WHMIS	Personal Protection Equipment	TDG (Ground)
N/A		N/A

1 Identification of the substance/mixture and of the company/undertaking

Product identifier
Trade name: Copper Cathode

SDS Nr: SDS-0004
Chemical description: Copper

CAS No: 7440-50-8
EC No: 231-159-6

Registration-No: Registration deadline not expired.
Use: Manufacture of bronzes, brass, other copper alloys, cables and electrical conductors.

Company identification: Freepoint Commodities, LLC
58 Commerce Road
Stamford, Ct. 06902

E-Mail address (competent person): Lou Santore

Lou Santore [LSantore@freepoint.com]

Emergency telephone number: Within the U.S. or Canada: 1 800 424 9300
Outside the U.S. and Canada: +1 703 527 3887 (collect calls accepted)

MSDS prepared by: Paule Patterson, ENERCON Services, Inc.

2 Hazards identification

This preparation is not classified as hazardous according to 29CFR 1910-1200.

GHS Classification:

Single Target Organ Toxicity Repeated Exposure (Category2):
Target Organ - Lungs
Eye Irritation – Category 2B
Aspiration Hazard – Category 1

GHS LABEL ELEMENTS
Symbol(s)
N/A

Signal Word
Warning

CLP Hazard Statements :

.

HEALTH HAZARDS:
H320: Causes eye irritation.
H372: Causes damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation).

CLP Precautionary statements
Prevention :
P260: Do not breath dust.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink, or smoke when using this product.
P285: In case of inadequate ventilation wear respiratory protection.
P314: Get medical advice / attention if you feel unwell.

Disposal:
P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local, state, and national regulations.

EC Risk Phrases:

R33: Danger of cumulative effects.
R36: Irritating to eyes.
R48/23: Harmful: danger of serious damage to health by prolonged exposure through inhalation.

3 Composition/information on ingredients

Molecular Weight: Not applicable to mixtures

Ingredient	% Weight	OSHA PEL	ACGIH PEL
Copper	100	1.0 mg/m^3(respirable dusts/mist) 0.1 mg/m^3 (fume)	1.0 mg/m^3(respirable dusts/mist) 0.2 mg/m^3 (fume)

4 First aid measures

First Aid: Eyes
Do not allow victim to rub eye(s). Let the eye(s) water naturally for a few minutes. If particle/dust does not dislodge, flush with lukewarm, gently flowing water for five minutes or until particle/dust is removed, while holding eyelid(s) open. If irritation persists, immediately obtain medical attention. DO NOT attempt to manually remove anything stuck to the eye.

First Aid: Skin
Dust: No health effects expected. If irritation does occur, flush with lukewarm, gently flowing water for 5 minutes. If irritation persists, obtain medical advice.
Molten Metal: Flush contact area to solidify and cool but do not attempt to remove encrusted material or clothing. Cover burns and seek medical attention immediately.

First Aid: Ingestion
DO NOT INDUCE VOMITING. Rinse mouth immediately and drink large quantities of water. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated. **Seek medical advice and bring a copy of this SDS.**

First Aid: Inhalation
Keep victim calm. Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately. NOTE: Metal fume fever may develop 3-10 hours after exposure. If symptoms of metal fume fever (flu-like symptoms) develop, obtain medical attention.

5 Fire-fighting measures

General Fire Hazards

See Section 9 for Flammability Properties. Massive metal is not considered a fire or explosion hazard. Finely-divided copper metal dust or powder may be flammable or explosive when dispersed in the air at high concentrations and exposed to heat, flame, or other ignition sources. Explosions may also occur upon contact with certain incompatible materials.

Unusual Fire or Explosion Hazards

Susceptible to spontaneous combustion. Highly combustible and/or explosive when in dust or powder form. Coal dust may react slowly with oxygen at room temperature. Heat accelerates the process, which could lead to spontaneous ignition in piles of coal dust.

Hazardous Combustion Products

Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

Extinguishing Media

SMALL FIRES:
DO NOT USE Water, Foam, Carbon Dioxide, Dry Chemical, Halon, or Water Fog.
Apply dry sand, dolomite, graphite, powdered sodium chloride, soda ash, or other suitable dry powders.
Do not flush down public sewers. The use of self- contained breathing apparatus and protective clothing is recommended for fire fighters. Avoid inhalation of vapors.

LARGE FIRES:
DO NOT USE Water, Foam, Carbon Dioxide, Dry Chemical, Halon, or Water Fog.
Apply dry sand, dolomite, graphite, powdered sodium chloride, soda ash, or other suitable dry powders.
Do not flush down public sewers. The use of self- contained breathing apparatus and protective clothing is recommended for fire fighters. Avoid inhalation of vapors.

6 Accidental release measures

Recovery and Neutralization

Control source of spillage if possible to do so safely. Clean up spilled material immediately.

Materials and Methods for Clean-Up

Molten metal should be allowed to cool and harden before cleanup.
Once solidified wear gloves, pick up and return to process.
Powder or dust should be cleaned up using methods which will minimize dust generation (e.g., vacuum solids, dampen material and shovel or wet sweep). Return uncontaminated spilled material to the process if possible.
Place contaminated material in suitable labeled containers for later recovery in view of the commercial value of copper.
Do not empty into drains or the aquatic environment. Observe local, state, and federal governmental regulations.

Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Copper compounds can pose a significant threat to aquatic life forms. However, in metal form it is not readily bio-available in the environment. Nevertheless, contamination of water and soil should be prevented.

7 Handling and storage

Handling Procedures

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices.

Store in a cool, dry, well-ventilated location.

Do not store near foodstuffs.

Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area.

Copper cathodes suspected of containing moisture should be THOROUGHLY DRIED before being added to a molten bath. Cathodes may contain cavities that collect moisture. Entrained moisture will expand explosively when immersed in a molten bath and potentially spatter molten metal out of the bath.

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the vicinity of any potential splash exposure.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not eat, drink or smoke in areas of use or storage.

Incompatibilities

Copper is incompatible with acetylene, ammonium nitrate, bromates, chlorates, iodates, chlorine fluorine, chlorine trifluoride, and peroxides. Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxide or azide compounds. Copper reacts with strong oxidants like chlorates, bromates, iodates and ammonium nitrate causing a potential explosion hazard.

8 Exposure controls/personal protection

Component Exposure Limits

Ingredient	OSHA PEL	ACGIH PEL
Copper	1.0 mg/m^3(respirable dusts/mist) 0.1 mg/m^3 (fume)	1.0 mg/m^3(respirable dusts/mist) 0.2 mg/m^3 (fume)

Personal Protective Equipment: Respiratory

MSHA/NIOSH approved dust respirator. Appropriate respirator depends upon type and magnitude of exposure.

A NIOSH/ MSHA-approved air-purifying respirator may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation.

Personal Protective Equipment:

Skin and Body

Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

Eye Protection

Use chemical safety goggles and / or a full face shield.

Hygiene Measures

Emergency eye wash and safety shower capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use gasoline or solvents (naphtha, kerosene, etc.) for washing this product from exposed skin areas. Waterless hand cleaners are effective.

Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

ENGINEERING CONTROLS

Ventilation: Use adequate local or general ventilation to maintain the concentration of copper fumes in the working environment well below recommended occupational exposure limits. Supply sufficient replacement air to make up for air removed by the exhaust system.

Respirators: Where copper dust or fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (a 42CFR84 Class N, R or P-95 particulate filter cartridge or better).

9 Physical and chemical properties

Appearance:	Reddish metal	**Odor:**	N/A
Physical State:	Solid	**pH:**	ND
Vapor Pressure:	1 mm at 1981 ºF (1083 ºC)	**Vapor Density:**	N/D
Boiling Point:	4703 ^{0}F (2595 ^{0}C)	**Melting Point:**	1981 ^{0}F (1083 ^{0}C)
Solubility (H2O):	Insoluble	**Specific Gravity:**	8.94
Evaporation Rate:	ND	**VOC:**	ND
Octanol/H2O Coeff.:	ND	**Flash Point:**	ND
Flash Point Method:	TCC	**Upper Flammability Limit (UFL):**	ND
Lower Flammability Limit (LFL):	ND	**Burning Rate:**	ND
Auto Ignition: ND			

10 Stability and reactivity

Chemical Stability

This is a stable material under normal conditions of use and at normal temperatures and pressures.

Hazardous Reaction Potential

Hazardous Polymerization will not occur.

Conditions to Avoid

Copper is incompatible with acetylene, ammonium nitrate, bromates, chlorates, iodates, chlorine fluorine, chlorine trifluoride, and peroxides. Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxide or azide compounds. Copper reacts with strong oxidants like chlorates, bromates, iodates and ammonium nitrate causing a potential explosion hazard.

Incompatible Products

Keep away from strong oxidizers, acetylene, ammonium nitrate, bromates, chlorates, iodates, chlorine, fluorine, chlorine trifluoride, and peroxides.

Hazardous Decomposition Products

High temperature operations such as oxy-acetylene cutting, electric arc welding, arc-air gouging or overheating a molten metal bath may generate fumes. The fumes will contain copper oxides, which, on inhalation in sufficient quantity, can produce metal fume fever.

11 Toxicological information

Acute Toxicity

A: General Product Information

Copper is an essential element, but can become toxic when inhaled or ingested in large doses. Individuals with a rare disorder called “Wilson’s Disease” (estimated prevalence 0.003% of the population) are predisposed to accumulate copper and should not be occupationally exposed.

B: Component Analysis - LD50/LC50

Not classified

Potential Health Effects: Skin Contact Property

May cause skin irritation.

Potential Health Effects: Eye Contact Properties

Eye irritation.

Potential Health Effects: Ingestion

Individuals reported to have ingested large quantities of copper salts have reported gastrointestinal effects including vomiting, diarrhea, nausea, abdominal pain and a metallic taste in the mouth. Effects on the kidneys, liver, and even death have also been reported in severe cases of copper poisoning. However, copper is a strong emetic and spontaneous vomiting following ingestion usually limits uptake of copper.

Potential Health Effects: Inhalation

An intense, short-term exposure to fumes from cutting or welding, etc. could result in the condition called metal fume fever. The symptoms of metal fume fever generally occur within 3 to 10 hours. They may include immediate dryness and irritation of the throat, tightness of the chest, and coughing that may later be followed by flu-like symptoms of fever, malaise, perspiration, frontal headache, muscle cramps, low back pain, occasionally blurred vision, nausea, and vomiting. Severe cases could cause pulmonary congestion and edema as well as acute encephalopathy with possible seizures, coma, and death. However, short-term exposures of this magnitude are unlikely in industry today. Those experiencing a single acute episode of metal fume fever generally recover slowly but without apparent residual effects.

Chronic Toxicity:

Prolonged exposure to copper dust or fume can cause irritation to the upper respiratory tract and, occasionally, ulceration and perforation of the nasal septum. A green discoloration of the skin and hair has been reported in some copper workers similar to

that caused by wearing jewelry made of copper. A few instances of allergic skin rashes have also been reported in workers exposed to metallic copper. Copper is an essential element, but can become toxic when inhaled or ingested in large doses. Individuals with a rare disorder called “Wilson’s Disease” (estimated prevalence 0.003% of the population) are predisposed to accumulate copper and should not be occupationally exposed.

Carcinogenicity
A: General Product Information

Not classified

Reproductive toxicity:
This product is not reported to have any reproductive toxicity effects.

Mutagenicity: This product is not reported to have any reproductive toxicity effects.

Teratogenicity The components of this product are not reported to cause teratogenic effects in humans. Based on best current information, there is no known teratogenicity associated with this product.

Specific Target Organ Toxicity - Single Exposure: No data available.
Specific Target Organ Toxicity - Repeated Exposure: No data available.

12 Ecological information

Ecotoxicity:
Ecotoxicological data have not been determined specifically for this product.
However, its processing or extended exposure in the aquatic and terrestrial environments can lead to the release of copper in bio-available forms. These can cause detrimental environmental effects. The mobility of copper in soluble forms is media dependent. These can bind with inorganic, organic ligands, and particulates, reducing mobility and bioavailability in soil and water. Bioavailability is also controlled by other factors such as pH and hardness in the aquatic environment.

Aquatic Acute: No additional information available.

Aquatic Chronic toxicity: No additional information available

Persistence and Degradability: Major constituents are inherently biodegradable.

Bioaccumulative Potential: Does not bioaccumulate.

Mobility in Soil: Not mobile.

Other adverse effects: No information available.

Additional ecological information: No additional information available

13 Disposal considerations

Waste Disposal Instructions

Cleanup Considerations: This product as produced is not specifically listed as an EPA RCRA hazardous waste according to federal regulations (40 CFR 261). However, when discarded or disposed of, it may meet the criteria of a "characteristic" hazardous waste. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s).
It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

Empty container: scrap metal recycling or re-conditioning
Soiled container: (treatment like product itself)

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local, state, and federal regulations.
Dispose of this material and its container(s) in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses. The competence of the collector or contractor should be established beforehand.

Disposal Regulatory Requirements:

Refer to latest EPA or state regulations regarding proper disposal.

14 Transport information

DOT Information: Not regulated.

Contains no REACH candidate substance.

15 Regulatory information

US federal regulations:
Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility / operation.

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.
WHMIS Classification: Not applicable. Copper is not a controlled product under WHMIS.

EPA Superfund Amendment & Reauthorization Act (SARA):
SARA Section 103: CERCLA identifies Copper as a Hazardous Material and requires the quantity to be registered at 5,000 pounds (2270 kg) or greater (reporting not required when diameter of the pieces of solid metal released is equal to or exceeds 100 micrometers (0.004 inches)).
However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

SARA 311/312 Hazards : No SARA Hazards

Contains no REACH candidate substance.

CHILEAN:
Mine Safety Rules: Supreme Decree 72
Main Environment Act 19300

16 Other information

DISCLAIMER OF LIABILITY: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

This document is generated for the purpose of distributing health, safety, and environmental data.
Information is correct to the best of our knowledge at the date of the SDS publication. It is not a specification sheet nor should any displayed data be construed as a specification.
The information on this was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable.