

Material Safety Data Sheet

Copper Sulfate, Pentahydrate, GR ACS



Section 1. Product and Company Identification

Product name : Copper Sulfate, Pentahydrate, GR ACS
Product code : 1.02790
Synonym : Copper (II) Sulfate; Blue Vitriol
Material uses : Other non-specified industry: Analytical reagent.
Manufacturer : EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday - Friday: 8:00 - 5:00 PM
Validation date : **1/8/2008.**
Print date : 1/8/2008.
In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state : Solid. (Crystalline solid. Powder.)
Odor : Odorless.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : WARNING!
HARMFUL IF INHALED OR SWALLOWED.
CAUSES SEVERE RESPIRATORY TRACT AND EYE IRRITATION.
CAUSES SKIN IRRITATION.
MAY CAUSE EYE INJURY.
Do not ingest. Avoid contact with skin and clothing. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes : Severely irritating to eyes.
Skin : Irritating to skin.
Inhalation : Toxic by inhalation. Severely irritating to the respiratory system.
Ingestion : Toxic if swallowed.
Carcinogenic effects : No known significant effects or critical hazards.
Mutagenic effects : No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation.

See toxicological information (section 11)

Continued on Next Page

Section 3. Composition/Information on Ingredients

United States

<u>Name</u>	<u>CAS number</u>	<u>% by Weight</u>
Cupric Sulfate, Pentahydrate	7758-99-8	100

Section 4. First Aid Measures

- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire Fighting Measures

Flammability of the product : No specific hazard.

Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

Section 7. Handling and Storage

- Handling** : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
Recommended: safety glasses with side-shields
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Body: Recommended: lab coat
- Respiratory** : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: nitrile rubber
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

- Physical state** : Solid. (Crystalline solid. Powder.)
- Color** : Blue.
- Odor** : Odorless.
- Molecular weight** : 249.7 g/mole
- Molecular formula** : $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
- Melting/freezing point** : Decomposition temperature: 110°C (230°F)

Section 10. Stability and Reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Air sensitive. Absorbs moisture from the air.
- Hazardous decomposition products** : sulfur oxides (SO_2 , SO_3 etc.) Copper. fumes
- Hazardous polymerization** : Will not occur.

Section 11. Toxicological Information

Toxicity data

United States

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Cupric Sulfate, Pentahydrate	LD50	300 mg/kg	Oral	Rat
	LD50	43 mg/kg	Oral	Mouse
	LD50	693 mg/kg	Oral	chicken
	LDLo	5 mg/kg	Oral	Domestic Animals.
	LDLo	60 mg/kg	Oral	Dog
	LDLo	300 mg/kg	Oral	wild bird species

Other toxic effects on humans : Very hazardous in case of ingestion, .
Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant).

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity /
Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : Severely irritating to the respiratory system.

Eyes : Severely irritating to eyes.

Skin : Irritating to skin.

Section 12. Ecological Information

Ecotoxicity data

United States

<u>Product/ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
Cupric Sulfate, Pentahydrate	Daphnia magna (EC50)	48 hour/hours	0.18 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.032 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.13 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	0.892 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	1.2 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	1.3 mg/l

Environmental precautions : Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Products of degradation : These products are sulfur oxides (SO₂, SO₃ etc.). Some metallic oxides.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.


Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Section 13. Disposal Considerations

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CUPRIC SULFATE)	9	III		Reportable quantity 10 lbs. (4.536 kg)

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Toxic material
Irritating material

U.S. Federal regulations : TSCA 8(b) inventory: Listed

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Cupric Sulfate, Pentahydrate
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Cupric Sulfate, Pentahydrate : Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Cupric Sulfate, Pentahydrate

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: Cupric Sulfate, Pentahydrate : (environmental hazard, generic environmental hazard)
New Jersey: Cupric Sulfate, Pentahydrate

Canada

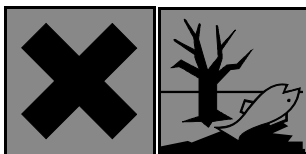
WHMIS (Canada) : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA DSL/CEPA NDSL : No products were found.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard symbol/symbols :



Section 15. Regulatory Information

- Risk phrases** : R22- Harmful if swallowed.
R36/38- Irritating to eyes and skin.
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Safety phrases** : S2- Keep out of the reach of children.
S22- Do not breathe dust.
S60- This material and its container must be disposed of as hazardous waste.
S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

International regulations

- International lists** : Australia (NICNAS): Cupric Sulfate, Pentahydrate

China: Cupric Sulfate, Pentahydrate

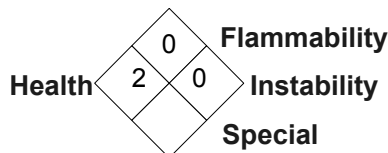
Japan (METI): Cupric Sulfate, Pentahydrate

Philippines (RA6969): Cupric Sulfate, Pentahydrate

Section 16. Other Information

- Label requirements** : WARNING!
HARMFUL IF INHALED OR SWALLOWED.
CAUSES SEVERE RESPIRATORY TRACT AND EYE IRRITATION.
CAUSES SKIN IRRITATION.
MAY CAUSE EYE INJURY.

National Fire Protection Association (U.S.A.) :



Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.