Issue date: 7/22/2003
Revision date: 4/3/2024

Safety Data Sheet

1. Chemical product and company identification

Product name	:	Copper(Ⅱ) nitrate trihydrate

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	07499
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Reproductive toxicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (nervous system, blood, liver, kidney)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs)
Environmental hazards	Aquatic acute	Category 1
	Aquatic chronic	Category 1

Hazard pictograms

Signal word : Danger

Hazard statements : Harmful if swallowed
Causes severe skin burns and eye damage
May cause respiratory irritation
Suspected of damaging fertility or the unborn child
Causes damage to organs (nervous system, blood, liver, kidney)
Causes damage to organs (respiratory organs) through prolonged or repeated exposure
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

Precautionary statements

Prevention	:	Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	:	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Rinse mouth. Do not induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water . IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. IF exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER or doctor. Call a POISON CENTER or doctor if you feel unwell. Get medical advice/attention if you feel unwell. Collect spillage.
Storage	:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	:	Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Copper(Ⅱ) nitrate trihydrate	≥ 99	Cu(NO3)2・3H2O	Listed	221-838-5	10031-43-3

4. First aid measures

First aid measures

First-aid measures after inhalation	:	Remove the victim to fresh air, and make him blow his nose and gargle.
First-aid measures after skin contact	:	Wash the affected areas under running water, get medical treatment as soon as possible.
First-aid measures after eye contact	:	Wash the affected areas under running water for at least 15 minutes. Get medical treatment.
First-aid measures after ingestion	:	Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.
Personal Protection in First	:	Rescuers should wear proper protective equipment like rubber

Aid and Measures		gloves, goggles.

5. Fire fighting measures

Suitable extinguishing media	:	This product is noncombustible.
Unsuitable extinguishing media	:	None
Fire hazard	:	Thermal decomposition emits harmful Copper oxides fume. Contact with combustible material may cause fire.
Firefighting instructions	:	Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
Personal protection (Emergency response)	:	Firefighters should wear protective equipment.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures	:	Wear proper protective equipment and avoid contact with skin and inhalation of dust. Conduct operations from upwind and evacuate people downwind.

Environmental precautions

Environmental precautions	:	Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Sweep up in a chemical waste container. Neutralize residue with calcium hydroxide or sodium carbonate water solution and then flush contaminated area with copious amounts of water.
Prevention Measures for Secondary Accidents	:	Do not allow contact with organic substances or combustible substances.

7. Handling and storage

Handling

Technical measures	:	Wear appropriate protective equipment to avoid contact with skin or inhalation of dust.
Precautions for safe handling	:	Avoid formation of dust and aerosols. The substance is an oxdizer. Avoid contact with organic substances.

Storage

Storage conditions	:	Store in a refrigerator and tightly closed (0-6℃). Keep away from combustible matrials.
Material used in packaging/containers	:	Glass, polyethylene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	Not established

Appropriate engineering controls	:	Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection	:	If necessary, wear dust mask
Hand protection	:	Impervious protective gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Solid
Color	:	Blue.
Odor	:	Odorless
pH	:	The aqueous solution is acidic.
Melting point	:	114.5 ° C
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	170 ° C (Loses a molecule of water and becomes a basic salt)
Flammability	:	Non flammable.
Vapor pressure	:	No data available
Relative density	:	2.047 (3.9/4℃)
Density	:	No data available
Relative gas density	:	No data available
Solubility	:	Organic solvents: Soluble in ethanol. Water: 57.9 % (0℃)
Partition coefficient n-octanol/water (log Pow)	:	No data available
Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	Has oxidative properties.
Chemical stability	:	Stable under normal conditions. Deliquescent.
Possibility of hazardous reactions	:	The mixture with powdery combustible materials may burn vigorously or explode by heating or shock. Reaction with ammonia / potassium amide produces an explosive Cu (I) derivative.
Conditions to avoid	:	Light, heat, moisture.
Incompatible materials	:	Reducing substances, combustible materials.
Hazardous decomposition products	:	Nitrogen oxides, copper oxides.

11. Toxicological information

Acute toxicity (oral)	:	Harmful if swallowed rat LD50=940mg/kg
Acute toxicity (dermal)	:	Classification not possible

Acute toxicity (inhalation)	:	No classification (gas) Classification not possible (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes severe skin burns In an in vitro skin corrosion test using artificial skin model in accordance with OECD TG 431, cell viabilities after 3 min., 60 min., 240 min. of exposure were 53.4%, 19.9%, 18.2%, respectively. Thus, it was classified into category 1B.
Serious eye damage/irritation	:	Causes serious eye damage The substance is classified into category 1B for Skin corrosion/ irritation. Thus, it was classified into category 1.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	No classification In skin sensitization studies using guinea pigs in accordance with OECD TG 406, similar responses were observed in both the test group and the control group, and sensitization is concluded to be negative.
Germ cell mutagenicity	:	Classification not possible There is no in vivo data. As for in vitro tests, a positive result was obtained in gene mutation examination using cultured mammalian cells.
Carcinogenicity	:	Classification not possible
Reproductive toxicity	:	Suspected of damaging fertility or the unborn child The substance is water-soluble. Thus, it was classified into category 2 based on the data of water-soluble copper(Ⅱ) sulfate pentahydrate. In a developmental toxicity test in which 2 strains of mice were fed diets containing copper(Ⅱ) sulfate pentahydrate, developmental effects including malformation were observed at dosing levels presumably toxic to dams, although there is no description about maternal toxicity.
STOT-single exposure	:	Causes damage to organs (nervous system, blood, liver, kidney) May cause respiratory irritation Human studies have shown that inhalation exposure to copper nitrate(Ⅱ) (anhydrous) causes the throat and lung irritation. A single oral ingestion of copper(Ⅱ) sulfate, a water-soluble copper compound like this substance, in humans causes effects on the nervous system, blood system, liver, and kidney. Animal studies have shown that single oral ingestion of water-soluble copper compounds causes acute toxic symptoms such as salivation, vomiting, diarrhea, gastrorrhagia, increased heart rate, hypotension, hemolytic anemia, convulsions, and paralysis. Although there is no detailed description of the doses with these effects, if they were observed near LD50 value, the doses correspond to category 2 because the LD50 value of this substance for rats is reported to be 940 mg/kg. In addition, single inhalation exposure of hamsters to aerosol of copper(Ⅱ) sulfate resulted in respiratory tract irritation. Based on the above information, it was classified into category 1 (nervous system, blood, liver, kidney) and category 3 (respiratory tract irritation).

STOT-repeated exposure	:	Causes damage to organs (respiratory organs) through prolonged or repeated exposure The substance was classified into category 1 (respiratory organs) based on the information of copper(Ⅱ) sulfate. That is , in the wine garden workers spraying antifungal agents containing 1 - 2.5% of copper(Ⅱ) sulfate, symptoms similar to silicosis were observed. Common effects found by alveolar lavage fluid and biopsy include intra-alveolar desquamation of macrophages, histiocytic and non-caseating granulomas with copper containing material, and reparative lesions under the form of fibro-hyaline nodules.
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Very toxic to aquatic life Ceriodaphnia LC50=0.0095mg/L/48h
Aquatic chronic	:	Very toxic to aquatic life with long lasting effects

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Disposal should be made by one of following methods. Or entrust approved waste disposal companies with the disposal. Precipitation method : Dissolve in water and add calcium hydroxide or sodium carbonate to precipitate. The precipitate is buried in a landfill site approved for the disposal of chemical and hazardous wastes. Roasting method : In case of a large amount of the chemical, recover metal copper by roast reduction method. Or entrust approved waste disposal companies with the disposal. <Note> ＊The pH of the neutralization should be above 8.5. The precipitation does not form completely below pH 8.5. ＊In case of disposal by roasting method, it is desirable to entrust to disposal companies.
Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	3260
Proper Shipping Name (IMDG)	:	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
Packing group (IMDG)	:	II
Transport hazard class(es) (IMDG)	:	8

Air transport(IATA)

UN-No. (IATA)	:	3260
Proper Shipping Name (IATA)	:	Corrosive solid, acidic, inorganic, n.o.s.
Packing group (IATA)	:	II
Transport hazard class(es) (IATA)	:	8
Marine pollutant	:	Applicable
MFAG-No	:	154

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources	:	Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) . Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) . NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.