Super Conductor Materials, Inc.
391 Spook Rock Industrial Park, Suffern, NY 10901 · 845.368.0240 · Fax 845.368.0250 · www.scm-inc.com

Chemtrec: (800) 424-9300
Poison Center: (800) 562-8236
Revision Date: January 8th, 2019

SAFETY DATA SHEET

Identity: Copper Formula: Cu

SECTION I - GENERAL INFORMATION

Manufacturer: Super Conductor Materials, Inc.

The information below is believed to be accurate and represents the best information available to Super Conductor Materials, Inc. However, SCM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 63.55

CAS #	OSHA PEL	ACGIH TLV	%
7440-50-8	1.0mg/m3	1.0mg/m3	0.0-100.0%

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: 2562.00°C
Melting Point: 1083.00°C
Evaporation Rate: N/A
Solubility in water: Insoluble

Density: 8.94 g/cm^3
Vapor Pressure (vs. air or mmHg): 1mmHg at 1628°C
Vapor Density (vs. air=1): Not volatile

Appearance and odor: Reddish powder and pieces, odorless

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Flash Point: Above 700°C *Method Used*: Unknown *Explosive Limits*: LEL: N/A UEL: N/A
Extinguishing Media: USE: Not applicable. Use suitable extinguishing media for surrounding materials and type of fire. AUTOIGNITION TEMPERATURE: 700C (cloud)

Special Fire Fighting Procedures: Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards:

-May ignite on contact with chlorine; chlorine trifluoride; fluorine; and hydrazinium nitrate.
-May react violently with C2H2; bromates; chlorates; iodates; (Cl2+OF2); dimethyl sulfoxide+trichloroacetic acid; ethylene oxide; H2O2; hydrazine mononitrate; hydrozoic acid; H2S+air; Pb(N3)2; K2O2; NaN3; Na2O2; and sulfuric acid.
-May have a potentially explosive reaction with acetylenic compounds; 3-bromopropyne; ethylene oxide; lead azide; and ammonium nitrate.
-Powders below 50 micron size range are not easily ignited by sparks and are weakly explosive in air.

Super Conductor Materials, Inc.
391 Spook Rock Industrial Park, Suffern, NY 10901 · 845.368.0240 · Fax 845.368.0250 · www.scm-inc.com

SECTION V - REACTIVITY DATA

Stability: Stable
Conditions to Avoid (stability): None specified
Incompatibility: 1-bromo-2-propyne; acetylenic compounds; 3-bromopropyne; ethylene oxide; lead azide; ammonium nitrate; chlorine; chlorine trifluoride, fluorine; hydrazinium nitrate; C2H2; bromates, chlorates, iodates; (Cl2+OF2); dimethyl sulfoxide+trichloro acetic acid; H2O2; hydrazine mononitrate; hydrazoic acid; H2S+air; Pb(N3)2; K2O2; NaN3; Na2O2; and sulfuric acid.

Hazardous Decomposition or Byproducts: Oxides of copper
Hazardous Polymerization: Will not occur
Conditions to avoid (hazardous polymerization):
Hazardous polymerization can occur, on long standing a white highly explosive peroxide deposit may form. Avoid prolonged exposure to air or moisture.

SECTION VI - HEALTH HAZARD DATA

Route of entry: Inhalation? Yes Skin? Yes Ingestions? Yes Eyes? Yes Other? No

Copper compounds: In animals, inhalation of copper dust has caused hemolysis of the red blood cells, deposition of hemofuscin in the liver and pancreas, and injury to the lung cells; injection of the dust has caused cirrhosis of the liver and pancreas, and a condition closely resembling hemochromatosis or bronzed diabetes. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Copper is an essential element of mammalian metabolism. Copper metal has little of no serious toxicity. The most common adverse effect associated with copper is the acute inhalation of copper fume during refining or welding. Results of overexposure usually appear within 4 to 8 hours and last only about 24 to 48 hours/

Signs and Symptoms of overexposure:

Inhalation: May cause a red, dry throat, metallic taste in mouth, congestion of the nasal and pharyngeal, sneezing, headache, excitability, dizziness and difficulty breathing.
Ingestion: Acute copper toxicity may cause: fever, tachycardia, hypotension, hemolytic anemia with intravascular hemolysis, oliguria, uremia, coma and cardiovascular collapse. Chronic copper toxicity may cause: nausea, vomiting, epigastric pain, yellow watery diarrhea, dizziness, general debility, jaundice, and green stools, saliva and vomitus.
Skin: May cause redness, itching and swelling.
Eye: May cause redness, itching, burning and watering.

Health Hazards (Acute and Chronic):

Inhalation:
Acute: May cause irritation to the respiratory tract, metal fume fever, allergic reaction, high temperature, metallic taste, nausea, coughing, general weakness, muscle aches, exhaustion, skin discoloration, nausea, vomiting, abdominal pain, diarrhea, stomach and intestine ulceration, jaundice, kidney and liver damage.
Chronic: May cause degeneration of mucous membrane, discoloration of the skin and hair, respiratory disease, ulceration and perforation of the nasal septum and pharyngeal congestion.

Ingestion:
Acute: Poison by intraperitoneal route. May cause acute copper toxicity.
Chronic: May cause irritation to the gastrointestinal tract and chronic copper toxicity. May cause damage to the nervous system, kidneys and enlarge the liver.

Skin:
Acute: May cause irritation.
Chronic: May cause dermatitis.

Eye:
Acute: May cause irritation to the conjunctiva.
Chronic: No chronic health effects recorded.

Target Organ: May affect the respiratory system, skin, liver, central nervous system, and kidneys.
Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No
Medical Conditions Aggravated by Exposure: Pre-existing respiratory, gastric disorders and an increased risk for individuals with Wilson's disease.

Emergency and First Aid Procedures:

Inhalation:	Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention
Ingestion:	Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person
Skin:	Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist
Eye:	Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Collect powder in a manner that minimizes further dust generation, such as using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste disposal method:

Keep out of sewers and waterways. Dispose of in accordance with state, local, and federal regulations.

Hazard Label Information:

Store in cool, dry area of -18° to 83°C and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):
NIOSH approved respirator, impervious gloves, dust proof safety glasses, clothes to prevent contact.

Ventilation:

Local Exhaust: To maintain concentration at low exposure levels.
Mechanical (General): God general ventilation is recommended.

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established