

Material Safety Data Sheet (MSDS)

Product Name: Copper Sulphate Pentahydrate USP Grade

MSDS Generate Date: 20-05-2017

Revision Date: 30-12-2024

Supplier:

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1. Identification of the Substance/Preparation and Company

Product Name: Copper Sulphate Pentahydrate

Synonyms: Cupric Sulphate, Blue Vitriol, Bluestone

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

Molecular Weight: 249.68 g/mol

Recommended Use: Used as a reagent in laboratories, in pharmaceutical formulations (USP Grade), and for industrial and agricultural applications.

2. Hazards Identification

Classification (GHS):

- Acute toxicity (oral) – Category 4
- Skin irritation – Category 2
- Eye irritation – Category 2A
- Hazardous to aquatic environment – Acute & Chronic Category 1

Signal Word: *Warning*

Hazard Statements:

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H400: Very toxic to aquatic life.

Precautionary Statements:

- P264: Wash hands thoroughly after handling.
- P273: Avoid release to the environment.
- P280: Wear protective gloves, clothing, and eye/face protection.

3. Composition / Information on Ingredients

Chemical Name: Copper Sulphate Pentahydrate

CAS No.: 7758-99-8

EC No.: 231-847-6

Purity: ≥ 99% (USP Grade)

4. First Aid Measures

Inhalation: Move the person to fresh air. If breathing is difficult, give oxygen and seek medical attention.

Skin Contact: Wash thoroughly with soap and water. Remove contaminated clothing. Seek medical advice if irritation persists.

Eye Contact: Rinse immediately with plenty of water for at least 15 minutes. Seek medical attention.

Ingestion: Rinse mouth with water. Do not induce vomiting. Seek medical help immediately.

5. Fire-Fighting Measures

Suitable Extinguishing Media: Water spray, foam, dry chemical, or carbon dioxide.

Specific Hazards: Emits toxic fumes of sulphur oxides and copper oxides when heated.

Protective Equipment: Firefighters should wear self-contained breathing apparatus and full

protective gear.

6. Accidental Release Measures

- Avoid dust formation.
 - Evacuate area and ventilate.
 - Wear appropriate protective equipment.
 - Sweep up and place in properly labeled containers for disposal.
 - Prevent product from entering drains or waterways.
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7. Handling and Storage

Handling: Avoid contact with skin, eyes, and clothing. Avoid inhalation of dust. Use adequate ventilation.

Storage: Store in tightly closed containers, in a cool, dry, well-ventilated area away from heat and incompatible substances.

8. Exposure Controls / Personal Protection

Engineering Controls: Use in well-ventilated areas.

Personal Protective Equipment:

- **Eyes:** Chemical safety goggles.
 - **Skin:** Protective gloves and clothing.
 - **Respiratory:** Use a suitable dust respirator if airborne particles are generated.
- Hygiene Measures:** Wash hands after handling and before eating or drinking.
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9. Physical and Chemical Properties

Appearance: Blue crystalline solid

Odor: Odorless

Solubility: Freely soluble in water

Melting Point: 110°C (loses water of crystallization)

Boiling Point: Not applicable

pH (5% solution): 3.5 – 4.5

Specific Gravity: 2.28

Molecular Weight: 249.68 g/mol

10. Stability and Reactivity

Stability: Stable under normal conditions of use and storage.

Incompatible Materials: Strong acids, reducing agents, magnesium, steel.

Decomposition Products: Copper oxides and sulfur oxides.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Acute Toxicity:

- Oral LD₅₀ (rat): 300 mg/kg

Skin Irritation: Causes irritation.

Eye Irritation: Causes serious eye irritation.

Chronic Effects: Prolonged exposure may cause liver and kidney damage due to copper accumulation.

12. Ecological Information

Ecotoxicity:

- Very toxic to aquatic organisms.

- LC₅₀ (Fish): 0.1 mg/L

Persistence and Degradability: Inorganic compound, non-biodegradable.

Bioaccumulation: May accumulate in aquatic organisms.

Environmental Precautions: Avoid release into the environment.

13. Disposal Considerations

Dispose of in accordance with local, regional, and national regulations.

Do not dispose into drains or watercourses.

Contaminated packaging should be disposed of as hazardous waste.

14. Transport Information (Detailed)

UN Number: 3077

UN Proper Shipping Name: *Environmentally Hazardous Substance, Solid, N.O.S. (Copper Sulphate)*

Transport Hazard Class: 9 (Miscellaneous Dangerous Substances)

Packing Group: III

Label Required:

 *Environmentally Hazardous Substance*

Marine Pollutant: Yes

Transport by Road/Rail (ADR/RID):

- Class: 9
- Packing Group: III
- Hazard Identification No.: 90
- Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S.

Transport by Sea (IMDG):

- Class: 9
- UN No.: 3077
- Packaging Group: III
- Marine Pollutant: Yes
- EMS Number: F-A, S-F

Transport by Air (IATA):

- Class: 9
- UN No.: 3077
- Packaging Group: III
- Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S. (Copper Sulphate)
- Avoid shipment with foodstuffs and feed.

Additional Information:

- Handle with care to prevent package damage.
- Keep dry during transport.
- Avoid contact with moisture and incompatible materials.

15. Regulatory Information

Labeling according to GHS:

Hazard pictograms:

 Environment |  Exclamation mark

Hazard Statements: H302, H315, H319, H400

Regulations: Listed in ECHA (EU), TSCA (USA), and Indian BIS guidelines.

16. Other Information

Disclaimer:

The information contained herein is based on data believed to be accurate and reliable as of the revision date. The user assumes all responsibility for safe handling and use of the material.

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