MATERIAL SAFETY DATA SHEET

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IMPORTANT: Read this MSDS before handling and disposing of this product and pass this information to employees, customers and users of this product.

SECTION 1 – MATERIAL IDENTIFICATION

Identity: Freedom Gray or Tin/Zinc Coated Copper

UNS Designation: None

ASTM Specification: B370

SECTION II – COMPOSITION / INGREDIENTS

Chemical Name	CAS NO.	Percent by wt.	Permissible Air Concentration (mg/m^3)	
			OSHA PEL	ACGIH TLV
*COPPER	7440-50-8	90	0.1 (Fume) 1 (Dust)	0.2 (Fume) 1 (Dust)
*ZINC	7440-66-6	3 - 5	5 (Fume) 15 (Fume)	2 (as Zinc Oxide, and Respirable)
TIN	7440-31-5	3 - 5	2	2

*Identifies substances that are subject to the requirements of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

SECTION III – PHYSICAL DATA

Color: Metallic Gray

Melting point (°F): **Copper** 1980
Coating 390

Specific Gravity (H_2O=1): 8.89-8.94

Solubility in Water: Negligible

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): Not Applicable

Extinguishing Media: Dry Sand or Metal Extinguishing Powders

Special Fire Fighting Procedures: Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

Unusual Fire and Explosion Hazards: Solid form can burn at minimum rate without flame (smolder). Do not use water on molten or smoldering metal. Grinding or other machining operations can produce fine particulate dust that may explode in the presence of a strong ignition source.

SECTION V – HEALTH HAZARD DATA

Specialty copper alloys are generally not considered hazardous in the form shipped (solid bars, billets, rods, wire, etc.) However, if your process involves grinding, melting, welding, cutting, or any other process that causes a release of dust or fume, hazardous levels of dust or fume of the constituents of these alloys could be generated. The following is a list of potential health effects for all hazardous elements that are possibly contained in any of our alloys. Please refer to Section II titled "Composition / Ingredients" for a list of those specific elements contained in this particular alloy.

Primary Route(s) of Entry: Inhalation

Target Organs: Respiratory System

Acute Hazards:

Elevated exposure to excessive concentrations of metal dust can cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Exposure to metal fumes can produce "metal fume fever", which may include chills and fever, metallic taste in the mouth, dryness and irritation of the throat, cough, stomach pain, headache, nausea, vomiting, and muscle and joint pain. The onset of symptoms may be delayed 4 to 12 hours, and could last from 12 to 48 hours.

Chronic Hazards:

Copper: Dust and/or fumes may cause irritation of eyes, skin and respiratory tract. Dry burning throat, headache, muscle aches, cough, nausea, chills, fever, metallic taste, and skin and hair discoloration.

Zinc: Zinc is very low in toxicity but inhalation of fumes may cause "metal fume fever". The onset of symptoms may be delayed 4 to 12 hours and may include irritation of the nose, mouth and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24 to 48 hours and leave no effect.

Tin: The inhalation of inorganic tin fumes or dust may cause an apparent benign pneumoconiosis called stannosis that is reported not to be disabling.

Medical Conditions Aggravated by Long-Term Exposure:

Persons suffering from chronic respiratory disorders may be adversely affected by exposure to metal fume and airborne particulate matter.

Emergency and First Aid Procedures:

Skin: Flush thoroughly with water.
Eyes: Flush with water, call physician.
Ingestion: Not a likely route of exposure. However, if ingested, seek medical attention.
Inhalation: For persons suspected of over-exposure to airborne fumes and particulates, remove person to fresh air. Seek medical attention promptly.

Carcinogenicity: Not identified as a carcinogen or potential carcinogen by NTP[1], IARC[2] and OSHA[3].

[1] National Toxicology Program
[2] International Agency for Research on Cancer
[3] Occupational Safety and Health Administration

SECTION VI – REACTIVITY DATA

Stability: Stable

Incompatibility (Material to avoid): Avoid contact with strong oxidizers. Avoid liberation of airborne dust that can be explosive.

Hazardous Decomposition Products: At temperatures above the melting point metallic oxide fumes may be generated.

Hazardous Polymerization: Will not occur.

SECTION VII – SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: A clean-up procedure that minimizes exposure is required. Vacuuming is preferred. Place material in closed containers. Do not use compressed air for cleaning. Use NIOSH approved respiratory protection if possibility of dust, and/or fume exposure exists.

Waste Disposal Method: Copper containing waste is normally collected to recover copper value. Should waste disposal be deemed necessary, follow all Federal, State and Local disposal regulations.

SECTION VIII – SPECIAL PROTECTION INFORMATION

Respiratory Protection:	If grinding, cutting, or machining of material generates airborne exposures above recommended limits, then a NIOSH approved respirator should be worn.
Ventilation:	Exhaust dust, mist and/or fume away from the operator.
Engineering Controls:	Use adequate ventilation to keep dust and/or fume concentrations below the occupational exposure limits shown in Section II.
Eye Protection:	Safety glasses or a face shield should be worn, when appropriate.
Gloves:	Protective gloves should be worn, when appropriate.

SECTION IX – SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing:

Good housekeeping must be practiced during storage, transfer, handling and use to avoid excess release of dust. Good personal hygiene procedures should be observed at all times after handling product.

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