* * * Section 1 - Identification of the Substance/Mixtures and of the Company/Undertaking * * *

1.1 Product identifier

Chemical Name: Copper Powder - Fine
Synonyms: Metal Alloy Powder

1.2 Relevant identified uses of the substance or mixture and uses advised against

Uses: Metal Powder for Additive Layer Manufacturer or HIP detailing.
Not to be used for: Any other purpose

1.3 Details of the supplier of the safety data sheet

Carpenter Additive
Dennis Road,
Widnes,
Cheshire WA8 0GU,
United Kingdom
Tel: +44 (0)1928 240 530
E- mail: SDS@CarpenterAdditive.com

1.4 Emergency telephone number

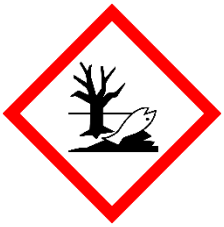
Acute: 112 (Emergency EU/UK) / 911 (Emergency US)
Non-acute (CHEMTREC): +1 703-527-3887 (from anywhere in the world) / 1-800-424-9300 (within US and Canada)

* * * Section 2 - Hazards Identification * * *

2.1 Classification of the substance or mixture

STOT RE Category 1
Aquatic Chronic Category 4
Aquatic Acute Category 1
Skin Sens. Category 1
Resp. Sens. Category 1

2.2 Label Elements




Signal Word: **Danger**
Hazard statements:
H372 - Causes damage to organs through prolonged or repeated exposure.
H413 - May cause long lasting harmful effects to aquatic life.
H410 - Very toxic to aquatic life with long lasting effects.
H317 - May cause an allergic skin reaction
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P285 - In case of inadequate ventilation wear respiratory protection
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention

P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe dust.

2.3 Other hazards

Dust can irritate the eyes. High dust levels may irritate the respiratory system.

* * * Section 3 - Composition / Information on Ingredients * * *

Ingredient	CAS/EC Number	REACH Registration Number	Weight %	CLP Hazard Category	H-Statements
Copper	7440-50-8 231-159-6	01-2119484878-14	>95	Aquatic acute 1 Aquatic Chronic 3	H400 H412
Iron	7439-89-6/ 231-096-4	01-2119462838-24	0-0.03	None, substance with a workplace exposure limit.	None
Chromium	7440-47-3/ 231-157-5	01-2119485652-31	3-4	None, substance with a workplace exposure limit.	None
Niobium	7440-03-1 231-113-5	05-2116477518-31-0000	2.7-3	None, substance with a workplace exposure limit.	None

* * * Section 4 - First Aid Measures * * *

4.1. Description of first aid measures

Inhalation: Remove patient to fresh air, allow to rest and keep warm. If not breathing, give artificial respiration and seek medical attention.
Skin contact: Remove contaminated clothing, shoes and jewellery and wash before reuse. Wash skin with soap and water for several minutes. Get medical attention if symptoms persist.
Eye contact: Rinse with a gentle stream water for at least 15 minutes. Hold eye lids open. Remove any contact lenses. Get medical attention if symptoms persist.
Ingestion: DO NOT induce vomiting! Rinse mouth out and then drink plenty of water. Get medical attention if discomfort occurs.
Personal precautions: Ensure that those giving first aid treatment do not get contaminated by product spills, etc. Wear suitable protective clothing, gloves and eye protection. See also Section 8 for details.

4.2. Most important symptoms and effects, both acute and delayed

May cause allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed

No further data available for this product.

* * * Section 5 - Fire Fighting Measures * * *

5.1. Extinguishing media

Suitable: Gently smother burning material with dry sand or other inert substance.
Special powder (Class D – Dry Powder) extinguishers with spin applicators for smother effect application may be used carefully.
Not to be used: Water, Carbon dioxide, Foam, ABC Powder

5.2. Special hazards arising from the substance or mixture

None.

5.3. Advice for fire fighters

Do not inhale explosion gases or combustion gases.
Self-contained breathing apparatus and protective clothing.
Prevent firefighting water entering watercourses or groundwater.
Avoid creation of dusts.

* * * Section 6 - Accidental Release Measures * * *

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment, see Section 8. Avoid contact with eyes and skin and inhalation of dust. Use with adequate ventilation.

6.2. Environmental precautions

Prevent from entering sewers or the immediate environment. In case of large spill, inform local police, local authority, water company, appropriate local environmental authority and/or fire brigade as appropriate.

6.3. Methods and material for containment and cleaning up

On soil: Contain any spilled material immediately by vacuuming or shovelling, taking care not to raise dust, into labelled containers for disposal (See Section 13). Do not flush with water or aqueous cleansing agents. If using vacuum suction equipment ensure that it is suitable for use with ignitable dusts.
On water: None known.

6.4. Reference to other sections

See Section 8 for details of protective equipment.
See Section 13 for details of disposal.

* * * Section 7 - Handling and Storage * * *

7.1. Precautions for safe handling

Use personal protective equipment, see Section 8. Avoid generation of dust clouds. Ensure good dust ventilation during handling. If necessary, use local exhaust ventilation. Use non-sparking tools when opening or closing containers. Avoid sources of sparks or other sources of ignition i.e. no grinding - naked flames - smoking etc.
Protect against static electricity. Earth all equipment. Use electrically conductive materials when possible. Use suitable explosion proof equipment and spark-proof tools. Wash hands and face thoroughly before eating, drinking or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Store indoors. Keep in original containers. Keep dry. Good housekeeping and engineering practices should be employed to prevent the generation and accumulation of dusts. The area should be suitably marked to indicate the presence of an ignitable dust. No smoking - warning should be present. Avoid sparks or other source of ignition. Do not store with reactive materials i.e. acids, oxidising agents.

7.3. Specific end use(s)

PC14 – Metal surface treatment product
ERC5 - Industrial use resulting in inclusion into or onto a Matrix

* * * Section 8 - Exposure Controls / Personal Protection * * *

8.1 Control Parameters

Copper (7440-50-8)

OSHA:	1 mg/m3 TWA.
NIOSH:	1 mg/m3 TWA.
WEL:	1 mg/m3 TWA.

7440-47-3 chromium
WEL Long-term value: 0.5 mg/m³

7440-03-1 chromium
WEL Long-term value: 5 mg/m³ inhalable aerosol

Monitoring procedures: None specified

8.2. Exposure Controls

Recommended engineering controls: Ensure good ventilation, where possible at local site of dust formation. Arrange for eye wash possibility.
Personal protection:
Always check applicability with your supplier of protective equipment.
Respiratory protection: Personal exposure must be controlled to conform to local/national regulations (see above). If this is not possible, respiratory protection must be worn. Full face respirator conforming to EN143, Type P3 should be used.
Skin protection: Chemically resistant protective overalls.
Eye protection: Wear safety glasses or goggles.
Hand protection: Always wear gloves when handling the product. Contact your supplier of protective equipment for more details. Note: Break-through times can vary depending on thickness, use and source. Change gloves regularly.

General hygiene: Do not eat, drink, or smoke while using this product. Immediately take off any contaminated clothing and launder before re-use. Wash hands and / or face before breaks and at the end of the shift. After the session, wash the skin and apply skin cream.

* * * Section 9 - Physical & Chemical Properties * * *

9.1 Information on basic physical and chemical properties

Appearance:	Atomised powder/grit with spherical particles.	**Odor:**	None
Odor Threshold Value:	None	**pH:**	Not Applicable
Melting Point (°C):	1083	**Boiling Point (°C):**	2567
Flash Point:	Not Available	**Evaporation Rate:**	Not Applicable
Flammability (Solid):	Not self igniting	**Upper Flammability Limit (UFL):**	Not Available
Vapor Pressure:	Not Available	**Vapor Density:**	Not Available
Density (g/cm³):	8.9	**Solubility:**	Insoluble
Partition coefficient:	Not Applicable	**Auto-ignition temperature:**	Not Available
Decomposition temperature:	Not Available	**Viscosity:**	Not Available
Auto Ignition:	Product is not self-igniting.	**Physical State:**	Yellow gold to orange powder
Explosive properties:	Fine powder may be explosive if dispersed into a dust cloud in air in the presence of a source of ignition.	**Oxidising properties:**	No oxidizing properties. Does not contain surplus oxygen or react exothermically with combustible material.

9.2 Other Information

These are typical values and do not constitute a specification.

* * * Section 10 - Stability & Reactivity * * *

10.1. Reactivity

No decomposition in recommended storage and handling conditions.

10.2. Chemical stability

Stable product under recommended storage and handling conditions.

10.3. Possibility of hazardous reactions

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

10.4. Conditions to avoid

High temperatures, contact with oxidising substances, contact with acids and sources of ignition.

10.5. Incompatible materials

Strong acids.

10.6. Hazardous decomposition products

No data available.

* * * Section 11 - Toxicological Information * * *

11.1 Potential Health Effects

A: General Product Information

Inhalation of metal fumes may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

B: Substance Analysis - LD50/LC50

Copper (7440-50-8)

Oral LD50 Rat: >2000 mg/kg

11.2 Carcinogenicity

A: General Product Information

No carcinogenicity data available for this product.

B: Substance Carcinogenicity

No carcinogenicity data available for this product.

11.3 Other Toxicological Information

Exposure to metal dusts and oxides may cause metal fume fever. Metal fume fever is a temporary flu-like condition characterized by chills, fever, muscle aches and pains, nausea and vomiting. Typically the symptoms appear within a few hours after exposure and subside within 2-3 days with no permanent effects.

* * * Section 12 - Ecological Information * * *

12.1 Toxicity

Acutely toxic to aquatic environments.

12.2 Persistence & Degradability

No further relevant information available.

12.3 Bioaccumulative potential

No further relevant information available.

12.4 Mobility in soil

Copper binds strongly to the soil matrix. No further relevant information is available.

12.5 Results of PBT and vPvB assessment

Does not contain PBT or vPvB substances.

12.6 Other adverse effects

No information available for the product.

* * * Section 13 - Disposal Considerations * * *

13.1 Waste treatment methods

Disposal of product: Waste product is considered Hazardous Waste and should be disposed of via a licensed operator.
Disposal of packaging: Contaminated packing should be disposed of as Hazardous waste according to local authority guidelines.

* * * Section 14 - Transport Information * * *

14.1. UN number

UN 3077

14.2. UN proper shipping name

Environmentally Hazardous Substance, Solid,n.o.s.

14.3. Transport hazard class(es)

9

14.4. Packing group

III

14.5. Environmental hazards

Toxic to aquatic life with long lasting effects.

14.6. Special precautions for user

None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

* * * Section 15 - Regulatory Information * * *

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

Chemical Agents Directive 98/24/EC

15.2. Chemical Safety Assessment

A Chemical Safety Assessment has not been carried out on this mixture.

* * * Section 16 - Other Information * * *

Rev09 - Section 7.2 & 14 have had references to aluminum removed.

Sources of data used in this MSDS:
In-house data files, CLP Annex VI Tables 3.1 & 3.2, TOXNET, IARC, International Labour Organization, NIOSH Pocket Guide to Chemical Hazards, European Chemicals Agency, Institute for Health and Consumer Protection.

Key/Legend:

EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; ELINCS = European List of Notified Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NIOSH = The National Institute for Occupational Safety and Health; NOHSC = National Occupational Health & Safety Commission; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

The information provided on this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. Although reasonable care has been taken in the preparation of this document to assess and summarise the hazard properties of the product, the user must satisfy himself that the information contained herein is pertinent to permit safe handling under his use conditions, since the supplier cannot foresee all conditions of use.