

## SAFETY DATA SHEET

Version 4.9  
Revision Date 05/27/2016  
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1. PRODUCT AND COMPANY IDENTIFICATION

## 1.1 Product identifiers

Product name : Copper(II) perchlorate hexahydrate

Product Number : 215392  
Brand : Aldrich

CAS-No. : 10294-46-9

## 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

## 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052

## 1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

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2. HAZARDS IDENTIFICATION

## 2.1 Classification of the substance or mixture

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Oxidizing solids (Category 2), H272

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word : Danger

Hazard statement(s)

H272

May intensify fire; oxidizer.

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H335

May cause respiratory irritation.

Precautionary statement(s)

P210

Keep away from heat.

P220

Keep/Store away from clothing/ combustible materials.

P221

Take any precaution to avoid mixing with combustibles.

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P264

Wash skin thoroughly after handling.

|                    |                                                                                                                                                                |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P271               | Use only outdoors or in a well-ventilated area.                                                                                                                |
| P280               | Wear protective gloves/ eye protection/ face protection.                                                                                                       |
| P302 + P352        | IF ON SKIN: Wash with plenty of soap and water.                                                                                                                |
| P304 + P340 + P312 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.                               |
| P332 + P313        | If skin irritation occurs: Get medical advice/ attention.                                                                                                      |
| P337 + P313        | If eye irritation persists: Get medical advice/ attention.                                                                                                     |
| P362               | Take off contaminated clothing and wash before reuse.                                                                                                          |
| P370 + P378        | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.                                                                          |
| P403 + P233        | Store in a well-ventilated place. Keep container tightly closed.                                                                                               |
| P405               | Store locked up.                                                                                                                                               |
| P501               | Dispose of contents/ container to an approved waste disposal plant.                                                                                            |

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

Synonyms : Cupric perchloratehexahydrate

Formula :  $\text{Cl}_2\text{CuO}_8 \cdot 6\text{H}_2\text{O}$

Molecular weight : 370.54 g/mol

CAS-No. : 10294-46-9

EC-No. : 237-391-4

#### Hazardous components

| Component                                 | Classification                                                              | Concentration |
|-------------------------------------------|-----------------------------------------------------------------------------|---------------|
| <b>Copper(II) perchlorate hexahydrate</b> |                                                                             |               |
|                                           | Ox. Sol. 2; Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; H272, H315, H319, H335 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 4. FIRST AID MEASURES

### 4.1 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.

### 4.2 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

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## 5. FIREFIGHTING MEASURES

### 5.1 Extinguishing media

#### **Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### 5.2 Special hazards arising from the substance or mixture

No data available

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.4 Further information

Use water spray to cool unopened containers.

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## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 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.

### 6.2 Environmental precautions

Do not let product enter drains.

### 6.3 Methods and materials for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

### 6.4 Reference to other sections

For disposal see section 13.

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## 7. HANDLING AND STORAGE

### 7.1 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. Keep away from sources of ignition - No smoking. Keep away from heat and sources of ignition.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Hygroscopic.

Storage class (TRGS 510): Strongly oxidizing hazardous materials

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

**Components with workplace control parameters**

| Component                          | CAS-No.    | Value | Control parameters | Basis                                  |
|------------------------------------|------------|-------|--------------------|----------------------------------------|
| Copper(II) perchlorate hexahydrate | 10294-46-9 | TWA   | 1.000000 mg/m3     | USA. NIOSH Recommended Exposure Limits |
|                                    |            | TWA   | 1.000000 mg/m3     | USA. NIOSH Recommended Exposure Limits |
|                                    |            | TWA   | 1 mg/m3            | USA. NIOSH Recommended Exposure Limits |

## 8.2 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

Safety glasses with side-shields conforming to EN166 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

Impervious clothing, 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 full-face 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

Do not let product enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |                                                 |                   |
|-------------------------------------------------|-------------------|
| a) Appearance                                   | Form: crystalline |
| b) Odour                                        | No data available |
| c) Odour Threshold                              | No data available |
| d) pH                                           | No data available |
| e) Melting point/freezing point                 | No data available |
| f) Initial boiling point and boiling range      | No data available |
| g) Flash point                                  | Not applicable    |
| h) Evaporation rate                             | No data available |
| i) Flammability (solid, gas)                    | No data available |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapour pressure                              | No data available |
| l) Vapour density                               | No data available |

- |                                           |                                                                          |
|-------------------------------------------|--------------------------------------------------------------------------|
| m) Relative density                       | 2.225 g/cm <sup>3</sup> at 25 °C (77 °F)                                 |
| n) Water solubility                       | No data available                                                        |
| o) Partition coefficient: n-octanol/water | No data available                                                        |
| p) Auto-ignition temperature              | No data available                                                        |
| q) Decomposition temperature              | No data available                                                        |
| r) Viscosity                              | No data available                                                        |
| s) Explosive properties                   | No data available                                                        |
| t) Oxidizing properties                   | The substance or mixture is classified as oxidizing with the category 2. |

## 9.2 Other safety information

No data available

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

Avoid moisture.

### 10.5 Incompatible materials

Reducing agents, Organic materials, Powdered metals, Aluminum

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Hydrogen chloride gas, Copper oxides

Other decomposition products - No data available

In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

No data available

Dermal: No data available

No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitisation

No data available

#### Germ cell mutagenicity

No data available

#### 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.

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.

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 identified as a carcinogen or potential carcinogen by OSHA.

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### **Reproductive toxicity**

No data available

No data available

#### **Specific target organ toxicity - single exposure**

Inhalation - May cause respiratory irritation.

#### **Specific target organ toxicity - repeated exposure**

No data available

#### **Aspiration hazard**

No data available

#### **Additional Information**

RTECS: Not available

Symptoms of systemic copper poisoning may include: capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis, and coma. Death may occur from shock or renal failure. Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defects, and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has lead to hemolytic anemia and accelerates arteriosclerosis.

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## **12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

No data available

### **12.2 Persistence and degradability**

No data available

### **12.3 Bioaccumulative potential**

No data available

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### **12.6 Other adverse effects**

No data available

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## **13. DISPOSAL CONSIDERATIONS**

### **13.1 Waste treatment methods**

#### **Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

#### **Contaminated packaging**

Dispose of as unused product.

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## 14. TRANSPORT INFORMATION

### DOT (US)

UN number: 1481      Class: 5.1      Packing group: II  
Proper shipping name: Perchlorates, inorganic, n.o.s.  
Reportable Quantity (RQ):

Poison Inhalation Hazard: No

### IMDG

UN number: 1481      Class: 5.1      Packing group: II      EMS-No: F-H, S-Q  
Proper shipping name: PERCHLORATES, INORGANIC, N.O.S.

### IATA

UN number: 1481      Class: 5.1      Packing group: II  
Proper shipping name: Perchlorates, inorganic, n.o.s.

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## 15. REGULATORY INFORMATION

### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

|                                    | CAS-No.    | Revision Date |
|------------------------------------|------------|---------------|
| Copper(II) perchlorate hexahydrate | 10294-46-9 | 2007-07-01    |

### SARA 311/312 Hazards

Reactivity Hazard, Acute Health Hazard

### Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

### Pennsylvania Right To Know Components

|                                    | CAS-No.    | Revision Date |
|------------------------------------|------------|---------------|
| Copper(II) perchlorate hexahydrate | 10294-46-9 | 2007-07-01    |

### New Jersey Right To Know Components

|                                    | CAS-No.    | Revision Date |
|------------------------------------|------------|---------------|
| Copper(II) perchlorate hexahydrate | 10294-46-9 | 2007-07-01    |

### California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## 16. OTHER INFORMATION

### Full text of H-Statements referred to under sections 2 and 3.

|             |                                                  |
|-------------|--------------------------------------------------|
| Eye Irrit.  | Eye irritation                                   |
| H272        | May intensify fire; oxidizer.                    |
| H315        | Causes skin irritation.                          |
| H319        | Causes serious eye irritation.                   |
| H335        | May cause respiratory irritation.                |
| Ox. Sol.    | Oxidizing solids                                 |
| Skin Irrit. | Skin irritation                                  |
| STOT SE     | Specific target organ toxicity - single exposure |

### HMIS Rating

Health hazard:                      2

Chronic Health Hazard:  
Flammability: 0  
Physical Hazard 2

**NFPA Rating**

Health hazard: 2  
Fire Hazard: 0  
Reactivity Hazard: 2  
Special hazard.I: OX

**Further information**

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**Preparation Information**

Sigma-Aldrich Corporation  
Product Safety – Americas Region  
1-800-521-8956

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