



Date Prepared: 5/1/15
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SDS-SAFETY DATA SHEET

GLOBAL HARMONIZED SYSTEM

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Copper Alloy C87850 (76-0-0-21-3)
ASTM B30-Alloy C87850

TRADE NAMES/SYNONYMS: Eco-Brass, No Lead Silicon Brass

PRODUCT USE: Manufacture of copper base castings

MANUFACTURER: H. KRAMER AND CO.
ADDRESS: 1339-1345 West 21st Street
Chicago, Illinois 60608

NFPA HAZARD RATING:
Health: 2
Fire: 1
Reactivity: 0



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SECTION 2 HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Odorless, reddish brown metal. Solid metal ingots are generally classified as "articles" under OSHA Communication Standard (29 CFR 1910.1200) and as such do not constitute a hazardous material in solid form. However, under certain processing operations such as melting, machining, grinding, welding, and cutting, some hazardous elements may be emitted.

Non-combustible as supplied. Small chips, fine turnings, and dust from secondary processing operations may be readily ignitable.

Explosion/fire hazards may be present when heavily concentrated dust particles are suspended in air or the metal is in a molten state and comes into contact with fluids, moisture, or condensation.

The following information summarizes the possible health effects of the hazardous elements released during secondary processing. The health effects listed below are not likely to occur unless melting, welding, grinding or other secondary process releases fumes or dusts that result in overexposure.

HEALTH HAZARDS:

Eye Damage/Irritation	Category 2B
Respiratory Sensitization	Category 1
Skin Sensitization	Category 2
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 2
Reproductive Toxicology	Category 1B
Specific Target Organ Toxicity - Single Exposure	Category 2 (respiratory system, skin)
Specific Target Organ Toxicity - Repeated Exposure	Category 2 (central nervous and respiratory systems, skin)
Acute Aquatic Toxicity	Category 2
Chronic Aquatic Toxicity	Category 2

HAZARD SYMBOLS:**SIGNAL WORD:**

Danger

HAZARD STATEMENT:

Fumes or Dust cause eye and respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Dust particles may cause abrasive injury to the eyes. May cause allergic skin reaction or dermatitis. This product contains Lead which may damage fertility or the unborn child. Lead causes damage to the central nervous system, blood, and kidneys, and may be acutely toxic. May cause systemic illnesses through repeated or prolonged exposure. Suspected of causing cancer.

PRECAUTIONARY STATEMENTS:**PREVENTION:**

Do not handle until all safety precautions have been read. Use personal protective equipment as required. Do not breathe dust or fumes. Do not get dust into eyes or mucous membranes. Do not eat, drink, or smoke while using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment.

RESPONSE:

If exposed or concerned: Get medical advice/attention

IF IN EYES: Flush eyes with water or saline solution for several minutes. If irritation persists, consult a physician.

IF ON SKIN: Wash with plenty of soap and water. If skin rash or irritation develops, consult a physician. Wash contaminated clothing before reuse.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Consult a physician.

If breathing is difficult or labored, administer oxygen and seek immediate medical attention.

IF INGESTED: Rinse mouth. Do not induce vomiting. Immediately call a Poison Control Center/consult a physician.

STORAGE:

Due to the weight of metal items, care must be exercised to avoid the collapse or breakage of the packaging materials. Stack all packages properly. Failure to do so may result in injury or death due to crushing or impact. Keep dry.

DISPOSAL:

Dispose of contents/container in accordance with the local regional, national, or international regulations

ENVIRONMENTAL HAZARDS:

Hazardous to the aquatic environment, long term hazard.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL CHARACTERIZATION:

Mixture

HAZARDOUS COMPONENT:

Chemical Name	CAS Number	Percentage
Copper	7440-50-8	75.00 - 78.00
Tin	7440-31-5	0.30 max
Lead	7439-92-1	0.09 max
Zinc	7440-66-6	18.00 - 22.00
Iron	7439-89-6	0.10 Max
Antimony	7440-36-0	0.10 Max
Nickel	7440-02-0	0.20 Max
Phosphorus	7723-14-0	0.05 - 0.20
Sulphur	7704-34-9	0.15 Max
Aluminum	7429-90-5	0.15 Max
Manganese	7439-96-5	0.10 Max
Silicon	7440-21-3	2.70 - 3.40

COMPOSITION COMMENTS:

All percentages are in percent by weight. In the molten state, product may liberate fumes that may contain oxides of the alloying elements.

SECTION 4 FIRST AID MEASURES

INHALATION

Dust or Fume from processing: Remove person to fresh air. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, give artificial respiration.

SKIN CONTACT

Wash the contaminated area with soap and water. Remove contaminated clothing and wash before reuse. In case of allergic reaction or other skin irritation, consult a physician. In case of thermal burns from contact with hot or molten metal, cool rapidly with water and seek immediate medical attention. Cuts or abrasions from contact with sharp edges should be treated by cleansing and bandaging the affected area.

EYE CONTACT

Dust or Fume from processing: Immediately flush eyes with plenty of water. Remove contact lenses if present and easy to do. Hold eyelids apart and rinse for 15 minutes. If irritation develops or persists, seek medical attention.

INGESTION

If swallowed, rinse mouth. Do not induce vomiting. Call a physician or poison control center immediately. Drink plenty of water. Never give anything by mouth to an unconscious person.

SECTION 5 FIRE FIGHTING MEASURES

GENERAL FIRE HAZARDS

This product does not present a fire or explosion hazard as shipped. Small chips, fines, or dust from secondary processing may be readily ignitable.

SUITABLE EXTINGUISHING MEDIA

Extinguishing powder against metal fires, carbon dioxide, dry sand. Use class D extinguishing media on dusts, fines, or molten metal.

UNSUITABLE EXTINGUISHING MEDIA

Do not use water or halogenated extinguishing media on burning metals as these agents will react with the burning material. Do not use water on molten metals as an explosion hazard could result.

SPECIFIC HAZARDS IN CASE OF FIRE

During a fire gases hazardous to health may be formed. Do not breathe fumes. May cause sensitization by inhalation or skin contact.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTION FOR FIRE FIGHTERS

Wear an approved positive pressure, self-contained breathing apparatus and full protective clothing.

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS AND PROTECTIVE EQUIPMENT

Minimize generation of dust. Ensure adequate ventilation. Use appropriate protective equipment to avoid inhalation and eye contact if dust is generated.

ENVIRONMENTAL PRECAUTIONS

No notable environmental hazard is anticipated from the release of this material in bulk solid form on land. Prevent product from entering drains. Do not flush into surface water or storm drains.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN UP

Metal turnings, chips, grindings, solid pieces, etc. are collected and recycled. Accumulations of dust should be vacuumed or wet-swept to prevent airborne exposure. If product is in a molten state, contain spills using dry sand as a dam. Allow molten materials to cool and solidify then collect by mechanical means into a suitable container for recycling or disposal.

SECTION 7 HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

Avoid contact with skin, eyes, and clothing. Avoid dust creation. Wear personal protective equipment when handling. Avoid contact with sharp edges. Special care should be taken when handling molten metals. Always wear proper safety equipment. Do not smoke, eat, or drink when handling this product. Observe good industrial hygiene.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMBATIBILITIES

Keep material dry. Metal in storage can become wet from condensation. It must be thoroughly dried before adding to molten metal. Avoid contact with strong acids or oxidizing agents which can react and liberate highly flammable hydrogen gas. Practice good housekeeping when stacking containers. Metal is heavy and can cause injuries if allowed to fall onto body parts.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

COMPONENT EXPOSURE LIMITS:

COPPER (Cu)(CAS# 7440-50-8)

ACGIH: 0.2 mg/m³ 8-hour TLV 8-hour TWA (fume); 1 mg/m³ TWA (dust and mist)
OSHA: 0.1 mg/m³ PEL 8-hour TWA (fume); 1 mg/m³ TWA (dust and mist)
NIOSH: REL 1 mg/m³ 8-hour TWA(dust and mist)

TIN (Sn)(CAS# 7440-31-5)

ACGIH: 2 mg/m³ TLV 8-hour TWA
OSHA: 2 mg/m³ PEL 8-hour TWA
NIOSH: REL 2 mg/m³ 8-hour TWA

LEAD (Pb)(CAS# 7439-92-1)

ACGIH: 0.05 mg/m³ TLV 8-hour TWA
OSHA: 0.05 mg/m³ PEL 8-hour TWA; 30ug/100ml blood (see 29 CFR 1910.1025)
NIOSH: REL 0.03 mg/m³ 8-hour TWA

ZINC (Zn)(CAS# 7440-66-6)

ACGIH: 2 mg/m³ TLV 8-hour TWA (oxide fume - respirable fraction); 10mg/m³ STEL
OSHA: 5 mg/m³ PEL 8-hour TWA (oxide fume); 15 mg/m³ TWA (total dust); 5mg/m³ (respirable fraction)

IRON (Fe)(CAS# 7439-89-6)

ACGIH: 5 mg/m³ TLV 8-hour TWA (oxide respirable fraction)
OSHA: 10 mg/m³ PEL 8-hour TWA (oxide fume)

ANTIMONY (Sb)(CAS# 7440-36-0)

ACGIH: 0.5 mg/m³ TLV 8-hour TWA
OSHA: 0.5 mg/m³ PEL 8-hour TWA

NICKEL (Ni)(CAS# 7440-02-0)

ACGIH: 1.5 mg/m³ TLV 8-hour TWA (inhalable fraction)
OSHA: 1 mg/m³ PEL 8-hour TWA
NIOSH: REL 0.015 mg/m³ 8-hour TWA

PHOSPHORUS (P)(CAS# 7723-14-0)

ACGIH: 0.02 (ppm) TLV 8-hour TWA
OSHA: 0.1 mg/m³ PEL 8-hour TWA
NIOSH: REL 0.1 mg/m³ 8-hour TWA

SULPHUR (S)(CAS# 7704-34-9)

ACGIH: 0.25 ppm STEL (as sulfur dioxide)
OSHA: 5 mg/m³ PEL 8-hour TWA (respirable fraction); 15 mg/m³ PEL 8 hour TWA (inhalation total)
NIOSH: REL 2 ppm (5 mg/m³) STEL 5 ppm (13 mg/m³) (as sulfur dioxide)

ALUMINUM (Al)(CAS# 7429-90-5)

ACGIH: 1 mg/m³ TLV 8-hour TWA (respirable fraction)
OSHA: 5 mg/m³ PEL 8-hour TWA (respirable dust); 15 mg/m³ (total dust)
NIOSH: REL 1 mg/m³ 8-hour TWA (fume)

MANGANESE (Mn)(CAS# 7439-96-5)

ACGIH: 0.02 mg/m³ TLV 8-hour TWA (respirable fraction)
OSHA: 5 mg/m³ Ceiling (fume)
NIOSH: REL 5 mg/m³ 8-hour TWA (respirable dust); 5 mg/m³ (fume); 10 mg/m³ (total)

SILICON (Si)(CAS# 7440-21-3)

ACGIH: 5 mg/m³ TLV 8-hour TWA (respirable dust)
OSHA: 5 mg/m³ PEL 8-hour TWA (respirable fraction); 15 mg/m³ (total dust)
NIOSH: REL 5 mg/m³ 8-hour TWA (respirable dust); 10 mg/m³ (total)

OCCUPATIONAL EXPOSURE LIMITS**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Lead (CAS 7439-92-1) 0.05 mg/m³; 30 ug/100 mL Blood

Note: Women of childbearing potential, whose blood Pb exceeds 10 µg/dl, are at risk of delivering a child with a blood Pb over the current Centers for Disease Control guideline of 10 µg/dl. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead.

(CDC: Preventing Lead Poisoning in Young Children, October 1991; See BEI® and TLV® Documentation for Lead).

BIOLOGICAL LIMIT VALUES**US. ACGIH BEIs Biological Exposure Indices**

Lead (CAS 7439-92-1) BEI- 30ug/100mL **Determinant-** Lead in Blood **Sampling Time-** Consult 29 CFR 1910.1025

ENGINEERING CONTROLS

Provide adequate ventilation. Use local exhaust or general ventilation as required to minimize exposure to dust and fume. Observe Occupational Exposure Limits described above.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



EYE / FACE PROTECTION

Safety glasses with side shields must be worn when performing any secondary processing such as cutting, grinding, sawing, etc. Wear dust resistant goggles where there is a danger of airborne dust. In addition to protective eyewear, full face shields are recommended. Welding shields/goggles are required when welding this product. See ANSI Z49.1 "Safety in Welding and Cutting" and OSHA regulation 29 CFR 1910.252

HAND PROTECTION

Use protective industrial type gloves to protect against sharp edges and abrasions. When working at elevated temperatures use proper protective gloves to prevent thermal burns. Consult OSHA 29 CFR 1910.138

RESPIRATORY PROTECTION

Use appropriate NIOSH/OSHA approved respiratory protection. Positive-pressure supplied air respirators may be required in areas with excessive contaminant concentrations. Consult OSHA 29 CFR 1910.134 for respiratory protection requirements and 29 CFR 1910.1025 for regulations on respiratory protection against airborne lead (Pb).

OTHER PROTECTION

Wear appropriate garments to protect against thermal burns such as fire coats, aprons and leggings when necessary. Head protection and foot protection recommended. Hearing protection may be required.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Physical Appearance:	Reddish brown colored metal in various shapes and sizes.
Physical State:	Solid below melting point, liquid above melting point.
Odor:	Odorless
Odor Threshold:	Not Applicable
pH:	Not Applicable
Melting Point/Freezing Point:	Liquidus 1680 F, Solidus 1510 F Molten state operating temperature is 1750 - 2300 F
Boiling Point (F°):	Copper 4703
	Tin 4120
	Lead 3137
	Zinc 1663
	Iron 5430
	Antimony 2975
	Nickel 4900
	Phosphorus 546
	Sulfur 832
	Aluminum 4442
	Manganese 3806
	Silicon 4860

SECTION 10 STABILITY AND REACTIVITY

Reactivity:	Stable at normal conditions
Hazardous Reaction Potential:	Hazardous polymerization will not occur.
Conditions to Avoid:	Molten metals will react with water in a potentially violent steam explosion.
Materials to Avoid:	Contact with acids or strong oxidizers will release flammable hydrogen gas. Avoid Ammonia, Acetylene, Halogens, and Mercury

Hazardous Decomposition Products:	Secondary processing my release dusts. Elevated temperature my release fumes or oxides of metals.
Flash Point:	Not Applicable
Evaporation Rate:	Not Applicable
Flammability:	Not Applicable
Upper/Lower Flammability:	Not Applicable
Upper/Lower Explosive Limits:	Not Applicable
Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable
Density:	0.300 lb./in3 at 68 F
Specific Gravity (Water = 1)	8.30
Solubility in Water:	Not Applicable
Partition Coefficient:	Not Applicable
Auto ignition Temperature:	Not Applicable
Decomposition Temperature:	Not Applicable

SECTION 11 TOXICOLOGICAL INFORMATION

EXPOSURE ROUTES:

For Dust: ingestion, eye contact, inhalation
 For Fume: inhalation, eye contact
 For Solids: the solid product is not hazardous

HEALTH EFFECTS ASSOCIATED WITH INDIVIDUAL INGREDIENTS

Copper: Can cause irritation of eyes, mucous membranes, skin and respiratory tract. Industrial exposure to copper fumes results in metal fume fever with atrophic changes in nasal mucous membranes.

Chronic Overexposures: can cause a reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes), and hair discoloration. Chronic poisoning results in Wilson's disease characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea. Passes through the placenta and excreted in maternal milk.

Acute Toxicity: LD50/oral of copper sulfate is 472 mg/kg in rats. Toxic response in humans has been observed at 11 mg/kg.

Tin: Tin powder is moderately irritating to the eyes, mucous membranes and respiratory tract due to mechanical action.

Chronic Overexposure: can cause benign lung disease (stannosis)

Acute Toxicity: LD50/oral/rat >2000 mg/kg bodyweight LD50/dermal/rat > 2000 mg/kg bodyweight
 LC50/inhalation/4h/rat > 5 g/m³

Lead: Can cause irritation of eyes and upper respiratory tract.

Acute Overexposure: can cause nausea and stomach cramps, weakness and fatigue.

Chronic Overexposure: can cause abdominal cramps, severe anemia, persistent vomiting, peripheral neuropathy, kidney damage, liver damage, damage to the central nervous system and blood forming organs. Causes reproductive harm, can cause reduced fertility and fetal toxicity in pregnant women. Listed in IARC/NTP monographs as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as possibly carcinogenic to humans by IARC -group 2B.

Acute Toxicity: LD50: Acute: 74 mg/kg (Mouse). LC50: Acute: 93 mg/kg (Rat).

Zinc: exposure to zinc oxide fume can cause metal fume fever. Symptoms resemble influenza with chills and nausea. May cause irritation to the eyes, mucous membranes, and respiratory tract.

Chronic Overexposure: There is no chronic form of metal fume fever but in rare instances an acute incident may be followed by complaints such as bronchitis or pneumonia. Some workers may develop a short-term immunity (resistance) so that repeated exposure to zinc oxide fumes does not cause metal fume fever. This immunity (resistance) however is quickly lost after short absences from work (weekends or vacations). Prolonged or repeated skin contact with zinc dust or from the skin. powder may cause dryness, irritation and cracking (dermatitis) since zinc is astringent and may tend to draw moisture. Zinc dust is not listed as a human carcinogen by the Occupational Safety and Health Administration (OSHA), the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), American Conference of Governmental Industrial Hygienists (ACGIH) or the European Union (EU).

Iron: exposure to iron oxide or dust can cause irritation to the eyes, mucous membranes and respiratory tract

Chronic Overexposure: can result in siderosis which causes a shortness of breath and coughing tendencies

Acute Toxicity: LD50/oral/rat: 3000mg/kg bodyweight

Antimony: may cause irritation to eyes, mucous membranes, and respiratory tract. May cause contact dermatitis.

Chronic Overexposure: causes dryness of the throat, nausea, headaches, sleeplessness, loss of appetite, and dizziness. In acute severe poisoning there may be death from circulatory or respiratory failure or toxic hepatitis.

Acute Toxicity: LD50/oral/rat: 7000mg/kg bodyweight

Nickel: can cause irritation of the eyes, mucous membranes, and respiratory tract. Can cause inflammation of the eyes and eyelids (conjunctivitis). Can cause sensitization and allergic contact dermatitis.

Chronic Overexposure: can cause hypertrophic rhinitis and nasal sinusitis, respiratory sensitization, asthma, and scarring of the lungs (pulmonary fibrosis). Excessive inhalation of nickel fumes has been associated with respiratory cancer.

Listed NTP and IARC monographs. Classified 2B (possible for Human) by IARC. Classified 2 by NTP (some evidence)

Acute Toxicity: LD50/oral/rat 5000mg/kg; LD50/oral/guinea pig 5000mg/kg

Phosphorus: causes irritation to the eyes, mucous membranes and respiratory tract.

Chronic Overexposure: may cause osteomyelitis of the jaw bone. Anemia and leucopenia were observed in workers that were chronically exposed to white phosphorus. May cause liver and kidney damage.

Acute Toxicity: LD50/man 4412 ug/kg; LD50/oral/rat 3.03 mg/kg; LD50/dermal/rat 100 mg/kg; LC50/inhale/rat 4.3 mg/L -1hr

Sulfur: may be irritating to eyes, mucous membranes and respiratory tract.

Chronic Overexposure: may lead to dermatitis, eczema, skin ulcers allergic reactions.

Acute Toxicity: LD50/oral/rat >3000 mg/kg; LD50/dermal/rabbit >2000 mg/kg; LC50/inhale/rat 9.23 mg/L -4hr

Aluminum: can cause irritation of the eyes, mucous membranes, and respiratory tract.

Chronic Overexposure: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways.

Acute Toxicity: LD50/oral/rat >2000 mg/kg; LC50/inhalation/rat >2.3 mg/L

Manganese: dusts in high concentrations can cause irritation of the eyes and throat. May cause nose to bleed. May cause metal fume fever characterized by flu-like symptoms.

Chronic Overexposure: repeated or prolonged exposure may cause degenerative changes in the brain. May effect the central nervous system, blood, metabolism and cause pulmonary fibrosis. Can cross placenta.

Acute Toxicity: LD50/oral/rat 9000 mg/kg;

Silicon: can cause irritation of the eyes, mucous membranes, and respiratory tract.

Chronic Overexposure: silicon inert dusts can cause chronic bronchitis and narrowing of the airways.

Acute Toxicity: LD50/oral/rat 3160 mg/kg

Bismuth: may be irritating to eyes, mucous membranes and respiratory tract.

Chronic Overexposure: may have long term effects. Health effects have not been fully investigated

Acute Toxicity: LD50/oral/mouse 10 gm/kg; LD50/oral/rat 5000 mg/kg;

CARCINOGENICITY

Possible cancer hazard - may cause cancer based on animal data.

IARC Monographs. Overall Evaluation of Carcinogenicity

Lead (Cas 7439-92-1) 2B Possibly carcinogenic to humans

Nickel (Cas 7440-02-0) 1 Carcinogenic to humans

NTP Report on Carcinogens

Nickel Compounds Known to be Human Carcinogen

Nickel, Metallic Reasonably suspected to be a human carcinogen.

SECTION 12 ECOLOGICAL INFORMATION

GENERAL ENVIRONMENTAL EFFECTS

No notable environmental hazard is expected from spills of solid material on land. Avoid aquatic contact, recover metal from aquatic environments. Toxic to aquatic life with long lasting effects.

PERSISTENCE AND DEGRADABILITY

The product is not biodegradable

BIOACCUMULATIVE POTENTIAL:

The product contains potentially bio accumulating elements

MOBILITY IN SOIL

Metals in solid form are not mobile in the environment. Dissolved metals may migrate through soil.

ECOTOXICITY

Copper	96 Hr. LC50: Pimephales promelas: 23 ug/L
	96 Hr. LC50: Oncorhynchus mykiss 13.8 ug/L
	96 Hr. LC50: Lepomis macrochirus 236 ug/L
	72 Hr. EC50 Scenedesmus subspicatus: 120 ug/L
	48 Hr. EC50 Daphnia magna: 0.03 mg/L
Lead	96 Hr. LC50 Pimephales promelas: 6.5 mg/L
	48 Hr. EC50 Water flea: 600ug/L
	48 Hr. LC50 Lepomis macrochirus: 2-5 mg/L
	96 Hr. LC50 Cyprinus carpio: 0.44 mg/L
	48 Hr. EC50 Daphnia magna: 0.0244 mg/L
Nickel	96 Hr. LC50 Rainbow Trout: 31.7 mg/L
	96 Hr. LC50 Fathead Minnow: 3.1 mg/L
	96 Hr. LC50 Cyprinus carpio: 0.44 mg/L
	48 Hr. EC50 Daphnia magna: 600 ug/L
Zinc	96 Hr. LC50 Pimephales promelas: 6.4 mg/L
	96 Hr. EC50 Selenastrum capricornutum: 30 ug/L
	72 Hr. EC50 Water flea: 5 ug/L
Iron	96 Hr. LC50 Morone saxatilis: 13.6 mg/L (static)

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL INSTRUCTIONS

This product should be reused or recycled. If reuse or recycling is not possible, then this material must be disposed of as a hazardous waste. Dispose in accordance with all applicable local, state, province, and federal regulations. Local regulations may be more stringent than regional or national requirements. It is the responsibility of the waste generator to determine the hazardous characteristics of the material to determine proper waste identification and disposal protocols. Characterize with applicable regulations such as 40 CFR 261 or state equivalent.

COMPONENT WASTE NUMBERS

It is the responsibility of the waste generator to determine the proper waste identification numbers and dispose of in compliance with applicable regulations. Refer to 40 CFR 261. Possible US EPA Waste Numbers: D008, D210, D220 and D230

SECTION 14 TRANSPORTATION INFORMATION

US DOT

Not regulated as a hazardous material by DOT

IATA

Not regulated as a dangerous good

IMDG

Not regulated as a dangerous good

SPECIAL PRECAUTIONS FOR USER

Not applicable

TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 AND THE IBC CODE

Not applicable

NOTES:

When "Not Regulated" enter the proper freight classification, SDS Number, and Product Name on the shipping paperwork.

SECTION 15 REGULATORY INFORMATION

US FEDERAL REGULATIONS

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GENERAL PRODUCT INFORMATION

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone depleting chemicals.

COMPONENT ANALYSIS - US FEDERAL

This product contains one of more of the following chemicals required to be identified under SARA section 302 (40 CFR 355 Appendix A), SARA section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4)

Copper (7440-50-8)

SARA 313 1.0% de minimus concentration

CERCLA 5000 lb. (2270 kg) final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released are larger than 100 micrometers.

Lead (7439-92-1)

SARA 313 0.1% Supplier notification limit, 0.1% de minimus concentration when contained in brass or bronze alloys.

CERCLA 10 lb. (4.54 kg) final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released are larger than 100 micrometers.

Zinc (7440-66-6)

SARA 313 1.0% de minimus concentration (dust or fume only)

CERCLA 1000 lb. (454 kg) final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released are larger than 100 micrometers.

Antimony (7440-36-0)

CERCLA 5000 lb. (2270 kg) final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released are larger than 100 micrometers.

Nickel (7440-02-0)

SARA 313 0.1% de minimus concentration

CERCLA 100 lb. (45.4 kg) final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released are larger than 100 micrometers.

Manganese (7439-96-5)

SARA 313 1.0% de minimus concentration

COMPONENT ANALYSIS - STATE

Pennsylvania: "Special Hazardous Substance": Nickel

California: Chemical(s) known to the State of California to cause cancer: Lead and Lead Compounds

California: Chemical(s) known to the State of California to cause reproductive toxicity: Lead

US California Right to Know - Substance List

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Iron (7439-89-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)

US Massachusetts Right to Know - Substance List

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)

US Minnesota - RTK

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)

US New Jersey Worker and Community Right to Know Act

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)

US Pennsylvania RTK - Hazardous Substances

Copper (7440-50-8)
Tin (7440-31-5)

Lead (7439-92-1)
Zinc (7440-66-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)
Cobalt (7440-48-4)

US Rhode Island - RTK

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)
Cobalt (7440-48-4)

US California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

WARNING! This product contains a chemical known to the State of California to cause cancer.

WARNING! This product contains a chemical known to the State of California to cause reproductive/developmental effects.

COMPONENT ANALYSIS - OTHER

Canada WHMIS IDL

Copper (7440-50-8)	1% Minimum Concentration
Tin (7440-31-5)	1% Minimum Concentration
Lead (7439-92-1)	0.1% Minimum Concentration
Nickel (7440-02-0)	0.1% Minimum Concentration
Aluminum (7429-90-5)	1% Minimum Concentration
Manganese (7440-96-5)	1% Minimum Concentration

United States & Puerto Rico Toxic Substances Control Act (TSCA)

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Iron (7439-89-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)

Canada Domestic Substances List (DSL)

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Iron (7439-89-6)
Antimony (7440-36-0)
Nickel (7440-02-0)

Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)

European Inventory of Existing Commercial Chemical Substances (EINECS)

Copper (7440-50-8)
Tin (7440-31-5)
Lead (7439-92-1)
Zinc (7440-66-6)
Iron (7439-89-6)
Antimony (7440-36-0)
Nickel (7440-02-0)
Aluminum (7429-90-5)
Manganese (7440-96-5)
Silicon (7440-21-3)

SECTION 16 OTHER INFORMATION

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REFERENCES:

IARC Monographs. Overall Evaluation of Carcinogenicity
NIOSH Pocket Guide to Chemical Hazards
"Threshold Limit Values of Chemical Substances in Work Environment" - ACGIH
National Toxicity Program (NTP) Report on Carcinogens

DISCLAIMER:

The above information is provided for the sole purpose of complying with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The information is given in good faith and is believed to be correct, but without guarantee. We do not assume responsibility for the results of its use.