

Safety Data Sheet: Copper

Section 1: Product Identification

Manufacturer/Supplier:

Wolverine Tube, Inc.
2100 Market Street NE
Decatur, AL 35601
(800) 633-3972

Recommended Use and Restrictions:

Solid copper, various forms and uses. Manufacture of articles.

Emergency Information:

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300
International CHEMTREC, call: 1-703-527-3887




GHS Product Identifier: Copper

Other Means of ID: Cu, Copper Dust, Copper Fume

Section 2: Hazard Identification

Classification: Copper and copper alloys are considered an “article” and are not hazardous in its solid form. However, certain processes such as cutting, milling, grinding, melting and welding could result in some serious hazardous materials being emitted. The GHS classification below pertains to these emitted products during these processes.

Signal Word, Hazard Statements & Symbols: WARNING

Symbols	Hazard	GHS Classification	Hazard Statements
	STOT (repeated exposure)	Category – 2	Causes damage to lungs, kidney and blood through prolonged or repeated exposure.
	Skin Irritation	Category – 2	Causes skin irritation.
	Acute Toxicity – Inhalation	Category – 4	Harmful if inhaled.
	Acute Toxic to Aquatic Life	Category – 1	Very toxic to aquatic life.
	Chronic Toxic to Aquatic Life	Category – 1	Very toxic to aquatic life with long lasting effects.
N/A	Eye Irritation	Category – 2B	Causes eye irritations.

Notes:

STOT – Specific Target Organ Toxicity

Precautionary Statements

Prevention:

Do not breathe dust/fume/gas/vapor/spray. Use in a well-ventilated area. Avoid generating dust. Dusts and fines from processing may be ignitable. Use personal protective equipment as required. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Contaminated work clothing should not be allowed out of the workplace.

First Aid Response:

EYES: Flush eyes with plenty of water for at least 15 minutes. Seek medical attention if eye irritation persists.
SKIN: Wash affected area with mild soap and water. Seek medical attention if skin irritation persists.
INHALATION: Remove individual to fresh air. Check for clear airway, breathing and presence of pulse. If necessary administer CPR. Consult a physician immediately.
INGESTION: Dust may irritate mouth and gastrointestinal tract. If ingested, seek medical attention.

Storage:

Store away from strong acids, alkalis and oxidizers. Store away from mercury, acetylene and halogens. Store in accordance with federal, state and local regulations.

Disposal: Copper should be recycled whenever possible. Otherwise, dispose of in accordance with applicable federal, state and local regulations.

Section 3: Composition and Information on Ingredients

Composition:

Name:	CAS #	% by Weight
Copper	7440-50-8	100

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. Do not use eye ointment. Seek medical attention immediately.

Skin Contact: After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient (moisturizing cream or lotion). If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Important Symptoms and Effects: Copper and copper alloys as sold and shipped is not likely to present acute or chronic health effects. However, during processing (cutting, milling, grinding, melting or welding) emitted byproducts may cause irritations, difficulty breathing, coughing or wheezing. May cause allergic skin reactions.

Section 5: Fire and Explosion Data

Suitable Extinguishing Media: Non-flammable. Not applicable for solid product. Use Class D extinguishing agents or sand on fires involving dusts or fines. Use extinguishers appropriate for surrounding materials. DO NOT use water on molten metal. DO NOT use water on dust, powder or fume fires.

Specific Hazards: Dusts from grinding operations may burn if they are ignited. Dust, powder and fumes are flammable when exposed to flame or by chemical reaction with oxidizing agents.

Hazardous Combustion Products: At temperatures above the melting point, fumes containing copper oxides and smaller amounts of other alloying elements (if present) may be liberated.

Special Protective Equipment and Precautions for Firefighters: Firefighters should wear self-contained NIOSH-approved breathing apparatus and full protective clothing.

Explosion Data: Molten metal in contact with water may be explosive.

Section 6: Accidental Release Measures

Personal Precautions, PPE and Emergency Procedures: Not applicable to copper in solid state. Avoid dust formation. Ensure adequate ventilation. Clean-up personnel should be protected against contact with eyes and skin protection.

Environmental Precautions: Not applicable to copper in solid state. Do not flush into surface water or sanitary sewer system.

Methods and Materials for Containment and Clean-up: Solid metal does not pose any problems. Dust spills should be cleaned up avoiding dust generation. Wash down with water if in contact with acids. Avoid inhalation of dusts. Collect scrap copper for recycling.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible.

Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool well-ventilated place.

Incompatibilities:

Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls and Personal Protection

Control Parameters: The exposure limit for copper dusts and fumes has been established as follows in the table below. All OEL values are established as 8-hour Time Weighted Average (TWA) concentrations unless otherwise noted.

Chemical Name	CAS Number	OSHA PEL	ACGIH TLV	NIOSH REL
Copper	7440-50-8	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)	1 mg/m ³ (dust) 0.2 mg/m ³ (fume)	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)

Appropriate Engineering Controls: Provide general or local exhaust ventilation to minimize airborne concentrations during milling, grinding, melting and welding operations.

Individual Protective Measures: Dependent upon process being performed on material. Each operation must be addressed for suitable equipment.

Gloves: As required.

Clothing: N/A

Eyes: Safety glasses or goggles.

Footwear: N/A

Respirator: If concentrations exceed established limits use NIOSH/MSHA approved particulate respirator when generating dust or fume.

Other: With molten metal, use full body cover clothing suitably treated to prevent burns.

Section 9: Chemical and Physical Properties

Physical State:	Solid	Other Information:	Not Applicable
Odor:	Not Applicable	Appearance:	Reddish metallic solid
pH:	Not Applicable	Odor Threshold:	Not Applicable
Boiling Point:	2595°C (4703°F)	Melting Point:	1083°C (1981°F)
Evaporation Rate:	Not Applicable	Flash Point:	N/A
UFL%:	Not Applicable	Flammability:	Not Flammable
Vapor Pressure:	Not Applicable	LFL%:	Not Applicable
Relative Density:	8.94	Vapor Density:	Not Applicable
Solubility:	Not Soluble	Specific Gravity:	No Data
Auto-Ignition Temp:	Not Applicable	Partition Coefficient:	No Data
Viscosity:	Not Applicable	Decomposition Temperature:	No Data

Section 10: Stability and Reactivity Data

Stability: The product is stable. Copper and its alloys are stable under normal storage and handling conditions.

Possibility of Hazardous Reactions: Hazardous polymerization cannot occur.

Conditions to Avoid: Reacts violently with hydrogen peroxide and other oxidizers. Reaction with acids could produce noxious gases. In contact with acids, hydrogen gas may evolve. Avoid dust formation. Molten metal can react violently with water or moisture.

Incompatible Materials: Yes, strong acids, alkalis and oxidizers. Also, mercury, acetylene and halogens.

Hazardous Decomposition: None.

Section 11: Toxicological Data

LD₅₀ Oral: No Data
LD₅₀ Dermal: No Data
LD₅₀ Inhalation: No Data
Other: No Data

Likely Routes of Entry: None for copper and alloys in their natural solid form. Inhalation of metal particulate or elemental oxide fumes generated during welding, burning, grinding or machining may pose acute or chronic health effects. In finely divided form, skin contact may produce localized irritation and/or contact dermatitis.

Eyes: High concentrations of dust may cause irritation to the eyes. Fumes can cause eye irritation.

Skin: May cause skin irritations. Prolonged skin contact with coated copper may cause skin irritation in sensitive individuals. Workers with anemia, kidney damage, digestive, respiratory, nervous system, pregnant women and fertile females warrant particular attention.

Inhalation: Dust may irritate the nose and throat. If heated, copper fumes may cause metal fume fever, a delayed, benign, transient flu-like condition.

Symptoms related to Product Characteristics: None for copper and alloys in their natural solid state.

Effects of Acute Exposure to Material: Can cause metal fume fever, a metallic taste in the mouth, dryness or irritation of the throat, and coughing. After 4-48 hours symptoms can include sweating, shivering, headache, fever, muscle aches, nausea, vomiting, weakness and tiredness.

STOT (Single Exposure): Causes damage to organs (kidneys, respiratory system).

STOT (Repeated Exposure): Respiratory system. Skin irritation. Reproductive system.

Mutagenicity: Suspected of causing genetic effects.

Carcinogenicity:

IARC: N/A

EPA-D (Not classifiable as to human carcinogenicity).

LD₅₀: Not established

LC₅₀: Not established

Section 12: Ecological Data

Ecotoxicity: No data available for copper and alloys in their natural solid state. However, individual components of the material have been found to be toxic to the environment. Metal dusts may migrate to soil and groundwater and be ingested by wildlife.

Component	Toxicity to Fish	Toxicity to Algae	Toxicity to Microorganisms
Copper	LC ₅₀ Fathead Minnow 96 hr. 0.0068-0.0156 mg/L	EC ₅₀ Freshwater Algae 72 hr. 0.0426-0.0535 mg/L	EC ₅₀ Water Flea 48 hr. 0.03 mg/L

Persistence and Degradability: No Data

Bioaccumulative Potential: No Data

Mobility in Soil: No Data

Other Adverse Effects: None Known.

Section 13: Disposal Information

Waste Disposal Methods: Recover copper for recycling.

Container Cleaning and Disposal: Dispose of in accordance with applicable federal, provincial/state and local regulations.

Section 14: Transport Information

General Shipping Information: Material not regulated for shipping.

Shipping Name and Description: N/A

UN Number: N/A

Hazard Class: N/A

Packing Group/Risk Group: N/A

Transport Regulations: Canadian Transportation of Dangerous Goods Regulations (TDG) March 2011.
US Department of Transport (DOT) Hazardous Materials shipping information (Title 49 – Transportation March 2011).

Section 15: Other Regulatory Information

Regulatory Information: The components of this material are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA – October 2006), as follows:

Chemical Name	SARA 302 (40 CFR 355, App. A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)	CERCLA Reportable Quantities
Copper	No	No	Yes	5,000 pounds

SARA Threshold Planning Quantity: There are no specific Threshold Planning Quantities for the material. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb. (4,540 kg) therefore applies, per 40 CFR 370.20.

CERCLA Reportable Quantity (RQ): 5,000 lb.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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The information contained herein is believed to be accurate but is not warranted to be so. All hazard classifications involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of a specific hazard. To deal adequately with the safe handling of this product, all the information contained in this SDS must be considered and reasonable safety precautions followed. The information contained in the Safety Data Sheet is based on the individual properties of the components of the mixture. Terrell Technical Services, Inc. has compiled the information and recommendations contained in this Safety Data Sheet from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the SDS was prepared. No warranty, guarantee, or representation is made as to the correctness or sufficiency of the information. The user of this product must decide for itself what specific safety measures are necessary to safely use this product, either alone or in combination with other products.

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