



HEALTH	1	
FLAMMABILITY	0	
REACTIVITY	0	
PROTECTIVE EQUIPMENT		

Cadmium Copper C16200

NFPA RATING

HMIS RATING

SECTION I. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Cadmium Copper C16200 (Various solid forms: rod / wire)
Chemical Family: Alloy

Manufacturer/Vendor Information: IWG Omega Wire, Inc.	IWG High Performance Conductors
12 Masonic Avenue Camden, NY 13316	1570 Campton Road Inman, SC 29349
Phone: (315) 245-3800	(864) 472-0481
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24-Hour Emergency Phone: (800) 424-9300 Chemtrec

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the Substance

GHS-US classification



- H301 - Toxic if swallowed
- H302 - Harmful if swallowed
- H330 - Fatal if inhaled
- H350 – May cause cancer
- H372 – Causes damage to organs through prolonged or repeated exposure
- H400 – Very toxic to aquatic life
- H410 – Very toxic to aquatic life with long lasting effects
- H412 – Harmful to aquatic life with long lasting effects

2.2 Unclassified Hazards

- 2.2.1** This material is stable under most conditions and presents minimal risk in the solid form as shipped, but thermal decomposition can create toxic vapors, gases, or fumes.
- 2.2.2 Abrasion, grinding, cutting, melting, welding, or other operations which reduce the particle size of the material will change the hazard classification of the product. If the particle size of this product is reduced, refer to OSHA Standard 1910.1027 (CADMIUM) for complete regulatory details.**
- 2.2.3** Reduction of the product into a dust or fume can create a hazard if the dust or fume becomes airborne in the presence of a spark or ignition source.
- 2.2.4** This material as a dust or fume poses a health hazard when inhaled and / or ingested.

SECTION 2. HAZARDS IDENTIFICATION (Con't)**2.3 Unknown Acute Toxicity**

No data available on copper inhalation acute toxicity. CDC (ASTDR) has established a minimal risk level for ingested copper at 0.01 mg/kg/day for acute oral exposure (1-14 days). CDC (ASTDR) has established a minimal risk level for ingested cadmium at 3×10^{-5} mg Cd/m³ for inhalation and 0.5 ug/Kg/day for acute oral exposure (15-364 days).

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>CAS No.</u>	<u>Chemical Name</u>	<u>% by wt.</u>
7440-50-8	Copper	98.8 – 99.0
7440-43-9	Cadmium	1.0 – 1.2

SECTION 4. FIRST AID**4.1 Instructions**

4.1.1 Eyes: If dust or fume contacts the eyes, flush with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

4.1.2 Skin: Wash with soap and water. Get medical attention if irritation develops or persists.

4.1.3 Ingestion: Rinse mouth. If conscious, induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

4.1.4 Inhalation: If exposed to excessive levels of dusts or fumes, move to fresh air and get medical attention if cough or other symptoms develop. If not breathing administer CPR.

4.2 Signs and Symptoms

Irritation of eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis.

ACUTE “Metal Fume Fever” Symptoms include: irritation of eyes, nose, throat, and skin; flu-like symptoms – sudden or delayed onset of chills, weakness, fatigue, nausea, vomiting, headache, diarrhea, muscular pains; tightness of chest; paralysis; loss of consciousness or death.

4.3 Note to Physician

Wilson’s Disease or G6PD deficiency causes individuals to absorb, retain, and store copper excessively, leading to copper toxicosis. Cadmium may exacerbate kidney and respiratory conditions.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Fire Fighting / Extinguishing Media: Particulate copper fire utilize: powdered dolomite, sodium chloride, or graphite.

5.2 Fire Fighting Procedures:

5.2.1 Evacuate area and fight fire from a safe distance. As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear. Avoid direct water stream on molten material. Molten form explodes upon contact with water.

5.2.2 Particulate copper powder is a moderate fire hazard. For copper fires do not use water; apply powdered dolomite, sodium chloride, or graphite. Material as shipped does not support combustion. Use fire extinguishing media appropriate for surrounding material.

5.2.3 If allowable, ensure reject fire-fighting water does not enter the environment.

5.3 Fire and Explosion Hazards: Heavy airborne concentrations of fine powder in enclosed spaces may ignite or explode in the presence of an ignition source.

SECTION 5. FIRE FIGHTING MEASURES (Con't)

5.4 Unusual Hazards: Toxic gases and vapors may be released in a fire. In the presence of halogens, copper powder may become explosive with heat, percussion, or light friction. In the presence of wet acetylene and ammonia, copper forms explosive acetylides.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Use clean up measures that avoid dust generation (mist with water, wet vacuum). Wear a NIOSH/MSHA approved respirator if dust will be generated in clean-up. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to environment.

SECTION 7. HANDLING AND STORAGE**7.1 Handling Information**

Not hazardous with intended use and / or in stable solid state.

7.2 Storage Information

Do not store near strong acids, bases or oxidizing agents or incompatible materials as described in Section 10.

7.3 Other Precaution

Minimize dust/fume generation and accumulation. Provide good ventilation in process area to prevent formation of vapor. Avoid inhalation of dust or fume. Wash hands and exposed skin with mild soap and clean water after handling. Wash excess dust from skin.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**8.1 Exposure Limits**

8.1.1 Copper: ACGIH TWA: 1 mg/m³ (dusts & mists), ACGIH TWA: 0.2 mg/m³ (fume), OSHA PEL TWA: 1 mg/m³ (dust), OSHA PEL TWA: 0.1 mg/m³ (fume).

8.1.2 Cadmium: ACGIH TWA: 0.002 mg/m³, OSHA PEL TWA: 0.005 mg/m³ (R)

8.2 Engineering Controls

If user operations generate dust or fume, use ventilation to keep exposure to airborne contaminants below the exposure limits.

8.3 PPE

8.3.1 Eye Protection: If user operations generate dust or fume use safety glasses with side-shields or goggles.

8.3.2 Skin Protection: Use protective clothing to prevent repeated or prolonged skin contact. Wash hands and exposed areas with mild soap and water.

8.3.3 Respiratory Protection: A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. For concentrations up to 10 times the exposure limit, use NIOSH or MSHA approved half- or full-face, air-purifying respirator. For higher concentrations, consult a professional industrial hygienist.

SECTION 9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Reddish brown, lustrous, malleable solid. / Metal in various forms (rod, wire).

Odor: No odor.

Melting Point: Copper: 1083° C; **Cadmium:** 321° C

Boiling Point: Copper: 2595° C; **Cadmium:** 765° C

Specific Gravity: Copper: 8.94 g/cm³; **Cadmium:** 8.65 g/cm³

Vapor Pressure: Copper: 1 mmHg @ 1628° C / 20 mmHg @ 1970° C; **Cadmium:** 1 mmHg @ 394° C

Solubility in Water: Insoluble

Heat of Vaporization: 1150 Cal/g

**Data regarding the heat of vaporization, vapor density, odor threshold, pH, freezing point, flash point, evaporation rate, relative density, flammability limits (upper/lower), flammability (solid, gas), partition coefficient: n-octanol/water, auto ignition temperature, decomposition temperature, and viscosity, is not available at this time.

SECTION 10. STABILITY AND REACTIVITY**10.1 Reactivity**

No additional information available.

10.2 Chemical Stability

Noncombustible solid in bulk form, but powdered form may ignite.

10.3 Possibility of Hazardous Reactions

Not established.

10.4 Conditions to Avoid

Direct sunlight. Extremely high or low temperatures.

10.5 Incompatible Materials

Potentially explosive with acetylinic compounds (C₂H₂), 3-bromopropene (BrO₃⁻), ethylene oxide (C₂H₄O), lead azide (Pb(N₃)₂), fused ammonium nitrate (NH₄NO₃), nitrosyl fluoride (FNO) and iodine pentafluoride (IF₅). Ignites on contact with chlorine (Cl), fluorine (F₂), and hydrazine mononitrate (H₅N₃O₃). Reacts violently with sodium azide (NaN₃), halogenates, peroxides - hydrogen peroxide (H₂O₂) & sodium peroxide (Na₂O₂), hydrogen sulfide (H₂S), hydrazoic acid (HN₃), bromates (BrO₃⁻), chlorates (ClO₃⁻), iodates (NaIO₃), chloride (Cl⁻), hypochlorites (ClO⁻), potassium oxide (K₂O), potassium hydroxide (KOH), copper nitrate (Cu(NO₃)₂), sulfur (S); strong acids, strong bases, oxidizers.

10.6 Hazardous Decomposition Products

Toxic metal fumes. Copper oxide. Cadmium oxide.

SECTION 11. TOXICOLOGICAL INFORMATION**11.1 Route(s) of Exposure**

Inhalation, eye, and ingestion of dust or fume.

11.2 Effects of Overexposure

Mild to moderate exposure: Ingestion or inhalation may cause irritation of the respiratory tract, moderate stomach irritation, and skin dysfunction including discoloration. Dust or fume may cause eye irritation. Dust may cause skin irritation.

Chronic Exposure: Skin sensitization; neurological damage; respiratory disease; and kidney dysfunction.

Acute Exposure: "Metal Fume Fever" due to overexposure to welding gases or lack of oxygen, characterized by metallic taste in mouth.

SECTION 11. TOXICOLOGICAL INFORMATION (Con't)

Target Organs: Eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson’s disease).

Medical Conditions Aggravated by Exposure: Wilson’s disease

11.3 Signs and Symptoms

Irritation of eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis.

ACUTE “Metal Fume Fever” Symptoms include: irritation of eyes, nose, throat, and skin; flu-like symptoms – sudden or delayed onset of chills, weakness, fatigue, nausea, vomiting, headache, diarrhea, muscular pains; tightness of chest; paralysis; loss of consciousness or death.

11.4 Carcinogenicity

Cadmium:	NTP: Group 2	IARC: Group 1	OSHA: Yes
Copper:	NTP: No	IARC: No	OSHA: No

11.5 Toxicology Tests

Acute toxicity : Copper

LD50 oral mouse: 3.5 mg/Kg

Acute toxicity : Cadmium

LD50 oral rat 225 mg/kg Cadmium

ATE (oral): 224.000 mg/kg

ATE (dust, mist): 0.500 mg/l/4h

SECTION 12. ECOLOGICAL INFORMATION*

12.1 Toxicity

Ecology - water : Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Copper (7440-50-8)

LC50 fishes 1	0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 other aquatic organisms 1	0.0426 - 0.0535 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC50 fish 2	< 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 other aquatic organisms 2	0.031 - 0.054 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])

Cadmium (7440-43-9)

LC50 fishes 1	0.003 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 1	0.0244 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 fish 2	0.006 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])

12.2. Persistence and degradability

Cadmium Copper C16200

Persistence and degradability : May cause long-term adverse effects in the environment.

12.3. Bioaccumulative potential

Cadmium Copper C16200

Bioaccumulative potential : Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

*Adapted from Freeport-McMoran Cadmium Copper C16200 SDS

SECTION 13. DISPOSAL CONSIDERATIONS**13.1 Waste Disposal Method**

Recycle metal to a metal recovery agent. If disposal is necessary, cadmium copper could be a characteristic hazardous waste for cadmium (D006), under RCRA. Waste should be disposed in accordance with Federal, State, and Local environmental control regulations. Avoid release to the environment.

SECTION 14. TRANSPORT INFORMATION**14.1 USDOT**

Not regulated in solid form.

SECTION 15. REGULATORY INFORMATION**15.1 US FEDERAL - REGULATIONS**

Federal Drinking Water Standards: Copper: EPA 1300 ug/l

CERCLA: Copper: RQ 5000 lbs; no reporting is required if diameter of the pieces of solid material is ≥ 100 mm (0.04 inches) for copper and no RQ is assigned to the broad class of copper compounds.

RCRA: Copper: Not listed; **Cadmium:** characteristic hazardous waste at TCLP concentration of 1 mg/L.

Clean Water Act: Copper: Designated as a toxic pollutant and is subject to effluent limitations.

SARA Title III – Emission Reporting: Copper and cadmium is reportable per Section 313. Depending on quantity of wire processed, **copper** and / or **cadmium** may be individually reportable under TRI.

TSCA: Copper: Listed; **Cadmium:** Listed.

CERCLA Hazardous Substances: No reporting of releases of the solid form is required if the mean diameter of the pieces of the solid metal released is greater than 100 micrometers (0.004 inches).

Clean Air Act: Copper: Not on HAPs list; **Cadmium Compounds:** Listed HAP

15.2 CANADA - REGULATIONS

Canadian Domestic Substance List: Copper: Listed; **Cadmium:** Listed.

Canadian Ingredient Disclosure List:

Copper: Listed; Cadmium: Listed

WHMIS Classification: Copper: Uncontrolled; Cadmium: Class D Division 1 Subdivision A – Very toxic material causing immediate and serious toxic effects / Class D Division 2 Subdivision A – Very toxic material causing other toxic effects.

15.3 EU – REGULATIONS

EINECS (European Inventory of Existing Commercial Chemical Substances): Copper: Listed; **Cadmium:** Listed.

SECTION 16. OTHER INFORMATION

Reason for Revision: Updated exposure limits and formatting.

Prepared By: Environmental Department
IWG Omega Wire, Inc.

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