



**MATERIAL
SAFETY DATA**

EMERGENCY PHONE: 1-888-2891-911

THIS MATERIAL SAFETY DATA SHEET (MSDS) KIT HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200.

PRODUCT NAME: TIN COATED LEADED BRASS

(OLIN MSDS No: 01324.0001)

This product consists of a base metal alloy coated with another metal. Attached are Material Safety Data Sheets (MSDS) for the following metal products:

**Base Metal - >99% - Leaded Brass
Coating - <1% - Tin Alloy**

THE INFORMATION IN THE ENCLOSED MSDSs 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 AN MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER BELOW TO MAKE CERTAIN THAT THE MSDS IS CURRENT.

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I - PRODUCT IDENTIFICATION

Product Name:	LEADED BRASS ALLOY
Synonyms:	Lead Brass
Chemical Family:	Copper Zinc Lead; UNS/CDA Alloy Nos. C30000 - C39999
Formula:	Not Applicable/Mixture
Description:	Metal
Hazard Classification:	Dust or fume is classified as skin irritant, eye irritant, lung toxin.
Revision No.:	3
Revision Date:	1-8-2002
Olin MSDS No.	00007.0001

II - COMPONENT DATA

Product Composition

CAS or Chemical Name:	Copper				
CAS Number:	7440-50-8				
Percentage Range:	55-91%				
Hazardous Per 29 CFR 1910.1200:	Yes				
Exposure Standards:	OSHA (PEL)		ACGIH (TLV)		
		ppm	mg/m ³	ppm	mg/m ³
	TWA: (fume)	n/a	0.1	n/a	0.2
	TWA: (dust)	n/a	1	n/a	1
	CEILING:	None	None	None	None
STEL:	None	None	None	None	

CAS or Chemical Name:	Lead				
CAS Number:	7439-92-1				
Percentage Range:	0.20-3.8%				
Hazardous Per 29 CFR 1910.1200:	Yes				
Exposure Standards: See 29 CFR 1910.1025	OSHA (PEL)		ACGIH (TLV)		
		ppm	mg/m ³	ppm	mg/m ³
	TWA:	n/a	.050	n/a	.15
	CEILING:	None	None	None	None
	STEL:	None	None	None	None

CAS or Chemical Name:	Nickel
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MATERIAL SAFETY DATA

CAS Number:	7440-02-0				
Percentage Range:	0-0.7%				
Hazardous Per 29 CFR 1910.1200:	Yes				
Exposure Standards:	OSHA (PEL)		ACGIH(TLV)		
		ppm	mg/m ³	ppm	mg/m ³
	TWA:	n/a	1	n/a	1
	CEILING:	None	None	None	none
	STEL:	None	None	None	None

CAS or Chemical Name:	Arsenic				
CAS Number:	7440-38-2				
Percentage Range:	0-0.25%				
Hazardous Per 29 CFR 1910.1200:	Yes				
Exposure Standards:	OSHA (PEL)		ACGIH(TLV)		
		ppm	mg/m ³	ppm	mg/m ³
	TWA:	n/a	0.01	n/a	0.2
	CEILING:	None	None	None	None
	STEL:	None	None	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/m ³	ppm	mg/m ³
	TWA: (fume)	n/a	5	n/a	5
	TWA: (dust)	n/a	10	n/a	10
	CEILING:	None	None	None	None
	STEL: (fume)	n/a	10	n/a	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:	None known
INCOMPATIBLE MATERIALS FOR PACKAGING:	None known
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT:	None known

IV – PHYSICAL DATA

Appearance:	Yellow metallic color
Melting Point:	895L-1040L/875S-1010S Deg.C 1640L-1900L/1610S-1850S Deg.F
Boiling Point:	Not Applicable
Decomposition Temperature:	Not Applicable
Specific Gravity:	8.4 - 8.9
Bulk Density:	8.4 - 8.9 (g/cc)
pH @ 25° C:	Not Applicable
Vapor Pressure @ 25° 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:	Respiratory protection not normally needed. If significant dusting or fuming occurs, wear a NIOSH approved dust respirator.
Ventilation:	Local exhaust ventilation is recommended if significant dusting or fuming occurs. Otherwise, use general exhaust ventilation.
Skin and Eye Protection:	Use safety glasses and wear cut resistant gloves when machining or handling sharp edges.

Equipment Specifications (When Applicable):

Respirator Type:	Wear NIOSH approved respirator with HEPA filters.
Protective Clothing Type: (This includes: gloves, boots, apron, protective suit.)	
Glove Type:	Cut resistant gloves when machining or handling sharp edges.
Boot Type:	None needed
Apron Type:	None needed
Protective Suit:	None needed

VI – FIRE AND EXPLOSION HAZARD INFORMATION

Flammability Data:

Explosive:	No
Flammable:	No

Combustible:	No
Pyrophoric:	No
Flash Point:	Not Applicable
Autoignition Temperature:	Not Applicable
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:	Dust or fume of the metals listed in Section II.

Summary of Reactivity:

Explosive:	No
Oxidizer:	No
Pyrophoric:	No
Organic Peroxide:	No
Water Reactive:	No
Corrosive:	No

VIII - FIRST AID

Eyes

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.

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. Ingestion is unlikely with finished metal alloy.

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

Warning Statements and Warning Properties

DUST IS HARMFUL IF SWALLOWED. HARMFUL IF METAL FUME OR DUST IS INHALED. CONTACT OF FUME OR DUST WITH SKIN OR EYES MAY BE HARMFUL.

Human Threshold Response Data

Odor Threshold:	There is no data available for odor threshold.
Irritation Threshold:	There is no data available for irritation threshold.
Immediately Dangerous to Life or Health:	No IDLH level 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, 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.
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 injury.

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:	No effects would be expected other than those described under acute exposure.

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 eye, the consequences are severe, with widespread degenerative change, 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 and 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 and emphysema may be aggravated by exposure to the dust or fume. Skin disorders such as eczema.

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
The alloy is not a skin or eye irritant.

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. Inhalation of lead can cause damage to the blood, central and peripheral nervous systems, and kidney. Lead inhibits the product 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 effect from lead.

Repeated or prolonged contact with nickel dust or the fume may cause dermatitis, usually referred to as a "nickel itch". Nickel dust or fume has been shown to produce allergic sensitization to the skin. It is judged that the physical nature of the product and low percentage of nickel would preclude the development of these effects from nickel.

Reproductive and Developmental Toxicity

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

There are no known or reported effects on fetal development of reproductive function for copper or zinc.

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 malformations in human beings.

Carcinogenicity

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

Copper and zinc are not listed as carcinogens 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 and lead compounds are listed as carcinogens by IARC.

Arsenic is classified as a carcinogen by OSHA and IARC.

Based on the low percentage of lead, nickel and arsenic in the product and its physical nature, it is judged that the risk of cancer is not significant from exposure to the product.

Mutagenicity

This product is not known or reported to be mutagenic.

Copper, lead, and zinc have not been reported 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. Based on the low percentage of nickel in the product and its physical nature, it is judged that the risk of mutagenicity is not significant from exposure to the product.

Aquatic Toxicity

No data is available on this product.

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, concentration 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.

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 lbs.) lead (1 lb.) and zinc (1000 lbs.) when 100 micrometers or smaller in size.
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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
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Water Release:	Not Applicable
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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.
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Spill Residues:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

Personal Protection for Emergency Spill and Firefighting 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 material 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 ACTS: 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:

HAZARDOUS CATEGORIES, PER 40 CFR 370.2:

HEALTH: Immediate (Acute) - Dust or fume only

PHYSICAL: None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 244, 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 chemical subject to the reporting requirements of Section 313 of Title 3 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 REVISIONS: New format and grouping. Address and phone numbers revised.

XV - MAJOR REFERENCES

1. Handbook on the Toxicology of Metals, Vol. II. L. Friberg, G. F. Nordberg, and V. B. Vouk, eds. Elsevier, New York. 1986.

2. McKee, Jack E. and Harold W. Wolf, Eds., Water Quality Criteria, NTIS PB Report; (PB-82-188244), 2nd Ed., Springfield, VA: National Technical Information Services, 1963.
3. U.S. Environmental Protection Agency, Office of Health and Environmental Assistance, "Health Assessment Document for Nickel". Document #EPA/600/8-83/012F, Final Report, September 1985
4. U.S. Department of Health and Human Services, National Toxicology Program, "Sixth Annual Report on Carcinogens, Summary 1991," Research Triangle Park, NC

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I - PRODUCT IDENTIFICATION

Product Name:	TIN ALLOY
Synonyms:	Metallic Tin Coatings and Tin based Tin/Lead Formulation Solders/Alloys
Chemical Family:	Mixture - Metal Alloy
Formula:	Not Applicable/Mixture
Description:	Metal
Hazard Classification:	Metal dust or fume is classified as: skin and eye irritant; lung, kidney, nervous system, blood and reproductive toxin; carcinogen. Finished metal alloy is not hazardous.
Revision No.:	3
Revision Date:	1-8-2002
Olin MSDS No.	00020.0001

II - COMPONENT DATA

Product Composition

CAS or Chemical Name:	Tin				
CAS Number:	7440-31-5				
Percentage Range:	60-100%				
Hazardous Per 29 CFR 1910.1200:	Yes				
Exposure Standards:	OSHA (PEL)		ACGIH (TLV)		
		Ppm	mg/m ³	ppm	mg/m ³
	TWA:	n/a	2	n/a	2
	CEILING:	None	None	None	None
	STEL:	None	None	None	None

CAS or Chemical Name:	Lead				
CAS Number:	7439-92-1				
Percentage Range:	0-40%				
Hazardous Per 29 CFR 1910.1200:	Yes				
Exposure Standards: See 29 CFR 1910.1025	OSHA (PEL)		ACGIH (TLV)		
		ppm	mg/m ³	ppm	mg/m ³
	TWA:	n/a	0.05	n/a	0.05
	CEILING:	None	None	None	None
	STEL:	None	None	None	None

III - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. AVOID BREATHING DUST OR FUME.

STORAGE CONDITIONS:

STORE IN A COOL DRY PLACE.
DO NOT STORE AT TEMPERATURES ABOVE: Not Applicable

PRODUCT STABILITY AND COMPATIBILITY:

SHELF LIFE LIMITATIONS:	None
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT:	Strong oxidizers; acids; strong alkalis

IV - PHYSICAL DATA

Appearance:	Solid-silver to gray metallic metal
Melting Point:	183-324 Deg.C (361-616 Deg.F)
Boiling Point:	1740 Deg.C (3164 Deg.F)
Decomposition Temperature:	Not Applicable
Specific Gravity:	5.83-11.27
Bulk Density:	Not Applicable
pH @ 25° C:	Not Applicable

Vapor Pressure @ 25° C:	Not Applicable
Solubility in Water:	Insoluble
Volatiles, Percent by Volume:	Not Applicable
Evaporation Rate:	Not Applicable
Vapor Density:	Not Applicable
Molecular Weight:	Not Applicable
Odor:	None
Coefficient of Oil/Water Distribution:	Not Applicable

V – Personal Protective Equipment Requirements

Personal Protection for Routine Use of Product:

Respiratory Protection:	Respiratory protection not normally needed. If dusting occurs or fumes are generated, wear a NIOSH approved dust respirator.
Ventilation:	Local exhaust ventilation is recommended if dusting occurs or fumes are generated. Otherwise, use general exhaust ventilation.
Skin and Eye Protection:	Use safety glasses and gloves when machining or handling sharp edges.

Equipment Specifications (When Applicable):

Respirator Type:	Wear NIOSH approved respirator with HEPA filters.
Protective Clothing Type: (This includes: gloves, boots, apron, protective suit.)	Glove Type: Wear cut resistant gloves when machining or handling sharp edges. Boot Type: None needed Apron Type: None needed Protective Suit: None needed

VI – FIRE AND EXPLOSION HAZARD INFORMATION

Flammability Data:

Explosive:	No
Flammable:	No
Combustible:	No
Pyrophoric:	No
Flash Point:	Not Applicable
Autoignition Temperature:	Not Applicable
LEL:	Not Applicable
UEL:	Not Applicable

NFPA Ratings: Not Established

HMIS Ratings:

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

Extinguishing Media:

Not Applicable - Choose extinguishing media suitable for surrounding materials.

Fire Fighting Techniques and Comments:

See Section XI for protective equipment for fire fighting.

VII - REACTIVITY INFORMATION

Conditions Under Which This Product May Be Unstable:

Temperatures Above:	Stable at normal temperatures
Mechanical Shock or Impact:	No
Electrical (Static) Discharge:	No
Hazardous Polymerization:	Will not occur
Incompatible Materials:	Strong oxidizers, acids, hydrogen peroxide, chlorine, turpentine, active metals - sodium, potassium; powdered lead fused with ammonium nitrate may cause a violent reaction.
Hazardous Decomposition:	At temperatures above melting point metal oxide fumes may be evolved; hydrogen gas from reaction with strong alkali's.
Other:	Do not use compressed air for cleaning or dry sweeping.

Summary of Reactivity:

Explosive:	No
Oxidizer:	No
Pyrophoric:	No
Organic Peroxide:	No
Water Reactive:	No
Corrosive:	No

VIII - FIRST AID

Eyes

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.

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 large quantities of water. Induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions. Ingestion is unlikely with finished metal product.

Inhalation

If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

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.

Warning Statements and Warning Properties

HARMFUL IF METAL FUME OR DUST IS INHALED. HARMFUL IF METAL DUST IS SWALLOWED. MAY BE HARMFUL IF METAL FUME OR DUST IS EXPOSED TO SKIN OR EYES.

Human Threshold Response Data

Odor Threshold:	No Data
Irritation Threshold:	No Data
Immediately Dangerous to Life or Health:	The IDLH concentration has not been established.

Signs, Symptoms and Effects of Exposure

Inhalation

Acute:	Inhalation of lead dust or metal fume may cause irritation to nose, throat, upper respiratory tract and lung. The irritant effects may lead to bronchitis, headache, a fall in blood pressure, weakness, convulsions, and collapse may occur. Severe poisoning may impair vision by damaging the optic nerve.
Chronic:	Chronic inhalation of lead dust or metal fume may cause damage to central and peripheral nerves, blood, kidneys, and the fetus. Male reproductive function may be impaired. Damage to nerves can result in reduction in motor nerve and muscle function. Anemia may result due to interference by lead of hemoglobin synthesis. Lead has been identified as an animal carcinogen; it may produce cancer in humans. Control of dust and fume levels in the air will significantly reduce the risk of cancer. Chronic exposure may lead to lead poisoning, known as "Plumbism", causing gingival lead line and an accumulation in body tissues. Inhalation of large amounts of dust and/or fume of this product may cause lung inflammation which may progress to bronchitis and permanent lung injury.

Skin

Acute:	Lead can be absorbed through the skin to produce effects similar to those listed for acute inhalation exposure. Skin contact with the dust or fume
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Chronic:	may cause irritation consisting of transient redness. This irritant effect would not result in permanent damage. Effects would be expected similar to those described under acute exposure. Lead can be absorbed through the skin to produce effects similar to those listed under chronic inhalation exposure.
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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.

Ingestion

Acute:	Ingestion of the dust may cause gastroenteritis with any or all of the following symptoms: nausea, vomiting, lethargy, and diarrhea. The effects of lead ingestion would be similar to those listed under acute inhalation exposure in addition to gastrointestinal tract irritation.
Chronic:	There is no data available on the chronic ingestion of the alloy. The effects of lead ingestion would be similar to those listed under chronic inhalation exposure.

Medical Conditions Aggravated by Exposure

Asthma and emphysema may be aggravated by exposure to the dust or fume. Exposure to lead can aggravate anemia, cardiovascular, and respiratory disease.

Interactions With Other Chemicals Which Enhance Toxicity

None known

Animal Toxicology

Acute Toxicity:

Oral LD 50: No Data Dermal LD 50: No Data Inhalation LC 50: No Data Irritation: Dust or fume is a skin and eye irritant.

Target Organ Toxicity:

Acute	Lead dust and fume can cause damage to CNS, blood, lungs, and eyes.
Chronic	There are no known or reported effects from repeated exposure to this product. Inhalation of tin may produce a benign condition called stannosis without fibrosis of pulmonary dysfunction. Inhalation of lead can cause damage to the blood, heart, 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 can also cause damage to peripheral nerves resulting in a decrease in motor nerve and muscle function.

Reproductive and Developmental Toxicity

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



MATERIAL SAFETY DATA

Lead has been shown to affect fetal development and reduce male reproductive function. Lead crosses the placenta and may affect the fetus causing birth defects, mental retardation, behavioral disorders, and death during the first year of childhood.

Carcinogenicity

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

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 or reported to be mutagenic.

Aquatic Toxicity

No data is available on this product.

The LC 50 of lead (48 hours) to Bluegill (*Lepomis macrochirus*) is reported to be 2-5 mg/l.

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) Not Applicable No reporting is required if solid metal is equal or greater than 100 micrometers (0.004 inches) in diameter.

Spill Mitigation Procedures:

Dust or fume is classified as a health hazard. Finished metal alloy is not hazardous.	
Air Release:	Not Applicable
Water Release:	This material is heavier than and insoluble in water. Handle as described in land spill.
Land Spill:	Containerize and label all spill materials properly. Decontaminate all clothing and the spill area using a soap solution and flush with large amounts of water.

Spill Residues:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.



MATERIAL SAFETY DATA

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 including a NIOSH approved self-contained breathing apparatus.

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.

As a nonhazardous solid waste, it should be disposed of by metal reclamation.

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/fume
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: Lead

XIV – ADDITIONAL INFORMATION

MSDS REVISIONS: New format and groupings. Address and phone numbers revised.

XV – MAJOR REFERENCES

1. Friberg, L., G.F. Nordberg, and V.B. Vouk, eds., Handbook on the Toxicology of Metals, Vol. II, Elsevier, New York, 1986.

THE INFORMATION IN THIS MSDS 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 MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

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