



## Section 1 Identification

**Product Name:** CenterLine® Aluminum Bronze Components and Material

**Synonyms:** • Adapters, holders, and miscellaneous components fabricated from: C61300, C61400, C62200, or C62500 wrought bronze; C95400 or C95520 cast nickel-aluminum bronze alloys.

**Recommended Use:** These products are generally used without modification in applications that benefit from the hardness and fatigue strength of the material. This includes structural applications for the broad range of resistance welding process variations, where the component will conduct electrical current and transmit force.

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## Section 2 Hazard(s) identification

During normal operation and usage, this non-combustible, non-reactive, solid material article does not present inhalation, ingestion, or chemical hazards. Components that this SDS concerns may require periodic maintenance or replacement, during which exposure to adhered hazardous contamination is possible. When this article is machined or otherwise modified by the user, dusts or fumes may be created, which may be potentially hazardous if the exposure limits described in Section 3 are exceeded.

Chromium(VI), cobalt, lead, and nickel, which may be liberated in dust or fume, are suspected to be of carcinogenic potential.

## Section 3 Composition/information on ingredients

Where present, listed constituents are dispersed in a solid bronze alloy matrix. Concentration percent by weight (% WT) must not be interpreted as a specification for a particular product.

MATERIAL OR COMPONENT	CAS. NO.	EINECS NO.	% WT	OSHA-PEL <sup>a</sup>	ACGIH-TLV <sup>a</sup>
MAY CONTAIN THE FOLLOWING:					
1. Copper	7440-50-8	231-159-6	Balance	0.1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
2. Aluminum	7429-90-5	231-072-3	< 13.5	5 mg/m <sup>3b</sup>	1 mg/m <sup>3b</sup>
3. Nickel	7440-02-0	231-111-4	< 6.0	0.5 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>
4. Iron	7439-89-6	231-096-4	< 5.5	5 mg/m <sup>3b</sup>	5 mg/m <sup>3b</sup>
5. Manganese	7439-96-5	231-105-1	< 2.0	5 mg/m <sup>3</sup>	0.02 mg/m <sup>3</sup>
6. Tin	7440-31-5	231-141-8	< 0.5	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
7. Zinc	7440-66-6	231-175-3	< 0.3	5 mg/m <sup>3b</sup>	5 mg/m <sup>3b</sup>
8. Cobalt	7440-48-4	231-158-0	< 0.2	0.1 mg/m <sup>3</sup>	0.02 mg/m <sup>3</sup>
9. Silicon	7440-21-3	231-130-8	< 0.15	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
10. Chromium	7440-47-3	231-157-5	< 0.05	1 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
11. Lead	7439-92-1	231-100-4	< 0.03	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
12. Phosphorous	7723-14-0	231-768-7	< 0.02	0.1 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>

<sup>a</sup> Other national or regional values or measures of exposure may be required at the point of use.

<sup>b</sup> As metal or oxide dust or fume.

## Section 4 First-aid measures

Show this SDS to those administering medical attention or treatment.

**Inhalation:** If breathing has stopped, perform artificial respiration and obtain medical aid immediately. If breathing is difficult, provide fresh air and seek medical attention as soon as possible.

**Skin:** Cuts or abrasions should be treated promptly with thorough cleansing of the affected area. Wash the skin using soap or mild detergent and water. Get medical attention if irritation develops and persists.

**Eyes:** Eye injuries from solid particles should receive immediate medical attention. Dust may be flushed from eyes



immediately with large amounts of water, lifting the lower and upper lids occasionally; seek medical attention.

**Ingestion:** If the product or dust is swallowed, seek immediate medical attention or advice. Do not induce vomiting.

## Section 5 Fire-fighting measures

**Suitable extinguishing media:** This solid material is noncombustible. Use extinguishing media appropriate to the surrounding fire.

**Special Fire Fighting Procedures:** Not applicable

**Unusual fire and explosion hazard:** A fire or explosion hazard is not likely but, is possible if dusts generated by grinding are present in certain combinations of particle size, dispersion, concentration, and strong ignition source.

**Hazardous combustion products:** Temperatures above the melting point may release alloy elements and metal oxides.

**Special protective equipment and precautions for fire-fighters:** For a dust fire confined to a small area, use a respirator approved for toxic dusts and fumes. Do not use water to extinguish fires around operations involving molten metal due to the potential for steam explosions.

## Section 6 Accidental release measures

**Clean-Up Procedures:** Product in solid form may be picked up by hand or other means to be placed into a container. When cleaning dust, use methods that minimize the dispersion of dust such as a high efficiency particulate air (HEPA) vacuum, wet dust mop, or wet clean-up. Put recovered material in a suitable, covered, and labeled container.

**Personal precautions, protective equipment and emergency procedures:** Refer to Section 8.

**Environmental precautions:** Refer to Section 12.

## Section 7 Handling and storage

**Safe handling procedures:** This product does not require special safety precautions for handling prior to installation. Installation and removal of the product may cause exposure to dusts and other materials or chemicals associated with the installation (work) environment. Operations such as grinding, cutting, burning, and welding may generate dusts or fumes which may require special handling procedures.

**Hygienic Practices:** Wash hands thoroughly after handling, and before eating or smoking. Smoking and consumption of food or beverages should be restricted from areas where hazardous dust or chemical may be present. Do not shake clothing, rags, or other items to remove dust. Dust should be removed by laundering or vacuuming (with appropriate filters) the clothing, rags, or other items.

**Conditions for safe storage:** Maintain good housekeeping to prevent exposure to materials and chemicals that may contaminate or impair the quality of the product.

## Section 8 Exposure controls/personal protection

**Control parameters:** Refer to table in Section 3 for occupational exposure limit values.

**Appropriate engineering controls:** When machining, heating, or melting, use adequate local (preferably) or general exhaust ventilation to ensure that concentrations of dusts or fumes do not exceed exposure limits. Keep workplace clean and dry (unless wet machining is being used to capture dust and fume). Train personnel to minimize exposure to hazards during installation and replacement of product. On a regular basis, verify condition and proper function of equipment in which the product will be installed.

**Individual protection measures:** Use appropriate gloves to protect against physical hazards. Always wear safety glasses with side shields and appropriate hearing protection when grinding or cutting. Use an approved respirator, with the proper assigned protection factor, whenever airborne concentrations of hazardous components exceed exposure limits listed in Section 3. Workers should wash before meals and leaving work.

## Section 9 Physical and chemical properties

**Appearance** Metallic solid with a copper color

**Odor:** None

**Boiling point and range:** ~ 2,500 C (4,530 F)



<b>Melting point:</b>	1,026-1,052 C (1,880-1,930 F)
<b>Flash point:</b>	Not determined
<b>Evaporation rate:</b>	Not volatile
<b>Flammability:</b>	Not flammable
<b>Vapor pressure:</b>	~ 0 mm/Hg
<b>Vapor density:</b>	Not volatile
<b>Density:</b>	7.1-7.9 g/cm <sup>3</sup> (0.26-0.29 lb/in <sup>3</sup> )
<b>Solubility in water:</b>	Insoluble

*Note: These are typical values and do not constitute a specification.*

## Section 10 Stability and reactivity

<b>Reactivity:</b>	Copper may react with acetylene gas to form copper acetylides, which are sensitive to shock. Copper may react with strong acids to generate explosive gas (e.g., hydrogen).
<b>Chemical Stability:</b>	Stable under normal use conditions
<b>Possibility of hazardous reactions:</b>	May react with strong acids. Contact of dust with strong oxidizers may cause fire or explosion.
<b>Conditions to avoid:</b>	Temperatures > 650 C (1,200 F), which may soften the copper alloy.
<b>Incompatible materials:</b>	Dust is explosively incompatible with sodium azide.
<b>Hazardous decomposition products:</b>	The melting of this product may release alloy elements and metal oxides.

## Section 11 Toxicological information

### Symptoms related to the physical, chemical and toxicological characteristics

Under normal handling and use, exposure to product presents few health hazards. Dusts may cause mechanical irritation to eyes and skin. Ingestion may cause transient irritation of throat, stomach and gastrointestinal tract. Inhalation may cause coughing, nose and throat irritation, and sneezing. Higher dust exposures may cause difficulty breathing, congestion, and chest tightness.

### Delayed and immediate effects and also chronic effects from short and long term exposure

Possible effects by route of exposure:

<b>Inhalation:</b>	Breathing metal dust may worsen symptoms of individuals with pre-existing chronic respiratory disease. Follow exposure guidelines for copper dust and fume. Acute exposure to dust or fume may cause upper respiratory tract irritation, metallic taste in mouth, nausea, fatigue, and/or metal fume fever. Breathing copper dust may worsen symptoms of individuals with pre-existing chronic respiratory disease. Nickel can cause headaches, dizziness, and difficult breathing. Inhalation of nickel and nickel compounds is associated with nasal and lung damage and cancer. Symptoms may include coughing, sore throat, and shortness of breath.
<b>Skin contact:</b>	Copper can cause some irritation with possible discoloration of skin. Nickel may cause and allergic rash.
<b>Skin absorption:</b>	Metal dust exposure in hot, humid atmospheres may cause skin irritation. Allergic contact dermatitis is rarely encountered.
<b>Eye contact:</b>	If present as dust, copper may cause irritation, discoloration, and damage. As a foreign body in the lens, copper dust may cause a dense cataract and discolor the lens.
<b>Ingestion:</b>	Ingestion of significant amounts of welding electrodes is unlikely. If copper is swallowed and person is conscious, give large quantities of water to drink. Get medical attention as soon as possible. Serious effects may occur if large amounts of dust are swallowed.

### Numerical measures of toxicity

While no toxicity data is available for this material, the following data has been determined for its constituents:

<b>Copper:</b>	LD <sub>50</sub> , mouse, oral >5,000 mg/kg.
<b>Aluminum:</b>	Aluminum oxide (non-fibrous): LD <sub>50</sub> , rat, oral >5,000 mg/kg
<b>Nickel:</b>	LD <sub>Lo</sub> , oral 9000 mg/kg. The International Agency for Research on Cancer (IARC) lists metallic nickel and nickel compounds as a Group 2B carcinogen (possibly carcinogenic to humans).
<b>Iron:</b>	LD <sub>50</sub> , rat, oral >30 g/kg.
<b>Manganese:</b>	LD <sub>50</sub> , rat, oral >9,000 mg/kg.
<b>Tin:</b>	LD <sub>50</sub> , rat, oral >2,000 mg/kg.



**Zinc:** LD<sub>50</sub>, mouse, oral >5,000 mg/kg.  
**Cobalt:** LD<sub>50</sub>, rat, oral 6,170 mg/kg. The IARC lists cobalt and cobalt compounds as Group 2B (possibly carcinogenic to humans).  
**Silicon:** LD<sub>50</sub>, rat, oral >3,160 mg/kg.  
**Chromium:** LD<sub>Lo</sub>, female rat, oral, 16 mg/kg. The IARC lists metallic chromium and chromium[III] compounds as Group 3 (not classifiable as to its carcinogenicity to humans). Chromium[VI] is listed under Group 1 (carcinogenic to humans).  
**Lead:** LD<sub>50</sub>, rat, oral >160 mg/kg. IARC lists lead and its inorganic compounds under its Group 2A (probably carcinogenic to humans).  
**Phosphorous:** LD<sub>50</sub>, rat, oral 3,030 µg/kg.

## Section 12 Ecological information

Aluminum bronze metal is relatively insoluble in water and, therefore, generally has low bioavailability. This product is not expected to present an environmental hazard. Avoid releasing dusts and fumes into the environment.

## Section 13 Disposal considerations

Product should be recycled as scrap copper whenever possible and may be treated as general industrial solid waste if permitted by federal, state, and local disposal regulations.

## Section 14 Transport information

**UN number:** Not applicable  
**UN proper shipping name:** Not applicable  
**Transport hazard class(es):** Not applicable  
**Packing group number:** Not applicable  
**Environmental hazards:** Not applicable  
**IMDG Code:** Not applicable  
**Transport in bulk:** Not applicable  
**Special precautions:** No special requirements are necessary in transporting this product.

## Section 15 Regulatory information

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations (CPR) and the SDS contains all of the information required by the CPR.

The product is not classified as a health or environmental hazard under current legislation including Regulation (EC) No 1272/2008 and the Council Directives 67/548/EEC and 1999/45/EEC. No obligation exists to issue a safety data sheet according to REACH Art. 31.

Aluminum (dust or fume), Chromium, Cobalt, Copper, Lead, Manganese, Nickel, Phosphorous, and Zinc are on the list of toxic chemicals subject to the United States Environmental Protection Agency (EPA) Toxics Release Inventory (TRI) Program reporting requirements. The concentrations of chromium, lead, phosphorous, and zinc in this product are below the current de minimis levels of 1.0%, 0.1%, 1.0%, and 1.0% respectively.

### Hazardous Material Identification System (HMIS)

Health Hazard:	1
Flammability Hazard:	0
Reactivity Hazard:	0
Maximum Personal Protection:	E

## Section 16 Other information

### Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists  
CAS = Chemical Abstracts Service (registry)  
EINECS = European Inventory of Existing Commercial Chemical Substances



HMIS	= Hazardous Materials Identification System
IARC	= International Agency for Research on Cancer
IMDG	= International Maritime Dangerous Goods
LD <sub>50</sub>	= lethal dose (50 percent kill)
LD <sub>Lo</sub>	= lowest published lethal dose
OSHA	= Occupational Safety and Health Administration
PEL	= permissible exposure limit
TLV	= threshold limit value
TWA	= time weighted average
UN number	= Designation assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.
% WT	= percent weight

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\* End of SDS CWL-C109-AE \*