrate									
Manufacturer:	Prince Agri Products, Inc. 229 Radio Road Quincy, IL 62305 217-222-8854	HMIS	NFPA							
		<table><tr><td>HEALTH</td><td>2*</td></tr><tr><td>FLAMMABILITY</td><td>0</td></tr><tr><td>PHYSICAL HAZARD</td><td>1</td></tr></table>	HEALTH	2*	FLAMMABILITY	0	PHYSICAL HAZARD	1		
HEALTH	2*									
FLAMMABILITY	0									
PHYSICAL HAZARD	1									
Emergency:	Chemtrec 800-424-9300	*Chronic Hazard								
	4 = Extreme	3 = High	2 = Moderate	1 = Slight						
				0 = Insignificant						
Components and Contaminants										
Chemical Name:	CAS #	OSHA PEL	ACGIH TLV	Percent						
Cupric Sulfate (as Cu)	7758-99-8	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	25% Cu						
Physical Data										
Boiling Point:	D @ 560°C	Specific Gravity (H <sub>2</sub> O=1):	2.284							
Vapor Pressure (mm/Hg):	NA	Melting Point: (decomposes)	-5H <sub>2</sub> O @ 150°C							
Vapor Density (Air=1):	NA	Evaporation Rate (Butyl Acetate=1):	NA							
Solubility in Water:	25.9% (by weight)									
Appearance and Odor:	Blue crystals, no odor.									
Fire and Explosion Hazard Data										
Flash Point:	Not combustible									
Flammable Limits:	LEL NA	UEL NA								
Extinguishing Media:	Any suitable means to extinguish surrounding fire. CO <sub>2</sub> and dry chemical are preferred.									
Special Fire Fighting Procedures:	In the event of fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.									
Unusual Fire and Explosion Hazards:	Not combustible.									
Reactivity Data										
Stability:	Stable under ordinary conditions of use and storage.									
Conditions to Avoid:	Excessive heat, humidity, and exposure to incompatibles									
Incompatibility (materials to avoid):	Alkalies, acetylene gas, aluminum powder, hydroxylamine and magnesium. Contact with magnesium metal can generate dangerous levels of hydrogen gas. Dissolves readily in water. Solutions are corrosive to mild steel.									
Hazardous Decomposition or Byproducts:	Sulfuric acid at temperatures exceeding 510°C. Copper fume at temperatures exceeding 560°C. Sulfur dioxide at temperatures exceeding 590°C.									
Hazardous Polymerization:	Will not occur.									
Health Hazard Data										
Route of Entry:	INHALATION: Can result in irritation of the upper respiratory tract. SKIN: Can cause irritation, redness and pain INGESTION: Toxic. May cause burning pain in the mouth, esophagus, and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste and diarrhea may occur. If vomiting does not occur immediately, systemic copper poisoning may occur. EYES: Can cause severe eye irritation. Contact may cause conjunctivitis, ulceration or clouding of the cornea.									
Health Hazards (Acute and Chronic):	Acute exposure can cause skin, eye and respiratory irritation. Chronic exposure by prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, ulceration and perforations of the nasal septum, runny nose, metallic taste and atrophic changes, and irritation of the mucous membranes. Prolonged or repeated eye contact may cause conjunctivitis.									
Carcinogenicity:	NTP: No	IARC Monographs: No								

	<b>Health Hazard Data (cont.)</b>
<b>Signs and Symptoms of Exposure:</b>	Symptoms caused by inhalation may include coughing, sore throat, and shortness of breath. Symptoms caused by ingestion may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsion, paralysis, and coma. Death may occur from shock or renal failure.
<b>Aggravation of Pre-existing Conditions:</b>	Persons with impaired respiratory function may be more susceptible to the effect of this substance.
<b>Emergency and First Aid Procedures:</b>	<b>IF INHALED</b> , remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician. <b>IN CASE OF SKIN CONTACT</b> , wash affected area thoroughly with soap & water. Remove contaminated clothing and launder before reuse. If irritation should develop, get medical attention. <b>IN CASE OF EYE CONTACT</b> , flush eyes immediately with copious amounts of water for at least 15 minutes with eyelids spread apart. Washing within one minute is essential to achieve maximum effectiveness. Get immediate medical attention after flushing. <b>IF INGESTED</b> , induce vomiting immediately by giving two glasses of water or milk and sticking finger down throat. Never give anything by mouth to an unconscious person. Call a physician, immediately.

#### Precautions for Safe Handling and Use

<b>Material Release or Spill Precautions:</b>	Should a spill occur, ventilate area. Clean-up personnel require respiratory protection. Recover uncontaminated material for use. Vacuum or sweep remaining material, keeping dust to a minimum. Cupric Sulfate has a RQ of 10 lb (4.54 Kg).
<b>Waste Disposal Method:</b>	Should a spill occur, ventilate area. Clean-up personnel require respiratory protection. Recover uncontaminated material for use. Vacuum or sweep remaining material, keeping dust to a minimum. If spilled solution is in a confined area, introduce lime or soda ash to form insoluble copper salts and dispose of by approved method. Place spills into plastic bags and seal with tape. Dispose of in accordance with applicable federal, state and local environmental and regulatory requirements.
<b>Handling and Storing Precautions:</b>	Store copper sulfate in closed containers in a cool, dry, well-ventilated area away from incompatible materials.
<b>Other Precautions:</b>	Observe good personal hygiene. Wash after handling.

#### Control Measures

<b>Respiratory Protection:</b>	Use NIOSH approved particulate respirator if dust generation occurs or is anticipated. OSHA standard 1910.134 or ANSI Z88.2-1980 specifications are recommended.
<b>Ventilation:</b>	A system of local and/or general exhaust is recommended to keep employee exposures below the airborne exposure limits. Local exhaust is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.
<b>Protective Gloves:</b>	Yes, rubber or plastic impervious gloves.
<b>Eye Protection:</b>	Yes, splash goggles and/or face shield.
<b>Other Protective Clothing or Equipment:</b>	Use other protective equipment when necessary in order to avoid prolonged exposure to skin.
<b>Work and Hygienic Practices:</b>	Observe good personal hygiene. Wash after handling.

#### SARA Title III Section 313 Supplier Notification

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372.45:

Component	CAS #	% by Weight
Copper Compound	7758-99-8	64% CuSO <sub>4</sub>

This information must be included in all MSDS's that are copied and distributed for this material.

#### Transportation Information

<b>DOT Shipping Name:</b>	RQ, Environmentally Hazardous Substance, Solid, n.o.s., (Cupric Sulfate)
<b>DOT Hazard Class:</b>	9
<b>Identification Number:</b>	UN 3077
<b>Additional Marking:</b>	"Marine Pollutant" required for bulk shipments, or shipment by vessel.
	During an emergency involving this material, DOT Emergency Response Guide No. 171 is recommended.