# SAFETY DATA SHEET

**Date Accessed:** 03/28/2024
**Date Revised:** 01/15/2022

## SECTION 1. IDENTIFICATION

**Product Name:** Copper Nanowires

**Product Number:** All applicable American Elements product codes, e.g. CU-M-01-NW.P

**CAS #:** 7440-50-8

**Relevant identified uses of the substance:** Scientific research and development

**Supplier details:**
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351

**Emergency telephone number:**
+1 800-424-9300

## SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
GHS02 Flame
Flam. Sol. 2 H228 Flammable solid.
GHS07
Eye Irrit. 2A H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.
Classification according to Directive 67/548/EEC or Directive 1999/45/EC
Xi; Irritant
R36/37: Irritating to eyes and respiratory system.
F; Highly flammable
R11: Highly flammable.
N; Dangerous for the environment
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Information concerning particular hazards for human and environment:
N/A
Hazards not otherwise classified
No data available.
Label elements
Labeling according to Regulation (EC) No 1272/2008
The substance is classified and labeled according to the CLP regulation.

Hazard pictogram



GHS02 GHS07
Signal word: Warning
Hazard statements
H228 Flammable solid.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
WHMIS classification
B4 - Flammable solid
D2B - Toxic material causing other toxic effects
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)
Health (acute effects) = 1
Flammability = 2
Physical Hazard = 1
Other hazards
Results of PBT and vPvB assessment:
PBT: N/A.
vPvB: N/A.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances
CAS No. / Substance Name:
7440-50-8 Copper
Identification number(s):
EC number: 231-159-6

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## SECTION 4. FIRST AID MEASURES

Description of first aid measures
If inhaled:
Supply fresh air. If required, provide arti
ficial respiration. Keep patient warm.
Seek immediate medical advice.
In case of skin contact:
Immediately wash with soap and water; rinse thoroughly.

Seek immediate medical advice.
In case of eye contact:
Rinse opened eye for several minutes under running water. Consult a physician.
If swallowed:
Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
No information available.
Indication of any immediate medical attention and special treatment needed
No information available.

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## SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing media
Special powder for metal fires. Do not use water.
For safety reasons unsuitable extinguishing media
Water
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Metal oxide fume
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions:
Do not allow material to be released to the environment without official permits.
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.
Methods and material for containment and cleanup:
Keep away from ignition sources.
Ensure adequate ventilation.
Prevention of secondary hazards:
Keep away from ignition sources.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information

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## SECTION 7. HANDLING AND STORAGE

Handling
Precautions for safe handling

Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure adequate ventilation.
Information about protection against explosions and fires:
Protect against electrostatic charges.
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles:
Store in a cool location.
Information about storage in one common storage facility:
Do not store together with oxidizing and acidic materials.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well-sealed containers.
Specific end use(s)
No information available.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
Control parameters
Components with limit values that require monitoring at the workplace:
7440-50-8 Copper (100.0%)
PEL (USA) Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
REL (USA) Long-term value: 1* 0.1** mg/m³ as Cu *dusts and mists **fume
TLV (USA) Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume; as Cu
EL (Canada) Long-term value: 1* 0.2** mg/m³ *dusts and mists; **fume
EV (Canada) Long-term value: 0.2* 1** mg/m³ as copper, *fume;**dust and mists
Additional information: No data
Exposure controls
Personal protective equipment
Follow typical general protective and industrial hygiene measures for handling chemicals.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
Breathing equipment:
Use suitable respirator when high concentrations are present.
Protection of hands:
Impervious gloves
Inspect gloves prior to use.
Suitability of gloves should be determined both by material and quality, the latter of which may vary by manufacturer.
Penetration time of glove material (in minutes)
No data available.
Eye protection: Safety glasses
Body protection: Protective work clothing.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
Appearance:
Form: Powder
Color: Copper colored
Odor: Odorless
Odor threshold: No data available.
pH: N/A.
Melting point/range: 1083 °C (1981 °F)
Boiling point/range: 2562 °C (4644 °F)
Sublimation temperature / start: No data available.
Flammability (solid, gas): Highly flammable.
Ignition temperature: No data available.
Decomposition temperature: No data available.
Auto igniting: No data available.
Danger of explosion: No data available.
Explosion limits:
Lower: No data available.
Upper: No data available.
Vapor pressure at 20 °C (68 °F): 0 hPa
Density at 20 °C (68 °F): 8.94 g/cm³ (74.604 lbs/gal)
Relative density: No data available.
Vapor density: N/A.
Evaporation rate: N/A.
Solubility in Water ($H_2O$): Insoluble
Partition coefficient (n-octanol/water): No data available.
Viscosity:
Dynamic: N/A.
Kinematic: N/A.
Other information
No information available.

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## SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available.
Chemical stability
Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions
No dangerous reactions known
Conditions to avoid
No information available.
Incompatible materials:
Acids
Oxidizing agents
Hazardous decomposition products:
Metal oxide fume

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## SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.
LD/LC50 values that are relevant for classification:
Oral LD50 >5000 mg/kg (mouse)
Skin irritation or corrosion: May cause irritation
Eye irritation or corrosion: Causes serious eye damage.
Sensitization: No sensitizing effects known.
Germ cell mutagenicity: N/A
Carcinogenicity:
EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.
Reproductive toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.
Specific target organ system toxicity - repeated exposure: N/A
Specific target organ system toxicity - single exposure: May cause respiratory irritation.
Aspiration hazard: N/A
Subacute to chronic toxicity: N/A
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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## SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity:
No information available.
Persistence and degradability:
No information available.
Bioaccumulative potential:
No information available.
Mobility in soil:
No information available.
Additional ecological information:
General notes:
Do not allow material to be released to the environment without official permits.
Also poisonous for fish and plankton in water bodies.
Toxic to aquatic life.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.
Results of PBT and vPvB assessment:
PBT: N/A.
vPvB: N/A.
Other adverse effects
No information available.

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## SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Recommendation:
Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation:
Disposal must be made according to official regulations.

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## SECTION 14. TRANSPORT INFORMATION

UN-Number
DOT, IMDG, IATA
UN3089
UN proper shipping name
DOT
Metal powders, flammable, n.o.s. (Copper powder)
IMDG
METAL POWDER, FLAMMABLE, N.O.S. (Copper powder), MARINE POLLUTANT
IATA
METAL POWDER, FLAMMABLE, N.O.S. (Copper powder)
Transport hazard class(es)
DOT
Class
4.1 Flammable solids, self-reactive substances and solid desensitized explosives.
Label
4.1
Class
4.1 (F3) Flammable solids, self-reactive substances and solid desensitized explosives
Label
4.1
IMDG
Class
4.1 Flammable solids, self-reactive substances and solid desensitized explosives.
Label
4.1
IATA
Class
4.1 Flammable solids, self-reactive substances and solid desensitized explosives.
Label
4.1
Packing group
DOT, IMDG, IATA
III
Environmental hazards:
Environmentally hazardous substance, solid; Marine Pollutant
Marine pollutant (IMDG):
Yes (PP)
Yes (P)
Symbol (fish and tree)
Special precautions for user
Warning: Flammable solids, self-reactive substances and solid desensitized explosives
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

N/A.
Transport/Additional information:
DOT
Marine Pollutant (DOT):
No
Remarks:
Special marking with the symbol (fish and tree).
UN "Model Regulation":
UN3089, Metal powders, flammable, n.o.s. (Copper powder), 4.1, III

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## SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).
SARA Section 313 (specific toxic chemical listings)
7440-50-8 Copper
California Proposition 65
Prop 65 - Chemicals known to cause cancer
Substance is not listed.
Prop 65 - Developmental toxicity
Substance is not listed.
Prop 65 - Developmental toxicity, female
Substance is not listed.
Prop 65 - Developmental toxicity, male
Substance is not listed.
Information about limitation of use:
For use only by technically qualified individuals.
This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.
Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorization for use)
Substance is not listed.
REACH - Pre-registered substances
Substance is listed.
Chemical safety assessment:
A Chemical Safety Assessment has not been carried out

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## SECTION 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the

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