

Material Safety Data Sheet

Tungsten-Copper

Date of Preparation: 11/8/2006

MSDS No. 2.410

Revision No. 2

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: Tungsten-Copper

Chemical Family: Elemental Metal Composite

Chemical Formula: WCu

Trade Name: Elkonite® 0W3, Elkonite® 1W3, Elkonite® 3W3, Elkonite® 5W3, Elkonite® 10W3, Elkonite® 20W3, Elkonite® 30W3, Elkonite® 40W3, Elkonite® 50W3, Elkonite® 2050C, Thermkon® 109, Thermkon® 83, Thermkon® 76, Thermkon® 93

Manufacturer:

CMW Inc.
70 S. Gray St.
Indianapolis, IN 46201

Telephone: 317-634-8884

FAX: 317-638-2706

Website: www.cmwinc.com

Section 2 - Composition/Information on Ingredients

Ingredient Name	CAS Number	% Weight
Tungsten	7440-33-7	50-90
Copper	7440-50-8	10-50

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Tungsten	none estab.	none estab.	5 mg/m ³	10 mg/m ³	5 mg/m ³	5 mg/m ³	none estab.
Copper	0.1 mg/m ³ as Cu fume.	none estab.	0.2 mg/m ³ as Cu fume 1 mg/m ³ as Cu dust & mist	none estab.	1 mg/m ³	none estab.	100 mg/m ³ as Cu

Section 3 - Hazards Identification

Hazard Rating Systems:

HMIS: Health 2 Flammability 0 Reactivity 0

NFPA: Health 2 Flammability 0 Reactivity 0

★★★★ Emergency Overview ★★★★★

Solid Tungsten-Copper presents no significant health hazard. Grinding, heating, welding of tungsten-copper may result in airborne particles or fumes. Dusts can form explosive mixtures in air. Avoid breathing dust. Keep away from strong acids, bases, gases, oxidizers, mercury, ammonia and acetylene.

Tungsten:**Primary Entry Routes:** Inhalation, skin contact, ingestion**Target Organs:** Insoluble compounds: skin, respiratory system; Soluble compounds: skin, respiratory system, central nervous system (CNS), gastrointestinal (GI) tract, eyes, liver, kidneys**Acute Effects:****Inhalation:** The dust may cause upper respiratory tract irritation.**Eye:** The dust may cause eye discomfort and irritation due to mechanical abrasion.**Skin:** May cause mild skin irritation after prolonged or repeated exposure to particulates or dust.**Ingestion:** Not normally a hazard due to the physical form of the material. Large amounts of dust or particulates may cause gastrointestinal effects.**Carcinogenicity:** IARC, NTP and OSHA do not list tungsten as a carcinogen.**Medical Conditions Aggravated by Long-Term Exposure:** None established.**Chronic Effects:** No human data available.**Copper:****Primary Entry Routes:** Inhalation, ingestion**Target Organs:** Respiratory system, skin, eyes, liver and kidneys**Acute Effects:****Inhalation:** Exposure from airborne dust or fumes may result from welding, grinding or sanding operations or during repair or maintenance on contaminated equipment. Symptoms may include irritation of upper respiratory tract, lungs, cough, metallic taste in mouth, fever, fatigue, nausea, bronchitis, chills, "metal fume fever", asthma-like symptoms, headache, profuse sweating, diarrhea, excessive urination, general malaise.**Eye:** Dust or fumes may cause mild irritation.**Skin:** Particles or dust may be abrasive to the skin.**Ingestion:** Kidney and liver damage may result if large quantities are ingested.**Carcinogenicity:** IARC, NTP, OSHA, ACGIH, and NIOSH do not list copper as a carcinogen.**Medical Conditions Aggravated by Long-Term Exposure:** Allergic reaction or sensitivity to metals. Exposure may aggravate conditions such as impaired pulmonary function, asthma, emphysema, chronic bronchitis, pre-existing kidney, liver or nervous system damage. A person with Wilson's Disease (a rare metabolic disorder characterized by retention of copper in the liver, brain, kidneys) is at increased risk from copper exposure and may develop liver cirrhosis, brain damage, CNS damage or kidney disease.**Chronic Effects:** Chronic exposure to copper dust or fumes may result in irritation of mucous membranes, nasal septum perforation, skin and hair discoloration.**Section 4 - First Aid Measures****Inhalation:** Remove to fresh air. Seek medical attention if respiratory irritation develops or breathing becomes difficult.**Eye Contact:** Flush eyes with water for at least 15 minutes. Seek medical attention if irritation persists.**Skin Contact:** Wash affected areas with soap and water. Seek medical attention if irritation persists.

Ingestion: Rinse mouth with water. Seek medical attention if irritation persists.
After first aid, get appropriate in-plant, paramedic, or community medical support.

Section 5 - Fire-Fighting Measures

Flash Point: N/A

Burning Rate: N/A

Autoignition Temperature: N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Do NOT use water. Sand or dry powder extinguishers should be used to smother dust fires.

Unusual Fire or Explosion Hazards: If the metal is reduced to powder form it may burn. Blanket material to exclude air and do not disturb until completely extinguished and cool. Explosion may result if burning dust is stirred into a cloud, by providing oxygen to a large surface area. Avoid contact with acetylene, ammonium nitrate, barium bromate, chlorate and iodate, bromates, phosphorus, potassium chlorate, potassium iodate, potassium peroxide, sodium azide, sodium chlorate and iodate, sodium peroxide, sulfur, chlorates, nitric acid and other strong acids and bases.

Fire-fighting instructions: Do not release runoff from fire control methods to sewers or waterways. Contact fire department and tell them location and nature of hazard. Tungsten-Copper in metallic form is not combustible.

Fire-fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

Small Spills: Clean up all spills immediately. Avoid contact with skin and eyes.

Wear impervious gloves and safety glasses. Use dry clean-up procedures and avoid generating dust. Vacuum up or sweep up. Place spilled material in clean, dry sealable, labeled container.

Large Spills: Clear area of personnel and move upwind. Use dry clean-up procedures. Avoid generating dust. If inhalation risk of exposure exists, wear NIOSH-approved dust respirator. Collect recoverable material into labeled containers for recycling.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1010.220)

Section 7 - Handling and Storage

Handling Precautions: Limit all unnecessary personal contact. Use in a well-ventilated area. When handling, DO NOT eat, drink or smoke. Always wash hands with soap and water after handling.

Storage Methods: Store in a cool, dry, well-ventilated area away from incompatibles.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls/Personal Protection

Engineering Controls: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses.

Hands: Recommend hand protection when handling metals for prevention of cuts from slivers and edges.

Respiratory Protection: Use NIOSH-approved respirator if TLV is exceeded or over-exposure is likely. Pressure demand airline respirators or self contained breathing apparatus is recommended for jobs with high exposure potential to copper dust or fumes

Section 9 - Physical and Chemical Properties

Appearance/General Information: Copper-grey metallic solid. Odorless. Very slightly soluble in nitric acid, sulfuric acid and aqua regia. Soluble in a mixture of hydrofluoric acid and nitric acid.

Vapor Pressure (kPa): 0

Vapor Density (Air=1): N/A

Specific Gravity (H₂O=1, at 4°C): 12.02-17.17 g/cc

Volatile Component (% Vol): 0

Water Solubility: Insoluble

pH: N/A

pH (1% Solution): N/A

Boiling Point Range: Tungsten: 5900°C (10652°F) at 760 mm Hg

Copper: 2567°C (4703°F)

Freezing/Melting Point Range: Tungsten: 3410°C (6171°F)

Copper: 1083°C (1763°F)

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Tungsten-copper metal is considered stable.

Hazardous polymerization will not occur. Melting may generate harmful fumes.

Storage incompatibilities: Do not store with acetylene, ammonium nitrate, bromates, chlorates, iodates, chlorine, fluorine, chlorine trifluoride, ethylene oxide, hydrazine, hydrozoic acid, hydrogen peroxide, hydrogen sulfide, lead azide, phosphorus, nitric acid, potassium peroxide, sodium azide, sodium peroxide and 1-bromo-1-propylene.

Section 11 - Toxicological Information

Tungsten:

Toxicity: Unknown route (rat) LD₅₀: 2000 mg/kg

Substance has been investigated as a reproductive effector in female rodents-Oral TD_{L0} 1.16 mg/kg.

Irritation: Skin (rabbit) 500mg/24 hr-mild

Eyes (rabbit) 500mg/24 hr-mild

Copper:

Toxicity: Oral (human) TD_{L0}: 0.12 mg/kg

Section 12 - Ecological Information**Tungsten:**

Environmental Fate: No data available

Ecotoxicity: No data available

Copper:

Environmental Fate: Many copper compounds and complexes are readily soluble, therefore copper is among the mobile heavy metals in soil. The mobility of copper is limited by adsorption to organic matter, clays and other materials. Due to the fact that copper is an essential nutrient, it is accumulated by plants and animals.

Ecotoxicity: In freshwater, acute toxicity decreases as hardness increases. At a hardness of 100mg/l, acute NAWQ is 18 $\mu\text{g/l}$ and chronic NAWQ is 12 $\mu\text{g/l}$. In saltwater, acute sensitivities of aquatic life range from 5.8 $\mu\text{g/l}$ for blue mussel to 600 $\mu\text{g/l}$ for green crab. Lowest chronic value for aquatic plants is 1 $\mu\text{g/l}$.

Section 13 - Disposal Considerations

Disposal: Tungsten-Copper is recyclable. Follow applicable local, state and federal regulations.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101)

Shipping Name: None

Hazard Class: None

ID No.: None

Packing Group: None

Label: No class label assigned

Placards: None

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lbs Cu

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

This material contains Copper

Copper is subject to the reporting requirements of Section 313 Title III and CFR Part 373

Section 16 - Other Information

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The information contained herein is believed to be correct, but no guarantee or warranty with respect to accuracy, completeness, or results is implied and no liability is assumed.