

1. Identification

Product identifier High Lead Tin Bronze Alloys

Other means of identification

SDS number 104

Product code C93900, C94000, C94100, C94300, C94310, C94400, C94500

Recommended use Manufacturing

Recommended restrictions Not assigned.

Manufacturer / Importer / Supplier / Distributor information

Company name Advance Bronze, Inc.

Address 139 Ohio St. - PO Box 280, Lodi, OH 44254

Telephone 330-948-1231

Contact person John Wenneman

E-mail johnw@advancebronze.com

Emergency phone number 1-800-424-9300
Chemtrec (24-hrs)

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

| | |
|---|-------------|
| Acute toxicity, oral | Category 4 |
| Acute toxicity, inhalation | Category 4 |
| Sensitization, skin | Category 1 |
| Carcinogenicity | Category 2 |
| Reproductive toxicity (fertility, the unborn child) | Category 1A |
| Specific target organ toxicity, repeated exposure | Category 2 |

OSHA hazard(s) Not classified.

Label elements

Hazard symbol



Signal word

Danger

Hazard statement

Harmful if swallowed. Harmful if inhaled. May cause an allergic skin reaction. May cause damage to organs (Lung, central nervous system) through prolonged or repeated exposure. Suspected of causing cancer. May damage fertility or the unborn child. Very toxic to aquatic life.

Precautionary statement

Prevention

Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe fumes and dusts. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Contaminated work clothing should not be allowed out of the workplace.

Response

If on skin: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Specific treatment (see this label). Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell. If swallowed: Immediately call a poison center/doctor. If swallowed: Rinse mouth. Do not induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage

Store locked up.

Disposal

Dispose of contents/container to a facility that has permission of disposing the industrial waste.

Hazard(s) not otherwise classified (HNOC)

Not classified.

Environmental hazards

Hazardous to the aquatic environment, acute hazard Category 1

3. Composition/information on ingredients

Mixture

| Hazardous components Chemical name | Common name and synonyms | CAS number | % |
|---------------------------------------|-----------------------------|------------|---------|
| Copper | | 7440-50-8 | 68.5-89 |
| Lead | | 7439-92-1 | 22-32 |
| Tin | | 7440-31-5 | 4.5-6 |
| Nickel | | 7440-02-0 | 0-6 |
| Zinc | | 7440-66-6 | 0-2.5 |

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The alloy contains additional alloying elements at concentrations below disclosure requirements. At temperatures above the melting point the alloys may liberate fumes containing oxides of alloying elements.

4. First-aid measures

Inhalation

In case of exposure to fumes or particulates: Get medical attention immediately.

Skin contact

Contact with dust: Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Get medical attention if irritation persists after washing. In case of allergic reaction or other skin disorders: Seek medical attention and bring along these instructions. In case of contact with hot or molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

Eye contact

Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove any contact lenses and open eyelids wide apart.

Ingestion

Rinse mouth thoroughly if dust is ingested. Only induce vomiting at the instruction of medical personnel. Get medical attention if any discomfort continues.

Most important symptoms/effects, acute and delayed

May cause irritation to mucous membranes. May cause skin and eye irritation. Cough. Shortness of breath. Wheezing. Sensitization. The principal symptoms of lead poisoning are gastro-intestinal or central nervous system disturbances and anemia.

Indication of immediate medical attention and special treatment needed

Treat symptomatically. Symptoms may be delayed.

General information

Get medical attention if any discomfort develops. Seek medical attention for all burns, regardless how minor they may seem. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media

Special powder against metal fires. Dry sand.

Unsuitable extinguishing media

Do not use water or halogenated extinguishing media. Do not use water on molten metal: Explosion hazard could result.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed. Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air. In a fire, nickel may form nickel carbonyl, a highly toxic substance and known carcinogen.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Fire-fighting equipment/instructions

Move containers from fire area if you can do it without risk.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

Methods and materials for containment and cleaning up

Avoid dust formation. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Collect dust using a vacuum cleaner equipped with HEPA filter. The vacuum cleaner should be explosion-proofed. If not possible, gently moisten dust before it is collected with shovel, broom or the like. This material and its container must be disposed of as hazardous waste.

Environmental precautions

Avoid release to the environment. Do not contaminate water.

7. Handling and storage

Precautions for safe handling

Follow special national provisions related to work with lead and its compounds. Pregnant women should not work with the product, if there is the least risk of lead exposure. Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. Provide adequate ventilation. Avoid contact with sharp edges and hot surfaces. Avoid generation and spreading of dust and fumes. Avoid inhalation of dust and contact with skin and eyes. Avoid contact with hot or molten material. Dust clouds may be explosive under certain conditions. Take precautionary measures against static discharges when there is a risk of dust explosion. Use explosion-proof electrical equipment if airborne dust levels are high. To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Wear appropriate personal protective equipment. Do not use water on molten metal. Do not eat, drink or smoke when using the product. Keep the workplace clean. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep dry. Store away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

| Components | Type | Value |
|----------------------|------|------------------------|
| Lead (CAS 7439-92-1) | TWA | 0.05 mg/m ³ |

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components | Type | Value | Form |
|------------------------|------|--|-------------------------|
| Copper (CAS 7440-50-8) | PEL | 1 mg/m ³ 0.1 mg/m ³ | Dust and mist. Fume. |
| Nickel (CAS 7440-02-0) | PEL | 1 mg/m ³ | |
| Tin (CAS 7440-31-5) | PEL | 2 mg/m ³ | |

US. ACGIH Threshold Limit Values

| Components | Type | Value | Form |
|------------------------|------|--|-------------------------|
| Copper (CAS 7440-50-8) | TWA | 1 mg/m ³ 0.2 mg/m ³ | Dust and mist. Fume. |
| Lead (CAS 7439-92-1) | TWA | 0.05 mg/m ³ | |
| Nickel (CAS 7440-02-0) | TWA | 1.5 mg/m ³ | Inhalable fraction. |
| Tin (CAS 7440-31-5) | TWA | 2 mg/m ³ | |

US. NIOSH: Pocket Guide to Chemical Hazards

| Components | Type | Value | Form |
|------------------------|------|-------------------------|----------------|
| Copper (CAS 7440-50-8) | REL | 1 mg/m ³ | Dust and mist. |
| Lead (CAS 7439-92-1) | REL | 0.05 mg/m ³ | |
| Nickel (CAS 7440-02-0) | REL | 0.015 mg/m ³ | |
| Tin (CAS 7440-31-5) | REL | 2 mg/m ³ | |

Biological limit values

US. ACGIH. BEIs. Biological Exposure Indices

| Components | Value | Determinant | Sampling Time |
|----------------------|----------|-------------|---------------|
| Lead (CAS 7439-92-1) | 300 µg/l | Lead | * |

* - For sampling details, please see the source document.

Exposure guidelines

Follow standard monitoring procedures.

Appropriate engineering controls

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high. Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing etc., in order to eliminate explosion hazards. Follow the schedule for work place measurements when working with lead and its compounds.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear dust-resistant safety goggles where there is danger of eye contact. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining.

| | |
|---------------------------------------|--|
| Skin protection | |
| Hand protection | Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier. |
| Other | Wear suitable protective clothing. |
| Respiratory protection | In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. When engineering controls are not sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH approved respirator for dusts. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. Seek advice from local supervisor. |
| Thermal hazards | Wear appropriate thermal protective clothing, when necessary. |
| General hygiene considerations | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Private clothes and working clothes should be kept separately. Contaminated uniforms should be laundered separately from other clothing to prevent potential cross-contamination. If possible, an industrial laundry service should be used to eliminate the possibility of contaminating the home environment. Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements. |

9. Physical and chemical properties

| | |
|---|-----------------------------------|
| Appearance | Shapes, Solids, Tubes & Turnings. |
| Physical state | Solid. |
| Form | Shapes, Solids, Tubes & Turnings. |
| Color | Yellow to red. |
| Odor | None. |
| Odor threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | 1724 °F (940 °C) |
| Initial boiling point and boiling range | Not available. |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not applicable. |
| Upper/lower flammability or explosive limits | |
| Flammability limit - lower (%) | Not available. |
| Flammability limit - upper (%) | Not available. |
| Explosive limit - lower (%) | Not available. |
| Explosive limit - upper (%) | Not available. |
| Vapor pressure | Not available. |
| Vapor density | Not available. |
| Relative density | 7.5 - 9 |
| Solubility(ies) | Insoluble in water. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Other information | |
| Bulk density | 0.27 - 0.323 lb/in ³ |

10. Stability and reactivity

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|---|---|
| Reactivity | Stable at normal conditions. |
| Chemical stability | Stable at normal conditions. Massive metal is stable and non reactive under normal conditions of use, storage and transport. |
| Possibility of hazardous reactions | Hazardous polymerization does not occur. Hot molten material will react violently with water resulting in spattering and fuming. |
| Conditions to avoid | Contact with incompatible materials. Contact with acids will release flammable hydrogen gas. Avoid dust formation. Dust clouds may be explosive under certain conditions. |

| | |
|---|--|
| Incompatible materials | Acids. Ammonium nitrate. Fluoride. Halogens. Nitrates. Phosphorus. Strong oxidizing agents. Sulfur. |
| Hazardous decomposition products | Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides. Lead oxide fumes may be formed at elevated temperatures. |

11. Toxicological information

Information on likely routes of exposure

| | |
|---------------------|---|
| Ingestion | Not relevant, due to the form of the product. However, ingestion of dusts generated during working operations may cause nausea and vomiting. Harmful if swallowed. |
| Inhalation | Harmful by inhalation. May cause respiratory tract irritation. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the mucous membranes and respiratory tract. |
| Skin contact | May cause an allergic skin reaction. Hot or molten material may produce thermal burns. Workers allergic to nickel may develop eczema or rashes. Acute exposure to cobalt metal, dust, and fume may cause irritation of skin and eyes. In sensitized individuals, exposure causes an asthma-like attack, with wheezing, bronchospasm, and dyspnea. |
| Eye contact | Molten material will produce thermal burns. Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye. |

Symptoms related to the physical, chemical and toxicological characteristics May cause irritation to mucous membranes. May cause skin and eye irritation. Coughing. Shortness of breath. Wheezing. The principal symptoms of lead poisoning are gastro-intestinal or central nervous system disturbances and anemia. Sensitization.

Information on toxicological effects

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|--|---|
| Acute toxicity | High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. Acute exposure to dust, and fume may cause irritation of skin and eyes. In sensitized individuals, exposure causes an asthma-like attack, with wheezing, bronchospasm, and dyspnea. |
| Skin corrosion/irritation | Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Hot or molten material may produce thermal burns. |
| Serious eye damage/eye irritation | Dust from machining operation in the eyes may cause irritation. |
| Respiratory sensitization | Not classified. |
| Skin sensitization | Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. May cause allergic skin reaction. |
| Germ cell mutagenicity | No data available. |
| 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 (CAS 7440-02-0) | Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen. |
|------------------------|---|

| | |
|---|---|
| Reproductive toxicity | Nickel: Has shown teratogenic effects in laboratory animals. Lead is a teratogen. Elevated lead exposure of either parent before pregnancy may increase the changes of miscarriage or birth defects. Continuous exposure may result in decreased fertility. Exposure of the mother during pregnancy may cause birth defects. |
| Specific target organ toxicity - single exposure | Not available. |
| Specific target organ toxicity - repeated exposure | Causes damage to the following organs through prolonged or repeated exposure: Lung. Central nervous system. |
| Aspiration hazard | Not available. |
| Chronic effects | Danger of cumulative effects. Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis). Chronic inhalation of metallic oxide dust/fume may cause metal fume fever. Lead may produce maternal toxicity, toxicity to the fetus, and adverse effects to blood, bone marrow, central/peripheral nervous systems, kidney, liver, and reproductive system. |
| Further information | Lead is accumulated in the body and may cause damage to the brain and nervous system after prolonged exposure. Welding or plasma arc cutting of metal and alloys can generate ozone, nitric oxides and ultraviolet radiation. Ozone overexposure may result in mucous membrane irritation or pulmonary discomfort. UV radiation can cause skin erythema and welders flash. |

12. Ecological information

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|--------------------|---|
| Ecotoxicity | Very toxic to aquatic life with long lasting effects. |
|--------------------|---|

| Components | Species | Test Results |
|----------------------|---------|---|
| Lead (CAS 7439-92-1) | LC50 | Rainbow trout, donaldson trout (Oncorhynchus mykiss) |
| | | 1.17 mg/l, 96 Hours |

| | |
|--------------------------------------|---|
| Persistence and degradability | The product is not biodegradable. |
| Bioaccumulative potential | The product contains potentially bioaccumulating substances. |
| Mobility in soil | Alloys in massive forms are not mobile in the environment. |
| Mobility in general | Alloys in massive forms are not mobile in the environment. |
| Other adverse effects | An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. |

13. Disposal considerations

| | |
|--|--|
| Disposal instructions | This material and its container must be disposed of as hazardous waste. Dispose in accordance with all applicable regulations. |
| Local disposal regulations | Dispose in accordance with all applicable regulations. |
| Hazardous waste code | Z110: Inorganic compounds n.o.s. |
| Waste from residues / unused products | Recover and recycle, if practical. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal. |
| Contaminated packaging | Not applicable. |

14. Transport information

DOT

| | |
|-------------------------------------|--|
| UN number | UN3077 |
| UN proper shipping name | Environmentally hazardous substances, solid, n.o.s. (Lead RQ = 42 LBS) |
| Transport hazard class(es) | 9 |
| Subsidiary class(es) | Not available. |
| Packing group | III |
| Special precautions for user | Not available. |
| Labels required | 9 |
| Special provisions | 8, 146, B54, IB8, IP3, N20, T1, TP33 |
| Packaging exceptions | 155 |
| Packaging non bulk | 213 |
| Packaging bulk | 240 |

IATA

| | |
|-------------------------------------|---|
| UN number | UN3077 |
| UN proper shipping name | Environmentally hazardous substance, solid, n.o.s. (Lead) |
| Transport hazard class(es) | 9 |
| Subsidiary class(es) | - |
| Packaging group | III |
| Labels required | 9 |
| ERG Code | 9L |
| Special precautions for user | Not available. |

IMDG

| | |
|-------------------------------------|---|
| UN number | UN3077 |
| UN proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Lead), MARINE POLLUTANT |
| Transport hazard class(es) | 9 |
| Subsidiary class(es) | - |
| Packaging group | III |
| Environmental hazards | |
| Marine pollutant | Yes |
| Labels required | 9 |
| EmS | F-A, S-F |
| Special precautions for user | Not available. |

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available.

15. Regulatory information

| | |
|--|--|
| US federal regulations | This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. |
| TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) | Not regulated. |

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Lead (CAS 7439-92-1) 29 CFR 1910.1025

CERCLA Hazardous Substance List (40 CFR 302.4)

Copper (CAS 7440-50-8) LISTED
Lead (CAS 7439-92-1) LISTED
Nickel (CAS 7440-02-0) LISTED
Zinc (CAS 7440-66-6) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical Yes

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Not listed.

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Not regulated.

DEA Exempt Chemical Mixtures Code Number

Not regulated.

Food and Drug Administration (FDA) Not regulated.

US state regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

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

US. New Jersey Worker and Community Right-to-Know Act

Copper (CAS 7440-50-8) 500 LBS
Lead (CAS 7439-92-1) 500 LBS
Nickel (CAS 7440-02-0) 500 LBS
Zinc (CAS 7440-66-6) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

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

US. Rhode Island RTK

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

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Lead (CAS 7439-92-1)
Nickel (CAS 7440-02-0)

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | No |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other information, including date of preparation or last version

| | |
|----------------------------|--|
| Issue date | June 01, 2015 |
| Version # | 1.0 |
| Further information | Not available. |
| References | HSDB® - Hazardous Substances Data Bank IARC Monographs. Overall Evaluation of Carcinogenicity National Toxicology Program (NTP) Report on Carcinogens ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices |

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