MATERIAL SAFETY DATA SHEET

COPPER (II) SULPHATE PENTAHYDRATE

CAS: 7758-99-8

Section 1: Chemical Product and Company Identification

Chemical Product
Product Name: COPPER (II) SULPHATE Pentahydrate
CAS#: 7758-99-8
Synonym: Blue vitriol; Cupric sulphate pentahydrate
Chemical Name: Copper (II) Sulphate Pentahydrate
Chemical Formula: $CuSO_4 \cdot 5H_2O$

Details Of The Supplier Of The Safety Data Sheet
Company Identification: COSMO CHEMISTRY
Office No. 713, 7th Floor, Millennium Business Hub
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Section 2: Composition and Information on Ingredients

Name	CAS #	% By Weight
Copper (II) Sulphate Pentahydrate	7758-99-8	100

Toxicological Data on Ingredients:
Copper (II) Sulphate Pentahydrate

- ORAL (LD50): Acute: **300 mg/kg [Rat]**
- DERMAL (LD50): Acute: **> 2000 mg/kg [Rat]**

Section 3: Hazards Identification

Potential Acute Health Effects
Hazardous in case of **skin contact (irritant), eye contact (irritant), ingestion, inhalation**.
Potential Chronic Health Effects

- **Carcinogenic Effects:** Not available
- **Mutagenic Effects:** Mutagenic for mammalian somatic cells
- **Teratogenic Effects:** Not available
- **Developmental Toxicity:** Not available

The substance may be toxic to **kidneys and liver**.
Repeated or prolonged exposure may cause **target organ damage**.

Section 4: First Aid Measures

Eye Contact
Check for and remove contact lenses. Flush eyes with water for **at least 15 minutes**. Get medical attention.
Skin Contact
Flush skin with plenty of water. Remove contaminated clothing. Wash clothing before reuse.
Serious Skin Contact
Wash with disinfectant soap and apply anti-bacterial cream. Seek immediate medical attention.
Inhalation
Move to fresh air. If breathing stops give artificial respiration. If breathing is difficult give oxygen.
Ingestion
Do **NOT induce vomiting** unless directed by medical personnel.
Seek medical attention immediately.

Section 5: Fire and Explosion Data

Flammability: Non-flammable
Auto-Ignition Temperature: Not available
Flash Points: Not available
Flammable Limits: Not available
Products of Combustion: Not available
Explosion Hazards

- Risk from mechanical impact: Not available
- Risk from static discharge: Not available
- Slightly explosive in presence of heat

Special Remarks on Fire Hazards
Heating may release **toxic fumes**.
Acidic solutions may react with **magnesium to release hydrogen gas**.
Special Remarks on Explosion Hazards
Nitromethanes and copper salts may form **explosive materials**.

Section 6: Accidental Release Measures

Small Spill
Collect spilled solid with appropriate tools and place in a waste container. Wash contaminated surface with water.
Large Spill
Use a shovel to collect the material. Ensure concentration does not exceed TLV limits.

Section 7: Handling and Storage

Precautions

- Do not ingest
- Do not breathe dust
- Wear protective clothing
- Avoid contact with skin and eyes
- Keep away from metals and alkalis

Storage
Keep container **tightly closed**. Store in a **cool, well-ventilated area**.

Section 8: Exposure Controls / Personal Protection

Engineering Controls
Use ventilation systems to keep airborne levels below recommended limits.
Personal Protection

- **Splash goggles**
- **Lab coat**
- **Dust respirator**
- **Gloves**
  Exposure Limits
- **ACGIH (TLV): 1 mg/m³**
- **OSHA (PEL): 0.1 mg/m³**
- **NIOSH: 1 mg/m³**

Section 9: Physical and Chemical Properties

Property	Value
Physical State	Solid (Crystalline granules or powder)
Odor	Odorless
Taste	Nauseous metallic
Molecular Weight	249.69 g/mol
Color	Blue
pH (1% solution)	Not available

Additional Properties

Property	Value
Boiling Point	150°C (302°F)
Melting Point	110°C (230°F)
Specific Gravity	2.28
Vapor Pressure	Not available
Vapor Density	Not available
Volatility	Not available
Odor Threshold	Not available

Solubility

- **Easily soluble in hot water**
- **Soluble in cold water and methanol**
- **Insoluble in ethanol**

- **Insoluble in most organic solvents**

Section 10: Stability and Reactivity Data

Stability: Stable
Instability Temperature: Not available
Conditions of Instability

- **Excess heat**
- **Incompatible materials**
- **Exposure to air**

Incompatibility
Reactive with metals and alkalis.
Polymerization
Will not occur.

Section 11: Toxicological Information

Routes of Entry
Inhalation, ingestion
Toxicity to Animals

- **Oral LD50: 300 mg/kg (Rat)**
- **Dermal LD50: >2000 mg/kg (Rat)**

Chronic Effects
May damage kidneys and liver.
Acute Effects

- **Skin irritation and burns**
- **Eye irritation and corneal damage**
- **Respiratory irritation**
- **Gastrointestinal irritation if swallowed**

Symptoms may include:

- **Nausea**
- **Vomiting**
- **Diarrhea**
- **Abdominal pain**
- **Metal taste**

Section 12: Ecological Information

Ecotoxicity

- **LC50 (Goldfish): 0.1 ppm (48 hours)**
- **LC50 (Rainbow Trout): 0.1 mg/L (96 hours)**
- **LC50 (Rainbow Trout): 2.5 mg/L (96 hours)**

Copper can accumulate in plants and animals but does not biomagnify significantly.

Section 13: Disposal Considerations

Dispose copper waste according to local environmental regulations.
Recovery methods may include:

- **Ion exchange**
- **Reverse osmosis**
- **Evaporation**
- **Chemical precipitation**

Section 14: Transport Information

Land Transport (ADR-RID)

Parameter	Value
Proper Shipping Name	Environmentally Hazardous Substance, Solid, N.O.S
UN Number	3077
Hazard Class	9
Packing Group	III

Sea Transport (IMDG)
UN No: 3077
Class: 9
Packing Group: III
Air Transport (IATA)
UN No: 3077
Class: 9
Packing Group: III

Section 15: Regulatory Information

Federal and State Regulations
SARA 313 reporting: Copper compounds
CERCLA Hazardous Substance:
Copper sulphate pentahydrate 10 lbs (4.536 kg)
Other Classifications
WHMIS: Class D-2B (Toxic)
DSCL (EEC):

- **R22 – Harmful if swallowed**
- **R36/38 – Irritating to eyes and skin**
- **R50/53 – Toxic to aquatic organisms**

HMIS Rating

Category	Rating
Health	2
Fire	0
Reactivity	0

Category	Rating
Personal Protection	E

NFPA Rating

Category	Rating
Health	2
Flammability	0
Reactivity	0

Section 16: Additional Information

Protective Equipment

- Gloves
- Lab coat
- Dust respirator
- Splash goggles

Disclaimer
The information contained herein is believed to be accurate but is provided without warranty.
This document is intended only as a guide for safe handling of the material by trained personnel.
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