

SAFETY DATA SHEET

1 PRODUCT AND SUPPLIER IDENTIFICATION

Product Name: Beryllium Copper Alloy - sheet, foil, rod, wire

Other: Beryllium Cu

Supplier: Stanford Advanced Materials

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Recommended Uses: Scientific Research

2 HAZARDS IDENTIFICATION

GHS Classification (29 CFR 1910.1200): Carcinogenicity, category 1, Specific target organ toxicity, repeated exposure, category 1.

GHS Label Elements:

Signal Word: Danger

Hazard Statements: H350 May cause cancer, H372 Causes damage to lungs through prolonged or repeated inhalation exposure.

Precautionary Statements: P201 Obtain special instructions before use, P202 Do not handle until all safety precautions have been read and understood, P260 Do not breathe dust or fume, P264 Wash skin thoroughly after handling, P270 Do not eat, drink or smoke when using this product, P280 Wear protective gloves/protective clothing/eye protection/face protection, P308+P313 IF exposed or concerned: Get medical advice/attention, P405 Store locked up, P501 Dispose of contents/container in accordance with local, state or federal regulations.

NOTE: In the solid form in which it is provided, this material does not pose a health hazard. Subsequent operations performed by the end user, such as exposure to high temperatures, melting or grinding, may produce beryllium oxide dust or fume. ESPI Metals does not warrant this material for any specific application and all precautions must be taken by the end user to prevent and protect against exposure to inhalable particulate. See section 8 for information on exposure controls and personal protection.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient:	CAS#:	%:	EC#:
Copper	7440-50-8	Balance	231-159-6

Beryllium	7440-41-7	0.4-2.0	231-150-7
Cobalt	7440-48-4	0.2-2.7	231-158-0
Nickel	7440-02-0	0.1-2	231-111-4

4 FIRST AID MEASURES

General Measures: Under normal handling and use, exposure to solid forms of this material present few health hazards. Subsequent operations such as grinding, melting or welding may produce potentially hazardous dust or fumes which can be inhaled or come in contact with the skin or eyes.

INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

INGESTION: Rinse mouth with water. Do not induce vomiting. Seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing, brush material off skin, wash affected area with soap and water. Seek medical attention if symptoms persist.

EYES: Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation. See section 11 for more information.

Indication of Immediate Medical Attention and Special Treatment: No other relevant information available.

5 FIREFIGHTING MEASURES

Extinguishing Media: Use suitable extinguishing media for surrounding material and type of fire.

Unsuitable Extinguishing Media: No information available.

Specific Hazards Arising from the Material: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings and dust from processing may be ignitable. May emit toxic metal oxide fumes under fire conditions.

Special Protective Equipment and Precautions for Firefighters: Full face, self-contained breathing apparatus and full protective clothing when necessary.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: In solid form this material poses no health or environmental risk. If spilled material is a particulate, establish a restricted entry zone based on the severity of the spill. Wear appropriate respiratory and protective equipment specified in section 8. Avoid dust formation. Avoid contact with skin and eyes. Avoid breathing dust or fume.

Methods and Materials for Containment and Cleaning Up: Sweep or scoop solid product and place in a properly labeled closed container. Cleanup particulate spills with a vacuum system utilizing a HEPA filtration system. Special precautions must be taken when changing filters on HEPA vacuum cleaners

used to clean up hazardous materials. Caution should be taken to minimize airborne generation of particulate and avoid contamination of air and water. Use only non-sparking tools. Place in properly labeled closed container for further handling and disposal.

Environmental Precautions: Do not allow to enter drains or to be released to the environment.

7 HANDLING AND STORAGE

Precautions for Safe Handling: Avoid creating dust. Avoid contact with skin and eyes. Wash thoroughly before eating or smoking. Provide adequate ventilation if dusts are created. See section 8 for information on personal protection equipment.

Conditions for Safe Storage: Store in a sealed container. Store in a cool, dry area. See section 10 for more information on incompatible materials.

8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:	OSHA/PEL:	ACGIH/TLV:
Copper	0.1 mg/m ³	0.2 mg/m ³
Beryllium	0.002 mg/m ³	0.00005 mg/m ³
Cobalt	0.1 mg/m ³	0.02 mg/m ³
Nickel	1 mg/m ³	1.5 mg/m ³

Engineering Controls: Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use vacuum and wet cleaning methods for particulate removal from surfaces. Be certain to de-energize electrical systems as necessary before beginning wet cleaning. Use vacuum cleaners with high efficiency particulate air (HEPA) filters. Do not use compressed air, brooms, or conventional vacuum cleaners to remove particulate from surfaces as this activity can result in elevated exposures to airborne particulate. Follow the manufacturer's instructions when performing maintenance on HEPA filtered vacuums used to clean hazardous materials. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Respiratory Protection: When potential exposures are above the occupational limits, approved respirators must be used.

Eye Protection: Safety glasses or goggles

Skin Protection: Wear impermeable gloves, protective work clothing as necessary.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Form: Solid in various forms

Color: Copper colored

Odor: Odorless

Odor Threshold: Not determined

pH: N/A
Melting Point: ~1000 °C
Boiling Point: No data
Flash Point: N/A
Evaporation Rate: N/A
Flammability: No data
Upper Flammable Limit: No data
Lower Flammable Limit: No data

Vapor Pressure: No data
Vapor Density: N/A
Relative Density (Specific Gravity): ~8.5 g/cc

Solubility in H₂O: Insoluble
Partition Coefficient (n-octanol/water): Not determined

Autoignition Temperature: No data
Decomposition Temperature: No data
Viscosity: N/A

10 STABILITY AND REACTIVITY

Reactivity: No data

Chemical Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: No data

Conditions to Avoid: Avoid creating or accumulating fines or dusts.

Incompatible Materials: Acids, oxidizers.

Hazardous Decomposition Products: Beryllium oxides.

11 TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, skin, eyes. Product as shipped does not present an inhalation hazard; however subsequent operations may create dusts or fumes which could be inhaled.

Symptoms of Exposure: Fines/dusts may irritate skin and eyes.

Acute and Chronic Effects:

Copper: Copper is a trace element that is essential for human health. Chronic exposure to copper dust can irritate the respiratory tract, nose, mouth and eyes, and cause headaches, dizziness, nausea and diarrhea. Ingestion of excessive amounts of copper may cause gastrointestinal distress. Chronic ingestion may damage the liver and kidneys.

Beryllium: Some people inhaling low concentrations of beryllium develop chronic beryllium disease, a granulomatous lung disease characterized by dyspnea, cough, reduced pulmonary function, and a variety of other symptoms including weight loss. The lack of a dose-response relationship between the extent of exposure and development of the disease, long latency period between exposure and onset,

and the low incidence among beryllium-exposed individuals suggests that the disease is immune mediated.

Cobalt: Acute exposure to cobalt metal dusts or fumes is characterized by irritation to the eyes, and to a lesser extent, irritation to the skin. Chronic exposure to cobalt metal dust or fumes may cause respiratory and dermatologic signs and symptoms. Chronic exposure to cobalt by inhalation in humans results in effects on the respiratory system, such as respiratory irritation, wheezing, asthma, decreased lung function, pneumonia, and fibrosis.

Nickel: The most common harmful health effect of metallic nickel in humans is an allergic skin reaction in those who are sensitive to nickel. Although nickel compounds are known human carcinogens, the evidence suggests that the relatively insoluble metallic nickel is less likely to present a carcinogenic hazard than are the nickel compounds that tend to release proportionately more nickel ion.

Acute Toxicity: No data

Carcinogenicity: Beryllium: NTP: K - Known to be carcinogenic **IARC:** 1 - Carcinogenic to humans

Carcinogenicity: Nickel: NTP: R - reasonably anticipated to be a human carcinogen **IARC:** 2B - possibly carcinogenic to humans

To the best of our knowledge the chemical, physical and toxicological characteristics of the substance are not fully known.

12 ECOLOGICAL INFORMATION

Ecotoxicity: No data

Persistence and Degradability: No data

Bioaccumulative Potential: No data

Mobility in Soil: No data

Other Adverse Effects: No further relevant information available.

13 DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Product: Dispose of in accordance with Federal, State and Local regulations.

Packaging: Dispose of in accordance with Federal, State and Local regulations.

14 TRANSPORT INFORMATION

Shipping Regulations: Not regulated

UN Number: N/A

UN Proper Shipping Name: N/A

Transport Hazard Class: N/A

Packing Group: N/A

Marine Pollutant: No

15 REGULATORY INFORMATION

TSCA Listed: All components are listed.

Regulation (EC) No 1272/2008 (CLP): Carcinogenicity, category 1, Specific target organ toxicity, repeated exposure, category 1.

Canada WHMIS Classification (CPR, SOR/88-66): Class D, Division 2, Subdivision A - Very toxic material causing other toxic effects, Class D, Division 2, Subdivision B - Toxic material causing other toxic effects.

HMIS Ratings: Health: *(chronic) **Flammability:** 0 **Reactivity:** 0

NFPA Ratings: Health: 1 **Flammability:** 0 **Reactivity:** 0

Chemical Safety Assessment: A chemical safety assessment has not been carried out.

16 OTHER INFORMATION

This material safety data sheet is offered solely for your information, consideration, and investigation. Stanford Advanced Materials provides no warranties, either express or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein.