



SAFETY DATA SHEET COPPER METAL POWDER

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifiers

| | |
|----------------------------------|--|
| Product Name: | Copper Powder - Spherical, Irregular, Dendritic |
| CAS-No.: | 7440-50-8 |
| EC No.: | 231-159-6 |
| REACH registration number | 01-2119480154-42-XXXX |

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

Powder Metallurgy, Decorative Castings/Coatings.

1.3. Company/undertaking identification

Copper Metal Powder - Spherical, Irregular

Easy Composites Ltd
Unit 39,
Park Hall Business Village
Longton, Stoke-on-Trent
ST3 5XA
United Kingdom

sales@easycomposites.co.uk
+44 (0)1782 454499

1.4. Emergency Contact Information

sales@easycomposites.co.uk
+44 (0)1782 454499

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Aquatic Acute 1, Aquatic Chronic 3

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2.2. Label elements

Labeling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram:



GHS09

| | | |
|----------------------------|---------|--|
| 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 in accordance with local/regional/national/international regulations |

2.3. Other hazards

The substances in the mixture do not meet the criteria for PBT or vPvB substances

Classification System is according to latest editions of EU lists and is extended by company and literature data.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Description of Material: Copper powder

Synonyms: None

Chemical Composition:

| EINECS N° | CAS N° | REACH registration N° | Chemical name | Conc. (% w/w) | Hazard class and category code | Hazard statement |
|-----------|-----------|-----------------------|---------------|---------------|--------------------------------------|------------------|
| 231-159-6 | 7440-50-8 | 01-2119480154-42-XXXX | Copper | >95 | Aquatic Acute 1 Aquatic Chronic 3 | H400 H412 |

For wording of the listed phrases refer to point 16

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: First aid followed by medical attention.

Inhalation: Move exposed person to fresh air. Keep warm and at rest. Seek medical attention as soon as possible.

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| | |
|---------------|---|
| Skin contact: | Wash with mild soap and water. Generally the product does not irritate the skin. Seek medical advice if irritation occurs/persists. |
| Eye Contact: | Rinse opened eye for several minutes under running water. Seek medical attention if irritation persists. |
| Ingestion: | Wash mouth out with water, seek medical attention if symptoms occur. |

4.2 Most Important Symptoms and effects, both acute and delayed

Exposure by inhalation (large quantities) will produce symptoms called metal fume fever, influenza type symptoms which last 24-48 hours.

Copper may cause irritation to upper respiratory tract, metallic taste, discoloration of skin and hair.

Ingestion or inhalation of large quantities may cause nausea or vomiting.

Dust irritates nose and trachea, in certain individuals skin contact for long periods may cause irritation and possible dermatitis.

Copper may cause gastro enteric problems.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically

5. FIRE FIGHTING MEASURES

5.1 Suitable Extinguishing Media:

Dry sand, dry powder extinguisher, fire blanket.

Extinguishing Media not suitable for safety reasons:

Liquid based extinguishers must not be used on molten metal.

5.2 Special hazards arising from the substance or mixture:

Carbon oxides, Borane/boron oxides

5.3 Advice for firefighters:

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions:

Wear protective equipment.
Keep unprotected persons away.
Avoid formation of dust

6.2 Environmental precautions:

Do not allow product to reach ground water, water bodies or sewerage system.

6.3 Methods for cleaning up:

Pick up manually or vacuum.

6.4 Reference to other sections:

See also sections 8 and 13

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7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling:

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

7.2 Conditions for safe storage including any incompatibilities:

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

7.3 Specific end uses:

None

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

EXPOSURE LIMIT VALUES:

TLV - TWA (ACGIH, 2009) **Cu 0.2 mg/m³ (fumes);**

TLV . TWA (ACGIH, 2009) **Cu 1 mg/m³ (dusts and mists);**

| EXPOSURE PATTERN | ROUTE | DESCRIPTOR | DNEL |
|---|-----------------------------|--|-------------------------------|
| Human- Long-term - systemic effects | Oral, dermal and inhalation | Internal dose DNEL (Derived No Effect Level) Using absorption factors of 25% for oral, 100% for inhalation (respirable) and 0.03% for dermal exposure routes | 0.041mg Cu/kg body weight/day |
| Human- Short-term - systemic effects | Oral, dermal and inhalation | Internal dose DNEL (Derived No Effect Level) Using absorption factors of 25% for oral, 100% for inhalation (respirable) and 0.03% for dermal exposure routes | 0.082mg Cu/kg body weight/day |
| Human- Short-term . effects- drinking water | Oral | A NOAEL for drinking water | 4 mg/l |

National exposure control limits must be considered where appropriate.

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

Ventilation:

Preferably Local exhaust ventilation (LEV) must be sufficient to keep concentration below occupational exposure limit

Respiratory protection:

Particulate cartridge filter type when LEV cannot be supplied.

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Hand Protection:

Gloves: consult manufacturer for suitable specification.
A suitable barrier cream is recommended.

Eye Protection:

Tight safety goggles.

Body Protection:

Protective work clothing

General Safety and Hygiene measures:

Do not eat or drink while working with the product.
Wash hands before breaks and at the end of work.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|---|--|
| a) Appearance: | Yellow gold irregular powder |
| b) Odour: | odourless |
| c) Odour threshold | no data available |
| d) pH | no data available |
| e) Melting point/freezing point | 1083°C |
| 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) | product is not self igniting |
| j) Upper/lower flammability or explosive limits | not applicable |
| k) Vapour pressure | no data available |
| l) Vapour density | no data available |
| m) Relative density | 2-4 g/cm ³ at 20°C |
| n) Specific Weight | 8.9 g/cm ³ at 20°C |
| o) Water solubility | Cu: Insoluble - copper needs to be transformed into a copper compound to become soluble. A solubility test (OECD 105) demonstrated a solubility of <1 mg Cu/l for a copper powder. |
| p) Partition coefficient: n octanol/water | no data available |
| q) Auto-ignition temperature | no auto-ignition |
| r) Decomposition temperature | decomposition/melting begins at 1083°C |
| s) Viscosity | not applicable |
| t) Explosive properties | non explosive |

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u) Oxidizing properties

not oxidising substance

9.2 Other Safety Information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No decomposition in usual conditions

10.2 Chemical stability

Stable under normal conditions of use

10.3 Possibility of hazardous reactions

May yield hydrogen and noxious copper compounds if affected by unsuitable materials.

10.4 Conditions to avoid

Avoid dust formation and contact with acids

10.5 Incompatible materials

Strong acids

10.6 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

| | Copper |
|------------|--|
| Oral | LD-50 rats >2000mg/kg body weight Not classified |
| Dermal | Not classified |
| Inhalation | Fractions with d50 > 10 µm not classified Fractions with <10 µm LD-50 rats 1-5 g/m ³ air |

Skin corrosion/irritation

Not classified

Serious eye damage/eye irritation

Not classified

Respiratory or skin sensitization

Not classified

Germ cell mutagenicity

Not classified

Carcinogenicity

Not classified

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Reproductive toxicity

Not classified

Specific target organ toxicity - single exposure

Not classified

Specific target organ toxicity - repeated exposure

Not classified

Aspiration hazard

Not classified

12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute aquatic toxicity:

Cu: Toxicity for pH = 5.5-6.5 L(E)C50 of 25.0 g Cu/L (Van Sprang et al., 2010, in Copper Chemical Safety Report (CSR), 2010). *M-factor: 1*

12.1.2 Chronic freshwater toxicity:

Cu: *Not classified* (Predicted No-Effect Concentration (PNEC): 7,8 g/l is the value of dissolved Cu/l to be used to assess local risks)

12.1.3 Chronic marine waters toxicity:

Cu: *Not classified* (PNEC: 5.2 g/l is the value of dissolved Cu/l to be used to assess local risks)

12.1.4 Chronic freshwater sediment toxicity:

Cu: Freshwater sediment PNEC is: 87 mg Cu/kg dry sediment weight

12.1.5 Chronic marine water sediment toxicity:

12.1.6 Soil toxicity:

Cu: Soil PNEC: 65.5 mg Cu/kg dry weight of soil

12.2 Persistence and degradability

Not classified

12.3 Bioaccumulative potential

Not classified

12.4 Mobility in soil

Cu: Copper-ions bind strongly to the soil matrix. The binding depends on the soil properties. A median water-soil partitioning coefficient (K_p) of 2120 L/kg has been derived.

12.5 Results of PBT and vPvB assessment

The mixture does not contain PBT or vPvB substances

12.6 Other adverse effects

Copper is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

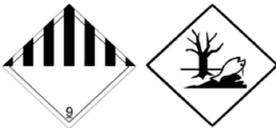
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13. DISPOSAL CONSIDERATIONS

Product: Remove in accordance with local official regulations. Dispose of at a hazardous waste landfill. Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Used packaging material: Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations.

14. TRANSPORT INFORMATION:

| | ADR/RID | IMDG | IATA |
|---|--|--|--|
| 14.1 UN number | 3077 | 3077 | 3077 |
| 14.2 UN Proper shipping name | ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (COPPER POWDER) | ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (COPPER POWDER) | ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (COPPER POWDER) |
| 14.3 Transport Hazard Class(es) | 9 | 9 | 9 |
| 14.4 Packing group | III | III | III |
| 14.5 Environmental Hazards | Classified as hazardous | Classified as hazardous | Classified as hazardous |
| 14.6 Special Precautions for user | (*) | EmS: F-A, S-F (*) | (*) |
| 14.7 Transport in Bulk according to Annex II of Marpol73/78 and the IBC code | Not applicable | Not applicable | Not applicable |
| 14.8 Labelling |  | | |
| (*) . The transport, comprising charge and discharge, must be made by people who have been trained on Dangerous Goods Regulations | | | |

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

The mixture is NOT subject to:

- Regulation (EC) n. Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer;

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- Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants;

- Regulation (EC) n. 689/2008 of the European Parliament and of the Council of 17 June 2008 concerning the export and import of dangerous chemicals.

15.2 Chemical Safety Assessment

Has been carried out for copper

16. OTHER INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Products covered by this data sheet include:

Dendritic Copper Powder : -100#, -300# (SFP2) -300LD (SFP3), SFP8, SFP10, 100/300#

Spherical Copper Powder : -300#, 160/315#, 150/300#

Irregular Copper Powder : -325#, Hymod -150# E2B

Copper 14/100#, Copper 150#

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Laws and References

- Directive 2004/74/EC
- Regulation EC n. 1907/2006 (REACH)
- Regulation EC n. 2172/2008 (CLP)
- Regulation EC n. 790/2009
- Regulation EC n. 453/2010
- ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG Code (International Maritime Dangerous Goods Code).
- IATA (International Air Transport Association).
- SAX'S, (Dangerous Properties of Industrial Materials)
- ACGIH (2009) American Conference of Governmental Industrial Hygienists
- Copper Chemical Safety Report(CSR) 2010
- Explosibility of Metal Powders, 1964. Authors: Murray Jacobson, Austin R. Cooper and John Nagy; researchers of the Bureau of Mines, Pittsburgh, Pa.

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