

# Material Safety Data Sheet

## AG Specialties Brand Copper Sulfate

### Section 1 – Product and Company Identification

Product Name: Cupric Sulfate  
Trade Names: AG SPECIALTIES BRAND COPPER SULFATE  
Synonyms: Copper Sulfate Pentahydrate  
Chemical Formula:  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$   
MSDS Creation Date: July 2000  
MSDS Current revision date: None  
Distributed by: AG Specialties LLC; 12220 SW Grant Ave; Tigard, OR 97223; 877-601-7670  
EMERGENCY: CHEMTREC (24 Hour Emergency Response) 1-800-424-9300

### Section 2 – Composition / Information on Ingredients

Ingredient Name	CAS Number	%wt
Copper Sulfate- Pentahydrate	7758-99-8	100
	7758-98-7 (anhydrous form)	

### Section 3 – Hazards Identification

**Emergency overview:** WARNING! HARMFUL IF SWALLOWED, AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**NFPA Rating:** Health=2, Moderate; Fire=0; Reactivity=0; Contact Rating=2, Moderate  
Storage Color Code: Orange (General Storage)

#### Potential Health Effects:

**Inhalation:** Causes irritation to respiratory tract, symptoms may include coughing, sore throat, and shortness of breath. May result in ulceration and perforation of respiratory tract. When heated, this compound may give off copper fume, which can cause symptoms similar to the common cold, including chills and stuffiness of the head.

**Skin Contact:** May cause irritation and itching.

**Eye Contact:** Dust may cause irritation. Contact may cause conjunctivitis, ulceration, or clouding of the cornea.

**Ingestion:** May cause burning pain in the mouth, esophagus, and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste, and diarrhea may occur. If vomiting does not occur immediately systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects, paralysis and coma. Death may occur from shock or renal failure. Fatalities have occurred as a result of ingesting gram quantities of copper sulfate.

**Chronic Exposure:** Prolonged or repeated skin exposure may cause dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, blood and liver damage, ulceration and perforation of the nasal septum, runny nose, metallic taste, and atrophic changes and irritation of the mucous membranes.

**Aggravation of Pre-existing Condition:** Persons with pre-existing skin disorders, impaired liver, kidney, or pulmonary function, glucose 6-phosphate-dehydrogenase deficiency, or pre-existing Wilson's disease may be more susceptible to the effects of this material.

## Section 4 – First aid Measures

**Inhalation:** Remove from exposure area to fresh air immediately. If breathing is difficult, oxygen may be administered by a qualified operator. If not breathing, give artificial respiration. Call a physician.

**Skin Contact:** 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.

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

**Ingestion:** Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

## Section 5 – Fire-Fighting Measures

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

**Extinguishing Media:** Use any standard agent suitable for surrounding structural fire or for other chemicals that may be involved.

**Firefighting:** Wear appropriate self-contained positive pressure breathing apparatus. When heated above 110C (230F) material will melt. Avoid using a direct water stream on molten material as it may cause spattering.

**Hazardous Combustion Products:** None

## Section 6 – Accidental Release Measures

**In Case of Spill:** 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. US Regulations (CERCLA) require reporting spills and releases to soil, water, and air in excess of reportable quantities. The toll free telephone number for the US Coast Guard National Response Center is (800) 424-8802.

## Section 7 – Handling and Storage

**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 the 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

### Exposure Limits, Airborne:

OSHA Permissible Exposure Limit (PEL): 1 mg/m<sup>3</sup> (TWA) for copper dusts and mists as Cu

ACGIH Threshold Limit Value (TLV): 1mg/m<sup>3</sup> (TWA) for copper dusts and mists as Cu

**Ventilation:** 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.

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

**Clothing:** Wear protective gloves and clean body-covering clothing.

**Gloves:** Wear cotton or canvas protective gloves to prevent excessive contact with this product.

**Respirator:** 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, glycerine, 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.

**EMERGENCY WASH FACILITIES:** Where there is the potential that an employee's eyes and/or skin may be exposed to this product, the employer should provide an eye wash fountain and safety shower or another source of running water within the immediate work area.

## Section 9 – Physical and Chemical Properties

**Description:** Transparent blue triclinic crystals or crystalline granule or powder

**Specific Gravity:** 2.28 @ 15.6C/4C

**ph:** 4.0 @ 0.2 M% solution

**Melting Point:** 110C (230F) Loses 4H<sub>2</sub>O @ this temperature

**Boiling Point:** >150C (>302F) Decomposes with loss of 5H<sub>2</sub>O

**Vapor Pressure:** No information found

**Water Solubility:** 31.6g/100cc H<sub>2</sub>O @ 0C (32F)

## Section 10 – Stability and Reactivity

**Stability:** Stable under ordinary conditions of use and storage.

**Reactivity:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatibles

**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 acetyl ides.

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

**Polymerization:** Will not occur

## Section 11 – Toxicological Information

**Rat:** Oral LD50: 300 mg/kg. Investigated as a tumorigen, mutagen.

Ingredient

NTP Carcinogen

IARC Category

Cupric Sulfate

None

None

## 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 1mg/l. The IC50/72-hour values for algae are less than 1mg/l. Toxicity data for copper.

## 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

**US DOT Shipping name:** RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CUPRIC SULFATE)

**US DOT Hazard Class:** 9 – Miscellaneous hazardous material.

**US DOT Identification Number:** UN 3077

**US DOT Packing Group:** III

**US DOT Label Code:** 9

**Reportable Quantity:** 400 lb

## Section 15 – Other Information

*NFPA Ratings:* Health: 2, Flammability: 0, Reactivity: 0

*Label Hazard Warning:* WARNING! HARMFUL IF SWALLOWED, AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

*Label Precautions:*

- Avoid contact with eyes, skin and clothing.
- Wash thoroughly after handling.
- Avoid breathing dust.
- Keep container closed.
- Use only with adequate ventilation.

*Label First Aid:* If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. Customers are responsible for compliance with local, state and federal regulations that may be pertinent in the storage, application and disposal of this product.

*Product Use:* Fertilizer and animal feed ingredient additive.

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