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\*\*\*\* MATERIAL SAFETY DATA SHEET \*\*\*\*

Copper (II) Sulfate Anhydrous  
05870

\*\*\*\* SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION \*\*\*\*

MSDS Name: Copper (II) Sulfate Anhydrous

Catalog Numbers:  
C489 10, C48910, C495 500, C495-500, C495500

Synonyms:  
Blue Vitriol, cupric sulfate, sulfuric acid copper (II) salt  
Company Identification: Fisher Scientific  
1 Reagent Lane  
Fairlawn, NJ 07410

For information, call: 201-796-7100  
Emergency Number: 201-796-7100  
For CHEMTREC assistance, call: 800-424-9300

\*\*\*\* SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS \*\*\*\*

CAS#	Chemical Name	%	EINECS#
7758-98-7	Copper (II) sulfate	97%	231-847-6

\*\*\*\* SECTION 3 - HAZARDS IDENTIFICATION \*\*\*\*

EMERGENCY OVERVIEW

Appearance: Blue crystals or powder.  
Warning! May cause skin irritation. This substance has caused adverse reproductive and fetal effects in animals. Harmful if swallowed. May cause liver damage. May cause respiratory and digestive tract irritation. May cause severe eye irritation and possible injury. May cause blood abnormalities.  
Target Organs: Kidneys, liver, spleen, lungs.

Potential Health Effects

**Eyes:**  
Causes eye irritation. Exposure to particulates or solution may cause conjunctivitis, ulceration, and corneal abnormalities.  
**Skin:**  
Causes irritation with burning pain, itching, and redness.  
**Ingestion:**  
May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver damage.  
May cause hypotension, jaundice, coma, and possible death.

**Inhalation:**  
Causes respiratory tract irritation. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities.

**Chronic:**  
Not available.  
Chronic toxicity related to copper is found in individuals with Wilson's disease. These individuals are unable to excrete copper, which causes retention of copper in the body. This may result in damage to the liver, kidneys, brain, blood, bones and endocrine glands.

\*\*\*\* SECTION 4 - FIRST AID MEASURES \*\*\*\*

**Eyes:**  
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid.  
**Skin:**  
Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.  
**Ingestion:**  
If victim is conscious and alert, give 2-4 cups of milk or water. Get medical aid immediately. Induce vomiting by giving one teaspoon of Syrup of Ipecac.  
**Inhalation:**  
Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.  
**Notes to Physician:**  
Treat symptomatically and supportively.  
Penicillamine may be of value 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. Substance is noncombustible.

Extinguishing Media:

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Use water spray, dry chemical, or carbon dioxide.  
Autoignition Temperature: Not applicable.  
Flash Point: Not applicable.  
NFPA Rating: Not published.  
Explosion Limits, Lower: Not available.  
Upper: Not available.

\*\*\*\* SECTION 6 - ACCIDENTAL RELEASE MEASURES \*\*\*\*

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section).  
Sweep up, then place into a suitable clean, dry container for disposal. Avoid generating dusty conditions.

\*\*\*\* SECTION 7 - HANDLING and STORAGE \*\*\*\*

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Do not get on skin or in eyes. Do not ingest or inhale.

Storage:

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

\*\*\*\* SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION \*\*\*\*

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Copper (II) sulfate	none listed	as Cu: 1 mg/m3 TWA (dusts and mists); 0.1 mg/m3 TWA (fume) (listed under ** no name **	fume, as Cu: 0.1 mg/m3 TWA; dust s and mists, as C u: 1 mg/m3 TWA (listed under ** no name **)

OSHA Vacated PELs:

Copper (II) sulfate:  
No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

**Eyes:**  
Wear safety glasses with side shields.

**Skin:**  
Wear impervious gloves.

**Clothing:**  
Wear appropriate protective clothing to prevent skin exposure.

**Respirators:**  
Follow the OSHA respirator regulations found in 29CFR 1910.134. Always use a NIOSH-approved respirator when necessary.

\*\*\*\* SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES \*\*\*\*

Physical State: Solid  
Appearance: Blue crystals or powder.  
Odor: None.  
pH: Not available.  
Vapor Pressure: Negligible.  
Vapor Density: Not applicable.  
Evaporation Rate: Negligible.  
Viscosity: Not available.  
Boiling Point: Not applicable.  
Freezing/Melting Point: 176 F  
Decomposition Temperature: Not available.  
Solubility: Soluble in water.  
Specific Gravity/Density: 3.60 (water=1)  
Molecular Formula: CuSO4  
Molecular Weight: 159.6036

\*\*\*\* SECTION 10 - STABILITY AND REACTIVITY \*\*\*\*

Chemical Stability:

Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid:

High temperatures, incompatible materials.

Incompatibilities with Other Materials:  
Hydroxylamine.  
Hazardous Decomposition Products:  
Oxides of sulfur, copper fumes.  
Hazardous Polymerization: Has not been reported.

\*\*\*\* SECTION 11 - TOXICOLOGICAL INFORMATION \*\*\*\*

RTECS#:  
CAS# 7758-98-7: GL8800000  
LD50/LC50:  
CAS# 7758-98-7: Oral, rat: LD50 = 300 mg/kg.  
Carcinogenicity:  
Copper (II) sulfate -  
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.  
Epidemiology:  
No information available.  
Teratogenicity:  
Embryo or Fetus: stunted fetus, ivn-mouse TDLo=3200 ug/kg.  
Fertility: post-implantation mortality, ivn-mouse TDLo=3200 ug/kg.  
Specific Developmental Abnormalities: body wall, ivn-hamster  
TDLo=2130 ug/kg; cardiovascular and central nervous system, ivn-mouse  
TDLo=3200 ug/kg.  
Reproductive Effects:  
Paternal Effects: spermatogenesis, itt-rat TDLo=3192 ug/kg;  
testes/epididymis, scu-mouse TDLo=12768 ug/kg.  
Neurotoxicity:  
No information available.  
Mutagenicity:  
DNA Damage: hamster embryo 2200umol/L, rat liver 1 mmol/L. DNA  
Inhibition: ipn-mouse 20 g/kg. Unscheduled DNA Synthesis: hamster  
embryo 200 umol/L.  
Other Studies:  
None.

\*\*\*\* SECTION 12 - ECOLOGICAL INFORMATION \*\*\*\*

Ecotoxicity:  
Rainbow trout (fresh water) TLm=3.8 ppm/24H Prawn (salt water)  
LC50=0.14 ppm/48H  
Environmental Fate:  
No information reported.  
Physical/Chemical:  
No information available.  
Other:  
None.

\*\*\*\* SECTION 13 - DISPOSAL CONSIDERATIONS \*\*\*\*

Dispose of in a manner consistent with federal, state, and local regulations.  
RCRA D-Series Maximum Concentration of Contaminants: Not listed.  
RCRA D-Series Chronic Toxicity Reference Levels: Not listed.  
RCRA F-Series: Not listed.  
RCRA P-Series: Not listed.  
RCRA U-Series: Not listed.  
Not listed as a material banned from land disposal according to RCRA.

\*\*\*\* SECTION 14 - TRANSPORT INFORMATION \*\*\*\*

US DOT  
Shipping Name: CORROSIVE LIQUID, N.O.S.  
(CONTAINS NITRIC ACID)  
Hazard Class: 8  
UN Number: UN1760  
Packing Group: II  
IMO  
No information available.  
IATA  
No information available.  
RID/ADR  
No information available.  
Canadian TDG  
Shipping Name: CUPRIC SULFATE  
Hazard Class: 9.2  
UN Number: UN9109  
Other Information: REGULATED LIMIT 5KG

\*\*\*\* SECTION 15 - REGULATORY INFORMATION \*\*\*\*

A. 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)  
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  
No chemicals are reportable under Section 313.

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:  
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:  
None of the chemicals in this product are considered highly hazardous  
by OSHA.

B. State  
Copper (II) sulfate can be found on the following state right to know  
lists: New Jersey, Pennsylvania, Massachusetts.  
California No Significant Risk Level:  
None of the chemicals in this product are listed.

C. International

Canada  
CAS# 7758-98-7 is listed on Canada's DSL/NDSL List.  
CAS# 7758-98-7 is listed on Canada's Ingredient Disclosure List.  
European Labeling in Accordance with EC Directives  
Hazard Symbols: Not available.  
Risk Phrases:  
Safety Phrases:  
S 24/25 Avoid contact with skin and eyes.

Exposure Limits:  
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-BELGI  
UM:TWA 0.2 mg(Cu)/m3 (fume). OEL-BELGIUM:TWA 1 mg(Cu)/m3 (dust). OEL-D  
ENMARK:TWA 0.1 mg(Cu)/m3 (fume). OEL-DENMARK:TWA 1 mg(Cu)/m3 (dust). O  
EL-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 mg(Cu)/m3 (fume). O  
EL-FRANCE:TWA 1 mg(Cu)/m3:STEL 2 mg(Cu)/m3 (dust). OEL-GERMANY:TWA 0.1  
mg(Cu)/m3 (fume). OEL-GERMANY:TWA 1 mg(Cu)/m3. OEL-GERMANY: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 NETHERLANDS:TWA 0.2 mg(Cu)/  
m3 (fume). OEL-THE NETHERLANDS:TWA 1 mg(Cu)/m3 (dust). OEL-THE PHILIPP  
INES:TWA 1.0 mg(Cu)/m3 (fume) JAN9. OEL-POLAND:TWA 0.1 mg(Cu)/m3 (fume  
) OEL-RUSSIA:STEL 0.5 mg/m3. OEL-RUSSIA:STEL 0.5 ppm (1 mg(Cu)/m3 (d  
ust) 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-SWIT

\*\*\*\* SECTION 16 - ADDITIONAL INFORMATION \*\*\*\*

Additional Information:

No additional information available.  
MSDS Creation Date: 1/16/1995 Revision #2 Date: 3/04/1996

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information currently available to us. However, we make no warranty of  
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