



SAFETY DATA SHEET

Product Name: Copper Tube products 510 - 521
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Section 1: Product and Company Identification

Product Names: 510 Brass Tube Phosphor Bronze, 5%
521 Brass Tube Phosphor Bronze, 8%

Product Use: Metal tube products – various consumer, construction and manufacturing uses

Chemical Family: Copper Alloy

Product Codes: UNS C51000, C52100

Supplier: Small Tube Products
200 Oliphant Drive,
PO Box 1017,
Duncansville, PA, USA
16635
Tel: 814-693-6000 (8 am – 5 pm; Mon-Fri; Eastern time zone)
www.smalltubeproducts.com

Section 2: Hazards Identification

Personal Protection	OSHA (USA)	WHMIS (Canada)	Transport Symbol
	Manufactured article Not hazardous	 Manufactured Article Not controlled	Not Regulated for Transport

Emergency Overview: Solid copper alloy tube products do not present an inhalation, ingestion, or contact health hazard. Metallic dust and fumes generated from operations such as cutting, grinding, high temperature processes or other machining, have potential health hazards which are listed in this section.

Appearance, Color and Odor: Solid metal tubes and shapes, copper/orange color, odorless.

USA: As sold, the solid manufactured article is not considered hazardous. Metallic dust or fume, which may be generated during use of these products, is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Canada: As sold, the solid manufactured article is not controlled. Exposure to metallic dust or fume, which may be generated during use of these products, is controlled under WHMIS.

Potential Health Effects **ACUTE (short term): see Section 8 for exposure controls**

Relevant Route(s) of Exposure: Inhalation of dust or fume, skin and eye contact.

- Inhalation:** Overexposure to dust or fume may cause coughing, shortness of breath, respiratory tract irritation, nasal septum perforation, congestion of the mucous membranes, lung damage and/or metal fume fever. The symptoms of metal fume fever typically appear several hours after exposure and are associated with any combination of the following symptoms; dry throat, cough, chills, fever, headache, chest tightening, shortness of breath, metallic taste, vomiting and fatigue.
- Ingestion:** Ingestion of large amounts of metallic dust may cause a metallic taste, gastro-intestinal discomfort with nausea, vomiting and diarrhea.



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Section 2: Hazards Identification, continued

Skin: Overexposure to this material in the form of dust may cause irritation with dermatitis. Contact with the heated product will cause thermal burns to the skin.

Eye: Overexposure to this material in the form of dust may cause irritation as a "foreign object". Fumes may be irritating to the eyes. Repeated occupational exposures to dust and fumes may cause conjunctivitis.

CHRONIC (long term): see Section 11 for additional toxicological data

Long-term over-exposures to high concentrations of airborne dust may cause increased mucous flow in the nose and respiratory system. This condition usually disappears after exposure ceases.

Long-term over-exposure by inhalation of metallic dusts and fumes may cause chronic obstructive lung disease, rhinitis and/or bronchitis. Long-term over-exposure by inhalation of dusts may lead to fibrosis.

Prolonged or repeated exposure to copper fume can discolor skin and hair. Long-term over-exposure by ingestion may damage the liver and kidneys.

Chronic exposures to low levels of Lead from dust and fume may lead to accumulation of Lead in the body. Chronic exposures to Lead can cause adverse reproductive and developmental effects and may affect the GI tract, Central Nervous System (CNS), kidneys, blood, gingival tissue and eyes.

Medical Conditions Aggravated by Exposure: Overexposure to this material in the form of metallurgical dust is hazardous to health. Pre-existing pulmonary and skin conditions such as emphysema, asthma, bronchitis and dermatitis may be aggravated by exposure to this material. Individuals with "Wilson's disease", a rare condition that interferes with the body's ability to eliminate copper, should consult a physician before exposures to copper dusts and fumes.

Interactions With Other Chemicals: See Section 10

Potential Environmental Effects: Prevent the release of waste metals into the environment.

Section 3: Composition / Information on Ingredients

Hazardous Ingredients:

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Wt. %</u>
Copper (Cu)	7440-50-8	90.3– 95.8
Tin (Sn)	7440-31-5	4.2 – 9.0
Zinc (Zn)	7440-66-6	0 – 0.3
Phosphorus	7723-14-0	0.03 – 0.35
Lead (Pb)	7439-92-1	0 – 0.05
Iron (Fe)	7439-89-6	0 – 0.1

Section 4: First Aid Measures

Inhalation: If high airborne concentrations are present, take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). If symptoms are experienced, remove source of contamination or move victim to fresh air. Obtain medical advice.

Eye Contact: Do not allow victim to rub eye(s). Let the eye(s) water naturally for a few minutes. Have victim look right and left, and then up and down. If particle does not dislodge, flush with lukewarm, gently flowing water for 15 minutes or until particle is removed, while holding the eyelid(s) open. If irritation persists, obtain medical attention. DO NOT attempt to manually remove anything stuck to the eye(s).

Skin Contact: No health effects expected. If irritation occurs, gently brush away dust particles quickly. Wash gently and thoroughly with lukewarm water and non-abrasive soap for 5 minutes. If irritation persists, obtain medical advice.

Ingestion: If dust is swallowed, obtain medical advice or contact a Poison Control Center.



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Section 5: Fire Fighting Measures

Flammable Properties:	This product is not flammable. Under rare conditions, finely divided powder or dust from machining may be considered to be a fire and explosion hazard in the presence of high temperatures or ignition sources.
Suitable extinguishing Media:	Use water or other extinguishing media appropriate for the surrounding fire.
Unsuitable extinguishing Media:	Not available
Explosion Data	
Sensitivity to Mechanical Impact:	Not sensitive
Sensitivity to Static Discharge:	Not sensitive
Specific Hazards arising from the Chemical:	During a fire, the product may release fumes of the component metals and toxic metal oxide fumes.
Protective Equipment and precautions for firefighters:	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance.

Section 6: Accidental Release Measures

Personal Precautions:	Wear proper personal protective equipment as indicated in Section 8.
Environmental Precautions:	Prevent material from contaminating soil and from entering sewers or waterways.
Methods for Containment:	No special methods required.
Methods for Clean-up:	Scoop or shovel spilled material into an appropriate waste container for recycling or disposal. For dust, use a vacuum with appropriate filters or a wet method to reduce airborne dust during clean-up; do not dry sweep.

Section 7: Handling and Storage

Storage Conditions:	Product should be stored in a clean, dry area.
Handling Precautions:	Workers should be properly trained in safety procedures for cutting, grinding and other machining operations where these products are used. Wear appropriate personal protective equipment suitable for the type of operation and conforming to workplace requirements.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines

Consult local authorities for acceptable exposure limits.

<u>Ingredient</u>	<u>ACGIH TLV</u> <u>(8-hr. TWA)</u> <u>(mg/m³)</u>	<u>U.S. OSHA PEL</u> <u>(8-hr. TWA)</u> <u>(mg/m³)</u>
Copper	0.2 (fume) 1 (dust and mist, as Cu)	0.1 (fume as Cu) 1 (dust and mist, as Cu)
Tin	2 (as Sn)	2 (as Sn)
Phosphorus	0.1	0.1
Lead	0.05 BEI	0.05 (29 CFR 1910.1025) OSHA Carcinogen

Other Exposure controls: NIOSH IDLH (Immediately Dangeorous to Life or Health) = 100 mg/m³ (as Cu or Pb)

NIOSH REL Copper dust = 1 mg/m³ TWA



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Section 8: Exposure Controls/Personal Protection, continued

Exposure Controls

- Engineering Controls:** Provide local exhaust ventilation or general dilution to maintain exposure levels below the exposure limits. Monitor noise levels to determine the hearing protection requirements.
- If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.
- Personal Protection**
- Eye/Face Protection:** Wear safety glasses with side shields or goggles. Wear equipment appropriate for the type of operation being performed.
- Skin Protection:** Wear protective gloves and clean body-covering clothing when necessary to prevent exposure to this product. Wear protective equipment appropriate for the type of operation being performed.
- Respiratory Protection:** When metal dust concentrations in air exceed the occupational exposure guidelines, always wear respiratory protection. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
- A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or Canadian Standards Association (CSA) Standard Z94.4-2002 must be followed whenever workplace conditions warrant a respirator's use.
- NIOSH Respirator Recommendations for Copper fume (as Cu)
- Up to 1 mg/m³:
(APF = 10) An approved respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. An approved supplied-air respirator.
- Up to 2.5 mg/m³:
(APF = 25) An approved supplied-air respirator operated in a continuous-flow mode. An approved powered, air-purifying respirator with a high-efficiency particulate filter.
- Up to 5 mg/m³:
(APF = 50) An approved air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. An approved supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode. An approved powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter. An approved self-contained breathing apparatus with a full facepiece. An approved supplied-air respirator with a full facepiece.
- Up to 100 mg/m³:
(APF = 2000) An approved supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
- Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) An approved self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. An approved supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.
- Escape:
(APF = 50) An approved air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. An approved escape-type, self-contained breathing apparatus.
- Other Protective Equipment:** Wear hearing protection appropriate to the noise levels generated during all machine operations.
- General Hygiene Measures:** Launder contaminated clothing before re-wearing, or discard. Do not eat, drink or smoke in work areas. Wash hands thoroughly after working with this material and before eating, drinking, smoking or using the toilet. Maintain good housekeeping, keep the workplace clean and minimize the generation of airborne dust.



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Section 9: Physical and Chemical Properties

Physical State:	Solid	Flash Point & method:	Not applicable
Appearance, Color and Odor:	Metal tube or shaped piece, lustrous copper/orange color, odorless.	Autoignition Temperature:	Not applicable
Odor Threshold:	Not applicable	Flammability Limits in Air:	Not applicable
pH:	Not applicable	Vapour Pressure:	Not applicable
Density:	8.8 - 8.86 g/cm ³ at 20°C (68°F)	Vapour Density:	Not applicable
Partition coefficient:	Not applicable	Evaporation Rate:	Not applicable
Solubility:	Insoluble	Boiling Point/Range:	2595°C (4703°F) approx.
Viscosity:	Not applicable	Melting Point:	1027-1049°C (1880-1920°F)
Decomposition Temperature:	Not available		

Section 10: Stability and Reactivity

Chemical Stability:	Stable material. May turn green on prolonged contact with air due to formation of cupric carbonate.
Conditions to Avoid:	Extreme heat.
Incompatible Materials:	Chlorine, fluorine, strong oxidising agents, strong acids, strong bases, sodium azide, acetylene.
Hazardous Decomposition Products:	Thermal decomposition may release metal oxide fumes when product is heated above its melting point.
Hazardous Reactions:	Not available

Section 11: Toxicological Information

Acute Toxicity Data

Acute Toxicity Data is not available for this article.

Other Toxicity Data

Carcinogenicity:	Copper metal is not considered a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA or NTP (National Toxicology Program). ACGIH has designated metallic Copper as A4 – Not Classifiable as a Human Carcinogen. Lead carcinogenicity: IARC group 2B; ACGIH A3. [Lead is present at less than 0.1%, by weight].
Irritation:	Exposure to fine particulate may cause eye, skin and lung irritation and discomfort.
Corrosivity:	Not applicable
Sensitization:	Not applicable
Neurological Effects:	Not applicable
Genetic Effects:	Not available
Reproductive Effects:	Lead: embryotoxicity in animals; reproductive toxicity in humans. [Lead is present at less than 0.1%, by weight].
Developmental Effects:	Lead: saturnism; injury during the postnatal period in humans. [Lead is present at less than 0.1%, by weight].
Target Organ Effects:	From exposures to Copper dust and fume: Upper respiratory system, Eyes, Skin, Liver and Kidney (increased risk to persons with Wilson's Disease). Lead; GI tract, CNS, kidneys, blood, gingival tissue, eyes



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Section 12: Ecological Information

Ecotoxicity:	Copper metal and compounds released into the natural environment have long-term adverse effects on the aquatic environment.
Persistence/Degradability:	Not applicable
Bioaccumulation/Accumulation:	Not available
Mobility:	Not available

Section 13: Disposal Considerations

Waste Disposal Method:	It is the responsibility of the user to dispose of, or send for metal reclamation, any unused material, residues and containers in accordance with local, regional, national and international regulations. Prevent releases of this material into the environment. Do NOT dump into any sewers, on the ground or into any body of water. Store material for disposal or recycling as indicated in Section 7 Handling and Storage.
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Section 14: Transport Information

U.S. Hazardous Materials Regulation (DOT 49CFR):	As sold, not regulated for transport.
Canadian Transportation of Dangerous Goods (TDG):	Not regulated for transport.
ICAO/IATA:	Not regulated for transport.

Section 15: Regulatory Information

USA

TSCA Status:	All substances are listed in the TSCA inventory.
SARA Title III:	
Sec: 311/312:	Exposures to dust and fume: Acute; Chronic
Sec. 313:	Copper, Zinc, Lead.
CERCLA RQ:	Applicable to Copper, Zinc, Lead. The RQ for these hazardous substances is limited to those pieces of the metal having a diameter smaller than 100 µm.

Canada

	This product has been classified in accordance with the hazard criteria of the <i>Controlled Products Regulations</i> and the SDS contains all the information required by the <i>Controlled Products Regulations</i> .
WHMIS Classification: (for workplace exposures)	As sold, this product is considered a manufactured article and is not controlled by WHMIS. In some workplaces, operations with this product may lead to generation of metallic dust or fume. Exposure to metallic dusts and fumes may have occupational health hazards and is controlled under WHMIS. D2B – Materials causing other toxic effects. – Irritation and chronic health effects with repeated exposure by inhalation, to dust and fumes.
New Substance Notification Regulations:	All substances in this product are listed on Canada's Domestic Substances List (DSL).
National Pollutant Release Inventory:	Copper, Zinc, Lead are NPRI reportable substances.



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Section 16: Other Information

Preparation Information:

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