Safety Data Sheet

ShoreMet Cupric Oxide

Section 1- Product and Company Identification

Supplier
ShoreMet LLC
3601 Enterprise Ave
Valparaiso, IN 46383

Manufacturer
ShoreMet LLC
3601 Enterprise Ave
Valparaiso, IN 46383

Company Contact: Danny Mislenkov
Telephone Number: (219) 390-3336 x100
Emergency Contact & Phone Number: **CHEMTREC (800) 424-9300**
Product Name: ShoreMet Cupric Oxide
Synonyms: Copper (II) Oxide, Black Copper Oxide
Chemical Formula: CuO
Recommended Use/Restrictions on Use: industrial chemicals, not to be used as a pesticide
General Comments: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, explosion, or accident involving chemicals. All non-emergency questions should be directed to customer service.

Section 2- Hazards Identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200;

WARNING

EMERGENCY OVERVIEW

This product is an odorless, black crystalline powder. This products primary health hazards are the potential for irritation of the eyes, skin, nose and other tissues that come in contact with dusts or particulates of this product. This product is not flammable or reactive. Thermal decomposition of this product produces irritating vapors and toxic gases. Emergency responders should wear proper personal protective equipment for the releases to which they are responding.

Hazard Statements

HARMFUL OR FATAL IF SWALLOWED. Very toxic to aquatic life with long lasting effects. May cause irritation of eyes, skin and respiratory tract. Avoid contact with eyes and skin. Avoid inhalation of dust. Wash thoroughly after handling. Use with adequate ventilation. Keep from contact with clothing and other combustible materials. Solutions of this material may be flammable.

GHS Classification

Hazardous to the aquatic environment – acute category 1; Hazardous to the aquatic environment – chronic category 1; Acute toxicity-oral category 4.

Primary Route(s) of Entry

Ingestion, inhalation, and skin contact

Section 2- Hazards Identification (Continued)

Potential Health Effects: Eyes

Exposure to particulates or solution of this product may cause redness and pain. Prolonged contact may cause conjunctivitis, and corneal abnormalities.

Potential Health Effects: Skin

This product can cause irritation of the skin with pain, itching, and redness. Prolonged exposure may cause dermatitis, eczema, and skin discoloration. Dermal exposure has not been associated with systemic toxicity but copper may induce allergic responses in sensitive individuals.

Potential Health Effects: Ingestion

Harmful or fatal if swallowed. May cause gastrointestinal irritation with symptoms such as nausea, vomiting, and diarrhea. Copper oxide is less toxic than more soluble coper salts, such as copper sulfates. Except for occasional acute incidents of copper poisoning, few effects are noted in normal human populations. Effects of single oral exposure have been reported as metallic taste, epigastric pain, headache, nausea, dizziness, vomiting, diarrhea, tachycardia, respiratory difficulty, hemolytic anemia, hematuria, massive gastrointestinal bleeding, liver and kidney failure, and death. In case of fatal ingestion, death is preceded by gastric hemorrhage, tachycardia, hypotension, hemolytic crisis, convulsions, and paralysis.

Potential Health Effects: Inhalation

May irritate the nose, throat and respiratory tract. Symptoms can include sore throat, coughing, and shortness of breath. In severe cases, ulceration and perforation of nasal septum can occur. If this material is heated, inhalation of fumes may lead to development of metal fume fever. This is a flu-like illness with symptoms of metallic taste, fever, chills, aches, chest tightness, and cough. Repeated inhalation exposure can cause shrinking of the lining of the inner nose.

Medical Conditions Aggravated by Exposure:

Persons with hereditary Wilson's disease have an abnormally high level of copper in their system; therefore, individuals with this disease when exposed to this product may accumulate high levels of copper and may suffer liver pathology, which can be fatal. Episodes of intravascular hemolysis have been observed. Pre-existing lung disease may be aggravated by exposure, possibly resulting in respiratory disease if overexposed on a chronic basis.

HMIS Ratings: HEALTH: 2* FIRE: 0 REACTIVITY: 0

Hazard Scale: 0=Minimal, 1=Slight, 2= Moderate, 3= Serious, 4=Severe *=Chronic Hazard

Section 3- Composition/Information on Ingredients

Component	CAS #	Percent
Cupric Oxide	1317-38-0	99.9
Cuprous Oxide	1317-39-1	0.10

Section 4- First Aid Measures

First Aid: Eyes

Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

First Aid: Skin

For skin contact, wash immediately with soap and water. Immediately take off all contaminated clothing. Seek immediate medical attention if irritation develops or persist.

Section 4- First Aid Measures (continued)

First Aid: Ingestion

If the material is swallowed, get immediate medical attention or advice—do not induce vomiting. Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to an unconscious victim. Do not use mouth-to-mouth if victim has ingested the substance. Induce artificial respiration with a proper respiratory medical device.

First Aid: Inhalation

If inhaled, immediately remove the affected person to fresh air. If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek immediate medical attention do NOT perform mouth-to-mouth resuscitation unless a pocket mask equipped with a one-way valve or other proper respiratory medical device is available.

First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically.

Section 5- Firefighting Measures

Extinguishing Media

ABC extinguisher, carbon dioxide, or water spray.

Hazardous Combustion Products

Copper compounds.

Special Firefighting Procedures

Separate from mass. Eliminate oxygen. Material is non-flammable. Reacts violently with water, do not direct a stream of water into the hot burning liquid. Heating may cause an explosion.

Personal Protective Equipment

Firefighters should wear full protective clothing including self-contained breathing apparatus.

Additional Information

Collect contaminated firefighting water separately, it must not enter the sewer system.

Section 6- Accidental Release Measures

Personal Precautions

Spilled material may produce dust hazard if not handled correctly. Wear appropriate personal protective equipment: coveralls, gloves, and eye protection. Avoid breathing dust, vapors, mist, or gas. Ensure adequate ventilation and evacuate personnel to safe areas.

Environmental Precautions

Do not allow to enter drains or watercourses. If the product enters drains or sewers, immediately inform the local water company. Where there is contamination of streams, rivers, or lakes contact local agency with responsibility for the environment.

Methods for Clean-Up

Contain spillages and clean-up with vacuum or conventional tools in an attempt to minimize dusting. Place in a suitable container for recycling or disposal in accordance with local and national waste regulations.

Section 7- Handling and Storage

Handling Procedures

Do not get this material in your eyes, on your skin, or on your clothing. Do not inhale dust. Use this product with adequate ventilation. Avoid release to the environment. Wash thoroughly after handling. See section 8 for appropriate protective clothing, equipment, and air monitoring procedures.

Section 7- Handling and Storage (Continued)

Storage Procedures

Store in a cool, dry, well-ventilated area. Empty product containers may contain product residue. Do not reuse empty containers. Do not store this material in open or unlabeled containers. Store away from direct sunlight, or any source of intense heat. Store away from area where freezing is possible. Keep away from food, drink and animal feed. Materials should be stored in secondary areas, or in diked areas, as appropriate. Floors should be sealed to prevent absorption of this material. Appropriate extinguishing equipment should be in storage area. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate.

Section 8- Exposure Controls/Personal Protection

EXPOSURE GUIDELINES:

General Product Information

Follow all applicable exposure limits.

Component Exposure Limits

Copper (II) Oxide: The exposure limits given are for copper and inorganic compounds as Cu, copper fume as Cu, or copper dust and mists as Cu.

ACGIH: 1 mg/m^3 TWA (dusts and mists): 0.2 mg/ m^3 (fume)

OSHA: 1 mg/m^3 TWA (dusts and mists): 0.1 mg/ m^3 (fume)

NIOSH: 1 mg/m^3 TWA (dusts and mists): 0.1 mg/ m^3 (fume)

Engineering Controls

Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits. Handle in accordance with good industrial hygiene and safety practice. Ensure that eyewash stations and safety showers are close to the work location.

PERSONAL PROTECTIVE EQUIPMENT:

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields or chemical splash goggles. If made into solution wear chemical splash goggles and face shield in compliance with OSHA regulations.

Personal Protective Equipment: Skin

Use impervious gloves. Recommended nitrile gloves. Use of impervious apron or coveralls and boots are recommended.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of vapors or mists, appropriate approved NIOSH respiratory protection must be provided. The following NIOSH guidelines for copper dust and mist (as Cu) are presented for further information.

Up to 5 mg/ m^3: Dust and mist respirator

Up to 10 mg/m^3: Any dust and mist respirator except single-use, and quarter mask respirators, or any SAR.

Up to 25 mg/m^3: SAR operated in continuous-flow mode, or powered air-purifying respirator with dust and mist filter(s).

Up to 50 mg/m^3: Air purifying, full face piece respirator with high-efficiency particulate filter(s), any powered air-purifying respirator with tight-fighting face piece and high-efficiency particulate filter(s), or full face piece SAR.

Up to 100 mg/ m^3: Positive pressure, full face piece SAR.

Personal Protective Equipment: General

Eyewash fountains and emergency showers are required.

Section 9- Physical and Chemical Properties

Appearance: Black crystalline powder
Physical State: Solid
pH: Not available
Vapor Pressure: N/A
Boiling Point: Not available
Solubility (H_2O): Practically insoluble
Freezing Point: Not available
Flash Point: Not available
Auto-ignition Temperature: Not available
Octanol/H_2O Coeff.: Not Available

Odor: Odorless
Odor Threshold: N/A
Viscosity: N/A
Vapor Density: N/A
Melting Point: 1326 ^{O}C
Specific Gravity: 6.4 @ 20 ^{O}C (68 ^{O}F)
Evaporation Rate *(n-BuAc=1)*: N/A
Flammability Limits in Air: N/A
Decomposition Temperature: Not available
Percent Volatile by Volume: N/A

Section 10- Chemical Stability and Reactivity Information

Reactivity

No data available.

Chemical Stability

This is a stable material in solid form at normal conditions.

Chemical Stability: Conditions to Avoid

Avoid extreme heat and contact with incompatible materials.

Incompatibility

This product reacts with acetylene in caustic solutions to form explosive acetylides. Exposure to moist air at > 100^{o} C may result in spontaneous combustion. Explodes when heated with powdered aluminum, anilinium perchlorate, hydrogen, magnesium, or phallic anhydride. Boron reacts violently with product after warming, melting glass tubing. Titanium reacts violently with product when heated. Hydrazine reacts vigorously with product. Cesium acetylene carbide explodes on contact with product at 350^{o} C. The reduction of heated cupric oxide by admixed magnesium is accompanied by incandescence and an explosion. Product is reduced when heated with sodium. The reaction proceeds with vivid incandescence. Product is reduced to metallic copper when heated with potassium at temperatures below its melting point. This reaction proceeds with vivid incandescence. Other incompatibilities include: dirubidium acetylides, hydrogen, hydrogen sulfides, metals, phospham, phthalic anhydride, acetylene, and zirconium. Interaction with hydroxylamine or hydrazine is vigorous. A pellet mixture containing barium acetate, copper (II) oxide, and yttrium oxide, has been shown to create a small explosion during the early stages. This product and manganese dioxide react at 359^{o} C incandescently. Solutions of sodium hypobromite are decomposed by powerful catalytic action of cupric ions, even as impurities.

Hazardous Decomposition

Decomposition products include copper fumes and copper compounds.

Hazardous Polymerization

Not expected to occur.

Section 11- Toxicological Information

Acute and Chronic Toxicity

Routes of Entry: Inhalation

Symptoms (Acute): Respiratory disorders

Delayed Effects: No data available

Component Analysis-LD50/LC50: Copper (II) oxide (CAS Number: 1317-38-0)

Inhalation LD50 Rat: 250 mg/kg

Oral LD50 Rat: 470 mg/kg

Section 11- Toxicological Information (Continued)

Component Analysis - TDLo/LDLo: Copper (II) oxide (CAS Number: 1317-38-0)

Inhalation LDLo Rat: 278 mg/kg

Carcinogenicity: Not listed in NTP, IARC, or OSHA as known carcinogen.

Chronic Effects

Mutagenicity: No evidence of mutagenic effect.

Teratogenicity: No evidence of teratogenic effect (birth defect).

Sensitization: No evidence of a sensitization effect.

Reproductive: No evidence of negative reproductive effects.

Other Toxicological Information

Individuals with Wilson's disease are unable to metabolize copper. Thus, persons with pre-existing Wilson's disease may be more susceptible to the effects of overexposure to this product. Persons with pre-existing skin disorders, impaired liver, kidney, or pulmonary function may also be more susceptible to the effects of this product.

Section 12- Ecological Information

Ecotoxicity

General Product Information

This product is a severe ecological hazard. This product may be toxic to plants and/or wildlife. Highly/very toxic to fish and other water organisms. Keep out of waterways.

Mobility in Soil

No data available.

Bioaccumulative Potential

Copper compounds are accumulated by plants and animals, but do not appear to be biomagnify from plants to animals.

Persistence

In soil, acidic conditions promote solubility of copper compounds and increase the concentration of ionic copper and so change the microorganism and other animal populations, depending on their various tolerance levels for copper. In aquatic environments, some copper compounds may be metabolized, however, there is no evidence that biotransformation processes have a significant bearing on the aquatic fate of these compounds. In water, as in soil, copper compounds will bind to carbonates, clay, humic materials, and hydrous oxides of iron and manganese. In the atmosphere, copper compounds (as aerosols) are estimated to have a residence time of two to ten days in an unpolluted atmosphere and 0.1 to less than four days in polluted, urban areas.

Degradability

No data available.

Section 13- Disposal Considerations

US EPA Waste Number & Descriptions

General Product Information

As shipped, this product is not considered a hazardous waste.

Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

All wastes must be handled in accordance with local, state, and federal regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

Section 14- Transportation Information

US DOT Information

Shipping Name: Non-regulated
Hazard Class: N/A
UN/NA: N/A
Packing Group: N/A
Required Label(s): None
Additional Shipping Paper Description: None

International Air Transport Association (IATA)

Shipping Name: Environmental hazardous substance, solid, n.o.s. (Copper Oxide)
Hazard Class: 9
UN/NA #: UN3077
Packing Group: III

Section 15- Regulatory Information

US Federal Regulations

General Product Information

As a copper compound, copper oxide (CAS # 1317-38-0) is listed as a priority and toxic pollutant under the Clean Water Act.

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Copper Compounds (7440-50-8)

SARA 313: Final RQ = 5000 pounds (2270 kg) Note: no reporting of releases of this substance is required if the diameter of the solid metal piece is equal to or greater than 0.004 inches.

Copper Oxide (1317-38-0)

SARA 311/312: Acute Health: YES, **Chronic Health:** YES, **Fire:** NO, **Pressure:** NO, **Reactive:** NO

State Regulations

General Product Information

Other state regulations may apply. Check individual state requirements.

Component Analysis- State

The following states contain copper oxide or one of its components on their sate hazardous substance list: CA, FL, MA, MN, NJ, and PA.

Component Analysis – WHMIS IDL

The following components are identified under Canadian Hazardous Products Act Ingredient Disclosure List: Copper oxide (minimum concentration): 1%; English Item 433; French Item 578 (related to copper, elemental).

Additional Regulatory Information (TSCA Status)

All components are on the US EPA TSCA Inventory List. All components are on the Canadian Domestic Substances or Non-Domestic Substances Inventory Lists.

Section 16- Other Information

Other Information

Disclaimer: Supplier gives no warranty of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser will make his own tests to determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental and/or consequential property damage arising out of the use of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. Read the Safety Data Sheet before handling product.

Reference Documentation

Information based on Safety Data Sheets for similar materials and SDSs for individual components on file at ShoreMet LLC.

Preparer Information

SDS Preparer: Travis J. Lechien

SDS Preparer Telephone Number: (219) 390-3336 x103

Revision Log:

Revision	Date	Initiator	Description of Changes
1	2/11/16	Travis J. Lechien	Original
2	6/30/2016	Travis J. Lechien	Contact Information, Composition

This is the end of SDS ShoreMet Cupric Oxide