Copper Clad Steel Material Safety Data Sheet

1 Product and Company Identification

Product Name	Copper Clad Steel, Bare or Plated with Silver or Nickel
Chemical Name	Bimetallic Wire
Synonyms	Copper Coated Steel, Plated Copper Clad Steel
Chemical Family	Copper and Steel
Formula	Not applicable - mixture
Product Use	Metallurgical Products
Company Address	Fisk Alloy PO Box 26 10 Thomas Road Hawthorne, NJ 07507, USA
MSDS Issue Date	1/5/2010
Technical Information	Call Fisk Alloy at: 973 427 7550 fiskalloy.com

2 Composition/Information on Ingredients

CAS NUMBER	COMPONENTS	WEIGHT %	EINECS/ELINCS	EU CLASSIFICATION	
				SYMBOL	R-PHASE
7440-50-8	Copper	30 – 40	231-159-6	None	None
7440-89-6	Iron	51 – 61	231-096-4	None	None
7440-02-0	Nickel	0 – 10	231-111-4	Xn	R 40-43
7440-22-4	Silver	0 – 10	231-131-3	None	None

OSHA Regulatory Status

In solid form this material is not hazardous. Dust or fume is classified as carcinogen, irritant, lung and respiratory system toxicant, neurotoxicant, 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. CONTAINS A MATERIAL WHICH MAY CAUSE BLOOD, KIDNEY, REPRODUCTIVE AND NEUROLOGICAL EFFECTS. MAY CAUSE AN ALLERGIC SKIN AND/OR RESPIRATORY REACTION. CONTAINS MATERIALS WHICH MAY CAUSE CANCER. 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 is 100 mg/m^3. The IDLH for nickel and silver is 10 mg/m^3.

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. Epidemiological studies in humans have shown an association between lung and nasal cancers and prolonged occupational exposure to high concentrations of nickel. Long-term exposure to silver at high concentrations can produce a condition called argyria, which is a bluish-gray pigmentation of the skin and other body tissues. This effect is not known to be associated with any toxic effects.

Medical Conditions Aggravated by Exposure

Exposure to dust or fume may aggravate an existing dermatitis, blood condition, 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

PROPERTY	VALUE
Explosive	No
Flammable	No
Combustible	No
Pyrophoric	No
Flash Point (^{0}C)	Not Applicable
Burning Rate of Metgerial	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

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

No special requirements.

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^3 (fumes) 1 mg/m^3 (dusts and mists)	0.1 mg/m^3 (fumes) 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 (dusts and powders); Germany (MAK): 0.1 mg/m^3 (fumes), 1 mg/m^3 (dusts and mists)
7440-89-6	Iron	None established	None established	None established

CAS No	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
7440-02-0	Nickel	1.5 mg/m^3 (inhalable)	1 mg/m^3	Germany, MAK: 1 mg/m^3 Canada (B.C.), Czechoslovakia, Denmark, Norway: 0.05 mg/m^3, K1, sensitizer Poland: 0.25 mg/m^3 Ireland, Sweden, Switzerland, U.K.: 0.5 mg/m^3 Belgium, Canada (Alberta & others), Finland, Japan, Mexico, The Netherlands: 1 mg/m^3
7440-22-4	Silver	0.1 mg/m^3	0.1 mg/m^3	Germany: 0.1 mg/m^3 (inhalable)

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	Red Metallic (silver metallic if plated)
Odor	None
Molecular Weight	Not Applicable - Mixture
Physical State	Solid
pH	Not Applicable
Vapor Pressure (mm Hg)	Not Applicable
Vapor Density	Not Applicable
Solubility in Water (20 ^{0}C)	Negligible

PROPERTY	VALUE
Volatiles, Percent by Volume	Not Applicable
Vapor Density (air =1)	Not Applicable
Boiling Point	No Data
Melting Point	961 - 1090 ^{0}C (1762 - 1995 ^{0}F)
Specific Gravity (g/cc)	8.24
Bulk Density (g/cc)	8.24
Viscosity (cps)	Not Applicable
Decomposition Temp.	Not Applicable
Evaporation Rate	Not Applicable
Octanol/Water Partition Coefficient	Unknown

10 Stability and Reactivity

Stability

Stable under normal temperatures and pressure.

Conditions to Avoid

Avoid contact with carbon monoxide, particularly at temperatures between 50°C and 300°C, to prevent formation of nickel carbonyl which is toxic and a carcinogen.

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 Toxilogical Information

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	FOR COMPONENTS			
		COPPER	NICKEL	SILVER	IRON
Oral LD_{50}	Believed to be > 5 g/kg	3.5 mg/kg (mouse, intra-peritoneal)	> 5 g/kg (rat)	> 10 g/kg (mouse)	30 g/kg (rat)
Dermal LD_{50}	Believed to be > 2g/kg	375 mg/kg (rabbit, subcutaneous)	> 7.5 g/kg (rabbit subcutaneous)	No data	No data
Inhalation LC_{50}	Believed to be slightly toxic	No data	> 12 mg/kg (rat, intratracheal)	No data	No data
Irritation	Eye and respiratory irritant, sensitizer	Respiratory irritant	Respiratory irritant, skin sensitizer	No data	Eye irritant
Sensitivity	No data		Skin sensitization		

Subchronic/Chronic Toxicity

No information for product.

Carcinogenicity

In laboratory animal studies, chronic exposure to high concentrations of nickel has caused an increase in lung and nasal tumors. The International Agency for Research on Cancer (IARC) has classified nickel as possibly carcinogenic to humans, group 2B. The National Toxicology Program (NTP) classifies nickel as a known human carcinogen.

Mutagenicity

This product is not known or reported to be mutagenic. Nickel has been shown to be mutagenic in *in vitro* studies.

Reproductive, Teratogenicity or Developmental Effects

This product is not known or reported to cause reproductive or developmental effects. Exposure of male rats to high concentrations of nickel caused testicular degeneration. However, symptoms of systemic toxicity, including severe weight loss, were also observed at the same concentrations indicating that the testicular effects were secondary to the frank toxicity. Exposure at these levels is highly unlikely under normal working conditions.

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

Ecotixicity

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.

Nickel: 96 hr LC50, rainbow trout =31.7 mg/L; 96 hr LC50, fathead minnow = 3.1 mg/L; 72 hr EC50, freshwater algae (4 species): = 0.1 mg/L; 96 hr LC50, Daphnia = 0. 51 mg/L

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 Transport Information

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.; Nickel, R.Q. = 100 lbs.; Silver, R.Q. = 1000 lbs. No reporting is required if diameter of the pieces of metal is equal to or exceeds 100 micrometers (0.004 inches).				
SARA 313	Copper, Nickel, Silver.				
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
Iron	Not listed	Not listed	Not listed	Not listed	Not listed
Nickel	X	X	X	X	X
Silver	Not listed	X	X	X	X

European Regulations

If nickel plated at > 0.1%, this material is classified as Xn, Harmful. However, this material in its massive 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

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 No. B04. **EMERGENCY TELEPHONE NUMBER: 1-618-258-5167.** For additional information visit olinbrass.com

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