MATERIAL SAFETY DATA SHEET

RP TEMPERING™
NANO-COMPOSITE TECHNOLOGY

PAR 3 Technology, LLC
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Cookeville, TN 38501

Emergency telephone number

Poison Control: 1-800-222-1222

Phone Number: 931-528-8596

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: **EMI Copper Powder 1**
Date of Preparation: 08/08/2006

Chemical Family: Metal

Chemical Name: Copper
Formula: Cu
CAS-No.: 7440-50-8
Product code: 1015771

2. HAZARD IDENTIFICATION

Emergency Overview

Caution

May cause respiratory tract, eye and skin irritation. Toxic by inhalation and if swallowed. Dust may form explosive mixture in air.

NFPA 704

Colour:	Red-brown	**Health:**	1
Physical state:	Powder	**Fire:**	1
Odour:	Odorless	**Instability:**	0

Potential Health Effects

Principle routes of exposure: Inhalation. Skin contact.

Eye contact: Contact with eyes may cause irritation.

Skin contact: Prolonged skin contact may cause skin irritation. May cause skin discoloration.

Inhalation: May cause irritation of respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with a metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count..

Ingestion: May be toxic by ingestion.

Chronic toxicity: Repeated inhalation can cause chronic respiratory disease, liver damage, and ulcerated tissue in the nose and throat.

Aggravated Medical Conditions: Conjunctivitis of the eye, dermatitis, asthma, respiratory diseases.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %
Copper compounds, as Cu	7440-50-8	>99%

4. FIRST AID MEASURES

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

Skin contact: Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician immediately.

Ingestion: Do not induce vomiting without medical advice. If conscious, drink plenty of water.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point: Not applicable

Suitable extinguishing media: Special powder against metal fire.

Hazardous decomposition products: Metal fumes.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

Unusual hazards: Copper ignites on contact with chlorine, fluorine, chlorine trifluoride, and hydrazinium nitrate. Remove all sources of ignition. High dust formation may present an explosion hazard.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate area of all unnecessary personnel. Avoid dust formation. Avoid contact with skin, eyes and clothing. Use personal protective equipment.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Wear personal protective equipment. Sweep up and shovel into suitable containers for disposal. Dispose of promptly.

7. HANDLING AND STORAGE

Handling: Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation. Wash hands thoroughly before eating, drinking or smoking.

Storage: Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits:

Components	OSHA	ACGIH
Copper compounds, as Cu	0.1 mg/m³ TWA (fume) 1 mg/m³ TWA (dusts and mists)	0.2 mg/m³ TWA (fume) 1 mg/m³ TWA (dusts and mists)

Engineering measures: Provide appropriate exhaust ventilation at places where dust or fume is formed. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Eye protection: Tightly fitting safety goggles.

Skin and body protection: Lightweight protective clothing.

Hand protection: Impervious gloves.

Respiratory protection: Use NIOSH approved respirator when ventilation is inadequate.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour:	Red-brown	**Physical state:**	Powder
Odour:	Odorless	**Molecular weight:**	63.50
Boiling point/range (°C):	2,202.0	**pH:**	No information available
Melting point/range (°C):	1082	**Specific gravity (Water =1):**	8.800 - 9.000
Vapor pressure (mmHg):	No data available	**Evaporation rate (Water =1):**	No data available

9. PHYSICAL AND CHEMICAL PROPERTIES

Water solubility (mg/l):	Insoluble	**VOC content (%)**	No data available

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions.

Polymerization: Will not occur.

Hazardous decomposition products: Metal fumes.

Materials to avoid: Hydrazoic acid. Potassium oxide, sulfuric acid, hydrogen peroxide, hydrogen sulfide + air, bromates, iodates, chlorates, ethylene oxide, hydrazoic acid, dimethyl sulfoxide + trichloroacetic acid, copper-ammonium nitrate, sodium peroxide, sodium azide, lead azide, and acetylene compounds. Copper ignites on contact with chlorine, fluorine, chlorine trifluoride, and hydrazinium nitrate.

Conditions to avoid: Avoid dust formation. Fine dust dispersed in air may ignite.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: No data is available on the product itself

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Carcinogenic effects: Not listed by IARC, NTP or OSHA as a carcinogen.

Target Organ Effects: Copper: Skin, liver, kidney, eyes.

12. ECOLOGICAL INFORMATION

Aquatic toxicity: Copper metal can release copper ions which are highly toxic to several aquatic species
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Copper compounds, as Cu
Ecotoxicity - Fish Species Data: = 13.8 µg/L LC50 Oncorhynchus mykiss 96 h
= 23 µg/L LC50 Pimephales promelas 96 h
= 236 µg/L LC50 Lepomis macrochirus 96 h
Ecotoxicity - Water Flea Data: = 10 µg/L EC50 water flea 96 h
= 200 µg/L EC50 water flea 96 h
Ecotoxicity - Freshwater Algae Data: = 120 µg/L EC50 Scenedesmus subspicatus 72 h

Persistence and degradability: Not determined

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Waste must be disposed of in accordance with federal, state and local environmental control regulations. This product has reclamation value.

14. TRANSPORT INFORMATION

DOT (U.S.)
Proper shipping name: Not regulated.

Other shipping information: This material meets the definition of a marine pollutant. Applies only to containers with a Reportable Quantity or for shipments in bulk or via water transportation.

TDG (Canada)
Proper shipping name: Not regulated.

IMDG
Proper shipping name: Not regulated.

14. TRANSPORT INFORMATION

IATA

Proper shipping name: Not regulated.

Copper compounds, as Cu (>99%)
DOT Severe Marine Pollutants: Listed

Copper compounds, as Cu (>99%)
CERCLA/DOT RQ: 5000 lb; 2270 kg

15. REGULATORY INFORMATION

U.S. Regulations:

Not subject to TSCA 12(b) Export Notification

Components	SARA 313:
Copper compounds, as Cu (>99%)	1.0% de minimis concentration (Chemical Category N100)

State Regulations
This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

Components	State Regulations - NJ; PA; CA Prop65
Copper compounds, as Cu	Listed (NJRTK) Listed (PARTK)

Canadian WHMIS

WHMIS hazard class: Non-controlled

Canadian Ingredient Disclosure List (IDL):

Components	WHMIS Ingredient Disclosure:
Copper compounds, as Cu	1%

International Inventories

TSCA 8(b): Listed or exempt.
Canadian DSL: Listed or exempt.
EINECS: Listed or exempt.
Phillipines (PICCS): Listed.
Japan (ENCS): Listed or exempt.
Korea (KECL): Listed.
China (IECS): Listed.
Australia (AICS): Listed.

16. OTHER INFORMATION

For Industrial Use Only

HMIS
Health: 1
Fire: 1
Physical hazard: 0
PPE: X

Prepared by: PAR3 Technical Center

The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

End of Safety Data Sheet