Olin Brass SDS No.: **00015.0001**	Review Date: 01/01/15
Revision No.: **12**	Revision Date: 06/01/15

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **COPPER NICKEL ALLOY**
Chemical Name: Metal Alloy
Synonyms: Cupro Nickels; UNS/CDA Alloy Nos. C70000 – C72999; B61/Y97; B62/Y99
Chemical Family: Copper
Formula: Not applicable - mixture
Product Use: Metallurgical Products

COMPANY ADDRESS
SDS Control Group
Olin Brass
305 Lewis and Clark Blvd
East Alton, IL
62024-1197
www.olinbrass.com

TECHNICAL INFORMATION:
618-258-5654

EMERGENCY TELEPHONE NUMBER:
1-618-258-5167

2. HAZARD IDENTIFICATION

United States (US)
According to OSHA 29 CFR 1910.1200 HCS

Health hazards associated with this product only apply in a fume or dust form.

Classification of the substance or mixture(Fume or Dust)

OSHA HCS 2012

Flammability – 0
Health – 1
Physical – 0

Label elements

OSHA HSC 2012

Hazard Statements

Causes skin irritation – H315
May cause respiratory irritation – H335

Precautionary statements

Avoid breathing dust or fumes – P261

Prevention

Avoid breathing dust or fumes – P261
Do not get in eyes, on skin, or on clothing – P262
Incase of inadequate ventilation wear respiratory protection – P285

Response

EYE CONTACT: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.– P305 + P351 + P338
If eye irritation develops, Get medical advice/attention – P313

SKIN CONTACT: Rinse skin with water/shower – P353
Take off contaminated clothing and wash before reuse – P362
If skin irritation or rash develops, get medical advice/attention – P363

INHALATION: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing – P340
Get medical advice/attention – P313

INGESTION: Not a likely route of exposure for finished metal alloy. If dust is ingested, immediately drink water to dilute.
Get medical advice/attention – P363

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

Other Hazards

OSHA HSC 2012

Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

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

Canada

According to WHMIS

Classification of the substance or mixture

WHMIS

This product is considered to be a manufactured article and therefore not subject to WHMIS requirements.

Other Information

NFPA

Not rated

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS Number	Components	% By Weight	EINECS/ ELINCS #	EU Classification	
				Symbol	R-Phrase
7440-50-8	Copper	54.0 – 99.0	231-159-6	None	None
7440-02-0	Nickel	1.0 – 46.0	231-111-4	Xn	R 40/43
7440-31-5	Tin	0.0 – 8.5	231-141-8	None	None
7439-96-5	Manganese	0.0 – 5.5	231-105-1	None	None
7440-48-4	Cobalt	0.0 – 3.0	231-158-0	Xn	R 42/43
7439—89-6	Iron	0.0 – 2.3	231-096-4	None	None
7440-66-6	Zinc	0.0 – 2.0	231-175-3	F (as dust or	R 15-17
7429-90-5	Aluminum	0.0 – 2.0	231-072-3	None	None
7440-21-3	Silicon	0.0 – 1.2	231-130-8	None	None
7440-41-7	Beryllium	0.0 – 0.7	231-150-7	T+	R 49-25-26-36/37/38-43-48/23-51/53

OSHA REGULATORY STATUS: In solid form, not hazardous. Dust or fume: carcinogen, irritant, lung and respiratory system toxicant, neurotoxicant, sensitizer

In solid form, this material is not hazardous. Dust and fumes are hazardous materials.

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
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	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 Temp.:	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

SPECIAL FIREFIGHTING PROCEDURES: None required.

6. ACCIDENTAL RELEASE MEASURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL (618)258-5167. 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 #	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)
7440-02-0	Nickel	0.2 mg/m^3 (inhalable); A1	1 mg/m^3	Germany(MAK): 1 mg/m^3 (Sah) 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, Netherlands: 1 mg/m^3 Portugal: 1.5 mg/m^3

CAS #	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
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
7439-96-5	Manganese	0.2 mg/m^3	5 mg/m^3 (Ceiling)	Belgium, Denmark, Finland, France, Switzerland, U.K.: 1 mg/m^3 Sweden: 2.5 mg/m^3 Germany(MAK): 0.5 mg/m^3
7440-48-4	Cobalt	0.02 mg/m^3; A3	0.1 mg/m^3	Austria: Group A2 carcinogen, skin & resp. sensitizer Canada (BC): 0.02 mg/m^3, K3, Z, A Canada (Alberta & others): 0.05 mg/m^3 Denmark: 0.02 mg/m^3 Germany(MAK): 2 (Sah)
7439-89-6	Iron	None established	None established	None established
7440-66-6	Zinc	None established	None established	None established
7429-90-5	Aluminum	10 mg/m^3	15 mg/m^3 (total dust)	Belgium, France, Hungary , Sweden: 5 mg/m^3 (resp. dust) Germany(MAK): 1.5 mg/m3 (resp. dust) Switzerland: 6 mg/m^3 Denmark, Netherlands, U.K.: 10 mg/m^3
7440-21-3	Silicon	10 mg/m^3	15 mg/m^3 (total dust)	Belgium, Denmark, France, Netherlands, U.K.: 10 mg/m^3 Switzerland: 4 mg/m^3
7440-41-7	Beryllium	0.002 mg/m^3 (inhalable); 0.01 mg/m^3 (STEL); A1, Sensitizer	0.002 mg/m^3; 0.005 mg/m^3 (Ceiling); 0.025 mg/m^3 (30 min. peak per 8 hr. shift)	Germany(MAK): Category 2 Denmark, Finland, Iceland, Norway, Poland: 0.001 mg/m^3, carcinogen Belgium, Canada, Czechoslovakia, France, Ireland, Japan, Portugal, Spain, Sweden, Switzerland, U.K.: 0.002 mg/m^3, sensitizer, K1 carcinogen Greece: 0.005 mg/m^3

If this product is heated and fumes are generated, zinc oxide fumes could be formed. The ACGIH TLV and OSHA PEL for zinc oxide fume is 5 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 (aprons, coveralls) as appropriate to prevent skin contact when using this product. 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:	Silver/red metallic	*Vapor Density (air = 1):*	Not applicable
Odor:	None	*Boiling Point (°F):*	No data
Molecular Weight:	Not applicable - Mixture	*Melting point:*	L:1121 - 1249°C (2003 - 2260°F)

PROPERTY	VALUE	PROPERTY	VALUE
			S:1075 - 1191°C (1967 - 2188°F)
Physical State:	Solid	*Specific gravity (g/cc):*	8.94
pH:	Not applicable	*Bulk Density*	8.94 g/cc
Vapor Pressure (mm Hg):	Not applicable	*Viscosity (cps):*	Not applicable
Vapor Density	Not applicable	*Decomposition Temperature:*	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

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. 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:		**Components:**								
		Copper	Nickel	Manganese	Cobalt	Iron	Zinc	Aluminum	Silicon	Beryllium
Oral LD_{50}	Believed to be > 5 g/kg	3.5 mg/kg (mouse, Ip)	> 5 g/kg (rat)	9 g/kg (rat)	6.2 g/kg (rat)	30 g/kg (rat)	No data	No data	3.16 g/kg (rat)	18-200 mg/kg (rat)
Dermal LD_{50}	Believed to be > 2 g/kg	375 mg/kg (rabbit, subcut)	> 7.5 g/kg (rabbit, subcut)	No data	No data	No data	No data	No data	No data	No data
Inhalation LC_{50}	Believed to be slightly to moderately toxic	No data	> 12 mg/kg (rat, It)	No data	165 mg/m^3, 30 min (rat)	No data	No data	> 1000 mg/m^3 (rat)	No data	> 0.8 mg/m^3, 50 min (rat)
Irrit.	Eye and resp. irrit.	Resp. Irritant	Resp. Irritant	Mild eye & skin irrit.	Resp. Irrit.	Eye irrit.	Eye irrit.	Mild eye & skin Irrit.	Eye, skin & resp. irrit.	Irrit.
Sens.	No data		Skin sens.	No data	Skin & resp. Sens.		No data	No data	No data	Skin sens.

Table Abbreviations : Irritation = Irrit., Sensitization = Sens., Respiratory = Resp. No Acute Animal Data for Tin.

SUBCHRONIC/ CHRONIC TOXICITY*:* No information for product. Subchronic and chronic exposure to beryllium via inhalation has caused lung damage in laboratory animals.

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, cobalt and cobalt compounds as possibly carcinogenic to humans, Group 2B. Chronic exposure to beryllium has produced lung cancer in several species of laboratory animals. Beryllium is listed as a known human carcinogen by IARC (Group 1), OSHA, NTP, and EPA.
MUTAGENICITY:	This product is not known or reported to be mutagenic. Nickel has been shown to be mutagenic in *in vitro* studies. Beryllium has shown evidence of mutation in *in vitro* bacterial and mammalian systems.
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 may have been secondary to frank toxicity. Laboratory studies in animals have shown that beryllium
NEUROLOGICAL EFFECTS:	This product is not know or reported to cause neurological effects. Chronic exposure to very high concentrations of manganese dust has caused nervous system effects including muscle weakness, tremors, and behavioral changes in humans.
INTERACTIONS WITH OTHER CHEMICALS WHICH 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.
Nickel:	96 hr LC_{50}, rainbow trout =31.7 mg/L; 96 hr LC_{50}, fathead minnow = 3.1 mg/L; 72 hr EC_{50}, freshwater algae (4 species): = 0.1 mg/L; 96 hr LC_{50}, *Daphnia* = 0. 51 mg/L

MOBILITY: No data
PERSISTANCE/DEGRADABILITY: Not biodegradable.
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. TRANSPORT 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.				
CERCLA:	Copper, R.Q.= 5000 lbs.; Nickel, R.Q. = 100 lbs.; Zinc, R.Q. = 1000 lbs; Beryllium, R.Q. = 10 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, Manganese, Cobalt, Zinc (dust or fume), Aluminum (fume or dust), Beryllium				
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.				

*RQ = Reportable Quantity

STATE RIGHT-TO-KNOW STATUS

Component	*CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Copper	Not listed	X	X	X	X
Nickel	X	X	X	X	X
Tin	Not listed	Not listed	X	X	Not listed
Manganese	Not listed	X	X	X	Not listed
Cobalt	X	X	X	X	X
Iron	Not listed	Not listed	Not listed	Not listed	Not listed
Zinc	Not listed	X	Not listed	X	X
Aluminum	Not listed	X	X	X	Not listed
Silicon	Not listed	Not listed	X	X	Not listed
Beryllium	X	X	X	X	X

* "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

Because this material contains beryllium at > 0.1% this material is classified as: **T+, Very Toxic.** However, this material in its massive 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, Nickel, Tin, Manganese, Cobalt and Beryllium

HMIS: This product is considered to be a manufactured article and therefore not subject to WHMIS requirements.

16. OTHER INFORMATION

REVISED: Format revised 6/1/15
PREPARED BY: Olin Brass
NOTICE: THE INFORMATION IN THIS SDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BRASS BELIEVES THIS INFORMATION TO BE RELIABLE AND CURRENT AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.

This document reviewed annually.