The information contained in this Material Safety Data Sheet is very important.
If need be, please have this document translated so that anyone using this material may fully understand these instructions and directions.

Product/Trade Name: Bronze S – Silicon Bronze

SECTION 1. IDENTIFICATION

Info furnished by: Hallmark Metals Corporation
Address: 930 Wellington Avenue
Cranston, RI 02910 USA
Date Prepared: 12 June 2015
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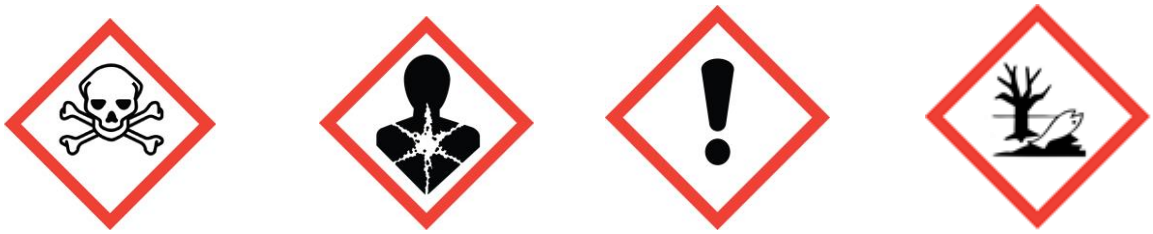
SECTION 2. HAZARDS IDENTIFICATION



COPPER

Effects of overexposure: under normal handling and use, exposure to massive forms of copper represents very few hazards. Particulates generated from the use of this substance may pose some health risks. Acute exposure will cause irritation to the eye; foreign body reaction causes Chalcosis. Prolonged and repeated exposure to the skin will cause irritation or discoloration. Acute exposure will cause primary gastrointestinal symptoms with nausea and vomiting, abdominal pain and diarrhea. In severe cases headache, sweating, kidney and liver and central nervous system damage progressing to convulsions, coma and possible death (rarely). Inhalation symptoms consist primarily of irritation. Cases of “metal fume fever” have been reported.

MANGANESE

Chronic manganese poisoning may result from inhalation of dust or fume. The central nervous system is the chief site of the injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling. Some individuals may be hyper susceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

NICKEL
The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis known as “nickel itch” which usually occurs when the skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning. Iarc has determined that there is at least evidence that nickel and certain compounds may be human carcinogenic to laboratory animals by various routes of entry.

SILICON
Silicon is a nuisance dust. Deposition in the eyes, ears, skin, and nose may result in injury. Inhalation produces no change in x-ray.

TIN
Exposure to the massive form of tin presents few hazards in itself. However, normal handling of tin may result in generation of dusts. And inhalation or ingestion of these dusts may present potentially significant health hazards. Thermal cutting and melting of tin may produce fumes containing the component’s elements. Breathing these fumes may also present potentially significant health hazards. Special precautions should be taken if metal is contaminated. Prolonged inhalation of tin fumes or dusts, or ingestion of tin compounds can result in tin poisoning. Symptoms include abdominal pain or colic, constipation, nausea, joint and muscle pains, and muscular weakness. Severe cases of overexposure may lead to central nervous systems disorders, characterized by somnolence, stupor, and ultimately death

ZINC
Solid massive form of material is not combustible under ordinary fire conditions. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat or flames or in contact with powerful oxidizers.

IRON
Flammable solid. May be harmful if inhaled or swallowed.

SECTION 3. COMPOSITION /INFORMATION ON INGREDIENTS

Element	CAS	%WT	Carcinogen	TLV/TWA	OSHA PEL ACGIH/OSHA
*Copper	7440-50-8	>95	NO	1.0 dust & mists. .2 fume	1.0 dust .1 fume
Silicon	7440-21-3	<4	NO	10.0 total	15.0 total 5.0 RESP
Nickel	7440-02-0	.20 max	YES	1.0	1.0
Manganese	7439-96-5	<1	NO	.2	5.0 fume

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

ELEMENT	CAS	%WT	Carcinogen	TLV/TWA	OSHA PEL
*Tin	7440-31-5	<.20	No	2.0 mg/cu m	2.0 mg/cu m
*Zinc	7440-66-6	<.25	No	0.5 mg/cu m	5.0 mg/cu m
*Iron	7439-89-6	<.20	No	0.5 mg/cu m	5.0 mg/cu m

*Product contains one or more of these metallic elements in varying percentages by weight.

SECTION 4. FIRST-AID MEASURES

Skin: Wash with soap and water
Eyes: Flus with water. Get medical attention
Inhalation: Remove from exposure. Get medical attention

SECTION 5. FIRE-FIGHTING MEASURES

Solid, massive form of material is not combustible under ordinary fire conditions. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat or flames, chemical reaction, or contact with powerful oxidizers.

Fire extinguishing methods: use special mixtures of dry chemicals. Do not use water or moist sand. Fire fighters should wear self-contained breathing apparatus and protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming with a “hepa” filter or wet sweeping to prevent heavy concentrations of airborne dust. Clean-up personal should wear respirators and protective clothing.

Metal can be reclaimed for refuse. Follow federal, state, and local regulations regarding disposal.

SECTION 7. HANDLING AND STORAGE

Use good housekeeping practices to prevent accumulations of dust and to keep airborne dust concentrations at a minimum. Avoid breathing dust or fumes.

Store material away from incompatible materials, and keep dust away from sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Use general and local exhaust ventilation to keep airborne concentrations of dust or fume below the TLV. Employees should wear OSHA or NIOSH approved respirators for protection against airborne dust or fumes. Full protective clothing should be worn by workers exposed to heavy concentrations of dust, and showering should be required before changing into street clothes. Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis.

Approved safety glasses or goggles should be worn when working with dusty material and molten metal. Safety stations should be provided in close proximity to work areas.

Pre-employment and periodic medical evaluations should be provided. Attention should be directed toward skin, eyes, respiratory tract, blood, kidneys, pulmonary function, and neurologic health. Chest x-rays should be included if symptoms are present.

Food should not be consumed in the work area. No smoking in work area. Hands and face must be washed before eating or smoking. Cosmetics should not be applied in areas where this product is used.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Melting Point	1122 – 2597 ° F depending on % of Cu
Boiling Point	N/A
Vapor Pressure	N/A
Vapor Density (air is 1)	N/A
Solubility in Water	N/A
Appearance & Color	Coppery metallic – no odor
Density g/cc	.302 lbs/cu. in.
Odor	None
% Volatile	N/A
Specific Gravity	8.36
Evaporation	N/A

SECTION 10. STABILITY AND REACTIVITY

Massive material is stable at ordinary temperatures, but dust presents moderate fire and explosion hazards. Material may be incompatible with acids, bases, and oxidizers. Molten metal may react violently with water. For additional information, users should consult data sheets on individual component elements.

SECTION 11. TOXICOLOGICAL INFORMATION

Exposure to Skin, eyes, and lungs:
Skin: Dust vapor and fumes may cause irritation.
Eyes: Dust vapor and fumes may cause irritation
Inhalation: Dust vapor and fumes may be irritating to the respiratory system and can result in both acute and chronic overexposure.

SECTION 12. ECOLOGICAL INFORMATION

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Metal can be claimed for refuse. Follow Federal, State, and local regulations regarding disposal.

SECTION 14. TRANSPORT INFORMATION

No data available

SECTION 15. REGULATORY INFORMATION

California State Proposition 65:
WARNING! This product contains Lead and Cadmium known to the state of California to cause cancer, birth defects, or other reproductive harm.

Bases on NFPA and NPCA systems
Health – 2
Flammability – 0
Reactivity – 0
Special hazard –

SECTION 16. OTHER INFORMATION

This fact sheet was prepared by Hallmark Metals Corporation. The information recommendations and suggestions were compiled from reference materials and other sources believed to be reliable. However, the fact sheets' accuracy or completeness is not guaranteed by Hallmark Metals Corporation, nor is any responsibility assumed or implied for any loss or damage resulting from inaccuracies or omissions. Appropriate warnings and safe handling procedures should be provided to handlers and users. No warranty is implied or expressed regarding the accuracy of this data. Liability is expressly disclaimed for loss or injury arising out of use of this information or the use of any materials designated.

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