



Fisk Alloy Wire

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Phosphor Bronze Alloy
Chemical Name: Metal Alloy
Synonyms: Copper Tin Phosphorus Alloys, Alloy Nos. C50500, 50700, C51000, C51900, C52100
Chemical Family: Copper Alloy
Formula: Not applicable - mixture
Product Use: Metallurgical Products

Company Address: Fisk Alloy Inc., 10 Thomas Road, P.O. Box 26, Hawthorne, NJ 07507, USA
MSDS Issue Date: December 2009

Technical Information:
Call Fisk Alloy at: (973) 427-7550
www.fiskalloy.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

| CAS Number | Components | Weight % | EINECS/ ELINCS | EU Classification | |
|------------|------------|----------|----------------|-------------------|----------|
| | | | | Symbol | R-Phrase |
| 7440-50-8 | Copper | 90 – 99 | 231-159-6 | None | None |
| 7440-31-5 | Tin | 1 – 9 | 231-141-8 | None | None |

OSHA Regulatory Status: In solid form this material is not hazardous. Dust or fumes are classified as irritant, lung toxin, sensitizer.

3. HAZARDS IDENTIFICATION

WARNING!
EXPOSURE TO DUST OR FUMES CAN CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION. EXPOSURE TO DUST OR FUMES CAN CAUSE RESPIRATORY SYSTEM DAMAGE. MAY CAUSE AN ALLERGIC SKIN AND/OR RESPIRATORY REACTION. USE ONLY WITH ADEQUATE VENTILATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

HAZARD RATINGS (for dust or fume) Degree of hazard (0 = low, 4 = extreme)
Hazardous Materials Identification System (HMIS): Health: 2* Flammability: 0 Physical Hazard: None
National Fire Protection Association (NFPA): Mixture. Not rated.

HUMAN THRESHOLD RESPONSE DATA

Odor Threshold: Unknown
Irritation Threshold: Unknown
Immediately Dangerous to Life or Health (IDLH) Value(s): The IDLH for this product is not known. The IDLH for copper and tin is 100 mg/m³.

POTENTIAL HEALTH EFFECTS

ACUTE EFFECTS

Eye: Dust or fume can cause irritation consisting of redness, swelling, and pain. May cause conjunctivitis with repeated exposures.
Skin: Material not expected to be absorbed through the skin. Contact with dust may cause mild irritation consisting of redness and/or swelling.

Inhalation: Harmful if inhaled. Inhalation of high concentrations of powder, dust, or fume may cause severe respiratory and nasal irritation, coughing, and difficulty breathing. Inhalation of high concentrations of metallic copper dusts or fumes may cause nasal irritation and/or nausea, vomiting and stomach pain. The metal fume may also produce influenza-like symptoms, known as metal fume fever. Symptoms of this reaction may include metallic taste, runny nose, nausea, fever and chills. These effects usually disappear within 24 hours, but may be delayed in onset.

Ingestion: Ingestion of large amounts of dust may cause nausea, diarrhea and or stomach pain.

CHRONIC EFFECTS:

Prolonged or repeated skin contact with dust may cause more severe irritation or dermatitis. Prolonged or repeated inhalation of dust or fume may cause more severe irritation and possibly lung damage. Chronic exposure to dust or fume may also lead to the development of permanent, severe, obstructive or fibrotic lung disease characterized by coughing, wheezing, and shortness of breath. Repeated exposure may cause an allergic skin reaction consisting of itching, redness, swelling, and rash or urticaria (hives) in sensitized individuals. Prolonged or repeated inhalation of dust or fume may cause an allergic type of asthma reaction characterized by wheezing, coughing, and extreme breathing difficulty in sensitized individuals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Exposure to dust or fume may aggravate an existing dermatitis, asthma, emphysema, or other respiratory disease.

POTENTIAL ENVIRONMENTAL EFFECTS: None known. Product has not been tested for environmental properties.

4. FIRST AID MEASURES

EYE CONTACT:

Immediately flush out fume and dust particles with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician at once.

SKIN CONTACT:

If exposed to dust or fumes, wash skin with plenty of water. Remove contaminated clothing and shoes and launder before reuse. If skin irritation or rash develops and persists or recurs, get medical attention.

INHALATION:

If symptoms of lung irritation occur (coughing, wheezing or breathing difficulty), remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep affected person warm and at rest. Get medical attention.

INGESTION:

Not a likely route of exposure for finished metal alloy. If dust is ingested, immediately drink water to dilute. Consult a physician if symptoms develop.

NOTE TO PHYSICIANS:

There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

5. FIRE FIGHTING MEASURES

| <u>PROPERTY</u> | <u>VALUE</u> |
|--|---------------------|
| Explosive | No |
| Flammable | No |
| Combustible | No |
| Pyrophoric | No |
| Flash Point (°C): | Not applicable |
| Burning Rate of Material: | Not applicable |
| Lower Explosive Limit: | Not applicable |
| Autoignition Temperature: | Not applicable |
| Upper Explosive Limit: | Not applicable |
| Flammability Classification (Defined by 29 CFR 1910.1200): | Not applicable |

UNUSUAL FIRE AND EXPLOSION HAZARDS: Dust may cause an ignitable and/or an explosive atmosphere.

EXTINGUISHING MEDIA: For localized powder fires, smother with dry sand, dry dolomite, sodium chloride or soda ash. Use fire-extinguishing media appropriate to fight surrounding fire.

SPECIAL FIREFIGHTING PROCEDURES: None required.

6. ACCIDENTAL RELEASE MEASURES

In dust form, this product may be an explosion hazard. Remove all sources of ignition. Dust or fume may be suppressed by the use of a local exhaust system. Dispose of per guidelines under Section 13, WASTE DISPOSAL.

7. HANDLING AND STORAGE

HANDLING: Avoid dispersion of dust in air.

STORAGE:

Shelf Life Limitations: None known.

Incompatible Materials for Packaging: None known.

Incompatible Materials for Storage or Transport: None known.

OTHER PRECAUTIONS: Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or HEPA vacuuming.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| CAS # | CHEMICAL NAME | ACGIH TLV | OSHA PEL | INTERNATIONAL OELS |
|-----------|---------------|---|---|--|
| 7440-50-8 | Copper | 0.2 mg/m ³ (fume), 1 mg/m ³ (dusts and mists) | 0.1 mg/m ³ (fume) 1 mg/m ³ (dusts and mists) | Austria, Belgium, Canada: 0.2 mg/m ³ (fumes), 1 mg/m ³ (dusts); Denmark: 1.0 mg/m ³ (dust and powder); Germany (MAK): 0.1 mg/m ³ (fume), 1 mg/m ³ (dusts and mists) |
| 7440-31-5 | Tin | 2 mg/m ³ | 2 mg/m ³ | U.K. (LTEL): 5 mg/m ³ ; Austria & Germany (MAK), Belgium, Finland, Denmark, The Netherlands, Poland, Switzerland: 2 mg/m ³ ; Hungary, Norway: 1 mg/m ³ |

ENGINEERING CONTROLS: Local exhaust ventilation is recommended if significant dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation.

EYE / FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: Wear impervious (cut-resistant) gloves and other protective clothing. If generating a dust, wash thoroughly after handling, especially before eating, drinking, or smoking.

RESPIRATORY PROTECTION: Respiratory protection not normally needed. If dusting occurs or fumes are generated above the PEL/TLV, use a NIOSH-approved half-face or full-face respirator equipped with High Efficiency Particulate (HEPA) filter cartridges.

GENERAL HYGIENE CONSIDERATIONS: Do not eat, drink, or smoke while using this product in dust form.

9. PHYSICAL AND CHEMICAL PROPERTIES

| Property | Value | Property | Value |
|------------------------------|--------------------------|-------------------------------------|---|
| Appearance | Bronze | Vapor Density (air = 1) | Not Applicable |
| Odor | None | Boiling Point | No Data |
| Molecular Weight | Not Applicable – Mixture | Melting Point | L: 1020-1075 °C (1880-1970 °F); S : 880-1035 °C (1620-1900 °F) |
| Physical State | Solid | Specific Gravity | 8.84 (g/cc) |
| pH | Not Applicable | Bulk Density | 8.84 (g/cc) |
| Vapor Pressure (mm Hg) | Not Applicable | Viscosity (cps) | Not Applicable |
| Vapor Density | Not Applicable | Decomposition Temp. | Not Applicable |
| Solubility in Water (20°C) | Negligible | Evaporation Rate | Not Applicable |
| Volatiles, Percent by Volume | Not Applicable | Octanol/Water Partition Coefficient | Unknown |

10. STABILITY AND REACTIVITY

| | |
|--|---|
| <u>STABILITY:</u> | Stable under normal temperatures and pressure. |
| <u>CONDITIONS TO AVOID:</u> | Not affected by mechanical impact or shock or by electrical discharge. |
| <u>MATERIALS TO AVOID:</u> | Acetylene, chlorine |
| <u>HAZARDOUS DECOMPOSITION PRODUCTS:</u> | When heated to decomposition, may produce metal oxides and fumes. Inhalation of high concentrations of metal fumes may cause a condition known as "metal fume fever" which is characterized by flu-like symptoms. |
| <u>HAZARDOUS POLYMERIZATION:</u> | Will not occur. |

11. TOXICOLOGICAL INFORMATION

POTENTIAL EXPOSURE ROUTES: For dust: ingestion, inhalation, and eye contact. For fume: inhalation and eye contact. The finished alloy metal is not hazardous.

ACUTE ANIMAL TOXICITY DATA:

| | For Product (dust or fume) | For Component | |
|-----------------------------|---|-------------------------------------|---------|
| | | Copper | Tin |
| Oral LD ₅₀ | Believed to be moderately toxic | 3.5 mg/kg (mouse, intra-peritoneal) | No data |
| Dermal LD ₅₀ | Believed to be > 2 g/kg | 375 mg/kg (rabbit, subcutaneous) | No data |
| Inhalation LC ₅₀ | Believed to be slightly to moderately toxic | No Data | No data |
| Irritation | Eye and respiratory irritant | Respiratory irritant | No data |

SUBCHRONIC/ CHRONIC TOXICITY: No information for product.

CARCINOGENICITY: None known.

MUTAGENICITY: This product is not known or reported to be mutagenic.

REPRODUCTIVE, TERATOGENICITY OR DEVELOPMENTAL EFFECTS: This product is not known or reported to cause reproductive or developmental effects.

NEUROLOGICAL EFFECTS: This product is not known or reported to cause neurological effects.

INTERACTIONS WITH OTHER CHEMICALS THAT ENHANCE TOXICITY: None known or reported.

12. ECOLOGICAL INFORMATION

ECOTOXICITY: No data is available on this product. Individual constituents are as follows:

Copper: The toxicity of copper to aquatic organisms varies significantly not only with the species, but also with the physical and chemical characteristics of the water, such as its temperature, hardness, turbidity and carbon dioxide content. Copper concentrations varying from 0.1 to 1.0 mg/l have been found by various investigators to be not toxic for most fish. However, concentrations of 0.015 to 3.0 mg/l have been reported as toxic, particularly in soft water to many kinds of fish, crustaceans, mollusks, insects, and plankton.

MOBILITY: No data

PERSISTANCE/DEGRADABILITY: No data

BIOACCUMULATION: No data

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. Care must be taken to prevent environmental contamination from the use of this material. The user of this

material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and non-hazardous wastes. This product may be a candidate for metal reclamation.

14. TRANSPOT INFORMATION

| | | | | | | |
|----------------------|---------------|---------|------|------|-----|------------|
| | U.S. DOT | RID/ADR | IMDG | IATA | IMO | Canada TDG |
| Proper Shipping Name | Not regulated | | | | | |
| Hazard Class | | | | | | |
| UN No. | | | | | | |
| Packing Group | | | | | | |
| Label | | | | | | |
| Reportable Quantity | | | | | | |

15. REGULATORY INFORMATION

US FEDERAL

| | | | | | |
|-----------------------|---|--|-------------------|-------------------------|----------------------------------|
| TSCA | The components of this product are listed on the Toxic Substance Control Act inventory. | | | | |
| CERLA | Copper, R.Q. = 5000 lbs. | | | | |
| SARA 313 | Copper | | | | |
| SARA 313 Hazard Class | <u>Health:</u> For dust or fume only | <u>Acute:</u> Yes <u>Chronic:</u> Yes | <u>Fire:</u> None | <u>Reactivity:</u> None | <u>Release of Pressure:</u> None |
| SARA 302 EHS List | None of the components of this product are listed. | | | | |

* R.Q. = Reportable Quality.

STATE RIGHT TO KNOW STATUS

| Component | CA Prop. 65 | New Jersey | Pennsylvania | Massachusetts | Michigan |
|-----------|-------------|------------|--------------|---------------|------------|
| Copper | Not listed | X | X | X | X |
| Tin | Not listed | Not listed | X | X | Not listed |

EUROPEAN REGULATIONS

This material does not contain elements classified as Xn, Harmful. This material in its solid form is not required to be labeled under EC regulations.

German WGK Classification: Unknown

CANADIAN REGULATIONS

- DSL LIST: The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.
- IDL: Copper, Tin
- WHMIS: This product is considered to be a manufactured article and therefore not subject to WHMIS requirements.

16. OTHER INFORMATION

This document is based on information obtained from Olin Brass, 427 North Shamrock St. East Alton, IL 62024-1197, MSDS-B10. EMERGENCY TELEPHONE NUMBER: 1-618-258-5167. For additional information visit www.olinbrass.com

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