

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Copper-Tin Alloy Nanoparticles

Product Number: All applicable American Elements product codes, e.g. CU-SN-02-NP , CU-SN-03-NP , CU-SN-04-NP , CU-SN-05-NP

CAS #: 158113-12-3

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

2.1 Classification of the substance or mixture

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

Combustible dust,

Acute aquatic toxicity (Category 1), H400

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word Warning

Hazard statement(s)

May form combustible dust concentrations in air

H400 Very toxic to aquatic life.

Precautionary statement(s)

P273 Avoid release to the environment.

P391 Collect spillage.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Combustible dust

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Synonyms : Bronze

Sn5Cu84

Molecular weight : 182.26 g/mol

Hazardous components

Component Classification Concentration

Copper

CAS-No.

EC-No.

7440-50-8

231-159-6

Aquatic Acute 1; H400 $\geq 90 - \leq 100$

%

Tin

CAS-No.

EC-No.

7440-31-5

231-141-8

$\geq 10 - < 20$ %

SECTION 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.

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

Flush eyes with water as a precaution.

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

SECTION 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

Tin/tin oxides, Copper oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing Vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

For personal protection see section 8.

6.2 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.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

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.

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.

Keep in a dry place.

Storage class (TRGS 510): Non Combustible Solids

7.3 Specific end use(s)

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component CAS-No. Value Control parameters

Basis

Copper 7440-50-8 TWA 1.000000

mg/m³

USA. ACGIH Threshold Limit Values (TLV)

Remarks Irritation
Gastrointestinal
metal fume fever
TWA 1.000000
mg/m3
USA. NIOSH Recommended
Exposure Limits
TWA 1.000000
mg/m3
USA. Occupational Exposure Limits
(OSHA) - Table Z-1 Limits for Air
Contaminants
TWA 0.200000
mg/m3
USA. ACGIH Threshold Limit Values
(TLV)
Irritation
Gastrointestinal
metal fume fever
TWA 0.100000
mg/m3
USA. Occupational Exposure Limits
(OSHA) - Table Z-1 Limits for Air
Contaminants
TWA 1.000000
mg/m3
USA. ACGIH Threshold Limit Values
(TLV)
Irritation
Gastrointestinal
metal fume fever
TWA 0.200000
mg/m3
USA. ACGIH Threshold Limit Values
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TWA 1.000000
mg/m3
USA. NIOSH Recommended
Exposure Limits
TWA 1.000000
mg/m3
USA. NIOSH Recommended
Exposure Limits
TWA 1.000000
mg/m3
USA. Occupational Exposure Limits
(OSHA) - Table Z-1 Limits for Air
Contaminants

TWA 0.100000

mg/m³

USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 1 mg/m³ USA. ACGIH Threshold Limit Values

(TLV)

Irritation

Gastrointestinal

metal fume fever

TWA 0.2 mg/m³ USA. ACGIH Threshold Limit Values

(TLV)

Irritation

Gastrointestinal

metal fume fever

TWA 1 mg/m³ USA. NIOSH Recommended

Exposure Limits

TWA 1 mg/m³ USA. NIOSH Recommended

Exposure Limits

TWA 1 mg/m³ USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 0.1 mg/m³ USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

Tin 7440-31-5 TWA 2.000000

mg/m³

USA. ACGIH Threshold Limit Values

(TLV)

Pneumoconiosis (or Stannosis)

TWA 2.000000

mg/m³

USA. NIOSH Recommended

Exposure Limits

TWA 2.000000

mg/m³

USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

TWA 2 mg/m³ USA. ACGIH Threshold Limit Values

(TLV)

Pneumoconiosis (or Stannosis)

TWA 2 mg/m³ USA. NIOSH Recommended

Exposure Limits

TWA 2 mg/m³ USA. Occupational Exposure Limits

(OSHA) - Table Z-1 Limits for Air

Contaminants

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

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
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- a) Appearance Form: powder
- b) Odor No data available
- c) Odor 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 N/A
- h) Evaporation rate No data available
- i) Flammability (solid, gas) May form combustible dust concentrations in air
- j) Upper/lower flammability or explosive limits
No data available
- k) Vapor pressure No data available
- l) Vapor density No data available
- m) Relative density No data available
- n) Water solubility No data available
- o) Partition coefficient: noctanol/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 No data available

9.2 Other safety information

No data available

SECTION 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

No data available

10.5 Incompatible materials

Strong bases, Strong oxidizing agents, Strong acids, Acid chlorides, Sulphur compounds, Halogens

10.6 Hazardous decomposition products

Other decomposition products - No data available

In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

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.

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.

Reproductive toxicity

No data available

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: Not available

sneezing, Nausea, Weakness, 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.

SECTION 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

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US)

Not dangerous goods

IMDG

UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper)

Marine pollutant:yes

IATA

UN number: 3077 Class: 9 Packing group: III

Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Copper)

Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing

inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

SECTION 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:

Copper

CAS-No.

7440-50-8

Revision Date

2007-07-01

No SARA Hazards

Massachusetts Right To Know Components

Copper

CAS-No.

7440-50-8

Revision Date

2007-07-01

Tin 7440-31-5 1994-04-01

Pennsylvania Right To Know Components

Copper

CAS-No.

7440-50-8

Revision Date

2007-07-01

Tin 7440-31-5 1994-04-01

New Jersey Right To Know Components

Copper

CAS-No.

7440-50-8

Revision Date

2007-07-01

Tin 7440-31-5 1994-04-01

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.

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 properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.