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Meets the Requirements of OSHA Standard 29 CFR 1910.1200 Hazard Communication and EPA Supplier Notification Requirements under Section 313 of the Emergency Planning and Community Right-to-Know Act.

SAFETY DATA SHEET (SDS)

COPPER ALLOY CASTINGS

SDS SC-000-013 Rev 11

DATE ISSUED

01/15

SECTION 1—PRODUCT IDENTIFICATION & COMPANY INFORMATION

PRODUCT NAME

COPPER ALLOY CASTINGS

OTHER DESIGNATIONS: Copper Alloy Specification No's Unified Numbering System (UNS)

UNS ALLOY DESIGNATIONS:

| | | |
|--------|--------|--------|
| C80100 | C80700 | C81200 |
| C80300 | C80900 | |
| C80500 | C81100 | |

PRODUCT IDENTIFICATION (Label Identifier)

MANUFACTURER'S NAME

STREET ADDRESS

EMERGENCY TELEPHONE NO.

MAILING ADDRESS

TELEPHONE NO.

CITY, STATE, ZIP CODE, COUNTRY

FAX NO.

E-MAIL ADDRESS/WEBSITE

RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Solid casting; no restrictions

SECTION 2—HAZARD IDENTIFICATION

CLASSIFICATION

Castings are metallic articles that do not present hazards in their original form.

OTHER INFORMATION

1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.
2. Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Sections 3 & 8 for further information.

SECTION 3—COMPOSITION/INFORMATION ON INGREDIENTS

| CHEMICAL NAME/COMMON NAME/SYNONYM | Wt % | CAS NUMBER |
|--|---------------------|-------------------|
| Copper (Cu) Metal | 99.7% (min)–99.95%* | 7440-50-8 |
| *Trace amounts of Boron and Silver make-up the remainder | | |

SECTION 4—FIRST AID MEASURES**EYE CONTACT:** Not applicable to solid castings**SKIN CONTACT:** No special requirements for solid castings**INGESTION:** Not applicable**INHALATION:** Not applicable**SECTION 5—FIREFIGHTING MEASURES****FLAMMABLE PROPERTIES:** Not applicable**EXTINGUISHING MEDIA:** Not applicable**PROTECTION OF FIREFIGHTERS:** Not applicable**SECTION 6—ACCIDENTAL RELEASE MEASURES**

Not applicable

SECTION 7—HANDLING & STORAGE**RECOMMENDED STORAGE**

No special requirements

PROCEDURES FOR HANDLING

Proper hand and foot protection is recommended.

SECTION 8—EXPOSURE CONTROLS/PERSONAL PROTECTION**ENGINEERING CONTROLS**

None Required. There are no health hazards from castings in solid form.

| SUBSTANCE | ACGIH TLV mg/m ³ | OSHA PEL mg/m ³ |
|-------------|--------------------------------|-------------------------------|
| Copper (Cu) | 1 | 1 |

SUPPLEMENTAL INFORMATION

Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.

Fumes from hot processes may contain other compounds with different exposure limits than those listed herein. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Exposure limits for the most common contaminants are offered as reference. Please consult a competent person for guidance on exposure assessment and controls.

| SUBSTANCE | ACGIH TLV mg/m ³ | OSHA PEL mg/m ³ |
|---------------------|--------------------------------|-------------------------------|
| Copper Compounds | | |
| Fume (Cu) | 0.2 | 0.1 |
| Dust and Mists (Cu) | 1 | 1 |

TERMS

All exposure limits referenced herein are 8 hour time weighted averages (TWA) unless otherwise noted.

TLV = Threshold Limit Value/American Conference of Governmental Industrial Hygienists (ACGIH)

PEL = Permissible Exposure Limit / OSHA

mg/m³ = milligrams per cubic meter**PERSONAL PROTECTION**

Proper hand and foot protection is recommended.

SECTION 9—PHYSICAL & CHEMICAL PROPERTIES**APPEARANCE/PHYSICAL STATE**

Solid, Orange-red in color

ODOR/ODOR THRESHOLD

None

VAPOR DENSITY

Not applicable

| | | | | |
|---|---|---|-------------|---------------------|
| MELTING POINT/FREEZING POINT Approximately 1085°C (1984°F) for copper | SPECIFIC GRAVITY (relative density) 8.96 g/cm ³ for copper (water = 1) | | | |
| BOILING POINT 2562°C (4644°F) for copper | VAPOR PRESSURE Not applicable | | | |
| FLASH POINT Not applicable for solid castings | EVAPORATION RATE Not applicable | | | |
| FLAMMABILITY Not flammable for castings in solid form | SOLUBILITY IN WATER Insoluble | | | |
| UPPER AND LOWER FLAMMABILITY LIMITS Not applicable for castings in solid form | pH Not applicable | | | |
| AUTO IGNITION TEMPERATURE Not applicable | VISCOSITY Not applicable | | | |
| DECOMPOSITION TEMPERATURE Not applicable | PARTITION COEFFICIENT Not applicable | | | |
| SECTION 10—STABILITY & REACTIVITY | | | | |
| CHEMICAL STABILITY: Castings in solid form are stable. | | | | |
| CONDITIONS TO AVOID: None | | | | |
| REACTIVITY: Not reactive | | INCOMPATIBLE MATERIALS: None | | |
| HAZARDOUS DECOMPOSITION PRODUCTS None | | HAZARDOUS POLYMERIZATION Not applicable | | |
| SECTION 11—TOXICOLOGICAL INFORMATION | | | | |
| POTENTIAL HEALTH EFFECTS | | | | |
| EYE CONTACT: None | | | | |
| SKIN: None | | | | |
| INGESTION: None | | | | |
| INHALATION: None | | | | |
| Carcinogen Classification of Ingredients | | | | |
| INGREDIENT | OSHA | NTP | IARC | TARGET ORGAN |
| None | --- | --- | --- | |
| TERMS | | | | |
| OSHA—Occupational Safety & Health Administration | | | | |
| Y = Listed as a Human Carcinogen | | | | |
| NTP—National Toxicology Program | | | | |
| K = Known to be a Human Carcinogen | | | | |
| R = Reasonably Anticipated to be a Human Carcinogen (RAHC) | | | | |
| IARC—International Agency for Research on Cancer | | | | |
| 1 = Carcinogenic to Humans | | | | |
| 2A = Probably Carcinogenic to Humans | | | | |
| 2B = Possibly Carcinogenic to Humans | | | | |
| 3 = Unclassifiable as to Carcinogenicity in Humans | | | | |
| 4 = Probably not Carcinogenic to Humans | | | | |
| Other | | | | |
| NL = Not Listed | | | | |

SECTION 12—ECOLOGICAL INFORMATION

| | |
|--|--|
| ECOTOXICITY Not applicable | PERSISTENCE AND DEGRADABILITY Not applicable |
| BIOACCUMULATION POTENTIAL Not applicable | MOBILITY IN SOIL Not applicable |
| OTHER ADVERSE EFFECTS Not applicable | |

SECTION 13—DISPOSAL CONSIDERATIONS

Recover or recycle if possible. Dispose of according to federal, state and local regulations. Dust collected from machining, welding, etc. may be classified as a hazardous waste. Consult federal, state and local regulations.

SECTION 14—TRANSPORT INFORMATION

| | |
|--|--|
| US DEPARTMENT OF TRANSPORTATION (DOT)-HMR (Hazardous Materials Registration) Not Regulated | CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG) Not regulated |
| UN SHIPPING NAME Not regulated | UN NUMBER Not regulated |
| TRANSPORT HAZARD CLASS Not regulated | PACKING GROUP Not regulated |
| ENVIRONMENTAL HAZARDS None | LABEL(S) REQUIRED? No |
| TRANSPORT IN BULK Not applicable | SPECIAL SHIPPING INFORMATION Not applicable |

SECTION 15—REGULATORY INFORMATION

| |
|---|
| <p>US-OSHA (Hazard Communication Standard) References: 29 CFR 1910.1200 A finished casting is an article as defined in the OSHA Hazard Communication Standard 29 CFR 1910.1200 (c) 29 CFR 1910.1000 Air Contaminants Dust or fumes generated by cleaning, machining, grinding, or welding of the casting may produce airborne contaminants, such as copper and silica.</p> |
| <p>US-EPA (Toxic Substances Control Act—TSCA) All components of these products are on the TSCA inventory list or are excluded from listing.</p> <p>US-EPA (SARA Title III) Releases to the environment of Copper may be subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.</p> |
| <p>CANADA-WHMIS (Workplace Hazardous Materials Information System) This SDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the SDS contains the information required by the CPR.</p> |
| <p>CANADA DSL (Domestic Substances List) Inventory Status All components of these products are on the DSL Inventory.</p> |
| <p>CEPA (Canadian Environmental Protection Act) No components are on the Toxic Substances List.</p> |
| <p>EINECS No. (European Inventory of Existing Commercial Chemical Substances) All components of these products are on the EINECS list.</p> |
| <p>RoHS (Restriction of Certain Hazardous Substances) Compliance Castings comply with RoHS</p> |

CALIFORNIA PROPOSITION 65 Compliance

Copper is not on California's Proposition 65 list. (California Health & Safety Code 25248.5 et seq.)

US STATE REGULATORY INFORMATION

Some of the components listed in Section 3 (e.g., Copper) may be covered under specific state regulations.

SECTION 16 — OTHER INFORMATION**SDS PREPARED BY**

American Foundry Society, Inc.
Occupational Safety & Health Committee (10-Q)

DATE

01/15

NOTE

This data and label information is offered in good faith as typical values and not as a product specification. No warranty either expressed or implied is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review the recommendations in specific context of the intended use and determine if they are appropriate.

Addendum: Label Information

| | |
|---|---|
| <p><u>PRODUCT IDENTIFIER</u></p> <p>SC-000-013 Rev 11</p> <p>COPPER ALLOY CASTINGS</p> | |
| <p><u>SUPPLIER IDENTIFICATION</u></p> <p>Company Name _____</p> <p>Street Address _____</p> <p>Mailing Address _____</p> <p>City _____ State _____</p> <p>Zip/Postal Code _____ Country _____</p> <p>Emergency Phone Number _____</p> <p>Other Info _____</p> | <p><u>HAZARD PICTOGRAMS</u></p> <p>None*</p> |
| | <p><u>SIGNAL WORD</u></p> <p>None*</p> |
| <p><u>PRECAUTIONARY STATEMENTS</u></p> <p>None*</p> | <p><u>HAZARD STATEMENTS</u></p> <p>None*</p> |
| <p>*Castings do not present hazards in their original form.</p> <p>OTHER INFORMATION</p> <ol style="list-style-type: none"> 1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica. 2. Fumes from hot processes may contain other compounds with different exposure limits. Dust or fumes generated by machining, grinding, welding or thermal cutting of the casting may produce airborne contaminants. Consult Sections 3 & 8 of the SDS for further information | |