MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

Product identifier: **COPPER**
Product use: Cutting and welding tips and electrode bodies.

Synonyms: Oxygen-free Copper #1100
Tellurium Copper

Supplier name and address:
Thermal Dynamics Corporation
82 Benning Street
West Lebanon, NH 03784, USA
Phone: (603) 298-5711

Manufacturer's name and address:
Various – Refer to Supplier

24 Hour Emergency Telephone #: (CHEMTREC) (800) 424-9300 USA / Canada
(703) 527-3887 International

SECTION 2 —COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS #	% (weight)	OSHA PEL	ACGIH TLV	LC_{50} (rat, inh) (mg/m^3/4hr)	LD_{50} (mg/kg) rat, oral	LD_{50} (mg/kg) dermal, rabbit
Oxygen-free Copper #1100:							
Copper	7440-50-8	99 - 100	1 mg/m^3 (dust & mist as Cu)	1 mg/m^3 (dust & mist as Cu)	N/Av	N/Av	N/Av
Tellurium Copper:							
Copper	7440-50-8	99 - 100	1 mg/m^3 (dust & mist as Cu)	1 mg/m^3 (dust & mist as Cu)	N/Av	N/Av	N/Av
Tellurium	13494-80-9	0.1 – 1	0.1 mg/m^3	0.1 mg/m^3	2420	83	N/Av

SECTION 3 — HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Solid, with silver or yellowish to reddish colour. No odour.
Caution! May cause mild eye or skin irritation. May cause irritation of the respiratory or gastrointestinal tract.
Contains material which may cause blood cell, liver or kidney damage.

POTENTIAL HEALTH EFFECTS

Target organs: Eyes, skin, respiratory system, gastrointestinal system, liver, kidneys.

Signs and symptoms of short-term (acute) exposure:

Inhalation: Exposure to dust or fumes may cause irritation of the upper respiratory tract. Symptoms of overexposure may include coughing, metallic taste in the mouth, nausea and a garlic odor in the breath. When fumes are released (during processes such as welding), inhalation may result in "metal fume fever", with symptoms of nasal congestion, headache, chills, fever and body aches, similar to influenza. Symptoms may be delayed for several hours.

Skin contact: Skin contact may result in redness and mild irritation.

Eye contact: Contact with fumes may cause mild irritation. Contact with dusts may cause mechanical irritation. Symptoms may include tearing, blinking and conjunctivitis

Ingestion: No health effects expected from small amounts. Large amounts may cause gastrointestinal discomfort, nausea, vomiting and diarrhea.

Effects of long-term (chronic) exposure: Contains ingredients which may cause blood cell, liver or kidney damage. Prolonged or repeated contact may cause thickening of the skin and greenish discolouration of the skin, teeth or hair.

Other important hazards: See TOXICOLOGICAL INFORMATION, Section 11.

SECTION 4 — FIRST AID MEASURES

Inhalation: If irritation occurs, remove victim to fresh air. If breathing is difficult, give artificial respiration. Obtain medical attention.

Skin contact: Wash skin thoroughly with mild soap and running water. Obtain medical attention if irritation develops. Launder clothing before reuse.

SECTION 4 — FIRST AID MEASURES Continued

Eye contact: Immediately flush eyes with gently running water for at least 15 minutes. Obtain medical attention if pain or irritation persists.

Ingestion: Contact a physician or Poison Control Centre. DO NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person.

SECTION 5 — FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability: Product is non-flammable. Dusts may be ignited if exposed to an extremely strong source of ignition.

Flash point: N/Av **Auto-ignition temperature:** N/Av

Lower flammable limit (% by volume): N/Av **Upper flammable limit (% by volume):** N/Av

Explosion data: *Sensitivity to mechanical impact / static discharge:* Not expected to be sensitive to mechanical impact or static discharge under normal conditions.

Oxidizing properties: N/Av

Suitable extinguishing media: Use media appropriate for surrounding materials. For fires involving fine metallic dusts, use dry chemical or smother with an inert solid, such as sand. Do not use water, molten metal reacts violently with water.

Special fire-fighting procedures/equipment: Firefighters should wear proper protective equipment and a self-contained breathing apparatus. Move containers from fire area if it can be done without risk. Do not use water to extinguish because molten metal reacts violently with water.

Hazardous combustion products: Copper oxide and other irritating fumes and smoke.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate chemically protective equipment. Keep all other personnel upwind and away from the spill/release. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

Environmental precautions: Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

Spill response/Cleanup: Wear appropriate protective equipment. Eliminate all sources of heat and flame. Ventilate area of release. Stop leak if you can do so without risk. Pick up material immediately using non-sparking tools. Use methods which do not generate dusts. Transfer to clean, dry, suitable containers for later disposal (see Section 13). Notify the appropriate authorities as required.

Prohibited materials: None known.

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: Wear appropriate protective equipment during handling. Use with adequate ventilation. Avoid inhaling vapours. Avoid contact with eyes, skin and clothing. Keep away from heat and flame. Keep away from incompatibles. Keep containers tightly closed when not in use. Wash thoroughly after handling.

Storage requirements: Store in a cool, dry, well-ventilated area away from all sources of ignition and incompatible materials. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.

Incompatible materials: Strong oxidizing agents, acids, bases, acetylene, ethylene oxide, sulphuric acid, fluorine gas.

Special packaging materials: Always keep in containers made of the same materials as the supply container.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation and engineering controls: Use general ventilation or local exhaust to keep fumes below applicable limits.

Respiratory protection: Wear a NIOSH-approved cartridge respirator for particulates or a supplied air mask if dust and/or fumes equal or exceed TLV's. Advice should be sought from respiratory protection specialists.

Protective gloves: Wear gloves to protect against thermal burns and to prevent excessive skin contact.

Eye protection: Wear safety glasses with side shields or goggles.

Other protective equipment: An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

Permissible exposure levels: See Section 2.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical form, colour and odour: Solid with silver or yellow to reddish colour, no odour.
Odour threshold: N/Av
Boiling point: N/Av
Specific gravity (water=1): 7.5 – 9.0
Coefficient of oil/water distribution: N/Av
Solubility in water: Insoluble
Volatile organic compounds (VOC's): N/Av
pH: N/Av
Evaporation rate (nBuAC=1): N/Av
Melting/freezing point: N/Av
Vapour pressure (mm Hg @ 25°C): N/Av
Vapour density (Air=1): N/Av
Percent Volatile by Weight: 0

SECTION 10 — STABILITY AND REACTIVITY

Stability and reactivity: Stable under the recommended storage and handling conditions prescribed.
Hazardous polymerization: Will not occur.
Conditions to avoid: None known.
Materials to avoid: Incompatible materials (see Section 7).
Hazardous decomposition products: None known. Refer to 'Hazardous combustion products', Section 5.

SECTION 11 — TOXICOLOGICAL INFORMATION

Routes of exposure: Skin contact, eye contact, ingestion and inhalation.
Toxicological data: There is no available data for the product itself, only for the ingredients.
LD_{50}: See Section 2; **LC_{50}:** See Section 2
Carcinogenicity: None of the ingredients are listed as carcinogens by IARC or ACGIH.
Teratogenicity, mutagenicity, other reproductive effects: This product contains Copper. There is some evidence from animal data which indicates Copper may decrease fertility in both males and females.
Sensitization to material: There is some evidence that Copper may cause allergic skin reactions only in hypersensitive individuals. Not expected to cause allergic respiratory reactions.
Synergistic materials: None known.
Conditions aggravated by exposure: None known.

SECTION 12 — ECOLOGICAL INFORMATION

Ecotoxicological information: The ecological characteristics of this product have not been fully investigated. The product should not be allowed to enter drains or water courses or be deposited where it can affect ground or surface waters. Do not discharge product unmonitored into the environment.
Chemical fate information: There is no data available on the product itself.
Aquatic toxicity: There is no data available on the product.

SECTION 13 — DISPOSAL CONSIDERATIONS

Handling for disposal: Handle waste according to recommendations in Section 7.
Methods of disposal: Containers should be disposed of in accordance with all applicable federal, provincial, state, and local regulations.

SECTION 14 — TRANSPORT INFORMATION

Canadian Transportation of Dangerous Goods Regulations (TDGR) Shipping Information:
This product is not regulated for transportation by ground within Canada.

US DOT 49 CFR information:
This product is not regulated for transportation by ground within the continental United States.

SECTION 15 — REGULATORY INFORMATION

WHMIS information:
Canadian WHMIS Classification: Class D2B (*Materials Causing Other Toxic Effects, Toxic Material*)

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

SECTION 15 — REGULATORY INFORMATION Continued

CEPA information: All ingredients are listed on the DSL.
TSCA information: All ingredients are listed on the TSCA inventory.

HMIS Rating: Health: 1*
Flammability: 0
Reactivity: 0

SECTION 16 — OTHER INFORMATION

Legend: ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CEPA: Canadian Environmental Protection Act
DSL: Domestic Substances List
HMIS: Hazardous Materials Identification System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
N/Ap: not applicable
N/Av: not available
NIOSH: National Institute of Occupational Safety and Health
OSHA: Occupational Safety & Health Administration
PEL: Permissible Exposure Limit
PSI: Pounds per Square Inch
RTECS: Registry of Toxic Effects of Chemical Substances
TSCA: Toxic Substances Control Act
TLV: Threshold Limit Values
WHMIS: Workplace Hazardous Materials Information System

References:
1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2006.
2. International Agency for Research on Cancer Monographs, searched 2007.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2007 (Chempendium, HSDB and RTECs).
4. Previous version of the Material Safety Data Sheet, dated November 19, 2003.

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