



MATERIAL SAFETY DATA SHEET

Revision Date: 1/31/05RE

Section 1 – Chemical Product and Company Information

MSDS Name: **Copper (II) Sulfate, Anhydrous**, MCM Part #16906 (12oz. Bottle) #17003 (40oz Bottle)
 Synonyms: Copper monosulfate; cupric sulfate; cupric sulfate anhydrous; Sulfuric acid, copper (2+) salt (1:1)
 Company Identification: M. C. Miller Co., Inc.
 3020 Aviation Boulevard
 Vero Beach, FL 32960
 Telephone: 772-794-9448
 Fax: 772-794-9908
 E-mail: sales@mcmliller.com

Copper sulfate crystals

Emergency Numbers: M. C. Miller Co. 772-794-9448
 Chemtrec – 800-424-9300 (US)

Chemtrec – 703-527-3887 (International)

Section 2 – Composition, Information on Ingredients

CAS#	Chemical Name	%	EINECS/ELINCS
7758-98-7	Copper (II) Sulfate	Ca. 100	231-874-6

Hazard Symbols: XN Risk Phrases: 22 36/38

Section 3 – Hazards Identification

Emergency Overview

- ? **Appearance:** Light Gray
- ? **Caution!** Hygroscopic. Air Sensitive. Mutagen. This substance has caused reproductive and fetal effects in animals. Harmful if swallowed. Causes eye and skin irritation and possible burns. Causes digestive and respiratory tract irritation with possible burns.
- ? **Target Organs:** Blood, Kidneys, Liver

Potential Health Effects

- ? **Eye:** Exposure to particulates or solution may cause conjunctivitis, ulceration, and corneal abnormalities. Causes eye irritation and possible burns.
- ? **Skin:** Causes skin irritation and possible burns. May cause itching eczema.
- ? **Ingestion:** Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting, and diarrhea. May cause severe gastrointestinal tract irritation with nausea, vomiting, and possible burns. Ingestion of large amounts of copper salts may cause bloody stools and vomit, low blood pressure, jaundice and coma. Ingestion of copper compounds may produce systemic toxic effects to the kidney, liver and central nervous excitation followed by depression.
- ? **Inhalation:** May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities. Causes respiratory tract irritation with possible burns.
- ? **Chronic:** May cause liver and kidney damage. May cause anemia and other blood cell abnormalities. May cause reproductive and fetal effects. Individuals with Wilson's disease are unable to metabolize copper. Thus, copper accumulates in various tissues and may result in liver, kidney, and brain damage. Laboratory experiments have resulted in mutagenic effects. Chronic copper poisoning in man is recognized in the form of Wilson's disease.

Section 4 – First Aid Measures

- ? **Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- ? **Skin:** Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
- ? **Ingestion:** Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
- ? **Inhalation:** Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. DO NOT use mouth-to-mouth respiration. If breathing has ceased, apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

- ? **Notes to Physician:** Individuals with Wilson's disease are more susceptible to chronic copper poisoning.
- ? **Antidote:** Qualified medical personnel should determine the use of d-Penicillamine as a chelating agent.

Section 5 – Fire Fighting Measures

- ? **General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is non-combustible. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.
- ? **Extinguishing Media:** Use extinguishing media most appropriate for the surrounding fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Section 6 – Accidental Release Measures

- ? **General Information:** Use proper personal protective equipment as indicated in Section 8.
- ? **Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Place under an inert atmosphere.

Section 7 – Handling and Storage

- ? **Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Do not ingest or inhale. Handle under an inert atmosphere. Store protected from air.
- ? **Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not expose to air. Store protected from moisture. Store under an inert atmosphere.

Section 8 – Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits			
Chemical Name	ACGIH	NIOSH	OSHA – Final PELs
Copper (II) Sulfate	None Listed	None Listed	None Listed

OSHA Vacated PELs

- ? Copper (II) Sulfate: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

- ? **Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- ? **Skin:** Wear appropriate protective gloves to prevent skin exposure.
- ? **Clothing:** Wear appropriate protective clothing to prevent skin exposure.
- ? **Respirators:** A respiratory protection program that meets OSHA's 29 CFR §1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 – Physical and Chemical Properties

Physical State: Powder
Appearance: Light Gray
Vapor Pressure: 7.3 mm Hg @ 25°C
Evaporation Rate: Negligible
Boiling Point: Not Available

Odor: Odorless
pH: Not Available
Vapor Density: Not Applicable
Viscosity: Not Available
Freezing/Melting Point: 200°C

Auto Ignition: _____ **Flash Point:** Not Applicable

Temperature:	Not Applicable	Decomposition	
NFPA Rating:	(estimated) Health: 2; Flammability: 0; Reactivity: 0	Explosion Limits, Lower/Upper	Not Available
Temperature:	650°C	Molecular Weight:	159.61
Specific Gravity/Density:	Not Available	Molecular Formula:	CuO4S
Solubility:	Soluble		

Section 10 – Stability and Reactivity

- ? **Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions. Air sensitive.
- ? **Conditions to Avoid:** High temperatures, dust generation, exposure to air, exposure to moist air or water.
- ? **Incompatibilities with Other Materials:** Finely powdered metals, hydrazine, hydroxylamine, magnesium, steel, nitromethane, moisture, and air.
- ? **Hazardous Decomposition Products:** Oxides of sulfur, irritating and toxic fumes and gases, copper fumes.
- ? **Hazardous Polymerization:** Will not occur.

Section 11 – Toxicological Information

- ? **RTECS#:**
- ? **CAS# 7758-98-7:** GL8800000
- ? **LD50/LC50:**
CAS# 7758-98-7:
Oral, rat: LD50 = 300 mg/kg;<BR.
- ? **Carcinogenicity:**
CAS# 7758-98-7: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
- ? **Epidemiology:** Parenteral, chicken: TDLo = 10 mg/kg (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Endocrine - tumors).
- ? **Teratogenicity:** Intravenous, mouse: TDLo = 3200 ug/kg (female 8 day(s) after conception) Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus) and Specific Developmental Abnormalities - Central Nervous System and cardiovascular (circulatory) system.; Oral, pig: TDLo = 140 mg/kg (female 1-15 week(s) after conception and lactating female 4 week(s) post-birth) Effects on Newborn - biochemical and metabolic.
- ? **Reproductive Effects:** Intraperitoneal, rat: TDLo = 7500 ug/kg (female 3 day(s) after conception) Fertility - other measures of fertility.; Subcutaneous, rat: TDLo = 12768 ug/kg (male 1 day(s) pre-mating) Paternal Effects - testes, epididymis, sperm duct.; Intratesticular, rat: TDLo = 3192 ug/kg (male 1 day(s) pre-mating) Paternal Effects - spermatogenesis (incl. genetic material, sperm morphology, motility, and count) and Paternal Effects - testes, epididymis, sperm duct.
- ? **Neurotoxicity:** No information available.
- ? **Mutagenicity:** DNA Damage: Rat, Ascites tumor = 500 umol/L.; DNA Damage: Rat, Liver = 1 mmol/L.; DNA Inhibition: Intraperitoneal, mouse = 20 gm/kg.; Morphological Transformation: Hamster, Embryo = 80 umol/L.; Unscheduled DNA Synthesis: Hamster, Embryo = 200 umol/L.
- ? **Other Studies:** No information available.

Section 12 – Ecological Information

- ? **Ecotoxicity:** In soil, copper sulfate is partly washed down to lower levels, partly bound by soil components, and partly oxidatively transformed. Copper has a strong affinity for hydrous iron and manganese oxides, clays, carbonate minerals, and organic matter. Sorption to these materials ... suspended in the water column & in the bed sediments, results in relative enrichment of the solid phase and reduction in dissolved levels.
- ? **Environmental Fate:** Plants and animals accumulate Copper, but it does not appear to biomagnify from plants to animals. This lack of biomagnification appears common with heavy metals. In air, copper aerosols (in general) have a residence time of 2 to 10 days in an unpolluted atmosphere and 0.1 to > 4 days in polluted, urban areas.
- ? **Physical/Chemical:** No evidence was found to indicate that there is any biotransformation process for copper compounds, which would have a significant bearing on the fate of copper in aquatic environments.
Other: None.

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Section 13 – Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 – Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	Environmentally Hazardous Substance, Solid, n.o.s. Technical Shipping Name: Copper Sulfate	Environmentally Hazardous Substance, Solid, n.o.s.	Environmentally Hazardous Substance, Solid, n.o.s.	Environmentally Hazardous Substance, Solid, n.o.s.	CUPRIC SULFATE
Hazard Class:	9	9	9	9	9.2
UN Number:	3077	3077	3077	3077	3077
Packing Group:	III	III	III	III	II
Additional Info:	WHMIS CLASSIFICATION: D2B - OTHER REGULATORY REQUIREMENT: none	-	-	-	REGULATED LIMIT 5 KG

Section 15 – Regulatory Information

? US Federal

TSCA

CAS# 7758-98-7 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

CAS# 7758-98-7: final RQ = 10 pounds (4.54 kg)

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 7758-98-7: acute.

Section 313

This material contains Copper (II) Sulfate (listed as ** undefined **), 100%, (CAS# 7758-98-7) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

CAS# 7758-98-7 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

