



OCI Company Ltd.

Material Safety Data Sheet

MSDS

Copper(II) Sulfate Solution

Section 1 - Chemical Product and Company Identification

TRADE NAMES : Copper(II) Sulfate Solution

Recommended use : Not available

Restriction of use : Not available

Company Identification

Company : OCI Company Ltd.

Address : 595 Hakik-dong, Nam-gu, Incheon, KOREA

Tel No. : 82 - 32 - 860 - 6114

Section 2 - Hazards Identification

- 1) Hazard Classification
- Acute toxicity (Oral) : 4
 - Skin corrosion/irritation : 2
 - Serious eye damage / Eye irritation : 2
 - Skin sensitivity : 1
 - Germ cell mutagenicity : 2
 - Reproductive toxicity : 2
 - Specific target organ toxicity following single exposure : 1
 - 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

Hazard statement

Danger

- H302 Harmful if swallowed
- H315 Causes severe skin burns and eye damage
- H317 Causes skin irritation
- H319 Causes serious eye damage
- H341 Suspected of causing genetic defects
- H370 Causes damage to organs
- H372 Causes damage to organs through prolonged or repeated exposure

Prevention precautionary statements

P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood
P260 Do not breathe dust/fume/gas/mist/vapours/spray
P264 Wash thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P280 Wear protective gloves/protective clothing/eye protection/face protection
P281 Use personal protective equipment as required
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302+P352 IF ON SKIN: Wash with plenty of soap and water
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307+P311 IF exposed: Call a POISON CENTER or doctor/physician
P308+P313 IF exposed or concerned: Get medical advice/attention
P314 Get medical advice/attention if you feel unwell
P321 Specific treatment
P330 Rinse mouth
P332+P313 If skin irritation occurs: Get medical advice/attention
P337+P313 If eye irritation persists: Get medical advice/attention
P362 Take off contaminated clothing and wash before reuse
P405 Store locked up.
P501 Dispose of contents/container to the related laws.

3) NFPA

Health Rating	3
Flammability Rating	0
Reactivity Rating	0

Section 3 - Composition, Information on Ingredients

COMPONENT: Copper (II) Sulfate Pentahydrate

CAS No.: 7758-99-8

PERCENTAGE: 20 - 25

COMPONENT: Water

CAS No.: 7732-18-5

PERCENTAGE: 75 - 80

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Skin: In case of contact, wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Ingestion: Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an

unconscious person. Call a physician immediately.

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

Section 5 - Fire Fighting Measures

Fire: Not considered to be a fire hazard.

Explosion: Not considered to be an explosion hazard. Sealed container may rupture during fire conditions from pressure water vapor release.

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. When heated above 110C (230F) material will melt. Avoid using a direct water stream on molten material as it may cause splattering.

Section 6 - Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

Section 7 - Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Solutions are corrosive to mild steel. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Section 8 - Exposure Controls, Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL): 1 mg/m³ (TWA) for copper dusts & mists as Cu

-ACGIH Threshold Limit Value (TLV): 1 mg/m³ (TWA) for copper dusts & mists as Cu

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is

lowest. If oil particles (e.g. lubricants, cutting fluids, glycerin, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

Section 9 - Physical and Chemical Properties

Appearance: Clear blue liquid

Odor: Odorless

pH: 1.0 – 1.6

Vapor Pressure: Not available

Vapor Density: Not available

Evaporation Rate: Not available

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: Not available.

Decomposition Temperature: Not available

Solubility: 100g / 100ml

Specific Gravity/Density: 1.155 – 1.175

Molecular Formula: $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

Molecular Weight: 249.68

Section 10 - Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: When heated to decomposition cupric oxide and sulfur oxide may form.

Hazardous Polymerization: Will not occur.

Incompatibilities: Substance will ignite hydroxylamine. Solutions are acidic and can react with magnesium to evolve flammable hydrogen gas. May react with acetylene to form dangerous acetylides.

Conditions to Avoid: Incompatibles.

Section 11 - Toxicological Information

Oral rat LD50: 300 mg/kg

Section 12 - Ecological Information

Environmental Fate:

Data for anhydrous material unless otherwise noted. When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater. When released into water, this material is not expected to biodegrade. When released into water, this material is not expected to evaporate

significantly. This material is expected to significantly bioaccumulate. This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. Bioaccumulation data for copper.

Environmental Toxicity:

This material is expected to be very toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l. The IC50/72-hour values for algae are less than 1 mg/l. Toxicity data for copper.

Cupric Sulfate: 96 Hr LC50 rainbow trout: 0.1 mg/L
48 Hr LC50 bluegill: 0.6 mg/L
96 Hr LC50 goldfish: 0.1 mg/L
48 Hr EC50 water flea: 0.024 mg/L

Section 13 - Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14 - Transport Information

Proper Shipping Name: COPPER SULFATE SOLUTION
Hazard Class: 9
UN/NA: UN3082
Packing Group: III

Section 15 - Regulatory Information

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes, Chronic: Yes, Fire: No, Pressure: No, Reactivity: No

Section 16 - Other Information

Sources : KOSHA, National Emergency Management Agency
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