

# SAFETY DATA SHEET

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## SECTION 1. IDENTIFICATION

**Product Identifier:** (3N) 99.9% Copper Ferrite Sputtering Target

**Product Code:** CU-FEO-03-P

**CAS Number:** 12018-79-0

**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)

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 3), H412

2.2 GHS Label elements, including precautionary statements



Pictogram

Signal word Warning

Hazard statement(s)

H400 Very toxic to aquatic life.

H412 Harmful to aquatic life with long lasting effects.

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 - none

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2 Mixtures

Synonyms : Copper ferrite

Formula :  $\text{CuFe}_2\text{O}_4$

Molecular weight : 239.23 g/mol

Hazardous components

Component Classification Concentration

Diiron trioxide

CAS-No.

EC-No.

1309-37-1

215-168-2

$\geq 50 - < 70 \%$

Copper oxide

CAS-No.

EC-No.

1317-38-0

215-269-1

Aquatic Acute 1; Aquatic

Chronic 3; H400, H412

$\geq 50 - < 70 \%$

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## 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. 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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## 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

Iron oxides, Copper oxides

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.4 Further information

No data available

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

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

Use personal protective equipment. Avoid dust formation. Avoid breathing Vapors, mist or gas. Ensure adequate

ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

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.

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## SECTION 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.

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

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

Components with workplace control parameters

Component CAS-No. Value Control

parameters

Basis

Diiron trioxide 1309-37-1 TWA 5 mg/m<sup>3</sup> USA. ACGIH Threshold Limit Values (TLV)

Remarks Pneumoconiosis  
Not classifiable as a human carcinogen  
TWA 5.000000  
mg/m3  
USA. ACGIH Threshold Limit Values  
(TLV)  
Pneumoconiosis  
Not classifiable as a human carcinogen  
TWA 15.000000  
mg/m3  
USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants  
TWA 5.000000  
mg/m3  
USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants  
TWA 10.000000  
mg/m3  
USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants  
See Appendix D - Substances with No Established RELs  
TWA 5.000000  
mg/m3  
USA. NIOSH Recommended  
Exposure Limits  
TWA 10.000000  
mg/m3  
USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants  
TWA 15.000000  
mg/m3  
USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants  
TWA 5.000000  
mg/m3  
USA. Occupational Exposure Limits  
(OSHA) - Table Z-1 Limits for Air  
Contaminants  
TWA 5.000000  
mg/m3  
USA. NIOSH Recommended  
Exposure Limits  
See Appendix D - Substances with No Established RELs  
TWA 5 mg/m3 USA. NIOSH Recommended  
Exposure Limits  
See Appendix D - Substances with No Established RELs  
Copper oxide 1317-38-0 TWA 0.100000  
mg/m3  
USA. NIOSH Recommended  
Exposure Limits

Also see specific listing for Copper (dusts and mists)

TWA 0.100000

mg/m<sup>3</sup>

USA. NIOSH Recommended

Exposure Limits

Also see specific listing for Copper (dusts and mists)

TWA 0.1 mg/m<sup>3</sup> USA. NIOSH Recommended

Exposure Limits

Also see specific listing for Copper (dusts and mists)

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

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. 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.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance Form: powder

Colour: red brown

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 No data available  
h) Evaporation rate No data available  
i) Flammability (solid, gas) No data available  
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 5.4 g/mL at 25 °C (77 °F)  
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

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## **SECTION 10. STABILITY AND REACTIVITY**

### **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**

Alkali metals, Powdered metals, Strong acids, Reducing agents, Peroxides, Chloroformates,  
Aluminum, Hydrogen  
sulfide gas

#### **10.6 Hazardous decomposition products**

Other decomposition products - No data available

In the event of fire: see section 5

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

### **11.1 Information on toxicological effects**

Acute toxicity

No data available

Inhalation: 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: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Diiron trioxide)

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

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly

investigated., Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed

by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include

epigastric pain, diarrhea, vomiting, nausea, and hematemesis occur. After apparent recovery a person may experience

metabolic acidosis, convulsions, and coma hours or days later. Further complications may develop leading to acute

liver necrosis that can result in death due to hepatic coma., Long term inhalation exposure to iron (oxide fume or dust)

can cause siderosis. Siderosis is considered to be a benign pneumoconiosis and does not normally cause significant

physiologic impairment. Siderosis can be observed on x-rays with the lungs having a mottled appearance., 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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## 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.

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## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

Product

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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## 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 oxide)

Marine pollutant:yes

IATA

UN number: 3077 Class: 9 Packing group: III

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

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.

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## 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 oxide

CAS-No.

1317-38-0

Revision Date

2007-07-01

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

Diiron trioxide

CAS-No.

1309-37-1

Revision Date

2007-03-01

Pennsylvania Right To Know Components

Diiron trioxide

CAS-No.

1309-37-1

Revision Date

2007-03-01

Copper oxide 1317-38-0 2007-07-01

New Jersey Right To Know Components

Diiron trioxide

CAS-No.

1309-37-1

Revision Date

2007-03-01

Copper oxide 1317-38-0 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.

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## 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.