

8865



FREEPORT-McMoRAN

## Copper

## Safety Data Sheet

Revision date: 05/13/2015

SB10505 thru SB10510 K101139 H  
SB10512 SB10513 K103901CQ  
SB10515 thru SB10523 K103901CU  
SB10525 SB10526 K104130 H  
SB40515 SB42921 9720605  
9711269 thru 9711274 9728090  
Supersedes: 01/21/2013 Version: 3.0

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## 1.1. Product identifier

Product form : Substance  
Substance name : Copper  
Chemical name : Copper  
CAS No. : 7440-50-8  
Synonyms : copper, copper anodes, copper cathodes, copper rod, copper wire, copper sheet, copper bar  
Other means of identification : Copper-various forms (anodes, rod, bars, billets, cakes, cathodes, sheets, wire)

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

Use of the substance/mixture : Industrial

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

Freeport-McMoRan Copper and Gold  
333 N. Central Ave  
Phoenix AZ 85004  
Phone: 602-366-8100

## 1.4. Emergency telephone number

Carechem 24 Emergency Numbers:

US/Canada +1 866 928 0789  
Mexico +52 55 5004 8763  
EU Regional +441235 239670  
Africa/South Africa +44 1235 239671  
Asia/Pacific Regional +65 3158 1074

## SECTION 2: Hazards identification

## 2.1. Classification of the substance or mixture

GHS-US classification  
Acute Tox. 4 (Oral) H302

## 2.2. Label elements

GHS-US labelling  
Hazard pictograms (GHS-US)



GHS07

Signal word (GHS-US) : Warning  
Hazard statements (GHS-US) : H302 - Harmful if swallowed  
Precautionary statements (GHS-US) : P264 - Wash Skin thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P301+P312 - If swallowed, call a doctor if you feel unwell  
P330 - If swallowed, rinse mouth  
P501 - Dispose of contents/container to Comply with applicable local, national and international regulation.

## 2.3. Other hazards

other hazards which do not result in classification : If user operations generate dust or fume, dust or fumes may cause irritation of the eyes, skin and respiratory tract. metal fume fever has been associated with metals such as zinc, magnesium, aluminum, antimony, iron, manganese, mercury, nickel and tin. however, there is insufficient evidence to conclude that exposures to copper dust and copper fume cause metal fume fever.

## 2.4. Unknown acute toxicity (GHS US)

No data available

## SECTION 3: Composition/information on ingredients

## 3.1. Substances



## Copper

### Safety Data Sheet

Name	Product Identifier	%	GHS-US classification
Copper (Main constituent)	(CAS No.) 7440-50-8	>= 99.6	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 3, H412

Full text of H-phrases: see section 16

### 3.2. Mixture

Not applicable

## SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures general	<p>If user operations generate dust or fume, . dust or fumes may cause irritation of the eyes, skin and respiratory tract.</p> <p>. ROUTE(S) OF ENTRY: INHALATION, EYE AND INGESTION OF OUST OR FUME.</p>
First-aid measures after inhalation	If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
First-aid measures after skin contact	Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.
First-aid measures after eye contact	if dust or fume contacts the eyes,. Immediately flush eyes thoroughly with water for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	if swallowed, induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/ attention.

#### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	: Upper respiratory irritation accompanied by coughing, dryness of mucous membranes.
Symptoms/injuries after inhalation	: Dust or fume may cause. Irritating to the nose, throat, and respiratory tract. metal fume fever has been associated with metals such as zinc, magnesium, aluminum, antimony, iron, manganese, mercury, nickel and tin. however, there is insufficient evidence to conclude that exposures to copper dust and copper fume cause metal fume fever. symptoms of metal fume fever include muscular pains, sudden onset of chills, weakness, fatigue, nausea, vomiting, headache, diarrhea and onset may be delayed for several hours.
Symptoms/injuries after skin contact	: Dust from this product may cause skin irritation.
Symptoms/injuries after eye contact	: dust or fume may cause eye irritation.
Symptoms/injuries after ingestion	: Irritation of the stomach possible.
Chronic symptoms	: Effects from chronic exposure are rare except in individuals with Wilson's disease.

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

Wilson's disease or  $\alpha 1$  antitrypsin deficiency causes individuals to absorb, retain, and store copper excessively, leading to copper toxicosis.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media:	: Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	: Do not use direct water stream.

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

Fire hazard	: Heavy airborne concentrations of fine powder in enclosed spaces may ignite or explode in the presence of sources of ignition. Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air.
Explosion hazard	: Heavy airborne concentrations of fine powder in enclosed spaces may ignite or explode in the presence of sources of ignition.

### 5.3. Advice for firefighters

Firefighting instructions	: Spray suitable extinguishing media directly at base of flame. Do not use a solid water stream as it may scatter and spread fire. Evacuate area.
Protective equipment for firefighters	: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.
Other information	: The substance can readily form explosive peroxides. In the presence of wet acetylene and ammonia, copper forms explosive acetylides.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Do not allow the product to be released into the environment. Avoid generation of dust, toxic and corrosive vapours are released.

6.1.1. For non-emergency personnel

Protective equipment	: Wear protective clothing as described in Section 8 of this safety data sheet.
Emergency procedures	: Avoid contact with skin and eyes. Wear suitable protective clothing. Eliminate all ignition sources if safe to do so. Evacuate unnecessary personnel.



Copper
Safety Data Sheet

- 6.1.2. For emergency responders
Protective equipment
Emergency procedures
: Wear protective clothing as described in Section 8 of this safety data sheet.
: Evacuate unnecessary personnel. Eliminate all sources of ignition, avoid sparks, flames and do not smoke in risk area. Avoid contact with skin and eyes. Avoid generation of dust, avoid breathing dust.

6.2. Environmental precautions
Avoid release to the environment. Comply with all laws and regulations. Prevent runoff from entering drains, sewers or waterways.

- 6.3. Methods and material for containment and cleaning up
For containment
Methods for cleaning up
: Contain the discharged material.
: Avoid generation of dust. (VACUUM, WET). Avoid repeated or prolonged contact with the skin. Any waste must be disposed of in accordance with federal, state, and local environmental regulations.

6.4. Reference to other sections
Refer to sections 8 and 13.

SECTION 7: Handling and storage

- 7.1. Precautions for safe handling
Precautions for safe handling
Hygiene measures
: Avoid generation of dust. Avoid contact with eyes, skin, and clothing. Avoid repeated or prolonged skin contact. Avoid contact with strong acids, strong oxidizing agents, chlorine, fused ammonium nitrate, nitrosyl fluoride, iodine pentafluoride. Do not breathe dust, do not handle or store near heat, sparks, or any other potential ignition sources. Do not handle until all safety precautions have been read and understood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers to flames, sparks, heat, or other potential ignition sources.
: Contaminated work clothing should not be allowed out of the workplace. Do no eat, drink or smoke when using this product. Separate working clothes from town clothes. Launder separately. Take care for general good hygiene and housekeeping. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
- 7.2. Conditions for safe storage, including any incompatibilities
Technical measures:
Storage condition(s)
Incompatible materials
Storage area
: Avoid static electricity discharges. Comply with applicable regulations. Control airborne concentrations below the exposure limits. Ensure adequate ventilation of the storage area.
: Store in a clean, dry, fire resistant area. Keep cool. Protect from sunlight.
: Acids. Oxidizing agent.
: Store in a well-ventilated place.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Copper (7440-50-8)		
USA OSHA	OSHA PEL (TWA) (mg/m3) (Dust)	1 mg/m³

Copper (7440-50-8)		
USA OSHA	OSHA PEL (TWA) (mg/m3) (Fume)	0.1 mg/m³

- 8.2. Exposure controls
Appropriate engineering controls
Personal protective equipment
: If user operations generate dust or fume, . Use ventilation to keep exposure to airborne contaminants below the exposure limits.
: Gloves. Protective clothing. Safety glasses. Wear suitable protective clothing.



- Hand protection
Eye protection
Skin and body protection
Respiratory protection
: In case of repeated or prolonged contact wear gloves. Avoid contact with skin.
: Use safety glasses with side-shields or goggles.
: Wear protective shoes. Wear long sleeves. Wear suitable protective clothing.
: A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. For concentrations up to 10 times the exposure limit, use NIOSH approved half- or full-face, air-purifying respirator with acid gas cartridges in combination with particulate filter. For higher concentrations, consult a professional industrial hygienist.



# Copper

## Safety Data Sheet

### SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties	
Physical state	: Solid
Appearance	: Various shapes.
Molecular mass	: 63.54 g/mol
Colour	: Reddish-yellow. copper.
odour	: Odorless.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 1083 °C 1981.4 °F (Fahrenheit)
Freezing point	: No data available
Boiling point	: 2595 °C 4703 °F
Flash point	: Not applicable
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: 1 mm Hg at 1628°C = 2962.4°F (20 mm Hg at 1970°C = 3578.0°F)
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Water: Insoluble
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information
No additional information available

### SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available
10.2. Chemical stability
Stable under recommended storage conditions.
10.3. Possibility of hazardous reactions
No additional information available
10.4. Conditions to avoid
No additional information available
10.5. Incompatible materials
copper is potentially explosive with: acetylinic compounds, 3-bromopropene, ethylene oxide, lead azide, and ammonium nitrate. ignites on contact with chlorine, fluorine, and hydrazinememonitrate. reacts violently with sodium azide, halogenates, peroxides, hydrogen sulfide, hydrozoic acid, bromates, chlorates, iodates, chloride and potassium oxide. avoid contact with strong acids.
10.6. Hazardous decomposition products
HIGH TEMPERATURES ASSOCIATED WITH SMELTING OR WELDING RELEASES METAL OXIDE FUMES.

### SECTION 11: Toxicological information

11.1. Information on toxicological effects	
Acute toxicity	: Harmful if swallowed.
Skin corrosion/irritation	: Not classified pH: Not applicable
Serious eye damage/irritation	: Not classified pH: Not applicable
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified

# Copper

## Safety Data Sheet

Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: Dust or fume may cause. Irritating to the nose, throat, and respiratory tract. metal fume fever has been associated with metals such as zinc, magnesium, aluminum, antimony, iron, manganese, mercury, nickel and tin. however, there is insufficient evidence to conclude that exposures to copper dust and copper fume cause metal fume fever. symptoms of metal fume fever include muscular pains, sudden onset of chills, weakness, fatigue, nausea, vomiting, headache, diarrhea and onset may be delayed for several hours.
Symptoms/injuries after skin contact	: Dust from this product may cause skin irritation.
Symptoms/injuries after eye contact	: dust or fume may cause eye irritation.
Symptoms/injuries after ingestion	: Irritation of the stomach possible.
Chronic symptoms	: Effects from chronic exposure are rare except in individuals with Wilson's disease.

## SECTION 12: Ecological information

### 12.1. Toxicity

Copper (7440-50-8)	
LC50 fishes 1	0.0068 - 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
EC50 Daphnia 1	0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 other aquatic organisms 1	0.0426 - 0.0535 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata [static])
LC50 fish 2	< 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 other aquatic organisms 2	0.031 - 0.054 mg/l (Exposure time: 96 h - Species: Pseudokirchneriella subcapitata [static])

## 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

#### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Waste must be disposed of in accordance with federal, state, and local environmental regulations.

## SECTION 14: Transport information

In accordance with DOT/ADR/RID/ADNR/IMDG/ICAO/IATA

## 14.1. UN number

Not applicable

#### 14.2. UN proper shipping name

Not applicable

### 14.3. Additional information

Other information : No supplementary information available.

### Overland transport

No additional information available

### Transport by sea

No additional information available

### Air transport

No additional information available



Copper
Safety Data Sheet

SECTION 15: Regulatory information

15.1. US Federal regulations

Table with 2 columns: Regulation, Details. Rows include CERCLA RQ (5000 lb SUBJECT TO SIZE LIMITATIONS), TSCA inventory listing, and SARA Section 313 (TRI) listing.

15.2. International regulations

Table for CANADA regulations. Rows include Copper (7440-50-8) listed on the Canadian DSL inventory and WHMIS Classification (Uncontrolled product).

Table for EU-Regulations. Row includes Copper (7440-50-8) listed on the EEC inventory EINECS.

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Aquatic Acute 1 H400
Aquatic Chronic 3 H412
Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC
Not classified
15.2.2. National regulations

Table for National regulations. Row includes Copper (7440-50-8) listed on various national inventories (AICS, IECSC, ECL, NZIoC, PICCS, Canadian Ingredient Disclosure List).

15.3. US State regulations

Table for US State regulations. Row includes Copper (7440-50-8) and a comprehensive list of state-level regulations from California to Illinois.



# Copper

## Safety Data Sheet

### Copper (7440-50-8)

U.S. - Louisiana - Reportable Quantity List for Pollutants  
U.S. - Maryland - Surface Water Quality Standards - Acute Freshwater Aquatic Life  
U.S. - Maryland - Surface Water Quality Standards - Acute Saltwater Aquatic Life Criteria  
U.S. - Maryland - Surface Water Quality Standards - Chronic Freshwater Aquatic Life  
U.S. - Maryland - Surface Water Quality Standards - Chronic Saltwater Aquatic Life Criteria  
U.S. - Maryland - Surface Water Quality Standards - Consumption of Water and Organisms  
U.S. - Massachusetts - Allowable Ambient Limits (AALs)  
U.S. - Massachusetts - Allowable Threshold Concentrations (ATCs)  
U.S. - Massachusetts - Drinking Water - Maximum Contaminant Levels (MCLs)  
U.S. - Massachusetts - Drinking Water - Secondary Maximum Contaminant Levels (SMCLs)  
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1  
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2  
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity  
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1  
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2  
U.S. - Massachusetts - Right To Know List  
U.S. - Massachusetts - Threshold Effects Exposure Limits (TEELs)  
U.S. - Massachusetts - Toxics Use Reduction Act  
U.S. - Michigan - Occupational Exposure Limits - TWAs  
U.S. - Michigan - Polluting Materials List  
U.S. - Minnesota - Hazardous Substance List  
U.S. - Minnesota - Permissible Exposure Limits - TWAs  
U.S. - Missouri - Drinking Water - Maximum Contaminant Levels (MCLs)  
U.S. - Missouri - Drinking Water - Secondary Maximum Contaminant Levels (SMCLs)  
U.S. - Nevada - Drinking Water - Secondary Maximum Contaminant Levels (SMCLs)  
U.S. - New Hampshire - Drinking Water - Secondary Maximum Contaminant Levels (SMCLs)  
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - 24-Hour  
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - Annual  
U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances  
U.S. - New Jersey - Environmental Hazardous Substances List  
U.S. - New Jersey - Primary Drinking Water Standards - Action Levels - ALs  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - New Jersey - Water Quality - Ground Water Quality Criteria  
U.S. - New Jersey - Water Quality - Practical Quantitation Levels (PQLs)  
U.S. - New Mexico - Water Quality - Standards for Ground Water of 10,000 mg/L TDS Concentration or Less  
U.S. - New York - Occupational Exposure Limits - TWAs  
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances  
U.S. - North Dakota - Air Pollutants - Guideline Concentrations - 8-Hour  
U.S. - North Dakota - Water Quality Standards - Aquatic Life Acute Value for Classes I, IA, II, III  
U.S. - North Dakota - Water Quality Standards - Aquatic Life Chronic Value for Classes I, IA, II, III  
U.S. - North Dakota - Water Quality Standards - Human Health Value for Classes I, IA, II  
U.S. - Oregon - Permissible Exposure Limits - TWAs  
U.S. - Pennsylvania - Beneficial Use of Sewage Sludge by Land Application - Pollutant Ceiling Limits  
U.S. - Pennsylvania - Drinking Water - Maximum Contaminant Levels (MCLs)  
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
U.S. - Pennsylvania - RTK (Right to Know) List  
U.S. - Rhode Island - Air Toxics - Acceptable Ambient Levels - 1-Hour  
U.S. - Rhode Island - Air Toxics - Acceptable Ambient Levels - Annual  
U.S. - Rhode Island - Water Quality Standards - Acute Freshwater Aquatic Life Criteria  
U.S. - Rhode Island - Water Quality Standards - Acute Saltwater Aquatic Life Criteria  
U.S. - Rhode Island - Water Quality Standards - Chronic Freshwater Aquatic Life Criteria  
U.S. - Rhode Island - Water Quality Standards - Chronic Saltwater Aquatic Life Criteria  
U.S. - Rhode Island - Water Quality Standards - Human Health Criteria for Consumption of Water and Aquatic Organisms  
U.S. - South Carolina - Secondary Maximum Contaminant Levels (SMCLs)  
U.S. - Tennessee - Occupational Exposure Limits - TWAs  
U.S. - Texas - Drinking Water Standards - Secondary Constituent Levels (SCLs)  
U.S. - Texas - Effects Screening Levels - Long Term  
U.S. - Texas - Effects Screening Levels - Short Term  
U.S. - Utah - Drinking Water - Secondary Maximum Contaminant Levels (SMCLs)  
U.S. - Vermont - Permissible Exposure Limits - TWAs  
U.S. - Virginia - Water Quality Standards - Acute Freshwater Aquatic Life  
U.S. - Virginia - Water Quality Standards - Acute Saltwater Aquatic Life  
U.S. - Virginia - Water Quality Standards - Chronic Freshwater Aquatic Life  
U.S. - Virginia - Water Quality Standards - Chronic Saltwater Aquatic Life  
U.S. - Virginia - Water Quality Standards - Public Water Supply Effluent Limits  
U.S. - Washington - Permissible Exposure Limits - STELs  
U.S. - Washington - Permissible Exposure Limits - TWAs  
U.S. - West Virginia - Water Quality - Groundwater Standards - Ceiling Concentrations  
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights 25 Feet to Less Than 40 Feet  
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights 40 Feet to Less Than 75 Feet  
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights 75 Feet or Greater  
U.S. - Wisconsin - Hazardous Air Contaminants - All Sources - Emissions From Stack Heights Less Than 25 Feet  
U.S. - Alaska - Water Quality Standards - Acute Aquatic Life Criteria for Fresh Water  
U.S. - Alaska - Water Quality Standards - Chronic Aquatic Life Criteria for Fresh Water  
U.S. - Alaska - Water Quality Standards - Acute Aquatic Life Criteria for Marine Water  
U.S. - Alaska - Water Quality Standards - Chronic Aquatic Life Criteria for Marine Water



# Copper

## Safety Data Sheet

Copper (7440-50-8)
U.S. - Arkansas - Surface Water Quality Standards - Chronic Aquatic Life Criteria
U.S. - Arkansas - Surface Water Quality Standards - Acute Aquatic Life Criteria

### SECTION 16: Other information

Full text of H-phrases: see section 16:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
H302	Harmful if swallowed
H400	Very toxic to aquatic life
H412	Harmful to aquatic life with long lasting effects

- NFPA health hazard

: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
- NFPA fire hazard

: 0 - Materials that will not burn.
- NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



- HMIS III Rating
- Health

: 1 Slight Hazard - Irritation or minor reversible injury possible
- Flammability

: 0 Minimal Hazard
- Physical

: 0 Minimal Hazard

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