

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Copper Nanowires B2, Industry Grade

Catalog Number: NovaWire-Cu-B2-IND

Formula: Cu

Diameter: ~ 75nm

Length: ~ 5µm

Supplier: Novarials Corporation
800 W Cummings Park, Suite 4600
Woburn, MA 01801

Telephone: +1 617-276-5642

Fax: +1 781-995-0388

2. HAZARDS IDENTIFICATION

Emergency Overview

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

Flammable solids (Category 1), H228

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 1), H410

GHS Label elements, including precautionary statements



Pictogram

Signal word Danger

Hazard statement(s)

H228 Flammable solid.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting equipment.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P391
P501

Collect spillage.
Dispose of contents/container to an approved waste disposal plant.

NFPA Ratings

Health Hazard: 0
Fire Hazard: 3
Reactivity Hazard: 3

HMIS Ratings

Health Hazard: 0
Chronic Health Hazard: *
Flammability: 3
Physical Hazard: 3

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Copper
Formula: Cu
Molecular Weight: 63.55 g/mol

Component	Concentration
Copper	
CAS-No.	7440-50-8
EC-No.	231-159-6
Water	
CAS-No.	7732-18-5
EC-No.	231-791-2

4. FIRST AID MEASURES

General advice

Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

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 and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Suitable extinguishing media

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

Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions – Copper Oxide

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
Keep away from sources of ignition – No smoking.
Take measurement to prevent the build up of electrostatic charge.

Conditions for safe storage

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

Air sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Personal protective equipment****Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respiration 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).

Hand 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.

Eye/Face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Body protection

Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES**APPEARANCE**

Form wet power

Color brown

Safety data

pH no data available

Melting point/freezing point no data available

Boiling point no data available

Flash point no data available

Ignition temperature no data available

Auto ignition temperature no data available

Lower explosion limit no data available

Upper explosion limit no data available

Vapour pressure no data available

Density no data available

Water solubility no data available

Partition coefficient: n-

octanol/water no data available

Relative vapour density no data available

Odour no data available

Odour Threshold no data available

Evaporation rate no data available

10. STABILITY AND REACTIVITY**Reactivity**

no data available

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid

Strong acids, Strong oxidizing agents, Acid chlorides, Halogens.

Hazardous decomposition products

Other decomposition products -no data available

11. TOXICOLOGICAL INFORMATION**Acute toxicity**

no data available

Skin corrosion/irritation

May irritate skin.

Serious eye damage/eye irritation

May irritate eyes.

Respiratory or skin sensitization

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

Reproductive toxicity

no data available

Specific target organ toxicity -single exposure (Globally Harmonized System)

May cause respiratory irritation.

Specific target organ toxicity -repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Additional Information

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 led to hemolytic anemia and accelerates arteriosclerosis. Damage to the lungs, Vomiting, Diarrhoea, Abdominal pain, Blood disorders.

Liver – Irregularities – Based on Human Evidence.

12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to fish

Mortality LOEC – *Oncorhynchus mykiss* (rainbow trout) – 0.022 mg/L – 96h

Toxicity to daphnia and other aquatic invertebrates

Mortality NOEC – *Daphnia* – 0.004 mg/L – 24h

EC50 – *Daphnia magna* (Water flea) – 0.04 – 0.05 mg/L – 48h

Persistence and degradability

no data available

Bioaccumulative potential

Bioaccumulation *Cyprinus carpio* (Carp) – 40 d – 200 mg/L

Bioconcentration factor (BCF): 108

Mobility in soil
no data available

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

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.
Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

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

Contaminated packaging
Dispose of as unused product

14. TRANSPORT INFORMATION

DOT (US)
UN3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powders, flammable, n.o.s.
Reportable Quantity (RQ):
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN3089 Class: 4.1 Packing group: II EMS-No: F-G, S-G
Proper shipping name: Metal powders, flammable, n.o.s
Marine pollutant: No

IATA
UN3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powders, flammable, n.o.s.

15. REGULATORY INFORMATION

SARA 302 Components
Not required

SARA 313 Components
Copper CAS-No. 7440-50-8

SARA 311/312 Hazards
Fire Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
Copper CAS-No. 7440-50-8

Pennsylvania Right To Know Components

Copper
Water

CAS-No. 7440-50-8
CAS-No. 7732-18-5

New Jersey Right To Know Components

Copper
Water

CAS-No. 7440-50-8
CAS-No. 7732-18-5

California Prop. 65 Components

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

16. DISCLAIMER

Novarials Corporation believes that the information in this Safety Data Sheet is accurate and represents the best and most current information available to us. Novarials Corporation makes no representations or warranties either express or implied, regarding the suitability of the materials for any purpose or the accuracy if the information contained within this document. Accordingly, Novarials Corporation and its affiliates shall not be held liable for any damage resulting from shipping, handling, storage, use of the above product.