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SAFETY DATA SHEET

SECTION 1. CHEMICAL IDENTIFICATION

| | |
|---------------------------------|---|
| CATALOG #: | 30243 |
| NAME: | Copper(II) sulfate pentahydrate |
| SYNONYMS: | Cupric sulfate pentahydrate |
| 24 HOUR EMERGENCY TELEPHONE: | (800) 535-5053(USA) 352-323-3500 (INTERNATIONAL) |
| TO REQUEST AN MSDS: | (800) 869-9290 |
| CUSTOMER SERVICE: | (630) 766-2112 |

SECTION 2. HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

GHS CLASSIFICATION IN ACCORDANCE WITH 29 CFR 1910 (OSHA HCS)
ACUTE TOXICITY, ORAL (CATEGORY 4), H302
SERIOUS EYE DAMAGE (CATEGORY 1), H318
SHORT-TERM (ACUTE) AQUATIC HAZARD (CATEGORY 1), H400
LONG-TERM (CHRONIC) AQUATIC HAZARD (CATEGORY 1), H410

FOR THE FULL TEXT OF THE H-STATEMENTS MENTIONED IN THIS SECTION, SEE SECTION 16.

**GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS
PICTOGRAM**



SIGNAL WORD DANGER

HAZARD STATEMENT(S)

H302 HARMFUL IF SWALLOWED.
H318 CAUSES SERIOUS EYE DAMAGE.
H410 VERY TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS.

PRECAUTIONARY STATEMENT(S)

P264 WASH SKIN THOROUGHLY AFTER HANDLING.
P270 DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT.
P273 AVOID RELEASE TO THE ENVIRONMENT.
P280 WEAR PROTECTIVE GLOVES/ PROTECTIVE CLOTHING/ EYE PROTECTION/ FACE PROTECTION.
P301 + P312 + P330 IF SWALLOWED: CALL A POISON CENTER OR DOCTOR/ PHYSICIAN IF YOU FEEL UNWELL. RINSE MOUTH.
P305 + P351 + P338 + P310 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 CENTER OR DOCTOR/ PHYSICIAN.
P391 COLLECT SPILLAGE.
P501 DISPOSE OF CONTENTS/ CONTAINER TO AN APPROVED WASTE DISPOSAL PLANT.

HAZARDS NOT OTHERWISE CLASSIFIED (HNOC) OR NOT COVERED BY GHS NONE

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

MF: $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
MW: 249.7
CAS-NO. 7758-99-8
PURITY: 98.5 - 101.0% (Assay)

HAZARDOUS COMPONENTS

| COMPONENT | CLASSIFICATION | CONCENTRATION |
|-----------|----------------|---------------|
|-----------|----------------|---------------|

| Copper(II) sulfate pentahydrate | | |
|--|--|----------|
| | ACUTE TOX. 4; EYE DAM. 1; AQUATIC ACUTE 1; AQUATIC CHRONIC 1; H302, H318, H400, H410 M-FACTOR - AQUATIC ACUTE: 10 - AQUATIC CHRONIC: 10 | <= 100 % |

FOR THE FULL TEXT OF THE H-STATEMENTS MENTIONED IN THIS SECTION, SEE SECTION 16.

SECTION 4. FIRST-AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

| | |
|---|--|
| GENERAL ADVICE | CONSULT A PHYSICIAN. SHOW THIS SAFETY DATA SHEET TO THE DOCTOR IN ATTENDANCE.MOVE OUT OF DANGEROUS AREA. |
| IF INHALED | IF BREATHED IN, MOVE PERSON INTO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONSULT A PHYSICIAN. |
| IN CASE OF SKIN CONTACT | WASH OFF WITH SOAP AND PLENTY OF WATER. CONSULT A PHYSICIAN. |
| IN CASE OF EYE CONTACT | RINSE THOROUGHLY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND CONSULT A PHYSICIAN. |
| IF SWALLOWED | NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. RINSE MOUTH WITH WATER. CONSULT A PHYSICIAN. |
| MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED | THE MOST IMPORTANT KNOWN SYMPTOMS AND EFFECTS ARE DESCRIBED IN THE LABELLING (SEE SECTION 2.2) AND/OR IN SECTION 11. |
| INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED | NO DATA AVAILABLE |

SECTION 5. FIRE AND EXPLOSION DATA

EXTINGUISHING MEDIA

| | |
|--|--|
| SUITABLE EXTINGUISHING MEDIA | USE WATER SPRAY, ALCOHOL-RESISTANT FOAM, DRY CHEMICAL OR CARBON DIOXIDE. |
| SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE | SULFUR OXIDES, COPPER OXIDES NOT COMBUSTIBLE. |
| ADVICE FOR FIREFIGHTERS | WEAR SELF-CONTAINED BREATHING APPARATUS FOR FIREFIGHTING IF NECESSARY. |
| FURTHER INFORMATION | NO DATA AVAILABLE |

SECTION 6. ACCIDENTAL RELEASE MEASURES

| | |
|--|---|
| PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES | USE PERSONAL PROTECTIVE EQUIPMENT. AVOID DUST FORMATION. AVOID BREATHING VAPOURS, MIST OR GAS. ENSURE ADEQUATE VENTILATION. EVACUATE PERSONNEL TO SAFE AREAS. AVOID BREATHING DUST. FOR PERSONAL PROTECTION SEE SECTION 8. |
| ENVIRONMENTAL PRECAUTIONS | PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED. |
| METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP | PICK UP AND ARRANGE DISPOSAL WITHOUT CREATING DUST. SWEEP UP AND SHOVEL. KEEP IN SUITABLE, CLOSED CONTAINERS FOR DISPOSAL. |
| REFERENCE TO OTHER SECTIONS | FOR DISPOSAL SEE SECTION 13. |

SECTION 7. HANDLING AND STORAGE

| | |
|--------------------------------------|--|
| PRECAUTIONS FOR SAFE HANDLING | AVOID CONTACT WITH SKIN AND EYES. AVOID FORMATION OF DUST AND AEROSOLS. FURTHER PROCESSING OF SOLID MATERIALS MAY RESULT IN THE FORMATION OF COMBUSTIBLE DUSTS. THE POTENTIAL FOR COMBUSTIBLE DUST FORMATION SHOULD BE TAKEN INTO CONSIDERATION BEFORE ADDITIONAL PROCESSING OCCURS. PROVIDE APPROPRIATE EXHAUST VENTILATION AT PLACES WHERE DUST IS FORMED. |
|--------------------------------------|--|

FOR PRECAUTIONS SEE SECTION 2.2.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES KEEP CONTAINER TIGHTLY CLOSED IN A DRY AND WELL-VENTILATED PLACE.

Store at RT

SPECIFIC END USE(S) APART FROM THE USES MENTIONED IN SECTION 1.2 NO OTHER SPECIFIC USES ARE STIPULATED.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

| COMPONENT | CAS-NO. | VALUE | CONTROL PARAMETERS | BASIS |
|---------------------------------|-----------|-------|--------------------|--|
| Copper(II) sulfate pentahydrate | 7758-99-8 | TWA | 1 MG/M3 | USA. NIOSH RECOMMENDED EXPOSURE LIMITS |
| | | PEL | 1 MG/M3 | CALIFORNIA PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS |

EXPOSURE CONTROLS

APPROPRIATE ENGINEERING CONTROLS HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICE. WASH HANDS BEFORE BREAKS AND AT THE END OF WORKDAY.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION FACE SHIELD AND SAFETY GLASSES USE EQUIPMENT FOR EYE PROTECTION TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR EN 166(EU).

SKIN PROTECTION HANDLE WITH GLOVES. GLOVES MUST BE INSPECTED PRIOR TO USE. USE PROPER GLOVE REMOVAL TECHNIQUE (WITHOUT TOUCHING GLOVE'S OUTER SURFACE) TO AVOID SKIN CONTACT WITH THIS PRODUCT. DISPOSE OF CONTAMINATED GLOVES AFTER USE IN ACCORDANCE WITH APPLICABLE LAWS AND GOOD LABORATORY PRACTICES. WASH AND DRY HANDS.

| | |
|--|--|
| BODY PROTECTION | COMPLETE SUIT PROTECTING AGAINST CHEMICALS, THE TYPE OF PROTECTIVE EQUIPMENT MUST BE SELECTED ACCORDING TO THE CONCENTRATION AND AMOUNT OF THE DANGEROUS SUBSTANCE AT THE SPECIFIC WORKPLACE. |
| RESPIRATORY PROTECTION | WHERE RISK ASSESSMENT SHOWS AIR-PURIFYING RESPIRATORS ARE APPROPRIATE USE A FULLFACE PARTICLE RESPIRATOR TYPE N100 (US) OR TYPE P3 (EN 143) RESPIRATOR CARTRIDGES AS A BACKUP TO ENGINEERING CONTROLS. IF THE RESPIRATOR IS THE SOLE MEANS OF PROTECTION, USE A FULL-FACE SUPPLIED AIR RESPIRATOR. USE RESPIRATORS AND COMPONENTS TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR CEN (EU). |
| CONTROL OF ENVIRONMENTAL EXPOSURE | PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED. |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|-------------------------------|
| APPEARANCE | Blue crystal |
| ODOUR | NO DATA AVAILABLE |
| ODOUR THRESHOLD | NO DATA AVAILABLE |
| PH | 3.5 - 4.5 AT 50 G/L AT 20 C |
| MELTING POINT/FREEZING POINT | |
| INITIAL BOILING POINT AND BOILING RANGE | |
| FLASH POINT | |
| EVAPORATION RATE | NO DATA AVAILABLE |
| FLAMMABILITY (SOLID, GAS) | THE PRODUCT IS NOT FLAMMABLE. |
| UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS | NO DATA AVAILABLE |
| VAPOUR PRESSURE | NO DATA AVAILABLE |
| VAPOUR DENSITY | NO DATA AVAILABLE |
| RELATIVE DENSITY | 2.27 g/mL (Lit.) |
| WATER SOLUBILITY | 317 G/L AT 20 C |
| PARTITION COEFFICIENT: N- OCTANOL/WATER | NO DATA AVAILABLE |
| AUTO-IGNITION TEMPERATURE | NO DATA AVAILABLE |
| DECOMPOSITION TEMPERATURE | NO DATA AVAILABLE |
| VISCOSITY | NO DATA AVAILABLE |

EXPLOSIVE PROPERTIES NO DATA AVAILABLE
OXIDIZING PROPERTIES NO DATA AVAILABLE

OTHER SAFETY INFORMATION
NO DATA AVAILABLE

SECTION 10. STABILITY AND REACTIVITY

| | |
|---|--|
| REACTIVITY | NO DATA AVAILABLE |
| CHEMICAL STABILITY | STABLE UNDER RECOMMENDED STORAGE CONDITIONS. |
| POSSIBILITY OF HAZARDOUS REACTIONS | NO DATA AVAILABLE |
| CONDITIONS TO AVOID | NO DATA AVAILABLE |
| INCOMPATIBLE MATERIALS | NO DATA AVAILABLE |
| HAZARDOUS DECOMPOSITION PRODUCTS | HAZARDOUS DECOMPOSITION PRODUCTS FORMED UNDER FIRE CONDITIONS. - SULFUR OXIDES, COPPER OXIDES OTHER DECOMPOSITION PRODUCTS - NO DATA AVAILABLE IN THE EVENT OF FIRE: SEE SECTION 5 |

SECTION 11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

| | |
|----------------------------------|--|
| ACUTE TOXICITY | LD50 ORAL - RAT - 300 MG/KG REMARKS: (RTECS) INHALATION: NO DATA AVAILABLE LD50 DERMAL - RAT - > 2,000 MG/KG REMARKS: (RTECS) NO DATA AVAILABLE |
| SKIN CORROSION/IRRITATION | SKIN - RABBIT RESULT: NO SKIN IRRITATION - 4 H (OECD TEST GUIDELINE) |

| | |
|---|--|
| SERIOUS EYE DAMAGE/EYE IRRITATION | EYES - RABBIT RESULT: CAUSES SERIOUS EYE DAMAGE. (OECD TEST GUIDELINE 405) |
| RESPIRATORY OR SKIN SENSITISATION | MAXIMIZATION TEST - GUINEA PIG RESULT: NEGATIVE (OECD TEST GUIDELINE 406) |
| GERM CELL MUTAGENICITY | AMES TEST SALMONELLA TYPHIMURIUM RESULT: NEGATIVE MOUSE - MALE AND FEMALE - BONE MARROW RESULT: NEGATIVE (NATIONAL TOXICOLOGY PROGRAM) OECD TEST GUIDELINE 486 RAT - MALE - LIVER CELLS RESULT: NEGATIVE |
| CARCINOGENICITY | |
| IARC: | NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED HUMAN CARCINOGEN BY IARC. |
| NTP: | NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS IDENTIFIED AS A KNOWN OR ANTICIPATED CARCINOGEN BY NTP. |
| OSHA: | NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN OR EQUAL TO 0.1% IS ON OSHA S LIST OF REGULATED CARCINOGENS. |
| REPRODUCTIVE TOXICITY | NO DATA AVAILABLE |
| SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE | NO DATA AVAILABLE |
| SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE | NO DATA AVAILABLE |
| ASPIRATION HAZARD | NO DATA AVAILABLE |

**ADDITIONAL
INFORMATION**

RTECS: NOT AVAILABLE

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

AFTER ABSORPTION:

DROP IN BLOOD PRESSURE, TACHYCARDIA, ACIDOSIS

AFTER A LATENCY PERIOD:

METAL-FUME FEVER AFTER INHALATION OF LARGE QUANTITIES.

HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE AND SAFETY PRACTICE.

STOMACH - IRREGULARITIES - BASED ON HUMAN EVIDENCE

SECTION 12. ECOLOGICAL INFORMATION

TOXICITY

TOXICITY TO FISH

STATIC TEST LC50 - ONCORHYNCHUS MYKISS (RAINBOW TROUT) - 0.032 MG/L - 96 H
REMARKS: (ECOTOX DATABASE)

**PERSISTENCE AND
DEGRADABILITY**

THE METHODS FOR DETERMINING THE BIOLOGICAL DEGRADABILITY ARE NOT APPLICABLE TO INORGANIC SUBSTANCES.

**BIOACCUMULATIVE
POTENTIAL**

NO DATA AVAILABLE

MOBILITY IN SOIL

NO DATA AVAILABLE

**RESULTS OF PBT AND
VPVB ASSESSMENT**

PBT/VPVB ASSESSMENT NOT AVAILABLE AS CHEMICAL SAFETY ASSESSMENT NOT REQUIRED/NOT CONDUCTED

OTHER ADVERSE EFFECTS

AN ENVIRONMENTAL HAZARD CANNOT BE EXCLUDED IN THE EVENT OF UNPROFESSIONAL HANDLING OR DISPOSAL.
VERY TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS.
FUNGICIDE
DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED.

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

| | |
|-------------------------------|--|
| PRODUCT | OFFER SURPLUS AND NON-RECYCLABLE SOLUTIONS TO A LICENSED DISPOSAL COMPANY. CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL. DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. |
| CONTAMINATED PACKAGING | DISPOSE OF AS UNUSED PRODUCT. |

SECTION 14. TRANSPORT INFORMATION

DOT (US)

| | |
|---------------------------|--|
| PROPER SHIPPING NAME: | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) sulfate pentahydrate) |
| UN NUMBER: | 3077 |
| CLASS: | 9 |
| PACKING GROUP: | III |
| REPORTABLE QUANTITY (RQ): | 10 LBS |
| MARINE POLLUTANT: | YES |
| POISON INHALATION HAZARD: | NO |

IMDG

| | |
|-----------------------|--|
| PROPER SHIPPING NAME: | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) sulfate pentahydrate) |
| UN NUMBER: | 3077 |
| CLASS: | 9 |
| PACKING GROUP: | III |
| EMS-NO: | F-A, S-F |
| MARINE POLLUTANT: | YES |

IATA

| | |
|-----------------------|--|
| PROPER SHIPPING NAME: | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) sulfate pentahydrate) |
| UN NUMBER: | 3077 |
| CLASS: | 9 |
| PACKING GROUP: | III |

SECTION 15. REGULATORY INFORMATION

SARA 302 COMPONENTS THIS MATERIAL DOES NOT CONTAIN ANY COMPONENTS WITH A SECTION 302 EHS TPQ.

SARA 313 COMPONENTS
THE FOLLOWING COMPONENTS ARE SUBJECT TO REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313:

| | CAS-NO. | REVISION DATE |
|---------------------------------|-----------|---------------|
| Copper(II) sulfate pentahydrate | 7758-99-8 | 02-16-1993 |

SARA 311/312 HAZARDS ACUTE HEALTH HAZARD, CHRONIC HEALTH HAZARD

MASSACHUSETTS RIGHT TO KNOW COMPONENTS
NO COMPONENTS ARE SUBJECT TO THE MASSACHUSETTS RIGHT TO KNOW ACT.

SECTION 16. OTHER INFORMATION

FULL TEXT OF H-STATEMENTS REFERRED TO UNDER SECTIONS 2 AND 3.

| | |
|------|---|
| H302 | HARMFUL IF SWALLOWED. |
| H318 | CAUSES SERIOUS EYE DAMAGE. |
| H410 | VERY TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS. |

MSDS LEGEND

| | |
|--------|--|
| MW: | MOLECULAR WEIGHT |
| MF: | MOLECULAR FORMULA |
| VOC: | VOLATILE ORGANIC COMPOUNDS |
| ACGIH: | AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGINISTS |
| CAS: | CHEMICAL ABSTRACTS SERIVE REGISTRY NUMBER |
| OSHA: | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION |
| PEL: | PERMISSIBLE EXPOSURE LIMIT (OSHA) |
| TLV: | THRESHOLD LIMIT VALUE (ACGIH) |

IMPORTANT:

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