



OCI Company Ltd.

Material Safety Data Sheet

MSDS

Copper Powder

Section 1 - Chemical Product and Company Identification

TRADE NAMES : Copper Powder

Recommended use : Not available

Restriction of use : Not available

Company Identification

Company : OCI Company Ltd.

Address : 230, Dokbae-ro, Nam-gu, Incheon, KOREA

Tel No. : 82 - 32 - 860 - 6114

Section 2 - Hazards Identification

- 1) Hazard Classification Specific target organ toxicity following single exposure : 3(Respiratory System)
Specific target organ toxicity following repeated exposure : 1
Acute hazard to the aquatic environment : 1
Chronic hazard to the aquatic environment : 1

2) Warning signal

Symbol



Signal word

Danger

Hazard statement

- H335 May cause respiratory irritation
H372 Causes damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life
H410 Very toxic to aquatic life with long lasting effects

Prevention precautionary statements

- P260 Do not breathe dust/fume/gas/mist/vapours/spray
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing..
P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P314 Get medical advice/attention if you feel unwell.
P391 Collect spillage.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container to the related laws.

3) NFPA

Health Rating	No data available.
Flammability Rating	No data available.
Reactivity Rating	No data available.

Section 3 - Composition, Information on Ingredients

COMPONENT: Copper Powder

CAS No.: 7440-50-8

PERCENTAGE: 100

Section 4 - First Aid Measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.

Inhalation: Move to fresh air. Get medical attention if symptoms persist.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

Most important symptoms/effects, acute and delayed Symptoms: May cause skin and eye irritation.

Indication of immediate medical attention and special treatment needed Treatment: Treat symptomatically. Symptoms may be delayed.

Section 5 - Fire Fighting Measures

General Fire Hazards: In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical: Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the SDS for Personal Protective Equipment.

Methods and material for containment and cleaning up: Stop leak if possible without any risk. Shovel up and place in a container for salvage or disposal. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental Precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

Section 7 - Handling and Storage

Precautions for safe handling: Wear protective gloves/protective clothing/eye protection/face protection. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities: Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place.

Section 8 - Exposure Controls, Personal Protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
COPPER - Fume.	TWA	0.2 mg/m ³	US. ACGIH Threshold Limit Values (2011)
COPPER - Dust and mist. - as Cu	REL	1 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
COPPER - Fume. - as Cu	PEL	0.1 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
COPPER - Dust and mist. - as Cu	PEL	1 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
COPPER - Fume. - as Cu	TWA	0.1 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
COPPER - Dust and mist. - as Cu	TWA	1 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)
COPPER - Fume. - as Cu	TWA	0.2 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)

Appropriate Engineering Controls No data available.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) 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. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/face protection: Wear safety glasses with side shields (or goggles).

Skin Protection

Hand Protection: Chemical resistant gloves

Other: Wear suitable protective clothing.

Respiratory Protection: In case of inadequate ventilation use suitable respirator.

Hygiene measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

Section 9 - Physical and Chemical Properties

Appearance

Physical state: solid

Form: solid

Color: Red

Odor: Odorless

Odor threshold: No data available.

pH: No data available.

Melting point/freezing point: 1,083 °C

Initial boiling point and boiling range: 2,595 °C

Flash Point: Not determined.

Evaporation rate: No data available.

Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): No data available.

Flammability limit - lower (%): No data available.

Explosive limit - upper (%): No data available.

Explosive limit - lower (%): No data available.

Vapor pressure: No data available.

Vapor density: No data available.

Relative density: 8.94 (Water=1)

Solubility(ies)

Solubility in water: Insoluble in water

Solubility (other): No data available.

Partition coefficient (n-octanol/water): - 0.57

Auto-ignition temperature: No data available.

Decomposition temperature: No data available.

Viscosity: No data available.

Other information

Molecular weight: 63.55 g/mol (Cu)

Section 10 - Stability and Reactivity

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical Stability: Material is stable under normal conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur.

Conditions to Avoid: Contact with incompatible materials.

Incompatible Materials: Strong oxidizing agents. Acetylene. Chlorinated compounds. Nitric acid. Phosphorus. Oxidizable metals. Bromides. Iodides. Ethylene Oxide Hydrazine. Sulfur oxides. Acids. Chlorine. Fluorine. Avoid alkalis and/or heat.

Hazardous Decomposition Products: Fire or excessive heat may produce hazardous decomposition products.

Section 11 - Toxicological Information

Information on likely routes of exposure

Ingestion: May be harmful if swallowed.

Inhalation: May be harmful if inhaled.

Skin Contact: May cause irritation.

Eye contact: May irritate eyes.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product: No data available.

Dermal Product: No data available.

Inhalation Product: No data available.

Repeated dose toxicity Product: No data available.

Skin Corrosion/Irritation Product: May cause skin irritation.

Serious Eye Damage/Eye Irritation Product: May irritate eyes.

Respiratory or Skin Sensitization Product: Not a skin sensitizer.

Carcinogenicity Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro Product: No mutagenic components identified

In vivo Product: No mutagenic components identified

Reproductive toxicity Product: No components toxic to reproduction

Specific Target Organ Toxicity - Single Exposure Product: None known.

Specific Target Organ Toxicity - Repeated Exposure Product: None known.

Aspiration Hazard Product: Not classified

Other effects: None known.

Section 12 - Ecological Information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish Product: No data available.

Specified substance(s): COPPER LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 3.3 mg/l Mortality

Aquatic Invertebrates Product: No data available.

Specified substance(s): COPPER EC 50 (Water flea (*Daphnia magna*), 48 h): 0.102 mg/l Intoxication
LC 50 (Water flea (*Daphnia magna*), 48 h): 0.026 - 0.036 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish Product: No data available.

Aquatic Invertebrates Product: No data available.

Toxicity to Aquatic Plants Product: No data available.

Specified substance(s): COPPER LC 50 (Green algae (*Scenedesmus dimorphus*), 9 d): 0.0627 mg/l Mortality

Persistence and Degradability

Biodegradation Product: There are no data on the degradability of this product.

BOD/COD Ratio Product: No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF) Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow) Product: No data available.

Mobility in Soil: No data available.

Other Adverse Effects: Very toxic to aquatic life with long lasting effects.

Section 13 - Disposal Considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

Section 14 - Transport Information

DOT

UN Number: UN 3077

UN Proper Shipping Name: METAL POWDER, FLAMMABLE, N.O.S.

Transport Hazard Class(es)

Class(es): 4.1

Label(s): 4.1

Packing Group: II

Marine Pollutant: Yes

Special precautions for user: -

IMDG

UN Number: UN 3077

UN Proper Shipping Name: METAL POWDER, FLAMMABLE, N.O.S.

Transport Hazard Class(es)

Class(es): 4.1
Label(s): 4.1
EmS No.: F-G, S-G
Packing Group: II
Marine Pollutant: Yes
Special precautions for user: -

IATA

UN Number: UN 3077
Proper Shipping Name: METAL POWDER, FLAMMABLE, N.O.S.
Transport Hazard Class(es):
Class(es): 4.1
Label(s): 4.1
Marine Pollutant: Yes
Packing Group: II
Special precautions for user: -

Section 15 - Regulatory Information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
-------------------	---------------------

COPPER	5000 lbs.
--------	-----------

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Acute (Immediate)

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
-------------------	---------------------

COPPER	5000 lbs.
--------	-----------

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
-------------------	-----------------------------

COPPER	10000 lbs
--------	-----------

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
COPPER	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity COPPER

US. Massachusetts RTK - Substance List

Chemical Identity COPPER

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity COPPER

US. Rhode Island RTK

Chemical Identity COPPER

Inventory Status:

Australia AICS: On or in compliance with the inventory

Canada DSL Inventory List: On or in compliance with the inventory

EINECS, ELINCS or NLP: On or in compliance with the inventory

Japan (ENCS) List: Not in compliance with the inventory.

China Inv. Existing Chemical Substances: On or in compliance with the inventory

Korea Existing Chemicals Inv. (KECI): On or in compliance with the inventory

Canada NDSL Inventory: Not in compliance with the inventory.

Philippines PICCS: On or in compliance with the inventory

US TSCA Inventory: On or in compliance with the inventory

New Zealand Inventory of Chemicals: On or in compliance with the inventory

Japan ISHL Listing: Not in compliance with the inventory.

Japan Pharmacopoeia Listing: Not in compliance with the inventory.

Section 16 - Other Information

Sources : KOSHA, National Emergency Management Agency

Issue date : 05/19/2003

Last updated date : 09/14/2015

Revision number : 3