

## SAFETY DATA SHEET

Creation Date 19-October-2009

Revision Date 17-December-2019

Revision Number 6

### 1. Identification

**Product Name** Cupric sulfate pentahydrate

**Cat No. :** BP346-500; C489-1; C489-10; C489-500; C490-3; C490-10; C493-3; C493-10; C493-500; C494-12; C494-212; C494-250LB; C494-500; C496-12; C496-212

**CAS-No** 7758-99-8  
**Synonyms** Copper(II) sulfate pentahydrate; Blue vitriol  
(Crystalline/Powder/Granular/Technical/USP/EP/BP/Certified ACS)

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.  
**Details of the supplier of the safety data sheet**

#### Company

**Importer/Distributor**  
Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

**Manufacturer**  
Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

#### **Emergency Telephone Number**

CHEMTREC®, Inside the USA:  
800-424-9300  
CHEMTREC®, Outside the USA:  
001-703-527-3887

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

|  |            |
|--|------------|
| <b>Acute oral toxicity</b>               | Category 4 |
| <b>Serious Eye Damage/Eye Irritation</b> | Category 1 |

#### Label Elements

#### **Signal Word**

Danger

#### **Hazard Statements**

Harmful if swallowed

Causes serious eye damage



### Precautionary Statements

#### Prevention

Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
Wear protective gloves/protective clothing/eye protection/face protection

#### Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
Immediately call a POISON CENTER/doctor  
Rinse mouth

#### Disposal

Dispose of contents/container to an approved waste disposal plant

#### Other Hazards

Very toxic to aquatic life with long lasting effects

## 3. Composition/Information on Ingredients

| Component                                | CAS-No    | Weight % |
|--|-----------|----------|
| Copper (II) sulfate pentahydrate (1:1:5) | 7758-99-8 | >95      |
| Cupric sulfate                           | 7758-98-7 | -        |

## 4. First-aid measures

|   |   |
|---|---|
| <b>General Advice</b>   | If symptoms persist, call a physician.  |
| <b>Eye Contact</b>  | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.   |
| <b>Skin Contact</b>   | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. |
| <b>Inhalation</b>   | Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.      |
| <b>Ingestion</b>  | Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.             |
| <b>Most important symptoms/effects<br/>Notes to Physician</b> | Causes severe eye damage.<br>Treat symptomatically  |

## 5. Fire-fighting measures

|                                       |                          |
|---------------------------------------|--------------------------|
| <b>Unsuitable Extinguishing Media</b> | No information available |
| <b>Flash Point</b>                    | No information available |
| <b>Method -</b>                       | No information available |

**Autoignition Temperature****Explosion Limits**

|   |                          |
|---|--------------------------|
| <b>Upper</b>                            | No data available        |
| <b>Lower</b>                            | No data available        |
| <b>Sensitivity to Mechanical Impact</b> | No information available |
| <b>Sensitivity to Static Discharge</b>  | No information available |

**Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors. Do not allow run-off from fire-fighting to enter drains or water courses.

**Hazardous Combustion Products**

Sulfur oxides Copper oxides

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**NFPA**

|               |                     |                    |                         |
|---------------|---------------------|--------------------|-------------------------|
| <b>Health</b> | <b>Flammability</b> | <b>Instability</b> | <b>Physical hazards</b> |
| 2             | 0                   | 1                  | N/A                     |

**6. Accidental release measures**

|                                  |  |
|----------------------------------|--|
| <b>Personal Precautions</b>      | Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.  |
| <b>Environmental Precautions</b> | Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. Should not be released into the environment. |

**Methods for Containment and Clean Up** Sweep up or vacuum up spillage and collect in suitable container for disposal. Keep in suitable, closed containers for disposal.

**7. Handling and storage**

|                 |   |
|-----------------|---|
| <b>Handling</b> | Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. |
| <b>Storage</b>  | Keep containers tightly closed in a dry, cool and well-ventilated place.  |

**8. Exposure controls / personal protection****Exposure Guidelines**

| Component                                | Alberta | British Columbia | Ontario TWAEV | Quebec | ACGIH TLV                | OSHA PEL | NIOSH IDLH  |
|--|---------|------------------|---------------|--------|--------------------------|----------|---|
| Copper (II) sulfate pentahydrate (1:1:5) |         |                  |               |        | TWA: 1 mg/m <sup>3</sup> |          | IDLH: 100 mg/m <sup>3</sup><br>TWA: 1 mg/m <sup>3</sup> |
| Cupric sulfate                           |         |                  |               |        | TWA: 1 mg/m <sup>3</sup> |          | IDLH: 100 mg/m <sup>3</sup><br>TWA: 1 mg/m <sup>3</sup> |

**Legend**

ACGIH - American Conference of Governmental Industrial Hygienists

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

**Engineering Measures**

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment****Eye Protection**  
**Hand Protection**Goggles  
Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time                 | Glove thickness | Glove comments         |
|----------------|-----------------------------------|-----------------|------------------------|
| Natural rubber | See manufacturers recommendations | -               | Splash protection only |
| Nitrile rubber |                                   |                 |                        |
| Neoprene       |                                   |                 |                        |
| PVC            |                                   |                 |                        |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Particulates filter conforming to EN 143

When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls**

Prevent product from entering drains. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

|   |                          |
|---|--------------------------|
| <b>Physical State</b>                         | Solid                    |
| <b>Appearance</b>                             | Blue                     |
| <b>Odor</b>                                   | Odorless                 |
| <b>Odor Threshold</b>                         | No information available |
| <b>pH</b>                                     | 3.5-4.5 5% aq. solution  |
| <b>Melting Point/Range</b>                    | 110 °C / 230 °F          |
| <b>Boiling Point/Range</b>                    | No information available |
| <b>Flash Point</b>                            | No information available |
| <b>Evaporation Rate</b>                       | Not applicable           |
| <b>Flammability (solid,gas)</b>               | No information available |
| <b>Flammability or explosive limits</b>       |                          |
| <b>Upper</b>                                  | No data available        |
| <b>Lower</b>                                  | No data available        |
| <b>Vapor Pressure</b>                         | 7.3 mmHg @ 25 °C         |
| <b>Vapor Density</b>                          | Not applicable           |
| <b>Specific Gravity</b>                       | No information available |
| <b>Solubility</b>                             | Soluble in water         |
| <b>Partition coefficient; n-octanol/water</b> | No data available        |
| <b>Autoignition Temperature</b>               |                          |
| <b>Decomposition Temperature</b>              | No information available |
| <b>Viscosity</b>                              | Not applicable           |
| <b>Molecular Formula</b>                      | CuO4S.5H2O               |
| <b>Molecular Weight</b>                       | 249.68                   |

## 10. Stability and reactivity

|   |   |
|---|---|
| <b>Reactive Hazard</b>                  | None known, based on information available                |
| <b>Stability</b>                        | Stable under normal conditions. Hygroscopic.              |
| <b>Conditions to Avoid</b>              | Avoid dust formation. Incompatible products. Excess heat. |
| <b>Incompatible Materials</b>           | Strong oxidizing agents                                   |
| <b>Hazardous Decomposition Products</b> | Sulfur oxides, Copper oxides                              |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.                  |
| <b>Hazardous Reactions</b>              | None under normal processing.                             |

## 11. Toxicological information

### Acute Toxicity

#### Product Information Component Information

| Component                                | LD50 Oral  | LD50 Dermal                                       | LC50 Inhalation |
|--|--|---|-----------------|
| Copper (II) sulfate pentahydrate (1:1:5) | LD50 = 960 mg/kg ( Rat )<br>LD50 = 300 mg/kg ( Rat ) | LD50 > 8 g/kg ( Rabbit )<br>LD50 > 2 g/kg ( Rat ) | Not listed      |
| Cupric sulfate                           | LD50 = 481 mg/kg ( Rat )                             | LD50 > 1000 mg/kg ( Rabbit )                      | Not listed      |

**Toxicologically Synergistic Products** No information available

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

|                        |  |
|------------------------|--|
| <b>Irritation</b>      | Irritating to eyes and skin  |
| <b>Sensitization</b>   | No information available   |
| <b>Carcinogenicity</b> | The table below indicates whether each agency has listed any ingredient as a carcinogen. |

| Component                                | CAS-No    | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|--|-----------|------------|------------|------------|------------|------------|
| Copper (II) sulfate pentahydrate (1:1:5) | 7758-99-8 | Not listed | Not listed | Not listed | Not listed | Not listed |
| Cupric sulfate                           | 7758-98-7 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** None known

**STOT - repeated exposure** None known

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** No information available

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

| Component                                | Freshwater Algae | Freshwater Fish                                  | Microtox  | Water Flea            |
|--|------------------|--|---|-----------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | Not listed       | Onchorhynchus mykiss:<br>LC50 = 0.1-2.5 mg/L/96h | Photobacterium phosphoreum: EC50 = 0.25 mg/L/30min as Cu++<br>Photobacterium phosphoreum EC50= 1.3 mg/L/5 min as Cu++ | EC50 = 0.24 mg/L/48h  |
| Cupric sulfate                           | Not listed       | LC50: = 0.1 mg/L, 96h (Onchorhynchus mykiss)     | Not listed  | EC50 = 0.024 mg/L/48h |

**Persistence and Degradability** May persist based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its water solubility.

### 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

**DOT**

**UN-No** UN3077  
**Proper Shipping Name** Environmentally hazardous substances, solid, n.o.s.  
**Hazard Class** 9  
**Packing Group** III

**TDG**

**UN-No** UN3077  
**Proper Shipping Name** Environmentally hazardous substances, solid, n.o.s.  
**Hazard Class** 9  
**Packing Group** III

**IATA**

**UN-No** UN3077  
**Proper Shipping Name** Environmentally hazardous substances, solid, n.o.s.  
**Hazard Class** 9  
**Packing Group** III

**IMDG/IMO**

**UN-No** UN3077  
**Proper Shipping Name** Environmentally hazardous substances, solid, n.o.s.  
**Hazard Class** 9  
**Packing Group** III

### 15. Regulatory information

**International Inventories**

| Component                                | DSL | NDSL | TSCA | EINECS    | ELINCS | PICCS | ENCS | AICS | KECL     | IECSC |
|--|-----|------|------|-----------|--------|-------|------|------|----------|-------|
| Copper (II) sulfate pentahydrate (1:1:5) | -   | -    | -    | -         | -      | X     | X    | X    | -        | X     |
| Cupric sulfate                           | X   | -    | X    | 231-847-6 | -      | X     | X    | X    | KE-08956 | X     |

**Legend**

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**ENCS** - Japanese Existing and New Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**IECSC** - Chinese Inventory of Existing Chemical Substances

**Canada**

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

| Component                                | Canada - National Pollutant Release Inventory (NPRI) | Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances | Canada's Chemicals Management Plan (CEPA) |
|--|--|--|---|
| Copper (II) sulfate pentahydrate (1:1:5) | Part 1, Group A Substance                            |  |   |
| Cupric sulfate                           | Part 1, Group A Substance                            |  |   |

**Legend** NPRI - National Pollutant Release Inventory

## 16. Other information

**Prepared By** Regulatory Affairs  
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**Revision Summary** This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

**Disclaimer**

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**End of SDS**