



Corporate Office
2165 Earlywood Dr.
Franklin, IN 46131
(317) 346-6655

California Office
1370 Decision St.
Vista, CA 92081
(760) 734-3995

www.ghortho.com

MATERIAL SAFETY DATA SHEET BRAZE FOR BRACKET BASES

Document Number: MSDS-075	Revision Date: June 02, 2014	Material Type: Silver-Copper-Tin-Zinc Alloys
Revision: A	Number of Pages: 3	

1-PRODUCT IDENTIFICATION

Product: Silver-Copper-Tin-Zinc Alloys.

Product Codes: 15-801; 28-685; 32-255 (Braze 255); 32-380 (Braze 380); 32-402 (Braze 402); 32-452 (Braze 452); 32-550 (Braze 550); 32-560 (Braze 560); 32-565 (Braze 565); 39-565; 40-057.

2-COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	%
Copper	7440-50-8	4-41
Silver	7440-22-4	24-81
Tin	7440-31-5	1-26
Zinc	7440-66-6	1-35

3-HAZARDS IDENTIFICATION

Primary Routes of Entry: Ingestion; inhalation.

Eye Hazards: Eye contact with these products in finely-divided forms may cause irritation, conjunctivitis, ulceration of the cornea, and/or argyria, a blue-gray discoloration of the eyes, skin, mucous membranes, and respiratory tract.

Skin Hazards: Skin contact with these products, particularly in finely-divided forms, may cause irritation, argyria, discoloration, and/or contact dermatitis.

Ingestion Hazards: Ingestion of these products in finely-divided forms may cause nausea, vomiting, and gastrointestinal irritation.

Inhalation Hazards: Inhalation of the components of these products is not known to present a significant risk to health when used according to instructions and with appropriate protective measures (see Section #8). Inhalation of component elements has been reported to cause one or more of the following symptoms and effects upon excessively high or prolonged exposure:

COPPER: Acute exposure may cause respiratory tract irritation, fever, muscle ache, chills, cough, weakness, and a metallic taste. Chronic exposure may damage the liver, kidney, spleen, pancreas, and brain.

SILVER: Chronic exposure via inhalation may cause argyria.

TIN: Exposure to tin dust or fume by inhalation may cause stannosis (a benign pneumoconiosis),

shortness of breath, and respiratory tract irritation.

ZINC: Acute exposure to zinc oxide may cause respiratory tract irritation and metal fume fever, which is characterized by a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of breath, vomiting, and fatigue.

4-FIRST AID MEASURES

Eye: 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. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

Ingestion: If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical attention.

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.

Note to Physician: None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Extensive or prolonged skin contact may cause dermatitis and/or argyria.

5-FIRE FIGHTING MEASURES

Flash Point: Not Applicable (N/Appl.)

Autoignition Point: N/Appl.

Flammability Class: N/Appl.

Lower Explosive Limit: N/Appl.

Upper Explosive Limit: N/Appl.

Fire And Explosion Hazards: In finely-divided form, the products may ignite when exposed to flame or by reaction with incompatible materials (see Section #10). If present in a fire or explosion, they may emit fumes of the constituent metals or metal oxides.

Extinguishing Media: Use dry chemical. Do not use water.

Fire Fighting Instructions: If fighting a fire in which this product is present, wear a self-contained breathing apparatus with full facepiece operated



Corporate Office
2165 Earlywood Dr.
Franklin, IN 46131
(317) 346-6655

California Office
1370 Decision St.
Vista, CA 92081
(760) 734-3995

www.ghortho.com

MATERIAL SAFETY DATA SHEET BRAZE FOR BRACKET BASES

Document Number: MSDS-075	Revision Date: June 02, 2014	Material Type: Silver-Copper-Tin-Zinc Alloys
Revision: A	Number of Pages: 3	

in pressure-demand or other positive pressure mode.

6-ACCIDENTAL RELEASE MEASURES

If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Wet sweeping or vacuuming using HEPA filtration is recommended.

7-HANDLING AND STORAGE

Handling Precautions: No special handling precautions are required.

Storage Precautions: Store away from incompatible materials (see Section #10).

Work/Hygienic Practices: To minimize ingestion, wash hands and face before eating, drinking, applying cosmetics, or using tobacco.

8-EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use appropriate ventilation (e.g., dilution, local exhaust) adequate to maintain concentrations of all components and their byproducts to within their applicable standards.

Eye/Face Protection: Wear eye protection adequate to prevent eye contact with finely-divided forms of product and eye injury if products are used with a flame. Plastic-frame spectacles with side shields and filter lenses (shade #3/#4) are recommended.

Skin Protection: Wear appropriate protective gloves and clothing to prevent skin injury if these products are used with a flame and/or for prolonged or repeated contact with finely-divided forms of product. Avoid flammable fabrics.

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 respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

Ingredient(s) – Exposure Limits

Copper:

ACGIH TLVs: 0.2 mg/m³ TWA (fume); 1 mg/m³ TWA (dusts and mists)

OSHA PELs: 0.1 mg/m³ TWA (fume); 1 mg/m³ TWA (dusts and mists)

Silver:

ACGIH TLV: 0.1 mg/m³ TWA (metal)

OSHA PEL: 0.01 mg/m³ TWA

Tin:

ACGIH TLV: 2 mg/m³ TWA (as Sn)

OSHA PEL: 2 mg/m³ TWA (as Sn)

Zinc:

ACGIH TLVs (as ZnO): 2 mg/m³ TWA; 10 mg/m³ STEL (respirable fractions)

OSHA PEL: 5 mg/m³ TWA (as ZnO fume)

9-PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Odorless white to light-yellow metals in forms of wire, rod, strip, powder, grain, tape, or preformed shapes.

Chemical type: alloy

Physical state: solid

Melting point: 1145-1270F./620-690C

Specific gravity: 8.7-9.4

Solubility: insoluble

Other commonly-reported physical properties (odor threshold, evaporation rate, vapor pressure, vapor density, freezing point, viscosity, oil-water partition coefficient, percent volatiles, percent VOCs) are not applicable to these products.

10-STABILITY AND REACTIVITY

Stability: stable

Hazardous Polymerization: will not occur

Conditions to Avoid (Stability): Silver and copper can form unstable acetylides if in contact with acetylene gas.

Incompatible Materials: Strong oxidizers; ammonia; azides; nitric acid; ethylene imine; chlorine trifluoride; bromine trifluoride; sulfuric acid; inorganic and organic peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; bromates, chlorates, and iodates of alkali and alkali earth metals; halogens; carbon disulfide; hydrazine mononitrate; selenium; hydroxylamine; tellurium; cupric nitrate; sulfur.



Corporate Office
2165 Earlywood Dr.
Franklin, IN 46131
(317) 346-6655

California Office
1370 Decision St.
Vista, CA 92081
(760) 734-3995

www.ghortho.com

MATERIAL SAFETY DATA SHEET BRAZE FOR BRACKET BASES

Document Number: MSDS-075	Revision Date: June 02, 2014	Material Type: Silver-Copper-Tin-Zinc Alloys
Revision: A	Number of Pages: 3	

Hazardous Decomposition Products: Heating to elevated temperatures may liberate metal/metal oxide fumes.

11-TOXICOLOGICAL INFORMATION

Carcinogenicity: These products contain no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Conditions Aggravated by Exposure: Pre-existing pulmonary diseases (e.g., bronchitis, emphysema) may be aggravated by inhalation overexposure, particularly as fume. Chronic overexposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, gastrointestinal system, and nervous system.

Ingredient(s) – Toxicological Data:

Copper:

LD50: No data available

LC50: No data available

Silver:

LD50: >2,000 mg/kg (oral/rat)

LC50: No data available

Tin:

LD50: No data available

LC50: No data available

Zinc:

LD50: No data available

LC50: No data available

12-ECOLOGICAL INFORMATION

In their intended manner of use, these products should not be released into the environment, and adverse effects on ecosystems are not anticipated under recommended conditions of use, storage, and disposal.

13-DISPOSAL CONSIDERATIONS

Dispose of unused or unusable product in accordance with applicable Federal, State/Provincial, and local regulations.

14-TRANSPORT INFORMATION

These products are not Hazardous Substances or Dangerous Goods per USDOT, TDG (Canada), IATA, or IMO regulations.

15-REGULATORY INFORMATION

TSCA Information: All components of these products are listed in the EPA's TSCA inventory.

SARA Hazard Classes: Acute Health Hazard; Chronic Health Hazard.

Ingredient(s) – U.S. Regulatory Information:

Copper:

SARA Title III – Section 313 Form "R" / TRI Reportable Chemical

Silver:

SARA Title III – Section 313 Form "R" / TRI Reportable Chemical

Canadian Regulatory Information:

All components of these products are listed on the Domestic Substances List. WHMIS Class(es) and Division(s): D2B

Component(s) on Ingredients Disclosure List:

1. Copper, elemental (CASRN 7440-50-8)
2. Silver, elemental (CASRN 7440-22-4)
3. Tin, elemental (CASRN 7440-31-5)

16-OTHER INFORMATION

HMIS Ratings:

Health – 1

Flammability – 1

Physical Hazard – 1

PPE – see Note

Note: ODP recommends use of safety glasses and protective gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which the product is used. Every condition of the product's use cannot be anticipated, and it is the user's responsibility to evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

NFPA Ratings:

Health – 1*

Flammability – 1

Reactivity – 1

Disclaimer: Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained



Corporate Office
2165 Earlywood Dr.
Franklin, IN 46131
(317) 346-6655

California Office
1370 Decision St.
Vista, CA 92081
(760) 734-3995

www.ghortho.com

MATERIAL SAFETY DATA SHEET BRAZE FOR BRACKET BASES

Document Number: MSDS-075	Revision Date: June 02, 2014	Material Type: Silver-Copper-Tin-Zinc Alloys
Revision: A	Number of Pages: 3	

therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).