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SAFETY DATA SHEET

Section 1- IDENTIFICATION		
COMPOSITION Cu		PRODUCT NAME Copper
SUPPLIER: Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030	RECOMMENDED USE: Laboratory Chemicals Scientific Research	EMERGENCY TELEPHONE NUMBERS US: 001-800-424-9300 Europe: 001-703-527-3887

Section 2- HAZARD(S) IDENTIFICATION	
Classification: This chemical is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)	
Physical Hazards: Not Classified	Health Hazards: Not Classified
Acute Aquatic Toxicity: Category 1 (H400)	Chronic Aquatic Toxicity: Category 1 (H410)
OSHA Defined Hazards: Not Classified	
LABEL ELEMENTS: Signal Word: Warning	
	
HAZARD STATEMENTS	
-H400: Very toxic to aquatic life	
-H410: Very toxic to aquatic life with long lasting effects.	
PRECAUTIONARY STATEMENTS	
-P273: Avoid release to the environment.	
-P391: Collect spillage.	
-P420: Store away from incompatible materials	
-P501: Dispose of contents/container to an approved waste disposal plant	
Hazards not otherwise classified (HNOC):	
-None identified.	

Section 3- COMPOSITION/INFORMATION ON INGREDIENTS		
COMPONENT	CAS-No	Molecular Weight
Copper	7440-50-8	63.55 g/mol

Section 4- FIRST AID MEASURES
GENERAL ADVICE: If exposed or concerned, get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
INHALATION: Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration. If symptoms develop or persist, consult a physician.
SKIN CONTACT: Wash off with soap and plenty of water. If skin irritation or rash occurs consult a

physician.

EYE CONTACT: Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. If eye irritation persists, consult a physician.

INGESTION: Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

MOST IMPORTANT SYMPTOMS/EFFECTS: The most important known symptoms and effects are described in Section 2.2) and/or in Section 11. Direct contact with eyes may cause temporary irritation.

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: No data available.

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media:

Carbon Dioxide (CO₂); Dry Chemical, Alcohol-Resistant Foam

Unsuitable Extinguishing Media:

No Information Available

Specific Hazards Arising from the Chemical:

Copper Oxides

Protective Equipment & Precautions for Firefighters:

As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

Firefighting Instructions/Specific Methods:

Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk.

General Fire Hazards:

No unusual fire or explosion hazards noted.

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection see Section 8.

Environmental Precautions: Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Avoid discharge into water courses, drains and onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases. See Section 12 for additional ecological information.

Methods for Containment & Clean Up: Stop the flow of material, if this is without risk. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. Do not let this chemical enter the environment, waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For disposal see Section 13.

Section 7- HANDLING AND STORAGE

Handling: Do not handle until all safety precautions have been read and understood. Avoid prolonged exposure. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains. Provide appropriate exhaust ventilation at places where dust is formed. Observe good industrial hygiene practices.

Storage:

Store in a dry and well-ventilated place. Store in original tightly closed container. Store away from incompatible materials (see Section 10).

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Component	CAS-No.	Value	Control Parameters	Basis
Copper	7440-50-8	TWA	1 mg/m ³	USA.ACGIH Threshold Limit Values (TLV)
		Remarks	Irritation Gastrointestinal Metal fume fever	
		TWA	0.2 mg/m ³	USA.ACGIH Threshold Limit Values (TLV)
		Remarks	Irritation Gastrointestinal Metal fume fever	
		TWA	1 mg/m ³	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
		TWA	0.1 mg/m ³	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
		TWA	1 mg/m ³	USA.NIOSH Pocket Guide to Chemical Hazards Recommended Exposure Limits
		PEL	0.1 mg/m ³	California Permissible Exposure Limits for Chemical Contaminants(Title 8,Article 107)

Biological Limit Values: No biological exposure limits noted

Engineering Measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment:

Eye/Face Protection: Wear safety glasses with side shields or goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and Body Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Wear appropriate chemical resistant clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection: Wear suitable respiratory equipment in case of insufficient ventilation. Use type N95 (US) or Type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal Hazards: Wear appropriate thermal protective clothing, when necessary.

Control of Environmental Exposure: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Appearance: Not available

Odor: No data available

Odor Threshold: No data available

pH: No data available

Melting Point/Range: 1083.4°C / 1982.1°F

Boiling Point/Range: 4653°C / 2567°F

Flash Point: No data available

Evaporation Rate: No data available

Flammability (solid, gas): No information available

Flammability or Exposure Limits:

Upper: No data available

Lower: No data available

Vapor Pressure: No data available

Vapor Density: No data available

Relative Density: 8.94 g/mL at 25°C (77°F)

Solubility: Insoluble

Partition coefficient; n-octanol/water: No data available

Auto Ignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: No data available

Explosive Properties: No data available

Oxidizing Properties: No data available

Specific Gravity: 8.94

Section 10- STABILITY AND REACTIVITY

Reactive Hazard: Stable and non-reactive under normal conditions of use, storage and transport.

Stability: Stable under recommended storage conditions.

Conditions to Avoid: Contact with incompatible materials

Incompatible Materials: Strong oxidizing agents, strong acids, acid chlorides, halogens

Hazardous Decomposition Products:

Hazardous decomposition products formed under fire conditions-Copper Oxides

Other decomposition products-No data available

Hazardous Polymerization: No data available

Hazardous Reactions: No data available

Section 11- TOXICOLOGICAL INFORMATION

Information on Toxicological Effects:

Acute toxicity: No data available

Inhalation: Prolonged inhalation may be harmful.

Skin Contact: No adverse effects due to skin contact are expected.

LD50 Intraperitoneal: Mouse – 3.5mg/kg

Eye Contact: May cause temporary eye irritation

Ingestion: Expected to be a low ingestion hazard

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Direct contact with eyes may cause temporary irritation

Skin Corrosion/Irritation: Prolonged skin contact may cause temporary irritation

Serious eye damage/irritation: May cause temporary eye irritation

Respiratory Sensitization: No information available

Skin Sensitization: No information available

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP or OSHA.

-IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen.

-NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen.

-OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen.

Germ Cell Mutagenicity: No information available

Reproductive Effects: No information available

Specific Target Organ Toxicity – single exposure: No information available
Specific Target Organ Toxicity – repeated exposure: No information available
Aspiration Hazard: No information available
Chronic Effects: Prolonged inhalation may be harmful.
Additional Information:
 -RTECS: GL5325000
 -Symptoms of systemic copper poisoning may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis and coma. Death may occur from shock or renal failure. Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defects and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has led to hemolytic anemia and accelerates arteriosclerosis.
 - To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated.

Section 12- ECOLOGICAL INFORMATION

Toxicity: Very toxic to aquatic life with long lasting effects.
Toxicity to Fish:
 -Crustacea – EC50 – Water flea (Daphnia magna) – 0.036 mg/l – 48.0 h
 -Fish – LC50 – Fathead Minnow (Pimephales Promelas) – 0.0319 – 0.0544 mg/l – 96.0 h
Persistence and Degradability: No information available
Bioaccumulation: No information available
Mobility in Soil: No information available
Results of PBT and vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.
Other Adverse Effects: Very toxic to aquatic life with long lasting effects. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13- DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14- TRANSPORT INFORMATION

DOT:
 Not regulated as dangerous goods

IATA:
UN-No: 3077
Proper Shipping Name: Environmentally hazardous substance, Solid, N.O.S.
Hazard Class: 9
Packing Group: III

IMDG/IMO:
UN-No: 3077
Proper Shipping Name: Environmentally hazardous substance, Solid, N.O.S.
Hazard Class: 9
Packing Group: III
EMS-No: F-A, S-F
Marine Pollutant: Yes

Further Information:
 EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods >5L for liquids or >5Kg for solids.

Section 15- REGULATORY INFORMATION

US Federal Regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D): Not regulated

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated

CERCLA Hazardous Substance List (40 CFR 302.4): Copper (CAS No: 7440-50-8) – Listed

SARA 304: Not regulated

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 313: The following components are subject to reporting levels established by SARA Title III, Section 313:

Component	CAS No.	% By Weight
Copper	7440-50-8	100

SARA 311/312 Hazards: Yes

HMIS (USA):

Health Hazard: 0

Chronic Health Hazard:

Flammability: 0

Physical Hazard: 0

National Fire Protection Association (USA):

Health Hazard: 0

Fire Hazard: 0

Reactivity Hazard: 0

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated

Clean Water Act (CWA) Section 112 (r) (40 CFR 68.130): Priority pollutant – Toxic pollutant

Safe Drinking Water Act (SDWA): Not regulated

US Massachusetts Right to Know Components: No components are subject to the Massachusetts

US New Jersey Right to Know Act Components:

Component	CAS No.	Revision Date
Copper	7440-50-8	1993-02-16

US Pennsylvania Worker and Community Right to Know Components:

Component	CAS No.	Revision Date
Copper	7440-50-8	1993-02-16

US California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

US California Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3 subd. (a)): Copper (CAS-No: 7440-50-8)

Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

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