Material Safety Data Sheet

Copper (II) Sulfate Pentahydrate

ACC# 05690

Section 1 - Chemical Product and Company Identification

MSDS Name: Copper (II) Sulfate Pentahydrate
Catalog Numbers: S73250, S73253, S73268, S73268-1, S73269, S73269-1, S73269-3, S73271, BP346-500, C489-1, C489-10, C489-500, C490-10, C490-3, C493-10, C493-100, C493-3, C493-500, C494, C494-12, C494-212, C494-500, C494250LB, C49612, C496212, S73250-1
Synonyms: Blue Vitriol
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7758-99-8	Copper (II) sulfate pentahydrate	ca.100	unlisted

Hazard Symbols: XN N
Risk Phrases: 22 36/38 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: blue crystals. Air sensitive. **Warning!** Harmful if swallowed. Causes digestive and respiratory tract irritation with possible burns. Causes eye and skin irritation and possible burns. Hygroscopic. Possible sensitizer.
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: May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Causes skin irritation and possible burns. May cause itching eczema.
Ingestion: Harmful if swallowed. 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 and 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: Prolonged or repeated eye contact may cause conjunctivitis. May cause liver and kidney damage. May cause anemia and other blood cell abnormalities. 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. May cause allergic skin reaction in some individuals. 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 resuscitation. 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: The use of d-Penicillamine as a chelating agent should be determined by qualified medical personnel.

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 noncombustible. 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.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

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. Avoid ingestion and inhalation. 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 pentahydrate	none listed	none listed	none listed

OSHA Vacated PELs: Copper (II) sulfate pentahydrate: 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: Crystals
Appearance: blue
Odor: Odorless
pH: Not available.
Vapor Pressure: 7.3 mm Hg @ 25 deg C
Vapor Density: Not available.
Evaporation Rate: Negligible.
Viscosity: Not available.
Boiling Point: 150 deg C (dec)
Freezing/Melting Point:110 deg C (dec)
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density:2.2840g/cm3
Molecular Formula: CuO4S.5H2O
Molecular Weight:249.68

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, incompatible materials, dust generation, exposure to air, exposure to moist air or water.
Incompatibilities with Other Materials: Moisture, air, steel, finely powdered metals, hydroxylamine, magnesium, hydrazine, nitromethane.
Hazardous Decomposition Products: Oxides of sulfur, irritating and toxic fumes and gases, oxides of copper, copper fumes.
Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#:
CAS# 7758-99-8: GL8900000
LD50/LC50:
CAS# 7758-99-8:
Oral, rat: LD50 = 300 mg/kg;
Skin, rat: LD50 = >2 gm/kg;<BR.

Carcinogenicity:
CAS# 7758-99-8: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: DNA Inhibition: Human, Lymphocyte = 76 umol/L.; Unscheduled DNA Synthesis: Rat, Liver = 31 umol/L.; Cytogenetic Analysis: Rat, Ascites tumor = 300 mg/kg.; Micronucleus Test: Intraperitoneal, mouse = 5 mg/kg.
Other Studies: No information available.

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 0.1-2.5 mg/L; 96 Hr; Unspecified Harlequin fish: LC50 =0.1-2.5 mg/L; 96 Hr; Unspecified Goldfish: LC50 = 0.1-2.5 mg/L; 96 Hr; Unspecified flea Daphnia: EC50 = 0.24 mg/L; 48 Hr; Unspecified 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: Copper is accumulated by plants and animals, 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: No evidence was found to indicate that there is any biotransformation proces for copper compounds which would have a significant bearing on the fate of copper in aquatic environments.
Other: None.

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:	NOT REGULATED FOR DOMESTIC TRANSPORT				CUPRIC SULFATE
Hazard Class:	NON				9.2
UN Number:	FS0002				UN9109
Packing Group:					II
Additional Info:					REGULATED LIMIT 5KG

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7758-99-8 is not on the TSCA Inventory. It is a hydrate and exempt from TSCA Inventory requirements (40CFR720.3(u)(2)).
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)
None of the chemicals in this material have an RQ.

Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7758-99-8: acute, chronic.
Section 313
This material contains Copper (II) sulfate pentahydrate (listed as Copper), 100%, (CAS# 7758-99-8) 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 depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances 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:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7758-99-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
XN N
Risk Phrases:
R 22 Harmful if swallowed.
R 36/38 Irritating to eyes and skin.
R 50/53 Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Safety Phrases:
S 22 Do not breathe dust.
S 60 This material and/or its container must be disposed of as hazardous waste.
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

WGK (Water Danger/Protection)
CAS# 7758-99-8: 2
Canada - DSL/NDSL
None of the chemicals in this product are listed on the DSL or NDSL list. **Canada - WHMIS**
This product has a WHMIS classification of D1B, D2A.
Canadian Ingredient Disclosure List
CAS# 7758-99-8 (listed as Copper) is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 7758-99-8: OEL-ARAB Republic of Egypt:TWA 0.1 mg(Cu)/m3 (fume) OEL-AUSTRALIA:TWA 0.2 mg(Cu)/m3 (fume) OEL-AUSTRALIA:TWA 1 mg(Cu)/m3

(dust) OEL-BELGIUM:TWA 0.2 mg(Cu)/m3 (fume) OEL-BELGIUM:TWA 1 mg(Cu)/m3 (dust) OEL-DENMARK:TWA 0.1 mg(Cu)/m3 (fume) OEL-DENMARK:TWA 1 m g(Cu)/m3 (dust) OEL-FINLAND:TWA 0.2 mg(Cu)/m3 (fume) OEL-FINLAND:TWA 1 mg(Cu)/m3 OEL-FINLAND:TWA 1 mg(Cu)/m3 (dust) OEL-FRANCE:TWA 0.2 m g(Cu)/m3 (fume) OEL-FRANCE:TWA 1 mg(Cu)/m3;STEL 2 mg(Cu)/m3 (dust OE L-GERMANY:TWA 0.1 mg(Cu)/m3 (fume) OEL-GERMANY:TWA 1 mg(Cu)/m3 OEL-G ERMANY:TWA 1 mg(Cu)/m3 (dust) OEL-HUNGARY:TWA 0.2 mg(Cu)/m3;STEL 0.4 mg(Cu)/m3 (dust) OEL-INDIA:TWA 0.2 mg(Cu)/m3 (fume) OEL-THE NETHERLA NDS:TWA 02 mg(Cu)/m3 (fume) OEL-THE NETHERLANDS:TWA 1 mg(Cu)/m3 (dust) OEL-THE PHILIPPINES:TWA 1.0 mg(Cu)/m3 (fume) JAN9 OEL-POLAND:TWA 0 .1 mg(Cu)/m3 (fume) OEL-RUSSIA:STEL 0.5 ppm (1 mg(Cu)/m3) (dust) JAN9 OEL-SWEDEN:TWA 0.2 mg(Cu)/m3 (resp. dust) OEL-SWEDEN:TWA 0.2 mg(Cu) /m3 (fume) OEL-SWEDEN:TWA 1 mg(Cu)/m3 (total dust) OEL-SWITZERLAND:T WA 0.1 mg(Cu)/m3;STEL 0.2 mg(Cu)/m3 (fume) OEL-SWITZERLAND:TWA 1 mg(C u)/m3;STEL 1 mg(Cu)/m3 OEL-THAILAND:TWA 0.1 mg(Cu)/m3 (fume) OEL-THA ILAND:TWA 1 mg(Cu)/m3 OEL-U

Section 16 - Additional Information

MSDS Creation Date: 7/09/1999
Revision #2 Date: 8/02/2000

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