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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-TIN ALLOY CASTINGS  
TIN BRONZE ALLOY CASTINGS**

**SDS SC-000-024 Rev 13**

**DATE ISSUED**

**01/15**

**SECTION 1—PRODUCT IDENTIFICATION & COMPANY INFORMATION**

**PRODUCT NAME**

**COPPER-TIN ALLOY CASTINGS  
TIN BRONZE ALLOY CASTINGS**

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

**UNS ALLOY DESIGNATIONS:**

C90200	C90700	C91000	C91600
C90300	C90800	C91100	C91700
C90500	C90900	C91300	

**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**

**OTHER INFORMATION**

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

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
Cobalt (Co) Metal	0.0–2.0	7440-48-4
Copper (Cu) Metal	79.0–94.0	7440-50-8
Lead (Pb) Metal	0.0–0.5	7439-92-1
Nickel (Ni) Metal	0.0–2.0	7440-02-0
Phosphorus, yellow (P) Metal	<0.5–1.2	12185-10-3
Tin (Sn) Metal	6.0–20.0	7440-31-5
Zinc (Zn) Metal	0.0–5.0	7440-66-6

**SECTION 4—FIRST AID MEASURES**

<b>EYE CONTACT:</b>	Not applicable to solid castings
<b>SKIN CONTACT:</b>	No special requirements for solid castings
<b>INGESTION:</b>	Not applicable
<b>INHALATION:</b>	Not applicable

**SECTION 5—FIREFIGHTING MEASURES**

<b>FLAMMABLE PROPERTIES:</b>	Not applicable
<b>EXTINGUISHING MEDIA:</b>	Not applicable
<b>PROTECTION OF FIREFIGHTERS:</b>	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.

<b>SUBSTANCE</b>	<b>ACGIH TLV mg/m<sup>3</sup></b>	<b>OSHA PEL mg/m<sup>3</sup></b>
Cobalt (Co) Metal	0.02	0.1
Copper (Cu) Metal	1	1
Lead (Pb) Metal	0.5	30µg/m <sup>3</sup> AL 50µg/m <sup>3</sup> PEL (See 29CFR1910.1025)
Nickel (Ni) Metal	1.5 (I)	1
Phosphorus, yellow (P) Metal	0.1	0.1
Tin (Sn) Metal	2	2
Zinc (Zn) Metal	N/E	N/E

**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.

<b>SUBSTANCE</b>	<b>ACGIH TLV mg/m<sup>3</sup></b>	<b>OSHA PEL mg/m<sup>3</sup></b>
Cobalt (Co) Metal		
Metal Dust and Fume	N/E	0.1
Elemental and Inorganic Compounds	0.02	N/E
Copper Compounds		
Fume (Cu)	0.2	0.1
Dusts and Mists (as Cu)	1	1

Lead Compounds Inorganic Compounds (Pb)	0.05	30µg/m <sup>3</sup> AL 50µg/m <sup>3</sup> PEL See 29CFR 1910.1025
Nickel Compounds (Ni) Insoluble, Inorganic Compounds Soluble, Inorganic Compounds Nickel Oxide	0.2 (I) 0.1 (I) 0.2 (I)	1 1 1
Tin Oxide (Sn)	2	N/E
Zinc Compounds (Zn) Zinc Oxide Total Dust Zinc Oxide Respirable Dust Zinc Oxide Fume	N/E 2 / 10 STEL N/E	15 5 5

#### TERMS

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

N/E = None Established

C = Ceiling

I = Inhalable fraction

R = Respirable fraction

STEL = Short Term Exposure Limit

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

PEL = Permissible Exposure Limit / OSHA

AL = Action Level / OSHA

mg/m<sup>3</sup> = milligrams per cubic meter

µg/m<sup>3</sup> = micrograms 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  
Melting point of copper-tin alloy (20% tin) is approximately 890°C (1634°F)

#### SPECIFIC GRAVITY (relative density)

8.96 g/cm<sup>3</sup> 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(S)
Cobalt and Compounds	NL	NL-	2B	Lung
Lead and Inorganic Compounds	NL	R	2A	Lung, Stomach, Liver, Kidney
Nickel Metal	NL	K	2B	Lung, Nasal passages

**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

<b>TRANSPORT HAZARD CLASS</b> Not regulated	<b>PACKING GROUP</b> Not regulated
<b>ENVIRONMENTAL HAZARDS</b> None	<b>LABEL(S) REQUIRED?</b> No
<b>TRANSPORT IN BULK</b> Not applicable	<b>SPECIAL SHIPPING INFORMATION</b> Not applicable

### SECTION 15—REGULATORY INFORMATION

**US-OSHA (Hazard Communication Standard)**

References: 29 CFR 1910.1200 Hazard Communication Standard

A finished casting is an article as defined in 29CFR 1910.1200 (c)

29 CFR 1910.1000 Air Contaminants

29 CFR1910.1025 Lead

Dust or fumes generated by cleaning, machining, grinding, or welding of the casting may produce airborne contaminants, such as cobalt, copper, lead, nickel, yellow phosphorus, tin, zinc and silica.

**US-EPA (Toxic Substances Control Act—TSCA)**

All components of these products are on the TSCA inventory list or are excluded from listing.

**US-EPA (SARA Title III)**

Releases to the environment of **Cobalt, Copper, Lead, Nickel, and Zinc (fume or dust)** 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.

**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.

**CANADA DSL (Domestic Substances List) Inventory Status**

All components of these products are on the DSL Inventory.

**CEPA (Canadian Environmental Protection Act)**

Lead is on the Toxic Substances List.

**EINECS No. (European Inventory of Existing Commercial Chemical Substances)**

All components of these products are on the EINECS list.

**RoHS (Restriction of Certain Hazardous Substances) Compliance**

Castings comply with RoHS

**CALIFORNIA PROPOSITION 65 Compliance**

WARNING: This product contains or produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code 25248.5 et seq.)

**US STATE REGULATORY INFORMATION**

Some of the components listed in Section 3 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><b><u>PRODUCT IDENTIFIER</u></b></p> <p>SC-000-024 Rev 13          COPPER-TIN ALLOY CASTINGS          TIN BRONZE ALLOY CASTINGS</p>	
<p><b><u>SUPPLIER IDENTIFICATION</u></b></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><b><u>HAZARD PICTOGRAMS</u></b></p> <p>None*</p> <hr/> <p><b><u>SIGNAL WORD</u></b></p> <p>None*</p>
<p><b><u>PRECAUTIONARY STATEMENTS</u></b></p> <p>None*</p>	<p><b><u>HAZARD STATEMENTS</u></b></p> <p>None*</p>
<p>*Castings do not present hazards in their original form.</p> <p><b>OTHER INFORMATION</b></p> <ol style="list-style-type: none"> <li>1. Grinding castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing crystalline silica.</li> <li>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 &amp; 8 of the SDS for further information.</li> </ol>	