

MATERIAL SAFETY DATA SHEET

Melpat Copper Sulphate



1. CHEMICAL PRODUCT

PRODUCT IDENTIFICATION

Product Name : COPPER SULPHATE PENTAHYDRATE
Chemical family : Inorganic Salt
Structural Formula : $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
CAS N° : 7758-99-8

2. COMPOSITION/ INFORMATION ON INGREDIENTS

<u>Component Name</u>	<u>%by Wt.</u>	<u>CAS#</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>
Copper	25	7440-50-8	1 rmg/m ³ *	1 mg/m ³ *

* As copper dusts or mists.

Components not precisely identified are proprietary or not hazardous.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Copper dust is eye, skin, and mucous membrane irritant. Copper Sulphate is toxic. Poisoning may affect the liver and/or kidneys and gastrointestinal tract. Persons with a history of chronic respiratory or skin disease may be at increased risk from exposure. See below for route-specific details.

POTENTIAL HEALTH EFFECTS

Inhalation: Slightly toxic by inhalation. Acute exposure inhalation of dusts and mist of copper salts may cause irritation of upper respiratory tract. Workers exposed to copper salts in dust form complained of metallic taste with irritation of nasal and oral mucous.

Eye Contact: May cause mild irritation to the eyes. Acute exposure copper salts splashed in the eyes may cause conjunctivitis, corneal ulceration and turbidity.

Skin Contact: Slight skin irritant. Excessive exposure, especially if prolonged, may produce skin irritation. Repeated exposure may cause allergic contact dermatitis.

Ingestion: Copper sulfate is only moderately toxic upon acute oral exposure. Ingestion of copper sulfate is often not toxic because vomiting is automatically triggered by its irritating effect on the gastrointestinal tract. Some of the signs of poisoning of copper sulfate was swallowed include a metallic taste in the mouth, burning pain in the chest and abdomen, intense nausea, vomiting, diarrhea, headache, sweating, shock, discontinued urination leading to yellowing of the skin. Symptoms of over-exposure may include nausea and vomiting, abdominal pain, and central nervous system depression, which, if severe enough, may lead to death.

4. FIRST AID MEASURES

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration preferably mouth-to-mouth. Get medical attention immediately.

Eye Contact: Hold eyelids open and flush with water, until no evidence of chemical remains (at least 15 - 20 minutes). Get medical attention.

Skin Contact: Remove contaminated clothing and shoes. Wash with plenty of soap and water until no evidence of chemical remains (approximately 15 - 20 minutes). Get medical attention.

Ingestion: Drink promptly a large quantity of milk, egg white, gelatin solution or if these are not available, large quantities of water. Unless extensive vomiting has occurred, empty the stomach by gastric lavage. Administration of gastric lavage should be performed by qualified medical personnel. Probable mucosal damage may contraindicate use of gastric lavage.

5. FIRE FIGHTING MEASURES

Flash Point & Method:	Not applicable.
Flammable Limits:	No data.
Autoignition Temperature:	No data.



NFPA RATING

HEALTH	2	
FLAMMABILITY	0	
REACTIVITY	0	
PROTECTIVE EQUIPMENT		

HMIS RATING

FIRE FIGHTING HAZARDS & PROCEDURES

- General Hazard: Negligible fire and explosion hazard when exposed to heat or flame.
- Extinguishing Media: Use dry chemical, carbon dioxide, water spray, or foam.
- Fire Fighting Equipment: Wear protective clothing and self-contained breathing apparatus.
- Hazardous Combustion: Thermal decomposition products include highly toxic
- Products: oxides of sulfur.

6. ACCIDENTAL RELEASE MEASURES

- Solid Spill: Dig holding area such as lagoon, pond or pit for containment. Use protective cover such as a plastic sheet to prevent material from dissolving fire extinguisher water or rain.
- Water Spill: Add suitable agent neutralize spilled material. Use dredges or lifts to extract immobilized masses of pollution and precipitates.

7. HANDLING AND STORAGE

- General Information: Average shelf life under proper storage conditions is at least two(2) years.
- Handling : Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.
- Storage: Store in a clean, dry, well-ventilated area. Do not store near feed, food or within the reach of children.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

PESTICIDE APPLICATORS & WORKERS

These workers must refer to the Product Label and Directions For Use in accordance with the Worker Protection Standard 40 CFR part 170.

MANUFACTURING, COMMERCIAL BLENDING, & PACKAGING WORKERS

Ventilation:	Control enclosed spaces with adequate ventilation to prevent exceedance of ACGIH TLV (1mg/m ³).
Respiratory Protection:	In enclosed spaces where the TLV may be exceeded, wear NIOSH/MSHA approved dust or mist respirator.
Eye Protection:	Employee must wear splashproof of dust resistant safety goggles to prevent eyes contact with this substance.
Protective Clothing:	Employees must wear appropriate protective (impervious) clothing, gloves and equipment to prevent repetead or prolonged skin contact with this substan

9. PHYSICAL AND CHEMICAL PROPERTIES

Molecular Weight :	249.5
Vapor Pressure:	No data.
Specific Gravity(H ₂ O = 1):	2.3
Solubility in Water:	Soluble.
pH:	4,0 +/- 0,5 (water suspension 5%)
Boiling Point:	250 °C (water suspension)
Melting Point:	200 °C (water suspension)
Viscosity:	No data
Odor:	None
Color:	Blue
Physical State:	Crystals or powder

10. STABILITY AND REACTIVITY

General:	This material is stable under normal conditions.
Incompatible Materials:	No data
Conditions to Avoid:	Excessive heat.
Hazardous Decomposition:	Thermal decomposition products include highly toxic oxides of sulfur.
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Copper is one of 26 essential trace elements occurring naturally in plant and animal tissue. The usual routes by which humans receive toxic exposure to copper sulfate are through skin or eye contact, as well as by inhalation of powders and dusts. Copper sulfate is a strong irritant.

Copper sulfate is only moderately toxic upon acute oral exposure. The lowest dose of copper sulfate that has been toxic when ingested by humans is 11 mg/kg. Ingestion of copper sulfate is often not toxic because vomiting is automatically triggered by its irritating effect on the gastrointestinal tract. Symptoms are severe, however, if copper sulfate is retained in the stomach, as in the unconscious victim.

Some of the signs of poisoning which occurred after 1-12 grams of copper sulfate was swallowed include a metallic taste in the mouth, burning pain in the chest and abdomen, intense nausea, vomiting, diarrhea, headache, sweating, shock, discontinued urination leading to yellowing of the skin. Injury to the brain, liver, kidneys and stomach and intestinal linings may also occur in copper sulfate poisoning.

The LD50 for copper sulfate is 30 mg/kg in rats. Ingestion by animals of three ounces of a 1% solution of copper sulfate will produce extreme inflammation of the gastrointestinal tract, with symptoms of abdominal pain, vomiting, and diarrhea. When copper sulfate is given

intravenously, or injected into the vein, as little as 2 mg/kg copper sulfate is lethal to guinea pigs; and 4 mg/kg is lethal to rabbits.

Chronic Effects

Vineyard sprayers experienced liver disease after 3 to 15 years of exposure to copper sulfate solution in Bordeaux mixture. Long-term effects are more likely in individuals with Wilson's disease, a condition which causes excessive absorption and storage of copper. Chronic exposure to low levels of copper can lead to anemia. The biological or chemical manner by which excessive doses of copper sulfate work is not well understood.

The growth of rats was retarded when 25 mg/kg of copper sulfate was included in their diets. 200mg/kg caused starvation and death. This material caused a significant increase in the death rates in mice that were exposed to an air level equivalent to human inhalation exposures. The EPA limit for copper sulfate in drinking water is 1 ppm. This limit has been set to prevent a disagreeable taste from copper in drinking water, as well as to provide adequate protection from toxicity.

12. ECOLOGICAL INFORMATION

Chemical Fate: The degree of mobility of copper in the environment depends upon the pH of ambient soils and waters. The higher the acidity, the more soluble copper salts are and, hence, the more mobile. Partitioning of copper into air is negligible due to the low vapor pressure of copper salts.

13. DISPOSAL CONSIDERATIONS

Comply with appropriate disposal regulations. Landfill solids at permitted sites. Use registered transporters.

14. TRANSPORT INFORMATION

Proper Shipping Name DOT: Environmentally Hazardous Substance, Solid, N.O.S., (CUPRIC SULFATE), 9, UN3077, PGIII, Marine Pollutant.*

Hazard Class: 9

UN No : 3077

Packing Group : III

LABELS :



Reportable Quantity (RQ) = 10 pounds (4.54 kg).

*Applicable when product is shipped in packaging of 10 pounds or greater.

Copper sulfate is classified for shipping purposes as a hazardous substance or hazardous waste. It may pose unreasonable risk to health, safety, or property, when transported. Copper sulfate is highly corrosive to plain steel, iron and galvanized pipes. All metal in contact with solutions of this material should be 304 stainless steel, monel or plastic. It should not be stored in metal containers. Copper sulfate is also incompatible with acetylene gas and with magnesium metal. Containers of this material should be kept tightly sealed. It is indefinitely stable when kept dry and is stable to heat, cold, or light. However, there is slight decomposition of copper sulfate at temperatures above 200 degrees C. Above 400 °C, it decomposes, giving off sulfur dioxide gas. Burning copper sulfate may produce irritating or poisonous gases, and pollution may be caused by runoff from fire control or dilution water.

15. REGULATORY INFORMATION

Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with federal, State, local and country laws.

16. OTHER INFORMATION

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