SAFETY DATA SHEET

Antimicrobial Copper Touch Surface
MD-CU_{29}1

Health Emergencies: CHEMTREC© (800) 424-9300

1. PRODUCT AND COMPANY INFORMATION

Product Identity: Antimicrobial Copper Touch Surface MD-CU_{29}1

Product Identifier: Copper

Name: (OFHC) (DHP) (ETP) ELECTROLYTIC TOUGH PITCHCDA ALLOY 101, 102, 104, 105, 107, 110*, 113, 114, 115, 116, 120, 122, 194

***INCLUSIVE ALLOY 110 SILVER PLATE**

Copper plus silver - All grades of copper covered (including silver bearing – (104, 105, 107, 113, 114, 115, 116) are expected to contain less than .1% silver.

Recommended use of the chemical and restrictions on use: Uncoated EPA-registered copper alloy materials continuously kill bacteria* within two hours of contact when cleaned regularly. Use only according to label directions. It is a violation of Federal law to use this product in a manner inconsistent to label directions.

** Laboratory testing shows that, when cleaned regularly, Antimicrobial Copper™ kills greater than 99.9% of the following bacteria within 2 hours of exposure: MRSA, Vancomycin -Resistant Enterococcus faecalis (VRE), Staphylococcus aureus, Enterobacter aerogenes, Pseudomonas aeruginosa, and E. coli O157:H7. Antimicrobial Copper surfaces are a supplement to and not a substitute for standard infection control practices. Just like other antimicrobial products, they have been shown to reduce microbial contamination, but do not necessarily prevent cross contamination; users must continue to follow all current infection control practices.*

Manufacturer: Hussey Copper, Ltd.
100 Washington Street
Leetsdale, PA 15317

Telephone: (724) 251-4200

Website: www.husseycopper.com

Emergency Phone: 800-424-9300 (CHEMTREC)

SDS Date of Preparation: 03/03/2020

2. HAZARDS IDENTIFICATION

NOTE: In the form in which it is sold, this product is not regulated as a Hazardous Product in the U.S. or Canada. This Safety Data Sheet is provided for information purposes only.

GHS Classification:

Label Symbol(s): None Required.
Label Signal Word(s): None Required.

GHS Label Elements (OSHA HCS 2012):

Statements of Hazard: None Required.
Precautionary Statements: None Required.
Storage/Disposal: P501 Dispose of contents and container in accordance with local and national regulations.

Emergency Overview: Reddish metal that does not burn in bulk. Copper dust clouds will not explode readily, if at all, in air. Due to its high melting point, molten copper metal is unlikely to occur in most fire situations. This metal is relatively non-toxic and poses little immediate hazard to personnel or the environment in an emergency situation.

2. HAZARDS IDENTIFICATION *(continued)*

Potential Health Effects: Inhalation of dust may result in irritation of the nasal mucous membranes. Inhalation of copper oxide fumes may cause irritation of the upper respiratory tract and may result in a form of metal fume fever, characterized by flu-like symptoms such as chills, fever, nausea, and vomiting. Ingestion of copper metal may cause metallic taste and gastrointestinal irritation. Copper particles embedded in the eye may cause redness, pain and discoloration of ocular tissue. Direct skin contact may result in irritation in some workers. Discoloration of the skin has been observed from handling copper, but does not indicate an actual injury. Copper is not listed as a carcinogen by OSHA, the NTP, the ACGIH, IARC, or the EU (see Toxicological Information, Section 11).

Potential Environmental Effects: Copper is relatively insoluble in water and, therefore, likely has low bioavailability. However, long-term exposure in aquatic and terrestrial environments or processing of the product can lead to the release of the constituent copper in more bioavailable forms. These bioavailable forms have the potential to yield toxic effects on aquatic organisms (see Ecological Information, Section 12).

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	PERCENT	CAS NO.	OSHA-PEL/ACGIH-TLV
* Base Metal Copper	99.9%	7440-50-8	For Exposure Levels See Section 8

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES: If exposure to copper dust/fume is kept below Permissible Exposure Limits (PEL)/ Threshold Limit Value (TLV) all trace elements should not pose any health risk. *Chemical(s) listed as a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

See Section 11 for Toxicological Information

4. FIRST AID MEASURES

Eyes: *Symptoms: Mild eye irritation, redness.* 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, but rather seek immediate medical attention in this case.

Skin: *Symptoms: Soiling of skin.* Dust: No health effects expected. If irritation does occur, flush with lukewarm, gently flowing water and mild soap for five minutes or until the product is removed. If skin irritation persists or if you feel unwell, 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.

Ingestion: Not a likely route of exposure for finished metal alloy. If dust is ingested, immediately drink water to dilute. Consult a physician if symptoms develop

Inhalation: *Symptoms: Coughing and irritation in heavy dust/fume clouds.* If symptoms are experienced, remove source of contamination or move victim from exposure area to fresh air. Get medical advice/attention if you feel unwell or are concerned. NOTE: Metal fume fever may develop 3-10 hours after exposure to copper fume. If symptoms of metal fume fever (flu-like symptoms) develop, obtain medical attention.

4. FIRST AID MEASURES *(continued)*

Indication of immediate medical attention/special treatment:

Notes to Physician

All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

See Section 11 for Toxicological Effects

5. FIRE FIGHTING MEASURES

Flash Point (Method used): Not Applicable *

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Not Applicable

Unusual Fire and Explosion Hazards: Not Applicable

**Under normal conditions: Heavy concentrations of fine copper dust may cause flash fire if exposed to ignition source.*

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid contact with skin, eyes, and mucous membranes.

Methods and Materials: If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Either wet sweeping or vacuuming using HEPA filtration is recommended.

Environmental Precautions: Copper compounds, while not readily bioavailable in the environment, have the potential to pose ecological effects to aquatic life forms under certain chemical conditions. Releases of the product to water and soil should, therefore, be prevented.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Avoid breathing dust or fumes. Practice good housekeeping and personal hygiene procedures. Preclude from exposure to fume or dust those individuals with diseases of the skin, sinuses, and lungs.

Conditions for Safe Storage, Including Any Incompatibilities: Do not store in proximity to incompatible materials (see Section 10).

Incompatible Materials or Ignition Sources: (Material to avoid):

Dust and fumes: acetylene, chlorine

Metals: acids and oxidizers

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Note: *The selection of the necessary level of engineering controls and personal protective equipment will vary depending upon the conditions of use and the potential for exposure. The following are therefore only general guidelines that may not fit all circumstances. Control measures to consider include:*

Engineering Controls: Use adequate local or general ventilation to maintain the concentration of copper (as either dust or 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.

Protective Clothing: Gloves and coveralls or other work clothing are recommended to prevent prolonged or repeated direct skin contact when copper is processed. Appropriate eye protection should be worn where fume or dust is generated. Where hot or molten metal is handled, heat resistant gloves, goggles or face shield, and clothing to protect from hot metal splash and radiant heat should be worn. Safety type boots are recommended. 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 as a minimum).

General Hygiene Considerations: Always practice good personal hygiene. Refrain from eating, drinking, or smoking in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION *(continued)*

Exposure Limits:

COPPER DUST & MISTS	OSHA (PEL)	TWA = 1 mg/m^3	ACGIH (TLV)	TLV = 1 mg/m^3
Copper Fumes	OSHA (PEL)	TWA = 0.1 mg/m^3	ACGIH (TLV)	TLV = 0.2 mg/m^3

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance And Odor: Reddish metal, odorless

Physical State: Solid

Vapor Density (Air = 1): Not Applicable

Boiling Point: 4703°F (2595°C)

Solubility In Water: Insoluble In Water

Molecular Weight: 63.55 g/mol

Vapor Pressure (mm Hg): 1 mmHg @ 1981°F

pH: Not Applicable

Melting Point: 1949°F (1065°C)

Specific Gravity (g/cc): 8.94

Bulk Density: 8.94

10. STABILITY AND REACTIVITY

Reactivity: None Reasonably Foreseeable

Stability: Stable

Hazardous Polymerization: Will Not Occur

Risk of Dangerous Reactions: See "Conditions to Avoid"

Conditions to Avoid: Copper can form unstable acetylides in contact with acetylene gas.

Incompatible Materials: Acetylene; ammonia; azides; nitric acid; halogens; ethylene imine; ethylene oxide; chlorine trifluoride; sulfuric acid; peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; hydrazine mononitrate; hydrazoic acid; hydrogen sulfide; bromates, chlorates, and iodates of alkali and alkali earth metals; hydroxylamine; selenium; tellurium; carbon disulfide; hydrazine; performic acid; phosphorus; sulfur; dioxane; titanium plus potassium chlorate.

Hazardous Decomposition Products: Heating to elevated temperatures may liberate metal/metal oxide fumes.

11. TOXICOLOGY INFORMATION

Potential Exposure Routes: For Dust: Ingestion, Inhalation, and Eye Contact. For Fumes: Inhalation and Eye Contact. The finished metal is not hazardous.

Numerical Measures of Toxicity:

Acute Animal Toxicity Data:

Oral LD_{50}: 5000 mg/kg (mouse)

Dermal LD_{50}: 375 mg/kg (rabbit subcutaneous)

Inhalation LC_{50}: >12 mg/kg (rat intratracheal)

Irritation: Eye & Respiratory Irritant, Sensitizer; Respiratory Irritant

General: Copper is an essential element, but can become toxic when inhaled or ingested in large doses. Most reports of acute toxicity are from suicidal attempts involving ingestion of copper sulphate. 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. However, in the form in which this product is sold it is relatively non-toxic. The major route of exposure would be through the generation and inhalation of copper oxide fume.

Acute Skin: Copper metal is not irritating to skin other than by direct abrasive action of metal particles on skin tissue.

11. TOXICOLOGY INFORMATION *(continued)*

Acute Eye: Contact with dust or fume may cause local irritation. Embedded copper particles in the eye result in a brownish or green-brown discoloration of the cornea, lens and iris (chalcosis) which may progress to serious ocular complications.

Acute Inhalation: Copper dust may be irritating to the nasal passages and the throat with a sweetish, metallic taste and excessive salivation. An intense, short-term exposure to copper 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, metallic taste, 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. Those experiencing a single acute episode of metal fume fever generally recover slowly but without apparent residual effects.

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

Chronic: Prolonged exposure to copper dust or fume can cause irritation to the eye and skin. A green discoloration of the skin has been reported similar to that sometimes experienced from copper jewelry. This green discoloration may occasionally also be seen in hair (particularly notable in blonde hair), nails and teeth. A few instances of allergic contact dermatitis have been reported. Copper is not listed as a human carcinogen by the Occupational Safety and Health Administration (OSHA), the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the American Conference of Governmental Industrial Hygienists (ACGIH) or the European Union (EU).

12. ECOLOGICAL INFORMATION

Copper metal is relatively insoluble in water and, therefore, generally has low bioavailability. However, long-term exposure in aquatic and terrestrial environments or processing of the product can lead to the release of the constituent copper in more bioavailable forms. These more bioavailable forms have the potential to yield toxic effects under specific chemical conditions (e.g., low pH). The mobility of the copper compounds in soluble forms is also media-dependent. They can bind with inorganic and organic ligands, reducing their mobility and bioavailability in both soil and water. Bioavailability is also regulated by other factors in the aquatic environment, such as hardness and dissolved organic carbon content.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and non-hazardous wastes.

This product may be a candidate for metal reclamation.

14. TRANSPORTATION INFORMATION

Transport is not regulated by USDOT, TDG (Canada), IATA, or IMO.

15. REGULATORY INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

FIFRA Labeling:

Antimicrobial Copper Touch Surface
[APPROVED END USE]
EPA Reg. No. 89187-1
This [APPROVED END USE]
MD-CU_{29}1
This touch surface is a U.S. EPA Registered Antimicrobial Copper Bacteria* Killing Solid Metal Product

**** Laboratory testing shows that, when cleaned regularly, Antimicrobial Copper™ kills greater than 99.9% of the following bacteria within 2 hours of exposure: MRSA, Vancomycin-Resistant Enterococcus faecalis (VRE), Staphylococcus aureus, Enterobacter aerogenes, Pseudomonas aeruginosa, and E. coli O157:H7. Antimicrobial Copper surfaces are a supplement to and not a substitute for standard infection control practices. Just like other antimicrobial products, they have been shown to reduce microbial contamination, but do not necessarily prevent cross contamination; users must continue to follow all current infection control practices.***

US Federal Regulations:

TSCA: The components of this product are listed on the Toxic Substances Control Act inventory.

CERLA: Copper, R.Q. = 5,000lbs.

SARA 313: Copper

SARA 313 Hazard Class: No Hazard Categories Apply

SARA 302 EHS List: Not on List

State Right-to-Know Status:

CA Pop 65: Copper: Not Listed

New Jersey: Copper: Yes

Pennsylvania: Copper: Yes

Massachusetts: Copper: Yes

New Jersey: Copper: Yes

Michigan: Copper: Yes

Canadian Regulations:

DSL LIST: The components of this product are on the DSL or are exempt from reporting under the New Substances Notification

16. OTHER INFORMATION

Disclaimer: Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).