



SAFETY DATA SHEET (SDS)

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SDS No.: CWL-C106-AE
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Section 1 Identification

Product Name: CenterLine® ETP Copper Components and Material
Synonyms:

- High conductivity (Hicon), oxygen-free high conductivity (OFHC), C11000, or electrolytic tough pitch (ETP) copper.
- A1/1 (ISO 5182:2008) copper.

Recommended Use: Used for nonstructural components of resistance welding tooling and equipment to conduct electrical current. Examples are bus bars, cables, and laminated shunts.
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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. Proximity to the resistance welding process during service may result in the adhesion of hazardous contamination from the work environment. 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.

Section 3 Composition/information on ingredients

Where present, listed constituents are dispersed in a solid 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 ^a	ACGIH-TLV ^a
MAY CONTAIN THE FOLLOWING:					
1. Copper	7440-50-8	231-159-6	> 99.9	0.1 mg/m ³	0.2 mg/m ³

^a Other national or regional values or measures of exposure may be required at the point of use.

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 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)
Melting point:	~ 1,083 C (1,980 F)
Flash point:	Not determined
Evaporation rate:	Not volatile
Flammability:	Not flammable
Vapor pressure:	~ 0 mm/Hg
Vapor density:	Not volatile
Density:	8.9 g/cm ³ (0.32 lb/in ³)
Solubility in water:	Insoluble

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

Section 10 Stability and reactivity

Reactivity: 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).

Chemical Stability: Stable under normal use conditions

Possibility of hazardous reactions: May react with strong acids. Contact of dust with strong oxidizers may cause fire



or explosion.
Conditions to avoid: Temperatures > 150 C (300 F), which may soften the copper material.
Incompatible materials: Dust is explosively incompatible with sodium azide.
Hazardous decomposition products: The melting of this product may release 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:

Inhalation: 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.

Skin contact: Copper can cause some irritation with possible discoloration of skin.

Skin absorption: Metal dust exposure in hot, humid atmospheres may cause skin irritation. Allergic contact dermatitis is rarely encountered.

Eye contact: 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.

Ingestion: 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 the electrode alloy(s), the following data has been determined for the material constituents:

Copper: LD₅₀, mouse, oral >5,000 mg/kg.

Section 12 Ecological information

Copper 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.

Copper is on the list of toxic chemicals subject to the United States Environmental Protection Agency (EPA) Toxics Release Inventory (TRI) Program reporting requirements.

Hazardous Material Identification System (HMIS)

Health Hazard:	0
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
- LD₅₀ = lethal dose (50 percent kill)
- LD_{Lo} = 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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