MATERIAL SAFETY DATA SHEET

Section 1 - Chemical Product and Company Identification

MSDS Name: Copper (I) Chloride
Catalog Numbers: S79988, S79988-1, S799881, S93226, C457-500
Synonyms: Copper Monochloride: Cuprous Chloride; Dicopper Dichloride; Cuprous Dichloride.
Company Identification: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
For information in the US, call: 201-796-7100
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#: 7758-89-6
Chemical Name: COPPER (I) CHLORIDE
%: 100
EINECS#: 231-842-9

Hazard Symbols: XN N

Risk Phrases: 22 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Danger! Corrosive. Light sensitive. Air sensitive. Moisture sensitive. Harmful if swallowed. Causes eye and skin burns. May cause liver and kidney damage. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. Target Organs: Kidneys, liver.

Potential Health Effects

Eye: Causes eye burns.

Skin: Causes skin burns.

Ingestion: Harmful if swallowed. May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause liver and kidney damage.

Inhalation: May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract.

Chronic: May cause liver and kidney damage.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).

Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

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: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. 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: Treat symptomatically and supportively.

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. Use water spray to keep fire-exposed containers cool. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated.

Extinguishing Media: Do NOT get water inside containers. For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.

Autoignition Temperature: Not applicable.

Flash Point: Not applicable.

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 3; flammability: 0; instability: 0;

Section 6 - Accidental Release Measures

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

Spills/Leaks: Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Provide ventilation. Place under an inert atmosphere. Do not get water inside containers.

Section 7 - Handling and Storage

Handling: Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Do not get on skin or in eyes. Do not ingest or inhale. Use with adequate ventilation. Store protected from light. Handle under an inert atmosphere. Store protected from air. Do not allow contact with water. Wash clothing before reuse. Discard contaminated shoes. Keep from contact with moist air and steam.

Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area. Do not store in metal containers. Do not expose to air. Store protected from moisture. Store protected from light. Store under an inert atmosphere. Material darkens on exposure to air.

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 (I) CHLORIDE	none listed	1 mg/m3 TWA (as Cu, except Copper fume) (listed under Copper compounds, n.o.s.).	none listed

OSHA Vacated PELs: COPPER (I) CHLORIDE: None listed

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 minimize contact with skin.

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 respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Crystals
Color: green gray
Odor: none reported
pH: Not available
Vapor Pressure: 1.3 mm Hg @ 546 C
Vapor Density: Not available
Evaporation Rate: Not applicable.
Viscosity: Not available
Boiling Point: 1490 deg C (2,714.00°F)
Freezing/Melting Point: 430 deg C (806.00°F)
Decomposition Temperature: Not available
Solubility in water: Slightly soluble
Specific Gravity/Density: 4.14
Molecular Formula: CuCl
Molecular Weight: 98.999

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Darkens on exposure to light and air.

Conditions to Avoid: Incompatible materials, light, dust generation, moisture, exposure to air, metals, excess heat.

Incompatibilities with Other Materials Strong oxidizing agents, strong acids, strong bases, potassium, lithium, heat.

Hazardous Decomposition Products Hydrogen chloride, irritating and toxic fumes and gases, chloride fumes.

Hazardous Polymerization Has not been reported.

Section 11 - Toxicological Information

RTECS#:	CAS# 7758-89-6: GL6990000
LD50/LC50:	RTECS: **CAS# 7758-89-6:** Inhalation, mouse: LC50 = 1008 mg/m3; Oral, mouse: LD50 = 347 mg/kg; Oral, rat: LD50 = 140 mg/kg; .
Carcinogenicity:	COPPER (I) CHLORIDE - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology:	No information found
Teratogenicity:	No information found
Reproductive:	No information found
Neurotoxicity:	No information found
Mutagenicity:	Mutagenic effects have occurred in experimental animals.
Other:	See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Not available

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
Shipping Name: COPPER CHLORIDE
Hazard Class: 8
UN Number: UN2802
Packing Group: III
Canada TDG
Shipping Name: COPPER CHLORIDE
Hazard Class: 8
UN Number: UN2802
Packing Group: III

Section 15 - Regulatory Information

US Federal

TSCA

CAS# 7758-89-6 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.
CERCLA Hazardous Substances and corresponding RQs	None of the chemicals in this material have an RQ.
SARA Section 302	None of the chemicals in this product have a TPQ.

Extremely Hazardous Substances

SARA Codes CAS # 7758-89-6: acute, chronic.

Section 313 This material contains COPPER (I) CHLORIDE (listed as Copper compounds, n.o.s.), 100%, (CAS# 7758-89-6) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

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. CAS# 7758-89-6 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

STATE COPPER (I) CHLORIDE can be found on the following state right to know lists: California, (listed as Copper compounds, n.o.s.), Pennsylvania, (listed as Copper compounds, n.o.s.).

California Prop 65

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 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 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# 7758-89-6: 2

Canada

CAS# 7758-89-6 is listed on Canada's DSL List

Canadian WHMIS Classifications: D1B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 7758-89-6 is listed on Canada's Ingredient Disclosure List

Section 16 - Other Information

MSDS Creation Date: 2/19/1998

Revision #5 Date 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine

the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.