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FLAMMABILITY	0
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PROTECTIVE EQUIPMENT	

## Bare Copper Wire

NFPA RATING

HMIS RATING

### SECTION I. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Bare Copper Wire; Single & Multiple Stand Construction

**Manufacturer/Vendor Information:** **Malin Company**

5400 Smith Road

Brook Park, Ohio 44142

Phone (216) 267-9080

Fax (216) 267-9077

**24-Hour Emergency Phone: (800) 424-9300 Chemtrec**

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the Substance

GHS-US classification



H302 - Harmful if swallowed

H333 - May be harmful if inhaled

H372 - Causes damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

H412 - Harmful to aquatic life with long lasting effects

#### 2.2 Unclassified Hazards

**2.2.1** This material is stable under most conditions and presents minimal risk in the solid form as shipped, but thermal decomposition can create toxic vapors, gases, or fumes.

**2.2.2 Abrasion, grinding, cutting, melting, welding, or other operations which reduce the particle size of the material will change the hazard classification of the product.**

**2.2.3** Reduction of the product into a dust or fume can create an explosion hazard if the dust or fume becomes airborne in the presence of a spark or ignition source.

**2.2.4** This material as a dust or fume poses a health hazard when inhaled and / or ingested.

#### 2.3 Unknown Acute Toxicity

No data available on inhalation acute toxicity. CDC (ASTDR) has established a minimal risk level for ingested copper at 0.01 mg/kg/day for acute oral exposure (1-14 days).

**SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS**

<u>CAS No.</u>	<u>Chemical Name</u>	<u>% by wt.</u>
7440-50-8	Copper	>99.99

**SECTION 4. FIRST AID****4.1 Instructions**

**4.1.1 Eyes:** If dust or fume contacts the eyes, flush with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

**4.1.2 Skin:** Wash with soap and water. Get medical attention if irritation develops or persists.

**4.1.3 Ingestion:** Rinse mouth. If conscious, induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**4.1.4 Inhalation:** If exposed to excessive levels of dusts or fumes, move to fresh air and get medical attention if cough or other symptoms develop. If not breathing administer CPR.

**4.2 Signs and Symptoms**

Irritation of eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis.

**ACUTE "Metal Fume Fever" Symptoms include: irritation of eyes, nose, throat, and skin; flu-like symptoms – sudden or delayed onset of chills, weakness, fatigue, nausea, vomiting, headache, diarrhea, muscular pains; tightness of chest; paralysis; loss of consciousness or death.**

**4.3 Note to Physician**

Wilson's Disease or G6PD deficiency causes individuals to absorb, retain, and store copper excessively, leading to copper toxicosis.

**SECTION 5. FIRE FIGHTING MEASURES**

**5.1 Fire Fighting / Extinguishing Media:** Particulate copper fire utilize: powdered dolomite, sodium chloride, or graphite.

**5.2 Fire Fighting Procedures:**

(1.) Evacuate area and fight fire from a safe distance. As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear. Avoid direct water stream on molten material. Molten form explodes upon contact with water.

(2.) Particulate copper powder is a moderate fire hazard. For copper fires do not use water; apply powdered dolomite, sodium chloride, or graphite. Material as shipped does not support combustion. Use fire extinguishing media appropriate for surrounding material.

**5.3 Fire and Explosion Hazards:** Heavy airborne concentrations of fine powder in enclosed spaces may ignite or explode in the presence of an ignition source.

**5.4 Unusual Hazards:** Toxic gases and vapors may be released in a fire. In the presence of halogens, copper powder may become explosive with heat, percussion, or light friction. In the presence of wet acetylene and ammonia, copper forms explosive acetylides.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Accidental Release Measures:** Use clean up measures that avoid dust generation (mist with water, wet vacuum). Wear a NIOSH/MSHA approved respirator if dust will be generated in clean-up. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to environment.

**SECTION 7. HANDLING AND STORAGE****7.1 Handling Information**

Not hazardous with intended use and / or in stable solid state.

**7.2 Storage Information**

Do not store near strong acids, bases or oxidizing agents or incompatible materials as described in Section 10.

**7.3 Other Precaution**

Minimize dust/fume generation and accumulation. Provide good ventilation in process area to prevent formation of vapor. Avoid inhalation of dust or fume. Wash hands and exposed skin with mild soap and clean water after handling. Wash excess dust from skin.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION****8.1 Exposure Limits Copper:**

ACGIH TWA: 1 mg/m<sup>3</sup> (dusts & mists), ACGIH TWA: 0.2 mg/m<sup>3</sup> (fume), OSHA PEL TWA: 1 mg/m<sup>3</sup> (dust), OSHA PEL TWA: 0.1 mg/m<sup>3</sup> (fume).

**8.2 Engineering Controls**

If user operations generate dust or fume, use ventilation to keep exposure to airborne contaminants below the exposure limits.

**8.3 PPE**

**8.3.1 Eye Protection:** If user operations generate dust or fume use safety glasses with side-shields or goggles.

**8.3.2 Skin Protection:** Use protective clothing to prevent repeated or prolonged skin contact. Wash hands and exposed areas with mild soap and water.

**8.3.3 Respiratory Protection:** A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. For concentrations up to 10 times the exposure limit, use NIOSH or MSHA approved half- or full-face, air-purifying respirator. For higher concentrations, consult a professional industrial hygienist.

**SECTION 9. PHYSICAL / CHEMICAL PROPERTIES**

**Appearance:** Reddish brown, lustrous, malleable solid. / Metal in various forms (rod, wire).

**Odor:** No odor.

**Melting Point:** 1981° F

**Boiling Point:** 4703° F

**Specific Gravity:** 8.94

**Vapor Pressure:** 1 mmHg @ 1628° C / 20 mmHg @ 1970° C

**Solubility in Water:** Insoluble

**\*\*Data regarding the heat of vaporization, vapor density, odor threshold, pH, freezing point, flash point, evaporation rate, relative density, flammability limits (upper/lower), flammability (solid, gas), partition coefficient: n-octanol/water, auto ignition temperature, decomposition temperature, and viscosity, is not available at this time.**

**SECTION 10. STABILITY AND REACTIVITY****10.1 Reactivity**

No additional information available.

**10.2 Chemical Stability**

Noncombustible solid in bulk form, but powdered form may ignite.

**10.3 Possibility of Hazardous Reactions**

Not established.

**10.4 Conditions to Avoid**

Direct sunlight. Extremely high or low temperatures.

**10.5 Incompatible Materials**

Potentially explosive with acetylinic compounds ( $C_2H_2$ ), 3-bromopropene ( $BrO_3^-$ ), ethylene oxide ( $C_2H_4O$ ), lead azide ( $Pb(N_3)_2$ ), fused ammonium nitrate ( $NH_4NO_3$ ), nitrosyl fluoride (FNO) and iodine pentafluoride ( $IF_5$ ). Ignites on contact with chlorine ( $Cl$ ), fluorine ( $F_2$ ), and hydrazine mononitrate ( $H_5N_3O_3$ ). Reacts violently with sodium azide ( $NaN_3$ ), halogenates, peroxides - hydrogen peroxide ( $H_2O_2$ ) & sodium peroxide ( $Na_2O_2$ ), hydrogen sulfide ( $H_2S$ ), hydrazoic acid ( $HN_3$ ), bromates ( $BrO_3^-$ ), chlorates ( $ClO_3^-$ ), iodates ( $NaIO_3$ ), chloride ( $Cl^-$ ), hypochlorites ( $ClO^-$ ), potassium oxide ( $K_2O$ ), potassium hydroxide (KOH), copper nitrate ( $Cu(NO_3)_2$ ), sulfur (S); strong acids, strong bases, oxidizers.

**10.6 Hazardous Decomposition Products**

Toxic metal fumes. Copper oxide.

**SECTION 11. TOXICOLOGICAL INFO****11.1 Route(s) of Exposure**

Inhalation, eye, and ingestion of dust or fume.

**11.2 Effects of Overexposure**

Mild to moderate exposure: Ingestion or inhalation may cause irritation of the respiratory tract, moderate stomach irritation, and skin dysfunction including discoloration. Dust or fume may cause eye irritation. Dust may cause skin irritation.

Chronic Exposure: Skin sensitization; neurological damage; respiratory disease; and kidney dysfunction.

Acute Exposure: "Metal Fume Fever" due to overexposure to welding gases or lack of oxygen, characterized by metallic taste in mouth.

Target Organs: Eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson's disease).

Medical Conditions Aggravated by Exposure: Wilson's disease

**11.3 Signs and Symptoms**

Irritation of eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis.

**ACUTE "Metal Fume Fever" Symptoms include: irritation of eyes, nose, throat, and skin; flu-like symptoms – sudden or delayed onset of chills, weakness, fatigue, nausea, vomiting, headache, diarrhea, muscular pains; tightness of chest; paralysis; loss of consciousness or death.**



**SECTION 11. TOXICOLOGICAL INFO (Con't)****11.4 Carcinogenicity**

**Copper:** NTP: No IARC: No OSHA: No

**11.5 Toxicology Tests**

Copper (7440-50-8)

Test : 1

LD/LC: LD<sub>50</sub>

Test Type: Acute

Test Route: Intraperitoneal

Test Species: Mouse

Results Amounts: 3.5 mg/kg

Inhalation Toxicity: Scientific evidence does not indicate that exposure to copper dust or fume causes upper respiratory irritation in a manner that is different than that following high dose exposure to other non-specific irritants.

Reproduction: Female rate 22 weeks prior to mating, oral route, dose 1520 ug/kg – specific developmental abnormalities (musculoskeletal system). At 152 mg/kg effects included stunted fetus and central nervous system. Female rats 35 weeks prior to mating, oral route, 1210 ug/kg – effects on fertility (pre- and post-implantation mortality) (RTECS).

Additional Information: There are no human data and inadequate animal data (HSDB) for carcinogenicity.

**SECTION 12. ECOLOGICAL INFO\*****12.1 Toxicity**

<b>Copper (7440-50-8)</b>	
LC50 fishes 1	0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 other aquatic organisms 1	0.0426 - 0.0535 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC50 fish 2	< 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 other aquatic organisms 2	0.031 - 0.054 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])

\*Adapted from Freeport-McMoran Cadmium Copper C16200 SDS

**SECTION 13. DISPOSAL CONSIDERATIONS****13.1 Waste Disposal Method**

Recycle metal to a metal recovery agent. Waste should be disposed in accordance with Federal, State, and Local environmental control regulations. Avoid release to the environment.

**SECTION 14. TRANSPORT INFORMATION****14.1 USDOT**

Not regulated in solid form.

**SECTION 15. REGULATORY INFORMATION****15.1 US FEDERAL - REGULATIONS**

**Federal Drinking Water Standards: Copper:** EPA 1300 ug/l

**CERCLA: Copper:** RQ 5000 lbs; no reporting is required if diameter of the pieces of solid material is  $\geq$  100 mm (0.04 inches) for copper.

**RCRA: Copper:** Not listed.

**SECTION 15. REGULATORY INFORMATION (Con't)**

**Clean Water Act: Copper:** Designated as a toxic pollutant and is subject to effluent limitations.

**SARA Title III – Emission Reporting: Copper** is reportable per Section 313. Depending on quantity of wire processed, **copper** may be individually reportable under TRI.

**TSCA: Copper:** Listed.

**CERCLA Hazardous Substances:** No reporting of releases of the solid form is required if the mean diameter of the pieces of the solid metal released is greater than 100 micrometers (0.004 inches).

**Clean Air Act: Copper:** Not on HAPs list.

**15.2 CANADA – REGULATIONS**

**Canadian Domestic Substance List: Copper:** Listed.

**Canadian Ingredient Disclosure List: Copper:** Listed.

**WHMIS Classification: Copper:** Uncontrolled.

**15.3 EU – REGULATIONS**

**EINECS (European Inventory of Existing Commercial Chemical Substances): Copper:** Listed.

**SECTION 16. OTHER INFORMATION**

**Reason for Revision:** Updated exposure limits and formatting.

**Prepared By:** **Malin Company**

Disclaimer: This information is based on available scientific evidence known to Malin Company. It is provided solely for the compliance to the Hazard Communication Standard. This information is furnished without warranty, expressed or implicit and is subject to change.