



Material Safety Data Sheet Copper Sulphate Pentahydrate

Edition: 01/11/2018

In compliance with Regulation (EC) No. 453/2010

1) Identification of substance/preparation and of the company undertaking

Material Copper Sulphate Pentahydrate
Synonyms: Copper (II) sulfate pentahydrate, Copper sulfate pentahydrate, Cupric sulphate pentahydrate,
Product form: Substance
EC No 231-818-8
CAS No 7757-79-1
REACH Registration No 01-2119520566-40-0016
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Product Uses

In agriculture as a soil additive, pesticide; feed additive; germicide; leather and textile mordant; pigment; electroplating and electro refining of copper; medicine; wood and pulp preservative; engraving and lithography; in mining ore treatment; steel and rubber processing.

2) Hazards identification.

This material is hazardous; HAZARDOUS SUBSTANCE.

Classified as Dangerous Goods for Transport by Sea, Air, Road and Rail; DANGEROUS GOODS.

Hazard Class: Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. Very toxic to aquatic life. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Poisons Schedule: S6 Poison.

M Factor 10

3) Composition/information on ingredient

Components	EC Number	CAS Number	Proportion	Hazard Class
Copper Sulphate pentahydrate	231-847-6	7758-99-8	100%	H302, H315, H319, H400, H401

4) First Aid Measures

Skin contact:

Take off contaminated clothes and wash with soap and plenty of water all the contaminated parts of the body. In case of irritation seek medical advice.

Eye contact:

Wash immediately with plenty of water for at least 15 minutes. Seek medical advice.

Ingestion:

If swallowed seek immediately medical advice. Show this safety data sheet or the label.

Inhalation:

If possible reduce exposure using fresh air. Remove from exposure take the person to a well aerated place and keep calm. Seek medical advice.

5) Fire Fighting

Suitable extinguishing media:

Product is not flammable. Use extinguishing media appropriate for surrounding fire (micronized water, CO₂, foam). Collect the contaminated water to avoid reaching of sewers or water courses.

Special hazards arising from the substance: Avoid breathing fumes that could be toxic (presence of sulphur oxides SO_x).

Special protective equipment for fire-fighters:

Fire-fighters should wear proper protective equipment and self-contained (positive pressure if available) breathing apparatus with full face piece.

6) Accidental Release Measures

Personal precautions:

Protect adequately all the body parts. The air passages must be protected (suitable filter mask) if the material is in microcrystals form (higher probability that the product forms dust). Keep away unauthorized people, children and animals.

Environmental precautions:

Use sand or soil to contain the loss of product. Avoid the possibility that significant quantities of product can enter water courses or sewer; if this should happen advise immediately the local competent authority.

Methods for cleaning up:

Cover the product with sand or soil and carefully clean up all the product. Put it into another clean and dry container, close and remove it from the area. Do not clean contaminated area with water.

7) Handling/Storage

Precautions for safe handling:

Avoid dust formation. Do not breathe dust. Handle in a well ventilated area or wear adequate respiratory protection (anti-dust mask). Avoid contact with skin and eyes wearing working clothes, gloves and protective glasses. Do not eat, smoke or drink during use. After use keep the packaging well closed.

Conditions for safe storage, including any incompatibilities:

Keep in sealed containers away from humidity and sunlight. Store the product in a well ventilated warehouse away from flammable product. Keep out of the reach of children, animal and unauthorized people. Keep away from food, drink and feeding stuff.

8) Exposure Controls/Personal Protection

Occupational Exposure Limits:

No value assigned for this specific material. However, Exposure Standard(s) for constituent(s):

Copper dusts & mists (as Cu): 8hr TWA = 1 mg/m³

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

These Exposure Standards are guides to be used in the control of occupational health hazards.

All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Engineering controls:

Natural ventilation should be adequate under normal use conditions.

Personal Protective Equipment:

Avoid contact with eyes and skin. Do not inhale dust. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use wash contaminated clothing. Wear rubber gloves while handling the product.

9) Physical/Chemical Properties

Appearance	Blue crystals
Molecular formula	CuSO ₄ .5H ₂ O
Melting Point	Decomposes at 650°C
Specific Gravity	2.2840 g/cm ³
Flash Point	Not applicable (does not burn)
Flamm. Limit LEL	Not applicable
Flamm. Limit UEL	Not applicable
Solubility in Water	Very soluble
Vapour Pressure	7.3 mmHg at 25°C
pH Value	4.0 (0.2 M @ 4°C)
Molecular Weight	249.69
Dehydration:	The pentahydrate loses two water molecules of hydration at 30°C, 2 more at 110°C and becomes anhydrous by 250°C.

10) Stability/Reactivity

Chemical stability:	Stable under normal conditions of use.
Conditions to avoid:	Avoid dust generation. Avoid contact with foodstuffs.
Incompatible materials:	Incompatible with finely powdered metals, steel, nitromethane, hydrazine, hydroxyl amine and magnesium.
Hazardous decomposition products:	Oxides of copper. Oxides of sulfur.
Hazardous reactions:	Contact with magnesium metal can generate flammable hydrogen gas. Will ignite hydroxyl amine. Can corrode most ferrous based metals.

11) Toxicological Info

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhea, and gastrointestinal irritation.

Eye contact: An eye irritant.

Skin contact: Contact with skin will result in irritation.

Inhalation: Breathing in dust may result in respiratory irritation.

Long Term Effects: No information available for the product.

Toxicological Data:

Oral (rat) LD50 : 300 mg/kg

Skin (rat) LD50 : > 2 gm/kg

12) Ecological Information

Ecotoxicity:

Avoid contaminating waterways. Unspecified in soil, copper sulfate is partly washed down to lower levels, partly bound by soil components, and partly oxidatively transformed. Copper has a strong affinity for hydrous iron and manganese oxides, clays, carbonate minerals, and organic matter. Sorption to these materials ... suspended in the water column & in the bed sediments, results in relative enrichment of the solid phase and reduction in dissolved levels.

Aquatic toxicity:

Very toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment.

EC50 algae, 5 days (*Selenastrum capricornutum*): 0.0031 mg/L (1)

48hr EC50 (*Daphnia magna*): 0.18mg/L (1)

96hr LC50 (rainbow trout): 0.032mg/L (1)

Environmental:

Copper is accumulated by plants and animals, but it does not appear to biomagnify from plants to animals. This lack of biomagnification appears common with heavy metals. In air, copper aerosols (in general) have a residence time of 2 to 10 days in an unpolluted atmosphere and 0.1 to > 4 days in polluted, urban areas.

Physical:

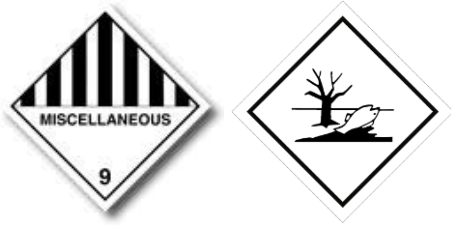
No evidence was found to indicate that there is any biotransformation process for copper compounds which would have a significant bearing on the fate of copper in aquatic environments.

13) Disposal Considerations

Disposal methods:

Refer to local government authority for disposal recommendations.

14) Transport Information



ROAD AND RAIL TRANSPORT

Classified as Dangerous Goods for Transport by Road and Rail; DANGEROUS GOODS.

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.

UN Number: 3077

DG/ADR Class: 9

Packing Group: In

MARINE TRANSPORT

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS. This material is classified as a Marine Pollutant (P) according to the International Maritime Dangerous Goods Code.

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.

UN Number: 3077

DG/ADR Class: 9

Packing Group: In

IMDG EMS Fire F-A

IMDG EMS Spill S-F

AIR TRANSPORT

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.

UN Number: 3077

DG/ADR Class: 9

Packing Group: In

15) Regulatory Information

CLASSIFICATION ACCORDING TO CLP / GHS

Signal word: WARNING



Hazard statements:

11302 Harmful if swallowed.

11315 Causes skin irritation.

11319 Causes serious eye irritation.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P501 Dispose of contents/container to ... Dispose of waste and residues in accordance with local authority requirements.

CLASSIFICATION ACCORDING TO DSD / DPD

Signal word: DANGER



N- dangerous for the environment

Xn- harmful

R-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

S-phrases:

S22 Do not breathe dust

S26 Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately

with plenty of water and seek medical advice.

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

16) Other Information

Other hazard statements:

H400 Very toxic to aquatic life.

Other precautionary statements:

P264, P270 Wash... thoroughly after handling.

P301+P312 Do not eat, drink or smoke when using this product.

IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell.

P305+P351+P338 Rinse mouth.

P337+P313 IF IN EYES: Rinse cautiously with water for several minutes.

P302+P352 Remove contact lenses, if present and easy to do. Continue

P321 rinsing. If eye irritation persists: Get medical advice/attention.

P333+P313 IF ON SKIN: Wash with plenty of soap and water.

Specific treatment (see... on this label).

P362 If skin irritation or rash occurs: Get medical advice/attention.

P391 Take off contaminated clothing and wash before reuse. Collect spillage.

Under REACH Material Safety Data Sheets (MSDS) are referred to as Safety Data Sheets (SDS).

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.