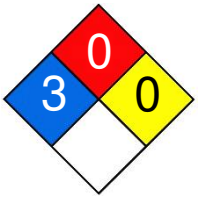
Material Safety Data Sheets



Revision 2

1. IDENTIFICATION

Product Name	**Copper sulphate, pentahydrate**
Other Names	Copper(II) sulphate, pentahydrate
Uses	Industrial, professional, consumer uses; Absorbents; Ceramics; Coatings and inks; Cosmetics; Electroplating and galvanic; Fertiliser; Glass; Laboratory chemicals; Lubricants and greases; Leather dyes; Mineral flotation; Raw material for non-ferrous smelting; Non-metal surface treatment; Pigments; Processing aids; Putties, fillers, construction chemicals; Polishes ans waxes; Photochemicals; Raw material for production of other compounds and fine chemicals; Rubber and plastic; Washing and cleaning products; Catalyst; Textile dyes; Adhesives; Water treatment.
Chemical Family	No Data Available
Chemical Formula	$CuSO_4.5H_2O$
Chemical Name	Sulfuric acid, copper(2+) salt (1:1), pentahydrate
Product Description	No Data Available
Company	**Arman sina.co**
Contact Information	info@armansina.com **www.armansina.com**

2. HAZARD IDENTIFICATION

Hazard Categories

Acute Toxicity (Oral)

Serious Eye Damage/Irritation

Acute Hazard To The Aquatic Environment

Long-term Hazard To The Aquatic Environment

Risk Phrases

Harmful if swallowed.

Causes serious eye damage.

Very toxic to aquatic life with long lasting effects.

Safety Phrases

Wear eye protection/face protection.

Avoid release to the environment.

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

IF IN EYES:Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor.

Collect spillage.

IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.

Rinse mouth.

Dispose of contents/container in accordance with local / regional / national / international regulations.

Symbol

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Copper sulphate, pentahydrate	$CuSO_4.5H_2O$	7758-99-8	>=98 - 100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth, then drink plenty of water. Do NOT induce vomiting. Call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.

Eye IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice.

Skin IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately wash skin and hair with plenty of soap and running water. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.

Advice to Doctor Treat symptomatically. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves. Administer Methylene Blue for methemoglobinemia, BAL, DMPS, EDTA and d-penicillamine. Jaundice and haemolysis can appear after 5-6 hours. Symptoms of liver failure can appear after 3-4 days.

Medical Conditions Aggravated by Exposure No information available.

5. FIRE FIGHTING MEASURES

General Measures If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal.

Flammability Conditions Non-combustible; Material does not burn.

Extinguishing Media If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Use the most suitable extinguishing media for the specific situation, evaluating their compatibility with the possible presence of other substances at the fire site. Do not scatter spilled material with high-pressure water streams.

Fire and Explosion Hazard The substance decomposes on heating producing toxic and corrosive fumes.

Hazardous Products of Combustion The substance decomposes on heating producing toxic and corrosive fumes, including Sulfur oxides (SOx).

Special Fire Fighting Instructions Contain runoff from fire control water - Runoff may pollute waterways. Dispose of contaminated fire extinguishing water and fire residues according to local regulations.

Personal Protective Equipment Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Flash Point Not applicable to an inorganic solid

Lower Explosion Limit No Data Available

Upper Explosion Limit No Data Available

Auto Ignition Temperature No Data Available

Hazchem Code No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Do not touch or walk through spilled material. Avoid dust formation. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area. Deliver for disposal in compliance with the regulations in force (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud. Cover powder spill with plastic sheet or tarp to minimize spreading.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. If environmental contamination has occurred advise local emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.

Personal Precautionary Measures Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid dust formation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective clothing as required (see SECTION 8). Avoid release to the environment - Collect spillage (see SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed when not in use - Protect against physical damage and check regularly for spills. Avoid exposure to air/moisture/humidity. Keep away from foodstuffs and incompatible materials (see SECTION 10).
Container	Keep only in correctly labelled original containers or containers suitable for the type of product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. - Safe Work Australia Exposure Standard for Copper, dusts and mists (as Cu): TWA = 1 mg/m3. - New Zealand Workplace Exposure Standard for Copper and its inorganic compounds, as Cu [Adopted 2020]: TWA = 0.01 mg/m3 (respirable); Dermal sensitiser (dsen).
Exposure Limits	No Data Available
Biological Limits	Predicted no-effect concentrations (PNECs): - Freshwater: 7.8 µg/l - Marine water: 5.2 µg/l - Freshwater sediment: 87 mg/kg dw. - Marine water sediment: 676 mg/kg dw. - Soil: 288 mg/kg dw. - STP: 230 µg/l
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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. Ensure ventilation is adequate and that air concentrations of components are controlled below Workplace Exposure Standards.
Personal Protection Equipment	- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Dust mask/respirator, with type P filter, whose class (1, 2 or 3) must be chosen in relation to the limit concentration of use (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical goggles; Face-shield for operations that cause splashing or spray mist. - Hand protection: Handle with gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Long-sleeved work clothes or overalls, safety shoes.

	shield for operations that cause splashing or spray mist. - Hand protection: Handle with gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Long-sleeved work clothes or overalls, safety shoes.
Special Hazards Precaustions	Minimize the residue present in the mixers before washing and cleaning operations, to reduce its presence in the waste water.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystals/micro-crystals
Odour	Odourless
Colour	Blue or light blue
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	22 g/100 ml water 25° C
Specific Gravity	No Data Available
Flash Point	Not applicable to an inorganic solid
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	>=110 ° C
Density	2.286 g/cm3
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	No information available.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.

Properties That May Initiate or Contribute to Fire Intensity	Non-combustible; Material does not burn.
Reactions That Release Gases or Vapours	The substance decomposes on heating producing toxic and corrosive fumes, including Sulfur oxides (SOx).
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	The solution in water is a weak acid. Attacks many metals in the presence of water.
Chemical Stability	Stable under recommended storage conditions.
Conditions to Avoid	Avoid dust formation. Avoid exposure to air.
Materials to Avoid	Incompatible/reactive with strong bases, hydroxylamine, magnesium, steel, (finely powdered) metals, sulfuric acid, caustics, ammonia, aliphatic amines, alkanolamines, amides, alkylene oxides, epichlorohydrin, organic anhydrides, isocyanates, vinyl acetate.
Hazardous Decomposition Products	The substance decomposes on heating producing toxic and corrosive fumes, including Sulfur oxides (SOx).
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Harmful if swallowed; Corrosive on ingestion with abdominal pain, burning sensation, diarrhoea, nausea, vomiting, shock or collapse.
- Skin corrosion/irritation: May cause skin irritation, redness, pain. Non-irritating (Rabbit) [OECD Guideline 404].
- Eye damage/irritation: Causes serious eye damage, pain, redness, blurred vision. Serious irritation/irreversible eye damage (Rabbit) [OECD Guideline 405].
- Respiratory/skin sensitisation: Non-sensitising (Guinea pig) [OECD Guideline 406].
- Germ cell mutagenicity: Negative, in-vivo: Non-programmed DNA synthesis, male rats (Copper sulphate) [OECD Guideline 486]. Negative, in-vitro: Bacterial reverse mutation assay (Copper sulphate) [OECD Guideline 471].
- Carcinogenicity: Not listed as carcinogenic according to IARC.
- Reproductive toxicity: Data are conclusive but not sufficient to classify.
- STOT (single exposure): Inhalation of dusts/aerosols may be irritating to the respiratory tract, with cough, sore throat. Ingestion may cause effects on the blood, kidneys and liver, resulting in hemolytic anemia, kidney impairment, liver impairment.
- STOT (repeated exposure): Lungs may be affected by repeated or prolonged exposure to the aerosol. The substance may have effects on the liver when ingested.
- Aspiration toxicity: No information available.

Acute

Ingestion	Acute Toxicity (Oral): - LD50, Rat (male/female): 482 mg/kg bw [OECD Guideline 401].
Other	Acute toxicity (Dermal): - LD50, Rat (male/female): >2,000 mg/kg [OECD Guideline 402].
Reproduction	Reproductive toxicity (Oral): - NOAEL, Rat: >1,500 ppm [OECD Guideline 416].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Very toxic to aquatic life with long lasting effects.

Persistence/Degradability	High persistence in water/soil; High persistence in air.
Mobility	Low mobility in soil (KOC: 6.124).
Environmental Fate	Avoid release to the environment - Prevent entry into soils, drains and waterways.
Bioaccumulation Potential	Low bioaccumulative potential (LogKOW: -2.2002).
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Recycle product/packaging wherever possible or dispose of in an authorised landfill and in accordance with local/regional/national regulations.
Special Precautions for Land Fill	No information available.

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	Copper sulphate, pentahydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	AU01
Comments	Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs.

Sea Transport

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulphate, pentahydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-F
Marine Pollutant	Yes

Air Transport

IATA DGR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulphate, pentahydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

15. OTHER INFORMATION

Revision	2
Key/Legend	**< Less Than** **> Greater Than** **AICS Australian Inventory of Chemical Substances** **atm Atmosphere** **CAS Chemical Abstracts Service (Registry Number)** **cm² Square Centimetres** **CO2 Carbon Dioxide** **COD Chemical Oxygen Demand** **deg C (° C) Degrees Celcius** **EPA (New Zealand) Environmental Protection Authority of New Zealand** **deg F (° F) Degrees Farenheit** **g Grams** **g/cm³ Grams per Cubic Centimetre** **g/l Grams per Litre** **HSNO Hazardous Substance and New Organism** **IDLH Immediately Dangerous to Life and Health** **immiscible Liquids are insoluable in each other.** **inHg Inch of Mercury** **inH2O Inch of Water** **K Kelvin** **kg Kilogram** **kg/m³ Kilograms per Cubic Metre** **lb Pound** **LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50%** (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. **LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one** half) of a group of test animals. **ltr or L Litre** **m³ Cubic Metre** **mbar Millibar** **mg Milligram** **mg/24H Milligrams per 24 Hours** **mg/kg Milligrams per Kilogram** **mg/m³ Milligrams per Cubic Metre** **Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.** **mm Millimetre** **mmH2O Millimetres of Water** **mPa.s Millipascals per Second** **N/A Not Applicable** **NIOSH National Institute for Occupational Safety and Health** **NOHSC National Occupational Heath and Safety Commission** **OECD Organisation for Economic Co-operation and Development** **Oz Ounce** **PEL Permissible Exposure Limit** **Pa Pascal** **ppb Parts per Billion** **ppm Parts per Million** **ppm/2h Parts per Million per 2 Hours** **ppm/6h Parts per Million per 6 Hours** **psi Pounds per Square Inch** **R Rankine** **RCP Reciprocal Calculation Procedure** **STEL Short Term Exposure Limit** **TLV Threshold Limit Value** **tne Tonne** **TWA Time Weighted Average** **ug/24H Micrograms per 24 Hours** **UN United Nations** **wt Weight**