

Copper

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Manufacturer/Supplier:

ESPI Metals

1050 Benson Way, Ashland, OR 97520

Toll Free (800) 638-2581 * Fax (541) 488-8313

E-Mail: sales@espimetals.com

Product Name: Copper

Formula: Cu

CAS Number: 7440-50-8

II. HAZARDOUS INGREDIENTS

Hazardous Component: Copper

Percent (%): 0-100

OSHA/PEL: 1 mg/m³ (dust); 0.1 mg/m³ (fume)

ACGIH/TLV: 1 mg/m³ (dust); 0.2 mg/m³ (fume)

HMIS Ratings (Powder):

Health: 1

Flammability: 2

Reactivity: 1

HMIS Ratings (Solid):

Health: 0

Flammability: 0

Reactivity: 0

III. PHYSICAL DATA

Boiling Point: 2567 °C

Melting Point: 1083 °C

Specific Gravity: 8.92 g/cc

Solubility in H₂O: Insoluble

Appearance and Odor: Reddish color, no odor

IV. FIRE AND EXPLOSION HAZARDS DATA

Flash Point: N/A

Autoignition Temperature: 700 °C (cloud)

Flammable Limits: **Upper:** N/A **Lower:** N/A

Extinguishing Media: (Powder) Do not use water. Use special powder for metal fires. (Solid) Product is not flammable. Use suitable extinguishing media for surrounding materials and type of fire.

Special Firefighting Procedures: Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes.

Unusual Fire & Explosion Hazard: Dust may form explosive mixture with air. Fire may release toxic metal oxide fume.

V. HEALTH HAZARD INFORMATION

Effects of Exposure:

To the best of our knowledge the chemical, physical and toxicological properties of copper have not been thoroughly investigated and recorded.

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)

Copper compounds may be irritating to the skin, eyes and respiratory tract. They may cause metal fume fever, hemolysis of the red blood cells and injury to the liver, lungs, kidneys and pancreas. Ingestion may also cause vomiting, gastric pain, dizziness, anemia, cramps, convulsions, shock, coma and death. Copper solutions may cause sensitization reactions.

Acute Effects:

Inhalation: 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.

Ingestion: May cause acute copper toxicity.

Skin: May cause irritation.

Eye: May cause irritation to the conjunctivae.

Chronic Effects:

Inhalation: 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: May cause irritation to the gastrointestinal tract and chronic copper toxicity. May cause damage to the nervous system, kidneys, and enlarge the liver.

Skin: May cause dermatitis.

Eye: No chronic health effects recorded.

Medical Conditions Generally Aggravated by Exposure: Pre-existing respiratory, gastric disorders, and an increased risk for individuals with Wilson's disease.

Target Organs: Respiratory system, central nervous system, skin, liver, kidneys.

Carcinogenicity: **NTP:** No **IARC:** No **OSHA:** No

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult and 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: (Powder) Remove contaminated clothing, brush material off skin, wash affected area with soap and water, seek medical attention if symptoms persist. Solid forms generally do not irritate the skin.

EYE: Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

VI. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None

Incompatibility (Material to Avoid): Strong acids, bromates, strong bases, acetylene, acetaldehyde, magnesium, chlorates and iodates.

Hazardous Decomposition Products: Metal oxide fume.

Hazardous Polymerization: Will not occur.

VII. SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material Is Released or Spilled: For powder spills: Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area and provide ventilation. Extinguish all sources of ignition. Sweep or scoop up spill and place in a closed container for proper disposal. Take care not to raise dust. Use non-sparking tools.

Waste Disposal Method: Dispose of in accordance with all Local, State and Federal waste disposal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection: Use supplied air respiratory protection in confined or enclosed spaces if needed.

Ventilation: Local exhaust ventilation may be necessary to control any air contaminants to within their limits during the use of this product. General exhaust is recommended.

Protective Gloves: Rubber gloves.

Eye Protection: Safety glasses

Other Protective Clothing or Equipment: Protective gear suitable to prevent contamination.

IX. SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storage: Store in a cool, dry place avoiding contact with heat and acids. Avoid creating dust clouds. Keep ignition sources away. Protect against electrostatic charges. Fumes can combine with air to form an explosive mixture. Do not store together with oxidizing and acidic materials.

Work 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 and smoking. Do not blow dust off clothing or skin with compressed air.

Maintain eyewash capable of sustained flushing, safety drench shower and facilities for washing.

TSCA Inventory: Yes

DOT Regulations:

Solid Forms:

Hazard Class: None

Powders:

Hazard Class: 4.1

Identification Number: UN3089

Packing Group: III

Proper Shipping Name: Metal powder, flammable, n.o.s. (copper)

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. ESPI shall not be held liable for any damage resulting from handling or from contact with the above product.

Issued by: S. Dierks

Date: November 2007