

MATERIAL SAFETY DATA SHEET

ANSONIA COPPER & BRASS, INC.
75 Liberty Street
Ansonia, Connecticut 06401
Telephone: (203) 732-6600

IMPORTANT - Read this MSDS before handling and disposing of this product, and pass this information on to employees, customers, and users of the product.

SECTION I - MATERIAL IDENTIFICATION

Description: Copper-Zinc-Silicon-Lead-Arsenic Alloys
Product Code(s): 69430, 69710
Forms: Wire, rod, large diameter tubing, and scrap metal

HMIS Ratings

Health - 3
Fire - 1
Reactivity - 1

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	OSHA PEL-TWA	OSHA PEL-C	ACGIH TLV-TWA	ACGIH TLV-STEL
Arsenic (<1%)	7440-38-2	0.01 mg/m ³	None	0.01 mg/m ³	None
Copper	7440-50-8	1 mg/m ³ , as dust 0.1 mg/m ³ , as fume	None	1 mg/m ³ , as dust 0.2 mg/m ³ , as fume	None
Lead	7439-92-1	0.05 mg/m ³	None	0.05 mg/m ³	None
Silicon	7440-21-3	15 mg/m ³ , Total dust 5 mg/m ³ , Respirable	None	None	None
Zinc	7440-66-6	5 mg/m ³ (as ZnO fume)	None	5 mg/m ³ (as ZnO fume)	10 mg/m ³ (as ZnO fume)

WARNING: These products contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

SECTION III - PHYSICAL DATA

Physical Form:	Solid (metal residues may include oxides)	Specific Gravity:	Approx. 8.4
Boiling Point:	Not Applicable	Vapor Density:	Not Applicable
Melting Temperature Range:	Approximately 1500-2260°F/816-1238°C.	Solubility (H ₂ O):	Insoluble
Vapor Pressure:	Not Applicable	Color:	Varies with composition
Evaporation Rate:	Not Applicable	Odor:	None

SECTION IV - FIRE AND EXPLOSION DATA

Flash Point (Method): Not Applicable **Autoignition Temperature:** Not Applicable **Flammable Limits (LEL/UEL):** Not Applicable

Overview: Solid massive form is not combustible under normal conditions of temperature and pressure. Fire and explosion hazards are moderate for material in the form of dust and fine powder when exposed to heat, flames, sparks, or by reaction with incompatible materials (see Section V).

Conditions to Avoid: Do not allow dust and fine powder to accumulate. Avoid creating sources of ignition sources, sparks, and flame in areas of dust and powder accumulations, or where there is a high airborne concentration.

Extinguishing Media to Use: Class D dry powder, dry sand, or specialized dry powders.

Extinguishing Media to Avoid: Water, moist sand, other liquids, foam, or halogenated extinguishing agents.

Special Fire Fighting Instructions: Firefighters should wear NIOSH- approved self-contained breathing apparatus with full facepiece in a positive-pressure mode, and full protective clothing. Avoid spreading fires of powder or dust. Dust clouds may be explosive. Take all appropriate steps to prevent formation of dust clouds. If fire is isolated, it may be allowed to burn itself out. Do not disturb burning metal while extinguishing the fire. Use firefighting methods and media as appropriate for surrounding materials.

Hazardous Combustion Products: Metals Involved in a fire at very high temperatures or in a molten state produce metal or metal oxide fumes that may be toxic as well as irritating to the respiratory system.

SECTION V - REACTIVITY DATA

Stability: Stable under foreseeable conditions of transport and storage.

Hazardous Decomposition Byproducts: Metal fume and/or metal oxide fume.

Hazardous Polymerization: Will not occur

SECTION V - REACTIVITY DATA (Continued)

Conditions to Avoid:

- During storage, avoid exposure to strong acids, bases, oxidizers and the materials indicated below in the *Incompatibility* section.
- Molten metal may react violently with water. Never put water or other liquids on it, as it may explode. Similarly, do not melt wet metal.
- This product can react with strong acids or oxidizing agents, which can liberate highly flammable hydrogen gas.
- Copper forms potentially explosive reactants with acetylene, ammonium nitrate, 3-bromopropyne, ethylene oxide and lead azide.
- In the presence of halogenated compounds, copper powder may explode through heat, percussion, or friction.
- Upon extended contact with wet acetylene and ammonia, copper may form an explosive peroxide.

Incompatibility (Materials to Avoid): Strong acids; strong bases; oxidizing agents; ammonium nitrate; bromates, chlorates, and iodates of alkali and alkali earth metals; inorganic and organic peroxides; chlorine trifluoride; azides; bromine trifluoride; cupric nitrate; sulfur; carbon disulfide; chromic anhydride; hydrazine mononitrate; hydroxylamine; nitric acid; performic acid; tellurium; selenium; aluminum plus lead oxide; cesium and rubidium carbides; halogens; cobalt fluoride; iodine pentafluoride; manganese trifluoride; nitrosyl fluoride; silver fluoride; hypochlorous acid.

SECTION VI - HEALTH HAZARD DATA

Overview: These products have not been tested for toxicological properties by the manufacturer. Symptoms and health effects of the component elements from scientific studies and reports are described herein.

Route(s) of Entry: Ingestion; inhalation.

Eye Hazards: Eye contact with these products in finely divided forms may cause irritation, conjunctivitis, and/or ulceration of the cornea.

Skin Hazards: Skin contact with these products in finely divided forms may cause irritation, discoloration, and contact dermatitis. The component arsenic is a known skin carcinogen, and can also cause dermatitis.

Ingestion Hazards: Ingestion of finely divided forms of these products may cause nausea, vomiting, and gastrointestinal (GI) tract irritation. Potential health effects from chronic long-term ingestion are similar to those described under *Inhalation Hazards* below.

Inhalation Hazards: The symptoms and effects of the component elements described here have occurred from excessively high and/or prolonged exposures, and do not necessarily represent the potential health hazards existing under foreseeable conditions of product use.

- **Arsenic:** Arsenic is acutely toxic, and high levels of exposure can produce multiple effects including damage to the nervous system, liver, vascular system, respiratory tract, and possible death. Chronic exposure to arsenic compounds or industrial processes involving arsenic have also increased the risk of cancers of the lungs and skin. Arsenic can also pass through the placental barrier and damage the fetus.
- **Copper:** Acute exposure may cause "metal fume fever", which is characterized by respiratory tract irritation, a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of breath, vomiting, and fatigue. Symptoms usually abate in 24-48 hours, leaving no known permanent effects. Long-term chronic exposure may damage the liver, kidney, spleen, pancreas, and brain.
- **Lead:** Chronic exposure may cause various systemic effects, such as damage to hematological (blood-forming), neurological, and renal (kidney) functions. Lead inhibits the synthesis of hemoglobin, and may lead to anemia. Neurological effects may include central and peripheral nervous system disorders. Symptoms of chronic lead overexposure include anemia, pale skin, a blue line at the gums, decreased handgrip strength, abdominal pain, nausea, vomiting, and weakness of the wrist. Lead may affect the cardiovascular, hepatic, gastrointestinal, and endocrine systems, and has been determined to adversely affect the male reproductive organs and functions.
- **Silicon:** No significant acute or chronic health effects are known from inhalation exposure to elemental silicon. Chronic exposure to amorphous silica fume (an oxidation byproduct) may cause pulmonary fibrosis.
- **Zinc:** Acute exposure to zinc oxide fume may cause "metal fume fever" (see *Copper*, above). Chronic effects from long-term exposure have not been established for either zinc oxide or metallic zinc.

Carcinogenicity: Lead is classified as a potential human carcinogen (Group 2B) by the International Agency for Research on Cancer (IARC). Arsenic is classified as a human carcinogen by IARC (Group 1), the National Toxicology Program (Group K), and the Occupational Safety and Health Administration (OSHA). None of the other components are classified as carcinogens by IARC, NTP, or OSHA.

Medical Conditions Aggravated by Overexposure: Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure, particularly as fume. Chronic overexposure may aggravate pre-existing diseases of the liver, kidneys, gastrointestinal system, nervous system, skin, blood-forming organs, and male reproductive system.

Emergency First Aid Procedures:

- **Eyes:** Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.
- **Skin:** Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes.
- **Ingestion:** If subject is conscious, induce vomiting. If unconscious or convulsive, get immediate medical assistance.
- **Inhalation:** If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

SECTION VI - HEALTH HAZARD DATA (Continued)

Note to Physician: Acute arsenic intoxication via ingestion is unlikely due to the implausibility of ingestion of products, insolubility of the products, and the low concentration of arsenic in the products (<15 grams/kilogram). Extensive or prolonged skin contact may cause dermatitis.

Toxicology Data:	Component (CASRN)	LD ₅₀ (Route/species)	LC ₅₀ (Species)
	Arsenic (7440-38-2)	763 mg/kg (oral/rat)	No data available
	Copper (7440-50-8)	No data available	No data available
	Lead (7439-92-1)	No data available	No data available
	Silicon (7440-21-3)	3,160 mg/kg (oral/rat)	No data available
	Zinc (7440-66-6)	No data available	No data available

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Potential for Exposure: Metal dust and fume exposure may occur when alloys are subject to grinding, cutting, extreme heat, and other forms of metalworking. If dust and fume are generated, avoid inhalation through the use of appropriate engineering controls (e.g., ventilation) and/or personal protective equipment, as described in Section VIII.

Handling and Storage: No special handling procedures are required. Do not store near strong acids, bases, oxidizing agents, or incompatible materials (see Section V). Prevent exposure to rainwater, which may cause storm water pollution.

Accidental Release Measures: If a powdered form of product is spilled, clean up spillage so as to minimize dust generation. Wet sweeping or vacuuming using HEPA filtration are recommended. Prevent exposure to rainwater and possible storm water pollution.

Waste Disposal: Recycle unused product whenever possible. These products contain lead and arsenic, and may be classifiable as RCRA hazardous wastes, depending upon test methodology and findings, as required by the U.S. Environmental Protection Agency or State/Provincial authority. Dispose of all waste products in accordance with applicable Federal, State/Provincial, and local regulations.

SECTION VIII - CONTROL MEASURES

Engineering Controls: Use appropriate ventilation (e.g., dilution, local exhaust) adequate to maintain concentrations of all components and their decomposition byproducts to within their respective OSHA PELs or other applicable standards. Follow appropriate guidance documents, such as NFPA, ANSI, and industrial ventilation design principles and practices.

Eye/Face Protection: Wear eye protection adequate to prevent eye contact with powdered forms of product and/or injury from the type of operation in which the product is used. Appropriate protection may include safety glasses with side shields, goggles, face shields, helmets, or lenses of tinted glass. Safety eyewash stations should be nearby locations of work with these products.

Skin Protection: Wear protective gloves and clothing appropriate to the type of operation in which the product is used. Melting, pouring, grinding, cutting, or welding operations will require appropriate protective gloves and/or clothing. Depending upon the operation, additional protective gear, such as leggings, gauntlets, helmets, etc. may be required. If there is the potential for extensive or prolonged contact with powdered forms of product, wear protective gloves or barrier creams to prevent dermatitis and/or skin injury.

Respiratory Protection: If an exposure level exceeds an applicable exposure standard, use a NIOSH-approved respirator having a configuration (type of facepiece, filter media, assigned protection factor, etc.) appropriate to the concentration of the contaminant(s) generated. For guidance on selection and use of respiratory protection, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

Work/Hygiene Practices: Eating, drinking, and use of tobacco should be prohibited in work areas. Wash hands and face before eating, drinking, using tobacco products, or applying cosmetics. Do not wear contaminated clothing into break and lunch rooms. Contaminated clothing should not be worn home, but should be left at the workplace. For lead or arsenic-contaminated clothing, OSHA requires that it be collected in a secure container and properly labeled for cleaning or repair.

SECTION IX - REGULATORY INFORMATION

Transportation Regulatory Information: These products are not classified as *Hazardous Substances* or *Dangerous Goods* per U.S. Department of Transportation (DOT), International Air Transport Association (IATA), or International Maritime Organization (IMO) regulations.

U.S. Regulatory Information

SARA Hazard Classes: Acute Health Hazard; Delayed Health Hazard

Section 313 Supply Notification: These products contain the following ingredients in concentrations greater than 1% (for carcinogens 0.1%) that are subject to Toxic Release Inventory (TRI) reporting under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and 40CFR Part 372:

- Arsenic (CASRN 7440-38-2)
- Copper (CASRN 7440-50-8)
- Lead (CASRN 7439-92-1)

Occupational Safety and Health Administration: Arsenic and lead are regulated by substance-specific standards (29CFR Part 1910.1018 and 1910.1025, respectively). If these products are used in a manner that creates employee exposures exceeding their respective Permissible Exposure Limits (PELs), some or all of the requirements of those standards may apply. Consult the standard for requirements specific to your operation. If uncertain, consult a qualified industrial hygienist or other health professional for guidance.

SECTION IX - REGULATORY INFORMATION (Continued)**Canadian Regulatory Information**

Workplace Hazardous Materials Information System (WHMIS) Class(es) and Division(s): D2A, D2B

Components on Ingredients Disclosure List:

- Arsenic, elemental (CASRN 7440-38-2)
- Copper, elemental (CASRN 7440-50-8)
- Lead, elemental (CASRN 7439-92-1)

SECTION X – REVISION INFORMATION

Date of Previous Edition: January 16, 2004

Section(s) Materially Revised: I, II

DISCLAIMER OF LIABILITY

The information in this MSDS was obtained from sources that we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESSED OR IMPLIED, REGARDING ITS CORRECTNESS.

The conditions or methods of handling, storage, use, and disposal of the product are beyond our control, and MAY be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY, AND EXPRESSLY DISCLAIM LIABILITY, FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE, OR DISPOSAL OF THE PRODUCT.