ISOFLEX
Isotopes for Science, Medicine and Industry

Safety Data Sheet

Version 1.5
Revision Date 04/23/2024

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**Copper**
Synonyms	Enriched Copper
Chemical Formula	Cu
Molecular Weight	63.546 g/mol
CAS No.	7440-50-8
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDOUS IDENTIFICATION

Emergency Overview

Appearance: Red to brown. Warning! Can be explosive when exposed to heat or flames. Causes eye and skin irritation. Inhalation of fumes may cause metal-fume fever. May cause lung damage. May cause liver and kidney damage. Causes respiratory tract irritation.

Target Organs: Kidneys, liver, lungs

Potential Health Effects

Eye	Causes eye irritation.
Skin	Causes skin irritation. May cause skin discoloration.
Ingestion	Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage.
Inhalation	Dust is irritating to the respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count.
Chronic	Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage. May cause lung damage.

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 **Flammability = 1** **Reactivity = 0**

HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 **Flammability = 0** **Physical Hazard = 0**

HEALTH HAZARD	2
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	E

Personal Protection: Safety glasses, gloves, dust respirator

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3. COMPOSITION, INFORMATION ON INGREDIENTS

Product Name	Copper, Enriched Copper
Chemical Formula	Cu
Molecular Weight	63.546
CAS No.	7440-50-8
EINECS/ELINCS No.	231-159-6
Hazard Symbols	None listed
Risk Phrases	None listed

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4. FIRST AID MEASURES

Eyes	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin	Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.
Ingestion	Induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.
Inhalation	Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician	Individuals with Wilson's disease are more susceptible to chronic copper poisoning.

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5. FIREFIGHTING MEASURES

General Information	As in any fire, wear a self-contained breathing apparatus in pressure-demand (MSHA/NIOSH-approved or equivalent) and full protective gear. Dust can be an explosion hazard when exposed to heat or flame. Non-combustible solid in bulk form, but powdered form may ignite.
Extinguishing Media	Use extinguishing media most appropriate for the surrounding fire.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection	Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Use proper personal protective equipment as indicated in Section 8.
Environmental Precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods for Cleaning Up	Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions.

7. HANDLING AND STORAGE

Handling	Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Avoid ingestion and inhalation.
Storage	Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not expose to air.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits	Chemical Name: Copper ACGIH: 0.2 mg/m^3 TWA (fume); 1 mg/m^3 TWA (dusts and mists) NIOSH: as Cu: 1 mg/m^3 TWA (dusts and mists); 0.1 mg/m^3 TWA (fume) dusts as mists as Cu: 100 mg/m^3 IDLH OSHA - Final PELs: 0.1 mg/m^3 TWA (fume); 1 mg/m^3 TWA (dusts and mists) OSHA - Vacated PELs: 0.1 mg/m^3 TWA (fume, dusts, mists as Cu)

Personal Protective Equipment

Eyes	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or by European Standard EN166.
Skin	Wear appropriate gloves to prevent skin exposure.
Clothing	Wear appropriate protective clothing to minimize contact with skin.
Respirators	Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH- or European Standard EN 149-approved respirator when necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State	Solid
Appearance	Red to brown
Odor	None reported

Safety Data

pH	Not available		
Vapor Pressure	1 mm Hg @1628 °C		
Vapor Density	Not available		
Evaporation Rate	Not applicable		
Viscosity	Not applicable		
Boiling Point	2595 °C		
Freezing/Melting Point	1083 °C		
Autoignition Temperature	Not applicable		
Flash Point	Not applicable		
Decomposition Temperature	Not available		
NFPA Rating (estimated)	Health Hazard: 2	Flammability: 1	Reactivity Hazard: 0
Explosion Limits:			
Lower	Not available		
Upper	Not available		
Solubility	Insoluble in water		
Specific Gravity/Density	8.92		
Chemical Formula	Cu		
Molecular Weight	63.546 g/mol		

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10. STABILITY AND REACTIVITY

Chemical Stability	Stable at room temperature in closed containers under normal storage and handling conditions
Conditions to Avoid	Incompatible materials, dust generation, moisture, exposure to air
Incompatibilities with Other Materials	Liquid copper explodes on contact with water. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide, hydrazoic acid, potassium oxide, dimethyl sulfoxide + trichloroacetic acid, hydrogen peroxide, sodium peroxide, sodium azide, sulfuric acid, hydrogen sulfide + air, and lead azide. Ignites on contact with chlorine, fluorine (above 121 °C), chlorine trifluoride, and hydrazinium nitrate (above 70 °C). Incompatible with 1-bromo-2-propyne, potassium dioxide, and actylenic compounds.
Hazardous Decomposition Products	Copper fumes
Hazardous Polymerization	Has not been reported

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11. TOXICOLOGICAL INFORMATION

RTECS No.	GL5325000
CAS No.	7440-50-8
LD50/LC50	Not available

Carcinogenicity:

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology	No data available
Teratogenicity	Experimental studies show teratogenic effects in laboratory animals.
Reproductive Effects	No data available
Neurotoxicity	No data available
Mutagenicity	No data available
Other Studies	Experimental studies show tumorigenic effects in laboratory animals.

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to Fish	Mortality LOEC - *Oncorhynchus mykiss* (rainbow trout) - 0.022 mg/l - 96 h
Toxicity to Daphnia and Other Aquatic Invertebrates	Mortality NOEC - *Daphnia* - 0.004 mg/l - 24 h EC50 - *Daphnia magna* (water flea) - 0.04 - 0.05 mg/l - 48 h
Persistence and Degradability	No data available
Bioaccumulative Potential	Bioaccumulation - *Cyprinus carpio* (Carp) - 40 d- 200 mg/l Bioconcentration factor (BCF): 108
Mobility in Soil	No data available
Results of PBT and vPvB Assessment	PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted
Other Adverse Effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long-lasting effects. Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Product	Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated Packaging	Dispose of as unused product. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series	None listed
RCRA U-Series	None listed

14. TRANSPORT INFORMATION

DOT:

Proper Shipping Name	None
Non-Hazardous for Transport	This substance is considered to be non-hazardous for transport.

IATA:

Non-Hazardous for Air Transport	Non-hazardous for air transport

Contact ISOFLEX for other transportation information.

15. REGULATORY INFORMATION

REACH No.	A registration number is not available for this substance, as the substance or its uses are exempted from registration, the annual tonnage does not require a registration, or the registration is envisaged for a later registration deadline.

SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	The following components are subject to reporting levels established by SARA Title III, Section 313: Copper, CAS No. 7440-50-8, Revision Date: 2007-07-01
SARA 311/312 Hazards	Fire Hazard, Chronic Health Hazard
Massachusetts Right to Know Components	Copper, CAS No.7440-50-8, Revision Date 2007-07-01
Pennsylvania Right to Know Components	Copper, CAS No. 7440-50-8, Revision Date 2007-07-01
New Jersey Right to Know Components	Copper, CAS No. 7440-50-8, Revision Date 2007-07-01
California Prop. 65 Components	This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other reproductive harm.

16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Issuing Date	January 12, 2014
Revision Date	April 23, 2024
Revision Number	5
Revision Note	Update Supplier Address

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)

IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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