

Date: November 30, 2011  
MSDS Code: CU-FE-SN-  
ZN

### MATERIAL SAFETY DATA SHEET

NFPA RATING: Health: 1 Flammability: 1 Reactivity: 1

Product: GILDING, 95%, COMM. BRONZE 90%, RED BRASS 85%, LOW BRASS 80%, CART. BRASS 70%, YELLOW BRASS 66%, YELLOW BRASS 65%

UNS Alloy Number(s): C21000, C21001, C22000, C23000, C24000, C26000, C26002, C26800, C27000, C27200, C40110

#### SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common Name : COPPER-IRON-TIN-ZINC Supplier : Wolverine Tube, Inc.  
Chemical Name : COPPER-IRON-TIN-ZINC Address : 2100 Market Street, N. E.  
Formula : Cu-Fe-Sn-Zn City, St. Zip : Decatur, AL 35609-2202  
Product CAS No. : Chemical Mixture Phone : 256-353-1310  
Product Use : Tubing, rod, bar, strip

FOR CHEMICAL EMERGENCY CALL CHEMTREC (24 HOURS):  
1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)  
1-703-527-3887 (Outside Above Area)

#### SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	% Wt.	OSHA-PEL (8-hour TWA)	ACGIH-TLV (8-hour TWA)
COPPER	7440-50-8	89 - 91%	Dust: 1.0 mg/m <sup>3</sup> Fume: 0.1 mg/m <sup>3</sup>	Dust: 1 mg/m <sup>3</sup> Fume: 0.2 mg/m <sup>3</sup>
IRON	1309-37-1	0.05%	10 mg/m <sup>3</sup> (as Fe <sub>2</sub> O <sub>3</sub> )	5 mg/m <sup>3</sup> (as Fe <sub>2</sub> O <sub>3</sub> )
TIN	7440-31-5	0.10%	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
ZINC	1314-13-2	Remainder	5 mg/m <sup>3</sup> (as ZnO fume) 5 mg/m <sup>3</sup> (as resp. dust) 15 mg/m <sup>3</sup> (as total dust)	5 mg/m <sup>3</sup> (as ZnO fume) 10 mg/m <sup>3</sup> (as total dust)

NOTE: The percentage by weight values reported for the ingredients in this product represent approximate formulation value. Other trace metals may be present in quantities less than 0.1%

#### SECTION 3: PHYSICAL DATA

Physical Form : SOLID Boiling Temperature : N/A  
Freeze/Melt Temperature : 1680-1910°F Vapor Pressure : N/A  
Evaporation Rate : N/A Specific Gravity : 8.53-8.80  
Density : N/A Water Solubility : N/A  
pH : N/A Color : Yellow or golden  
Odor : N/A

**SECTION 4: FIRE AND EXPLOSION DATA**

*Flashpoint:* N/A                      *Auto-Ignition Temp:* N/A                      *LEL:* N/A                      *UEL:* N/A

In the solid form, there are no fire or explosion hazards with this alloy. Fine chips or dust may ignite and should be stored in a well-ventilated area. In case of fire, use extinguishing agents appropriate for the surroundings or materials. Dry chemicals or sand should be used to extinguish fires. Fire fighters should wear full protective clothing and where conditions warrant NIOSH-approved self-contained breathing apparatus—see Sections 6 and 7.

**SECTION 5: REACTIVITY DATA**

*Stability* : Generally considered stable  
*Incompatibilities* : Strong acids and bases, oxidizing agents, acetylene, sodium azide  
*Hazardous Decomposition or By-Products* : Metal oxides are emitted when heated above the melting point.

**SECTION 6: HEALTH HAZARD INFORMATION**

ROUTE OF ENTRY

EFFECTS OF OVEREXPOSURE

*Inhalation*                      *Acute:* Irritation of the eyes, skin, and respiratory system. Metal fume fever, with flu-like symptoms. Metal fume fever usually runs its course within 24-48 hours. Also, copper may cause discoloration of hair and skin. If exposed, remove to fresh air and seek medical attention.  
*Ingestion*                      May cause abdominal pain, nausea, vomiting and diarrhea. Copper poisoning may result in hemolytic anemia and kidney, liver and spleen damage. If large quantities are ingested, seek medical attention.  
*Skin*                              May cause irritation. Wash immediately with soap and copious amounts of water.  
*Eye*                              May cause irritation. Flush with plenty of water, and seek medical attention.

**SECTION 7: SPILL, LEAK AND DISPOSAL PROCEDURES**

No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or wet-sweeping to prevent heavy concentrations of airborne dust. Clean-up personnel should wear respirators and protective clothing. Scrap metal can be reclaimed for re-use. Follow Federal, State, and Local regulations regarding disposal.

**SECTION 8: SPECIAL PROTECTION INFORMATION**

Use general and local exhaust ventilation to keep airborne concentrations of dust and fumes below the PEL. When required, employees should wear MSHA- or NIOSH-approved respirators for protection against airborne dust or fumes. Approved safety glasses and/or goggles should be worn during any machining, grinding, cutting, or other operations from whence airborne particles may be emitted. Food or drink should not be consumed in the work area.

**SECTION 9: SPECIAL PRECAUTIONS**

Use good housekeeping practices to prevent accumulations of dust and to keep airborne dust concentrations at a minimum. Avoid breathing dust or fumes. Store dust away from source of ignition.

*This product contains toxic chemicals (copper) which could produce fumes or dust as described in Section 6. The information furnished complies with the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). Information herein is given in good faith as authoritative and valid; however, no warranty, expressed or implied, can be made.*