



# KANGTAI CHEMICAL

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## MATERIAL SAFETY DATA SHEET COPPER SULPHATE PENTAHYDRATE

Origin: CHINA

### 1. PRODUCT DESCRIPTION

Product name: Copper Sulphate Pentahydrate  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$   
Synonyms: Cupric Sulphate, Copper Vitrol  
Molecular Formula:  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$   
CAS number: 7758-99-8  
Hazardous class: 9, subclass 9.1, classification code 9153  
Applications: Water treatment, crop protection, fertilizer, feed additives.  
Manufacturer: ZHUCHENG KANGSHENG FORAGE ADDITIVE FACTORY CHEMICAL  
Supplier: ZHUCHENGSHI KANGTAI CHEMICAL.,LTD  
Ph.: +86-0536-6013966, Fax: +86-0536-6063197

### 2. HAZARD IDENTIFICATION

Odorless blue crystals. Can cause irreversible eye damage and severe skin irritation. Harmful if swallowed or absorbed through the skin. Avoid breathing dust or mist. Avoid contact with the skin, eyes or clothes. May cause skin sensitization in certain individuals.

Swallowing: Toxic orally in accordance with FHSLSA regulations. Acute oral LD50 (male rats) = 472 mg/Kg. Can cause irritation to the digestive tract and abdominal pain.

Skin :Slight skin irritant. Excessive exposure may cause skin irritation. Repeated exposure may cause allergic dermatitis. May cause irritation or burns on wet skin.

Eyes: Can cause severe eye irritation and may result in irreversible eye damage.

Inhalation: Inhalation of dust may cause irritation to the mucous membranes and upper respiratory tract

Carcinogenicity: None as per NTP, OSHA, and IARC.

NFPA: Health-3 / Fire-0 / Reactivity-0

HMIS: Health-3 / Fire-0 / Reactivity-0

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### 3. COMPOSITION

Exposure Limits: ACGIH TLV TWA: 1.0 mg/m<sup>3</sup> (as copper dust/mist)

OSHA PEL TWA: 1.0 mg/m<sup>3</sup> (as copper dust/mist)

### 4. FIRST AID MEASURES

EMERGENCY AND FIRST AID PROCEDURES:

Eyes: Immediately flush eyes with plenty of warm, running water for at least minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.

Skin: Wash thoroughly with soap and water. Remove and wash contaminated clothing before reuse.



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Swallowing: Give large amounts of milk or water. Induce vomiting. Immediately call a physician or poison control center.

Inhalation: Remove person to fresh air immediately. Give oxygen if breathing is difficult. If breathing has stopped, give artificial respiration. Keep person warm, quite and get medical attention.

Carcinogenicity: None

## 5. FIRE-FIGHTING MEASURES

Flash Point: Not applicable.

Flammable Limits: Not flammable. If heated above 400o C it can decompose to emit toxic fumes of oxide and sulfur.

Auto Ignition Temperature: Not determined.

Extinguishing Media: Copper Sulfate does not burn nor will it support combustion. If stored with other combustible products use water, CO2 or dry chemical.

Special Fire Fighting Instructions: If dry heated above 600o C, SO2 is evolved. If water is used it will solubalize the Copper Sulfate and care should be taken to keep such water out of streams or other water bodies.

Fire Fighting Equipment: Wear self-contained breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

Use clean-up measures that avoid dust generation. Wear NIOSH or MSHA approved respirator if dust will be generated. Cover spill with absorbent material such as seeping compound or lime. Sweep up and put into an appropriate container for proper disposal in an approved method. Prevent accidental entry of solution into streams or other bodies of water. Shovel spills into plastic bags and seal with tape.

## 7. HANDLING AND STORAGE

Signal Word: DANGER

Handling Information: Avoid breathing dust or mist. Sweep up crystals. Eye wash stations should be available in work areas. Users should wash hands before eating, drinking, smoking or using the toilet. Remove PPE immediately after handling this product. Wash outside of gloves before removing. Wash and change into clean clothing as soon as possible.

Storage Information: Store in closed containers in a cool, dry, well ventilated area away from heat sources and reducing agents. Store in original containers.

Keep away from galvanized pipe, aluminum and nylon. Place damaged containers in plastic bags.

## 8. EXPOSURE CONTROLS

Ventilation: TWA = 1 mg/l. for Copper Sulfate. When TWA exceeds this limit in the workplace, provide appropriate ventilation.

Respiratory Protection: 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. Alternatively, provide respiratory protection equipment in accordance with Paragraph 1910.134 of Title 29 of the



Code of Federal Regulations.

Eye Protection: Use safety glasses with side shields or goggles.

Skin Protection: Applicators and other handlers should wear longsleeved shirts and long pants,

waterproof gloves, shoes plus socks and protective eyewear. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with product's concentrate. Do not reuse them. Keep and wash PPE separately from other laundry.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Blue crystals or powder

Boiling Point: -5H<sub>2</sub>O @ 150oC

Melting Point: -4H<sub>2</sub>O @ 110oC

Vapor Density: NA

Specific Gravity: 2.284

Solubility in H<sub>2</sub>O: 22.37% @ 0oC 117.95% @ 100oC

Solubility in Other Solvents: Soluble in methanol, glycerol and slightly soluble in ethanol.

Molecular Weight: 249.68

Appearance: Transparent blue crystals

Odor: Odorless

## 10. STABILITY AND REACTIVITY

Stability: Stable

Conditions to Avoid: Product is highly soluble, but does not react with water.

Incompatibility: Solutions are mildly corrosive to steel. Store solutions in plastic or rubber or 304, 347 or 316 stainless steel. Iron and moisture should be avoided. Store in a dry area. Incompatible with aluminum powder, acetylene gas, hydroxylamine, magnesium and moisture. Contact with magnesium can generate dangerous levels of hydrogen gas. With exposure to air it will oxidize and turn whitish.

Hazardous Decomposition Products: None at normal production temperatures and pressures. If dry heated above 600oC toxic sulfur may evolve.

Polymerization: Will not occur.

## 11. TOXICOLOGICAL INFORMATION

Inhalation: LC<sub>50</sub> > 2.95 mg/L (rat) Inhalation of dust can result in irritation of nasal mucous membranes and sometimes of the pharynx, on occasion ulceration with perforation of the nasal septum.

Skin: LD<sub>50</sub> > 8.0 g/kg (rabbit)

Ingestion: LD<sub>50</sub> > 472.5 mg/kg (rat)

Primary Eye Irritation: Corrosive, irreversible eye damage.

Primary Skin Irritation: No skin irritation.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.



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Measures against circulatory shock, respiratory depression and convulsions may be needed. Wilson's disease can be aggravated by excessive exposure. Symptoms include nausea, vomiting, epigastria pain, diarrhea, dizziness, jaundice, and general debility.

### 12. ECOLOGICAL INFORMATION

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.

### 13. DISPOSAL CONSIDERATIONS

Comply with Federal, State and local regulations on reporting spills. 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.

Do not reuse container. Comply with Federal, State and local environmental control regulations. Sweep up crystals, powder or insoluble Copper Carbonate and dispose of in an approved landfill.

### 14. TRANSPORTATION

DOT Shipping Name RQ, Environmentally Hazardous Substance, Solid, NOS, (CUPRIC SULFATE), 9, UN3077, PGIII, ERG 171

Reportable Quantity (RQ): 10 pounds (4.54 kg)

Not hazardous when shipping less than 10 pounds

Note: Marine pollutant

Copper Sulphate is transported by railway transport in covered railcars, automobile transport and sea transport in containers in accordance with regulations of hazardous materials transportation.

**Packing:** UN-approved 1250 kg PE/PP big bags & 25 kg PE bags stowed on pallets, shrink wrapped

### 15. REGULATORY INFORMATION

**NOTICE:** The information herein is presented in good faith and believed to be accurate. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with Federal, State, and local laws. SARA 313 Information; This product contains the following substance subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: COPPER COMPOUND > 1.0% SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following category:

#### **ACUTE HEALTH HAZARD**

**OSHA:** This product is considered hazardous under the OSHA Hazardous Communication Standard (29 CFR 1910.1200).



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**TSCA:** Listed on the Chemical Inventory

**CERCLA Hazardous Substances:** RQ is not assigned to the broad class of copper compounds.

**RCRA:** When discarding this material as supplied, it does not meet RCRA characteristic definition if ignitability, corrosiveness, reactivity, and is not listed in 40CFR 261.33. This product contains Copper Sulfate and is subject to the reporting requirements of Section 13 of the

Emergency Planning and Community-Right-to-Know-Act of 1986(40 CFR 372).

**Storage:** Store in a dry place.

**Other Precautions:** None other than those stated in the MSDS or on the package.

### 16. ADDITIONAL INFORMATION

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Kangtai chemical extends no warranty and assumes no responsibility for the accuracy of the content and disclaims all liability for reliance thereon. Kangtai chemical makes no representation or guarantee as the suitability of this information to a particular application of the substance covered in this Material Safety Data Sheet. Any customer must carefully assess the applicability of any information contained herein in regards to the particular use to which the customer puts the material. The customer of this product should be evaluated to determine if additional precautions are required.