

# MATERIAL SAFETY DATA SHEET

## Copper Sulphate

### SECTION I. MATERIAL IDENTIFICATION

|                   |   |
|-------------------|---|
| Common Name       | <b>Copper Sulphate / Copper Sulfate</b>   |
| Synonyms          | Blue Vitrol, Bluestone, Cupric Sulfate    |
| Molecular Formula | $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ |
| EPA Reg. Number   | 46923-4                                   |
| CAS Number        | 7758-99-8                                 |
| SIC Number        | 28199 C 29                                |

### SECTION II. PHYSICAL DATA

|                                |   |
|--------------------------------|---|
| Physical State                 | Blue crystals or powder                                       |
| Boiling Point                  | -5 H <sub>2</sub> O @ 150° F                                  |
| Melting Point                  | -4 H <sub>2</sub> O @ 110° F                                  |
| Specific Gravity               | 2.284   |
| Solubility in H <sub>2</sub> O | 22.37% @ 0° C<br>117.95% @ 100° C                             |
| Solubility in other solvents   | Soluble in methanol, glycerol and slightly soluble in ethanol |
| Appearance                     | Blue crystals or powder                                       |
| Odor                           | Odorless  |

### SECTION III. FIRE AND EXPLOSION DATA

|                                    |  |
|------------------------------------|--|
| Flash Point                        | Not applicable   |
| Flammable Limits                   | Not flammable. If heated above 400° C it can decompose to emit toxic fumes of oxide and sulfur.  |
| Extinguishing Media                | Copper Sulfate does not burn nor will it support combustion. If stored with other combustible products use water, CO <sub>2</sub> or dry chemical.   |
| Special Fire Fighting Instructions | If dry heated above 600° C, SO <sub>2</sub> is evolved. If water is used it will solubilize the Copper Sulfate and care should be taken to keep such water out of streams or other water bodies. |
| Fire and Explosion Hazards         | None   |

### SECTION IV. REACTIVITY DATA

|                                  |   |
|----------------------------------|---|
| Stability                        | Stable  |
| Conditions to Avoid              | Product is highly soluble, but does not react with water.   |
| Incompatibility                  | None known when product remains dry. Product readily dissolves in water. Solutions are mildly corrosive to steel. Store solutions in plastic or rubber or 304, 316 or 316 stainless steel. Iron and moisture should be avoided. Store in a dry area. With exposure to air it will oxidize and turn whitish. |
| Hazardous Decomposition Products | None at normal production temperatures and pressures. If dry heated above 600° C toxic sulfur may evolve.   |
| Polymerization                   | Will not occur.   |

## SECTION V. HEALTH AND HAZARD INFORMATION

|                 |  |
|-----------------|--|
| Swallowing      | Toxic orally in accordance with CLP regulations. Acute oral LD50 (male rats) = 472 mg/kg.                  |
| Skin            | Non-toxic. Skin irritation index is zero in accordance with CLP regulations.                               |
| Eyes            | Corrosive in accordance with CLP regulations. Eye irritation score: 24 hours = 41.67; 48 hours = corrosive |
| Inhalation      | Inhalation of dust may cause irritation to the upper respiratory tract.                                    |
| Carcinogenicity | None as per NTP, OSHA, and IARC.   |

## SECTION VI. FIRST AID PROCEDURES

|                 |   |
|-----------------|---|
| Swallowing      | Give large amounts of milk or water. Induce vomiting. Call Poison Control Center or a physician.                    |
| Skin            | Wash thoroughly with soap and water. Remove and wash contaminated clothing before reuse.                            |
| Eyes            | Immediately flush eyes with plenty of water for 15 minutes. Hold eyelids apart during irrigation. Call a physician. |
| Inhalation      | Remove person to fresh air and call a physician.  |
| Carcinogenicity | None  |

## SECTION VII. HANDLING PRECAUTIONS

|                               |  |
|-------------------------------|--|
| Personal Protective Equipment | Chemical safety goggles. Rubber gloves and rubber apron may be worn.   |
| Ventilation                   | TWA = 1 mg/l for Copper Sulfate. When TWA exceeds this limit in the workplace, provide appropriate ventilation. Wear an approved respirator for dusts or mists: MSHA/NIOSH approved number prefix TC-21C, or a NIOSH approved respirator with any R, P or HE filter. |

## SECTION VIII. ENVIRONMENTAL AND DISPOSAL INFORMATION

|                       |   |
|-----------------------|---|
| Aquatic Toxicity      | LC50, 24 hours, Daphnia magna equals 0.182 mg/l. Rainbow Trout equals 0.17 mg/l. Blue Gill equals 1.5 mg/l. All values are expressed as Copper Sulfate Pentahydrate. Test water was soft.   |
| Spills and Leaks      | Do not wash away crystals or powder. Recover dry if possible. If product is in a confined solution, react with soda ash to form an insoluble Copper Carbonate solid that can be scooped up. |
| Waste Disposal        | Do not reuse container. Sweep up crystals, powder or insoluble Copper Carbonate and dispose of in an approved landfill.   |
| Environmental Effects | May be dangerous if it enters the public water systems. Follow local regulation. Toxic to fish and plants. Fish toxicity critical concentration is 235 mg/l and plant toxicity is 25 mg/l.  |