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# Phosphor Bronze Alloy Material Safety Data Sheet

## 1 Product and Company Identification

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<i>Product Name</i>	Phosphor Bronze Alloy
<i>Chemical Name</i>	Metal Alloy
<i>Synonyms</i>	Copper Tin Phosphorus Alloys, Alloy Nos. C50500, 50700, C51000, C51900, C52100
<i>Chemical Family</i>	Copper Alloy
<i>Formula</i>	Not applicable - mixture
<i>Product Use</i>	Metallurgical Products
<i>Company Address</i>	Fisk Alloy PO Box 26 10 Thomas Road Hawthorne, NJ 07507, USA
<i>MSDS Issue Date</i>	12/1/2009
<i>Technical Information</i>	Call Fisk Alloy at: 973 427 7550 <a href="http://fiskalloy.com">fiskalloy.com</a>

## 2 Composition/Information on Ingredients

CAS NUMBER	COMPONENTS	WEIGHT %	EINECS/ELINCS	EU CLASSIFICATION	
				SYMBOL	R-PHASE
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. 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) values: The IDLH for this product is not known. The IDLH for copper and tin is 100 mg/m<sup>3</sup>.

### Potential Acute Health 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.

*Potential Chronic Health 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

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*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

PROPERTY	VALUE
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 Fire Fighting Procedures**

None required.

## 6 Accidental Release Measures

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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

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### 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 No	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
7440-50-8	Copper	0.2 mg/m <sup>3</sup> (fumes) 1 mg/m <sup>3</sup> (dusts and mists)	0.1 mg/m <sup>3</sup> (fumes) 1 mg/m <sup>3</sup> (dusts and mists)	Austria, Belgium, Canada: 0.2 mg/m <sup>3</sup> (fumes), 1 mg/m <sup>3</sup> (dusts); Denmark: 1.0 mg/m <sup>3</sup> (dusts and powders); Germany (MAK): 0.1 mg/m <sup>3</sup> (fumes), 1 mg/m <sup>3</sup> (dusts and mists)
7440-31-5	Tin	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	U.K. (LTEL): 5 mg/m <sup>3</sup> ; Austria & Germany (MAK), Belgium, Finland, Denmark, The Netherlands, Poland, Switzerland: 2 mg/m <sup>3</sup> ; Hungary, Norway: 1 mg/m <sup>3</sup>

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

## 10 Stability and Reactivity

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### *Stability*

Stable under normal temperatures and pressure.

### *Conditions to Avoid*

Not affected by mechanical impact or shock or by electrical discharge.

### *Materials to Avoid*

Acetylene, chlorine

### *Hazardous Decomposition Products*

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.

### *Hazardous Polymerization*

Will not occur.

## 11 Toxicological Information

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### *Potential Exposure Routes*

For Dust:

Ingestion, inhalation, and eye contact.

For Fumes:

Inhalation and eye contact. The finished alloy metal is not hazardous.

ACCUTE ANIMAL TOXICITY DATA			
TYPE	FOR PRODUCT (DUST OR FUME)	FOR COMPONENTS	
		COPPER	TIN
Oral LD <sub>50</sub>	Believed to be moderately toxic	3.5 mg/kg (mouse, intra-peritoneal)	No data
Dermal LD <sub>50</sub>	Believed to be > 2g/kg	375 mg/kg (rabbit, subcutaneous)	No data
Inhalation LC <sub>50</sub>	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

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*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 is available on this product.

*Persistence/Degradability*

No data is available on this product.

*Bioaccumulation*

No data is available on this product.



### 13 Disposal Considerations

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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 Transport Information

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Shipping is not regulated for this product.

### 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	Health: For dust or fume only	Acute: Yes Chronic: Yes	Fire: None	Reactivity: None	Release of Pressure: 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

\* "WARNING: This product contains detectable amounts of a chemical(s) known to the State of California to cause cancer and/or birth defects or other reproductive harm."

#### *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*

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

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This document is based on information obtained from Olin Brass, 427 North Shamrock St. East Alton, IL 62024-1197, MSDS Nos. B10 and 00015.0001. **EMERGENCY TELEPHONE NUMBER: 1-618-258-5167**. For additional information visit [olinbrass.com](http://olinbrass.com)

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