

MATERIAL SAFETY DATA SHEET

RCVD NOV 2000

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THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD. (REFER TO THE OSHA CLASSIFICATION IN SEC. I.) THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE. THE EXPOSURE TO THE COMMUNITY, IF ANY, IS QUITE DIFFERENT.

I. PRODUCT IDENTIFICATION

Art Jewelry

REVISION NO : 15
REVISION DATE : 1/01/99
PRODUCT CODE : BPE09A000
FILE NUMBER : BPE00123.0001
PRODUCT NAME: NICKEL SILVER 7XXX SERIES

SYNONYMS: Copper/Nickel/Zinc Alloy, Nickel/Silver/Copper Alloys- 735, 740, 743, 745, 752, 757, 760, 762, 770 or Y52

CHEMICAL FAMILY: Copper alloy

FORMULA: Not Applicable/Mixture

DESCRIPTION: Metal

OSHA HAZARD CLASSIFICATION: Carcinogen. (See " Below) Dust or fume is classified as skin and eye irritant; lung toxin; possible sensitizer and possible reproductive toxin. Finished metal alloy is not hazardous.

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Copper
CAS NUMBER: 7440-50-8
PERCENTAGE RANGE: 50-80%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:				
FUME:		0.1		0.2
DUST:		1		1
CEILING:	None		None	
STEL:	None		None	

* Inhalation of nickel metal has been shown not to cause cancer in scientific studies in either animals or humans. It is considered a carcinogen by implantation and injection, producing tumors at the site of administration. See Section 9 for further clarification.

CAS or CHEMICAL NAME: Nickel
CAS NUMBER: 7440-02-0
PERCENTAGE RANGE: 7-19.5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)	ACGIH(TLV)
	ppm mg/cubic-meter	ppm mg/cubic-meter
TWA:	1	1
CEILING:	None	None
STEL:	None	None

CAS or CHEMICAL NAME: Lead
CAS NUMBER: 7439-92-1
PERCENTAGE RANGE: 0-0.10%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: See 29 CFR 1910.1025

	OSHA(PEL)	ACGIH(TLV)
	ppm mg/cubic-meter	ppm mg/cubic-meter
TWA:	.050	.15
CEILING:	None	None
STEL:	None	None

CAS or CHEMICAL NAME: Zinc
CAS NUMBER: 7440-66-6
PERCENTAGE RANGE: Remainder to 100%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)	ACGIH(TLV)
	ppm mg/cubic-meter	ppm mg/cubic-meter
TWA:		
FUME:	5	5
DUST:	15 (total dust); 5 (respirable)	10
CEILING:	None	None
STEL:		
FUME:	None	10

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

AVOID CONTACT OF DUST OR FUME WITH SKIN, EYES, AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS:

DO NOT STORE AT TEMPERATURES ABOVE: Not Applicable

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Not known

INCOMPATIBLE MATERIALS FOR PACKAGING: None known

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: None known

IV. PHYSICAL DATA

APPEARANCE: Silvery white metallic color
MELTING POINT: 1036L-1125L/930S-1080S Deg.C
1850L-2055L/1705S-1960S Deg.F
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: Not Applicable
SPECIFIC GRAVITY: 8.70
BULK DENSITY: 8.70 (g/cc)
pH @ 25 DEG.C: Not Applicable
VAPOR PRESSURE @ 25 DEG.C: Not Applicable
SOLUBILITY IN WATER: Not Applicable
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
VAPOR DENSITY: Not Applicable
MOLECULAR WEIGHT: Not Applicable/Mixture
ODOR: None
COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Applicable

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA approved respirator if exposures above the TLV are possible.
VENTILATION: Use local exhaust ventilation to maintain levels to below the TLV.
SKIN PROTECTIVE EQUIPMENT: Wear protective gloves.
OTHER: Use safety glasses.

EQUIPMENT SPECIFICATIONS (WHERE APPLICABLE):

RESPIRATOR TYPE: Wear NIOSH/MSHA approved respirator with HEPA filters
GLOVE TYPE: Impervious
BOOT TYPE: Impervious
APRON TYPE: Impervious
PROTECTIVE SUIT: Impervious

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE: No
COMBUSTIBLE: No
PYROPHORIC: No
FLASH POINT: Not Applicable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:

Health: 2 (dust or fume only)
Flammability: 0
Reactivity: 0

EXTINGUISHING MEDIA: Use extinguishing media for surrounding materials.

FIRE FIGHTING TECHNIQUES AND COMMENTS: See Section XI for protective equipment for fire fighting. Dust may cause an ignitable and/or explosive atmosphere.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:

TEMPERATURES ABOVE: Not Applicable
MECHANICAL SHOCK OR IMPACT: No
ELECTRICAL (STATIC) DISCHARGE: No
HAZARDOUS POLYMERIZATION: Will not occur
INCOMPATIBLE MATERIALS: Dust and fume - acetylene, chlorine
HAZARDOUS DECOMPOSITION PRODUCTS: Copper fume, nickel carbonyl, zinc oxide fume
OTHER CONDITIONS TO AVOID: Avoid contact with carbon monoxide, particularly at temperatures between 50 Deg.C and 300 Deg.C, to prevent formation of nickel carbonyl which is toxic and a carcinogen.

SUMMARY OF REACTIVITY:

OXIDIZER: No
PYROPHORIC: No
ORGANIC PEROXIDE: No
WATER REACTIVE: No

VIII. FIRST AID

EYES:

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

SKIN:

Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician. If clothing comes in contact with the product, the clothing should be laundered before re-use.

INGESTION:

Immediately drink water to dilute. Consult a physician if symptoms develop.

INHALATION:

Remove to fresh air. If respiratory irritation develops treat symptomatically.

IX. TOXICOLOGY AND HEALTH INFORMATION**ROUTES OF ABSORPTION**

For dust: ingestion, dermal contact, inhalation, and eye contact
For fume: inhalation, eye contact, and dermal contact
The finished metal alloy is not hazardous

WARNING STATEMENTS AND WARNING PROPERTIES

MAY BE HARMFUL IF METAL DUST OR FUME IS INHALED, INGESTED OR EXPOSED TO SKIN OR EYES. METAL DUST AND/OR FUME MAY CAUSE SKIN, EYE, MUCOUS MEMBRANE AND RESPIRATORY IRRITATION. PROLONGED OR REPEATED CONTACT WITH DUST OR FUME MAY CAUSE DERMATITIS AND/OR ALLERGIC SKIN SENSITIZATION. THE FINISHED ALLOY IS NOT HAZARDOUS.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: No data
IRRITATION THRESHOLD: No data
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: No IDLH concentration has been established for this product.

SIGNS, SYMPTOMS AND EFFECTS OF EXPOSURE**INHALATION****ACUTE:**

If the metal fume is inhaled, mild irritation may result to the throat, mucous membranes, upper respiratory tract, and lungs. 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. Under extreme conditions the dust or fume may cause inflammation (swelling) of the nasal passages (mucosa) with nasal ulceration and bleeding.

CHRONIC:

Inhalation of large amounts of the dust and/or fume of this product may cause lung inflammation which may progress to bronchitis and permanent lung damage. Nickel has been reported to produce asthma.

SKIN

ACUTE:

Skin contact with the dust or fume may cause irritation consisting of transient redness. This irritant effect would not result in permanent damage.

CHRONIC:

Repeated or prolonged contact with the dust or fume may cause dermatitis and/or an allergic reaction to the skin. This response may resemble eczema. Symptoms may begin as a sensation of burning or itching, followed by redness and possible skin eruptions. Nodules may progress to pustules or ulceration. Fever may accompany these symptoms.

EYE

The dust or fume can irritate the eyes with effects consisting of reversible redness, swelling, and mucous discharge to the conjunctiva. No corneal involvement or visual impairment would be expected. Copper metal foreign body from the dust may cause similar irritation, but may also cause an inflammatory reaction around the foreign body, which may lead to extrusion of the particle. If the copper foreign body reaches the posterior (back) portion of the eyes, the consequences are severe, with widespread degenerative changes, discoloration of the eye and possible loss of sight.

INGESTION

ACUTE:

Ingestion of the dust may cause gastroenteritis with any or all of the following symptoms: nausea, vomiting, lethargy, or diarrhea.

Excessive oral exposures to copper (> 75 grams) have caused hemolysis of red blood cells, and liver and kidney damage.

CHRONIC:

There is no data available on the chronic ingestion of the alloy.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Asthma, emphysema, and diseases of the skin may be aggravated by exposure to the dust or fume.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:

There are no chemicals known to enhance the toxicity of the product.

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

Inhalation LC 50: No Data

Dermal LD 50: No Data

Oral LD 50: No Data

Irritation: Metal dust or fume may cause skin, eye, mucous membrane and respiratory irritation. Nickel dust or fume has been shown to produce allergic sensitization to the skin.

ACUTE TARGET ORGAN TOXICITY:

No organs known to be damaged from exposure to this alloy. Lung damage may occur from inhalation of large amounts of dust or fume.

CHRONIC TARGET ORGAN TOXICITY:

There are no known or reported effects from repeated exposure to this product.

Repeated or prolonged contact with nickel dust or the fume may cause a dermatitis, usually referred to as a "nickel itch".

Inhalation of lead can cause damage to the blood, central and peripheral nervous systems, and kidney. Lead inhibits the production of hemoglobin, the material in the blood which carries oxygen. Anemia may result. Lead also causes damage to peripheral nerves resulting in a decrease in motor nerve and muscle function. It is judged that the physical nature of product and low percentage of lead would preclude the development of the above mentioned effects from lead.

REPRODUCTIVE TOXICITY:

There are no known or reported effects on reproductive function or fetal development from exposure to this product.

Nickel has been reported to affect reproductive capability in laboratory animals. The preponderance of data on nickel's ability to cause birth defects would indicate it is not a teratogen. There are no reports indicating that exposure to nickel containing compounds has caused malformation in human beings.

Lead has been shown to affect fetal development and reduce male reproductive function. It is judged that the physical nature of the product and low percentage of lead would preclude the development of these effects from lead.

CARCINOGENICITY:

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

Some nickel containing compounds are listed as carcinogens by IARC and NTP.

Inhalation of some nickel containing compounds has been associated with lung and nasal tumors in laboratory animals and humans. Inhalation of nickel metal has been shown not to be carcinogenic in either animals or humans. Nickel metal has been shown to produce tumors at the site of injection or implantation in laboratory animals when administered by these routes.

Lead is classified as a carcinogen by IARC: Inadequate evidence for carcinogenicity to humans and sufficient evidence for carcinogenicity for inorganic lead compounds in laboratory animals. Lead and inorganic lead compounds are also classified as carcinogens by EPA.

MUTAGENICITY:

This product is not known to be mutagenic.

Nickel and its salts have been shown to be mutagenic in a number of test systems, including those that evaluate effects on DNA and chromosomes.

AQUATIC TOXICITY:

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

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 concentration 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, crustacea, mollusks, insects, and plankton.

The following concentrations of zinc have been reported as lethal to fish:

0.13 mg/l, 12-24 hrs: Rainbow trout fingerlings
1.9-3.6 mg/l (soft water, 30 degrees Celsius), 96 hr. TLM: Bluegill
Sunfish
4.0 mg/l (hard water), 3 days: Rainbow trout
1.0 mg/l (soft water), 24 hrs: Sticklebacks

The presence of copper appears to have a synergistic effect on the toxicity of zinc towards fish.

Nickel appears to be less toxic to fish and river crabs than copper, zinc, brass, and iron. For sticklebacks, however, the lethal limit has been reported as 0.8 mg/l of nickel. It has been found that nickel was more toxic to fish than iron and manganese. Fish have been found living in water polluted with mine effluent and containing 13-18 mg/l of nickel.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY:

Per 40 CFR 302.4 as nickel (1 LB.) or as copper (5000 LB.), lead (1 LB.) and zinc (1000 LB.) when 100 micrometers or smaller in size.

SPILL MITIGATION PROCEDURES:

This product may represent an explosion hazard in the form of dust. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Not Applicable

WATER RELEASE: Not Applicable

LAND SPILL: Spill response is normally only required when the material is in the form of dust or powder. Material may be picked up with the use of a vacuum system or other means which will reduce the amount of airborne particles.

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

No extra protection required beyond that listed in Section V. In case of fire, use normal fire fighting equipment.

XII. WASTE DISPOSAL

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.

If this materials becomes a waste, it can be sent to a metal reclaimer.

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 NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:

The components of this product are listed on the Toxic Substance Control Act inventory.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 65:

"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."

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH: (Dust or fume only)

Immediate (Acute); Delayed (Chronic)

PHYSICAL:

None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

This mixture or tradename product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

CHEMICALS LISTED ARE: Copper, lead, nickel, zinc (fume or dust)

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: Address and Phone numbers revised

XV. MAJOR REFERENCES

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2. ANSI Z88.2. Recommended Practice for Respiratory Protection. American National Standards Institute, New York, NY.
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5. Casarett, L. and J. Doull, Eds., Toxicology: The Basic Science of Poisons, 3rd Ed., New York: Macmillan Publishing Co., Inc. 1986.
6. CERIS (Chemical Emergency Response Information System) On Line Database. Association of American Railroads.
7. Chemical Degradation and Permeation Database and Selection Guide for Resistant Protective Materials. Austin, TX.
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11. Gosselin, R., et al., Gosselin-Clinical Toxicology of Commercial Products, 5th Ed., Baltimore: Williams and Wilkins, 1984.
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16. Lewis, R. and D. Sweet, Eds., Registry of Toxic Effects of Chemical Substances, 1985-1986, Washington, DC: U.S. Government Printing Office, 1987.
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20. Olin Respiratory Protection Manual.
21. Sax, N. Irving, Dangerous Properties of Hazardous Materials 6th Ed., New York: Van Nostrand Reinhold Company, 1984.
22. Threshold Limit Values and Biological Exposure Indices for 1993-94. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1993.
23. Toxic Substances Control Act Inventory, Washington, DC: U.S. Government Printing Office, 1986.
24. Friberg, L., G.F. Nordberg, and V.B. Vouk, eds. Handbook of the Toxicology of Metals, Vol. II: Specific Metals. Elsevier, New York, 1986.
25. Sittig, Marshall, Handbook of Toxic and Hazardous Chemicals and Carcinogens, 2nd Ed., Noyes Publications, Park Ridge, NJ, 1985.
26. U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, "Health Assessment Document for Nickel". Document # EPA/600/8-83/012F, Final Report, September 1985.
27. U.S. Dept. of Health and Human Services, National Toxicology Program, "Sixth Annual Report on Carcinogens, Summary 1991," Research Triangle Park, NC.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET 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 BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

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