

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

1.1. Product Identifiers

Product Name: CAS-No.: EC No.: REACH registration number (Copper) REACH registration number (Tin) Unique Formula Identifier (UFI) Nanoform Bronze Powder Mixture - Copper/Tin alloy Mixture - Copper/Tin alloy 01-2119480154-42-XXXX 01-2119486474-28-XXXX Not applicable Not applicable

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

Relevant Identified Uses: Powder Metallurgy, Additive Manufacturing, Metal Injection Moulding (MIM) Brazing Alloys, Fillers, Decorative Castings/Coatings, Functional Coatings, Filters.

Uses advised against: None identified.

1.3. Company/undertaking identification

Easy Composites Ltd Unit 39, Park Hall Business Village Longton, Stoke on Trent Staffordshire United Kingdom

Tel: +44 (0)1782 454499 Email: sales@easycomposites.com Web: www.easycomposites.co.uk

1.4. Emergency Contact Information

+44 (0)1782 454499 (Office hours 0800 - 1730)

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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; H400 Aquatic Chronic 2; H411

2.2. Label elements

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

Product name:	Bronze powder
Pictogram:	
Signal word:	Warning
Hazard statement(s)	H400 Very toxic to aquatic lifeH411 Toxic 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
Supplemental Information	Not applicable

2.3. Other hazards

May form combustible dust concentrations in air.

The substances in the mixture do not meet the criteria for PBT or vPvB substances according to Regulation (EC) 1907/2006, annex XIII.

Substance is not identified as having endocrine disrupting properties with respect to humans.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances:

Description of Material: Cop	oper, Tin Alloy
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Synonyms: Bronze in powder form

Chemical Composition:

Substance	EC N°	CAS N°	REACH registration N°	Conc. (% w/w)	Hazard class and category code	Specific concentration limit (SCL), M-Factor, Acute toxicity estimate (ATE)
Copper	231-159-6	7440-50-8	01- 2119480154- 42-XXXX	40 – 99%	H400; Aquatic Acute 1 H411; Aquatic Chronic 2	M(Chronic)=1
Tin	231-141-8	7440-31-5	01-2119486474- 28-XXXX	< 50%	Not classified	-

3.2 Mixtures

Not applicable

Note: For full text of H phrases see section 16

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

Self protection of the first aider:	No action should be taken involving personal risk, wear appropriate personal protective equipment, avoid direct contact, ensure adequate ventilation, avoid breathing dust, avoid contact with hot or molten product.
General Advice:	First aid followed by medical attention.
Inhalation:	IF INHALED: Remove from exposure. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you feel unwell.
Skin contact:	Wash skin with soap and water. If irritation develops and persists, get medical attention. When molten: Molten material can cause severe burns. Do NOT try to peel molten material from the skin. Cool rapidly with water.
Eye Contact:	Rinse opened eye for several minutes under running water. Remove contact lenses if easy to do so. Seek medical attention if irritation persists.
Ingestion:	IF SWALLOWED: Rinse mouth. Give 200-300mls (half pint) water to drink. Do NOT induce vomiting. If symptoms develop, obtain medical attention.

4.2 Most Important Symptoms and effects, both acute and delayed

Molten material can cause severe burns. Do NOT try to peel molten material from the skin. Cool rapidly with water.

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 Extinguishing Media:

Not flammable. In case of fire use extinguishing media appropriate to surrounding conditions. Water spray, foam, dry sand, dry powder extinguisher, CO₂, fire blanket.

Extinguishing Media not suitable for safety reasons:

Do not use water jet. Direct water jet may spread the fire. Do not use halogenated agents. Liquid based extinguishers must not be used on molten metal.

5.2 Special hazards arising from the substance or mixture:

Fire risk is slight but finely divided dust may create an explosive mixture with air. May decompose in a fire giving off toxic fumes. Decomposition products: Carbon monoxide, Carbon dioxide, metal oxides.

5.3 Advice for firefighters:

Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers. Contain fire control water for later disposal.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

No action should be taken involving personal risk. Ensure adequate ventilation. Avoid breathing dust. Wear appropriate personal protective equipment, avoid direct contact. Remove all ignition sources. Damp down to avoid dust generation. Evacuate the area and keep personnel upwind.

6.2 Environmental precautions:

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Dyke area to contain the spill and prevent releases to sewers, drains, or other waterways. Spillages or uncontrolled discharges into soil must be alerted to the appropriate regulatory body.

6.3 Methods and materials for containment and cleaning up:

Dusts/solid: Damp down to avoid dust generation. Use vacuum equipment for collecting spilt materials, where practicable. Recover the product where possible. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete. Dry sweeping is not recommended. If necessary, light water spray will reduce dust for dry sweeping, but over-wetting may produce slippery walking surfaces.

6.4 Reference to other sections:

See also sections 8 and 13

7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling:

When using do not eat or drink. Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposures. Avoid inhalation of dusts. Avoid contact with heated or molten product. Wash contaminated clothing before reuse. Damp down to avoid dust generation. Avoid dust generation. Wash hands thoroughly after handling. Keep good industrial hygiene.

7.2 Conditions for safe storage including any incompatibilities:

Do not store in unlabelled containers. Keep container tightly closed. Keep away from food, drinks and animal food. Store in a cool dry and well-ventilated place away from sources of heat or UV.

7.3 Specific end uses:

See section 1.2

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

8.1.1 Occupational exposure limits

Copper (Cu) (Copper (Cu) (7440-50-8)						
Country			Note	Source			
UK	TWA (8hr) (mg/m ³)	1	Dust	RH40/2005 as consolidated with amendments			
	TWA (8hr) (mg/m ³)		Fume	Jan 2020			
	(15 mins) STEL	2	Dust				
	(mg/m ³)						
France	VME (mg/m ³)	0.2	Fume	Valeurs limites d'exposition professionnelle aux agents			
	VME (mg/m ³)	1	Dust	chimiques en France (ED 984)			
	VLE (mg/m ³)	2	Dust				
Germany	MAK (mg/m ³)	0.01	-	MAK- und BAT-Werte-Liste 2021			
Spain	VLA - ED (mg/m ³)	0.01	Respirable Dust	Límites de exposición profesional para agentes			
Sweden	LTEL (8hr) (ma/m ³)	0.2	Respirable Dust	Arbetsmiljöverkets författningssamling Hygieniska			
	LTEL (8hr) (mg/m ³)	1	Dust	gränsvärden AFS 2018:1			
Netherlands	TWA (8hr) (mg/m ³)	0.1	Respirable Dust	SER,https://www.ser.nl/en/themes/OEL-Database			
	. , ,	0.1	•	Arbeidsomstandighedenwet Hoofdstuk 2 Artikel 6			
Italy	TLV - TWA (8hr)	0.2	Fume	ACGIH 2009			
	(mg/m ³)	0	-				
	TLc - TWA (8hr)	1	Dust				
	(mg/m ³)	· ·					
Taiwan	TWA (8hr) (mg/m ³)	0.2	Fume	https://laws.mol.gov.tw/eng/EngContent.aspx?msgid=55			
	TWA (8hr) (mg/m ³)	1	Dust				

TWA = Time weighted average, LTEL = Long term exposure, MAK = Maximum workplace concentration

Tin (Sn) (7440-31-5)

Country			Note	Source		
UK						
EU ELV	TWA (8hr) (mg/m3)	2	Fume	Europe. Commission Directive 91/322/EEC on		
	TWA (8hr) (mg/m3)	2	Dust	establishing indicative limit values		

8.1.2 Biological limit value

Not Established

8.1.3 PNEC's and DNEL's

Copper Derived no effect level DNEL	Oral	Inhalation	Dermal
Worker – Long Term	-	0.041 mg/m ³	137 mg/kg bw/day
Worker – Acute	-	9 mg/m ³	273 mg/kg bw/day
Consumer - Long Term - Systemic effects	0.041 mg/kg bw/day	0.041 mg/m ³	137 mg/kg bw/day
Consumer - acute - Systemic effects	4 mg/l	9 mg/m ³	237 mg/kg bw/day
Consumer - Long Term - Local effects	-	1 mg/m ³	-
Consumer - acute - Local effects	-	1 mg/m ³	-

Copper Predicted No Effect Concentration PNEC	Value
Freshwater - dissolved copper (µg Cu/L)	7.8 μg Cu/L
Marine water- dissolved copper (µg Cu/L)	5.2 μg Cu/L
Freshwater Sediment (mg/kg Sediment dw)	87 mg/kg Sediment dw
Marine water Sediment (mg/kg Sediment dw)	676 mg/kg Sediment dw
Soil (mg/kg soil dw)	65 mg/kg soil dw

Tin Derived no effect level DNEL	Oral	Inhalation	Dermal
Worker – Long Term	-	11.75 mg/m ³	133.3 mg/kg bw/day
Worker – Acute	-	11.75 mg/m ³	133.3 mg/kg bw/day
Consumer - Long Term - Systemic effects	80 mg/kg bw/day	3.48 mg/m ³	80 mg/kg bw/day
Consumer - acute - Systemic effects	80 mg/l	3.48 mg/m ³	80 mg/kg bw/day

8.2 Exposure Controls:

8.2.1 Appropriate engineering controls

Ensure adequate ventilation. Ideally Local exhaust ventilation (LEV) must be sufficient to keep concentration below occupational exposure limit. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure eye flushing stations are located close to the workplace.

8.2.2 Individual protection measures such as personal protective equipment

Use personal protective equipment as required. Good hygiene practices and housekeeping measures. Wash hands before breaks and after work. Do not eat, drink or smoke at the work place. Keep good industrial hygiene. Avoid breathing dust. Wash contaminated clothing before reuse. Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/face protection:

Use eye protection according to EN 166, designed to protect against dusts.

Skin protection:

Hand protection: Prolonged, direct contact: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Recommended: Nitrile rubber.

Body protection: Wear suitable coveralls to prevent exposure to the skin. Recommended: Safety shoes or boots - chemical resistant.

When molten: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Heat resistant coveralls (with trousers legs over boots and sleeves over cuffs of gloves), heat resistant heavy duty antiskid boots.

Respiratory Protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Respiratory protective equipment should conform to the appropriate EN standard. Recommended: Particle filter with high efficiency for solid particles (EN 143 or 149, Type P2 or FFP2, Associated Protection Factor (APF) = 10). A suitable mask with filter type A (EN14387 or EN405) may be appropriate. Recommended: 95%.

Thermal Hazards:

Molten material can cause severe burns. Do NOT try to peel molten material from the skin. Cool rapidly with water. Avoid contact with heated or molten product.

8.2.3 Environmental exposure controls:

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Physical state:	solid
b)	Colour:	bronze colour
c)	Odour:	odourless
d)	Melting point/freezing point:	1000 °C - 1015 °C

- e) Boiling point or initial boiling point and boiling range: not applicable to a solid that melts >300 °C
- f) Flammability: non-flammable

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g)	Lower and upper explosion limit:	not determined
h)	Flash point:	not applicable - solid
i)	Auto ignition temperature:	not determined
j)	Decomposition Temperature:	not determined
k)	pH:	not applicable – inorganic solid
I)	Kinematic Viscosity:	not applicable – inorganic solid
m)	Solubility:	Insoluble in water. Solubility test (OECD 105)
n)	Partition coefficient: n octanol/water:	not applicable – inorganic solid
o)	Vapour pressure:	not applicable – solid
p)	Density and/or relative density:	8.1 – 8.9 g/cm ³ at 20°C
q)	Relative vapour density:	not applicable – solid
r)	Particle characteristics:	no data available
Ot	her Safety Information	
Ox	idising properties:	not oxidising

10. STABILITY AND REACTIVITY

10.1 Reactivity

9.2

No decomposition in usual conditions

10.2 Chemical stability

Stable under normal conditions of use and storage

10.3 Possibility of hazardous reactions

Stable under normal conditions. 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 oxidizing agents and mineral acids

10.6 Hazardous decomposition products May decompose in a fire giving off toxic fumes. Decomposition products: Carbon monoxide, Carbon dioxide, metal oxides.

11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No. 1272/2008

Acute toxicity - Ingestion:

Based on available data, the classification criteria are not met. LD50: > 2500 mg/kg bw/day LD50 (rat) OECD 423

Acute toxicity - Inhalation:

Based on available data, the classification criteria are not met. LC50: > 5.11 mg/L (rat) OECD 436

Acute toxicity - Skin Contact:

Based on available data, the classification criteria are not met. LD50: > 2000 mg/kg bw/day (rat) OECD 402

Skin corrosion/irritation:

Based on available data, the classification criteria are not met. Not irritating to skin (4 hours) (rabbit) OECD 404

Serious eye damage/irritation:

Based on available data, the classification criteria are not met. Mildly irritating to eyes (72 hours) (rabbit) OECD 405

Respiratory or skin sensitization:

Based on available data, the classification criteria are not met. Weight of evidence approach: Sensitisation (guinea pig) – None (Guinea pig maximisation test) (OECD 406)

Germ cell mutagenicity:

Based on available data, the classification criteria are not met. In vitro Bacterial mutation test – negative (OECD 471) In vivo: negative (Mouse) (EU Method B.12)

Carcinogenicity:

Based on available data, the classification criteria are not met. Weight of evidence approach: No evidence of carcinogenic effects.

Reproductive toxicity:

Based on available data, the classification criteria are not met. No evidence of reproductive effects. (rat) (EPA OPPTS 870.3800)

STOT - single exposure:

Based on available data, the classification criteria are not met. No evidence of respiratory tract irritation. Not enough evidence of narcotic effects to meet classification criteria (OECD 436)

STOT - repeated exposure:

Based on available data, the classification criteria are not met. oral: Decrease in weight of heart and kidney. Not enough evidence to classify (EU Method B.26) inhalation: Some effects observed at highest dose. Not enough evidence to classify (OECD 412) Dermal: No data

Aspiration hazard:

Based on available data, the classification criteria are not met. Not applicable - inorganic solid.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

Substance is not identified as having endocrine disrupting properties with respect to humans.

11.2.2 Other information

None Known

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity: Aquatic Acute 1; H400: Very toxic to aquatic life. This classification is applicable to copper powders with particle size >10um and <1mm. Acute 1, chronic 1 classification - H410 - Very Toxic to aquatic life with long lasting effects – was assigned in the Copper Voluntary Risk Assessment report 2008. New information was generated and used to revise the chronic environmental classification, in line with the CLP guidance (2012).

Chronic toxicity: Aquatic Chronic 2; H411; Toxic to aquatic life with long lasting effects. Harmonised Classification: NOEC: $2.2 - 188 \ \mu g \ Cu/L$

12.2 Persistence and degradability

Not applicable for inorganic substances

12.3 Bioaccumulative potential

The substance has no potential for bioaccumulation

12.4 Mobility in soil

The substance has low mobility in soil.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB. None of the substances in this product fulfil the criteria for being regarded as a PBT or vPvb substance.

12.6 Endocrine disrupting properties

This substance has endocrine disrupting properties with respect to non-target organisms.

12.7 Other adverse effects

None known.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

13.1.1 Product/Packaging disposal

Product disposal should be in accordance with local, state or national legislation. To be disposed of as hazardous waste. Ensure that all packaging is disposed of safely. Handle contaminated packages in the same way as the substance itself. Do not allow into any sewer onto the ground, or into any body of water. Used packaging materials: Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations.

Waste classification according to directive 2008/98/EC: (Waste Framework Directive)

Waste Code HP14

14. TRANSPORT INFORMATION:

	ADR/RID	ADN	IMDG	IATA/ICAO
14.1 UN or ID number	UN3077	UN3077	UN3077	UN3077
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)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (COPPER POWDER)
14.3 Transport Hazard Class(es)	9	9	9	9
14.4 Packing group	111	111	111	111
14.5 Environmental Hazards	Environmentally hazardous substance	Environmentally hazardous substance	Environmentally hazardous substance	Environmentally hazardous substance
14.6 Special Precautions for user	(*) Also see section 2		EmS: F-A, S-F (*) Also see section 2	(*) Also see section 2
14.7 Transport in Bulk according to Annex II of Marpol73/78 and the IBC code	Not applicable	Not applicable	Not applicable	Not applicable
14.8 Additional Information	Labelling:			
(*) – The transport, comprising charge and discharge, must be made by people who have been trained on 'Dangerous Goods Regulations'				

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006 including the amendment regulation 2020/878.

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

15.1.1 EU Regulations

Authorisation and/or Restrictions on use:

Directive 2012/18/EU on the control of major-accident Hazards involving dangerous substances [Seveso-III-Directive]:

Restrictions of occupation:

15.1.2 National Regulations TBC

15.2 Chemical Safety Assessment

A REACH chemical safety assessment has been carried out.

Not restricted

E2 – Hazardous to the aquatic environment (Longterm), category 2. Lower tier requirements qualifying quantity = 200 tonnes; upper tier requirements qualifying quantity = 500 tonnes.

None Known

16. OTHER INFORMATION

Products covered by this data sheet include:

Spherical Bronze Powder Irregular Bronze Powder:	:	89/11, 85/15, 80/20, 67/33, 60/40, 50/50 – All grades. 90/10, 85/15, 80/20, 60/40, 65/35, 50/50 – All grades
(This list is not exhaustive)	
Issue Date Revision Number Safety Data Sheet N ^o .	:	30 April 2024 (Footer updated) 8b RB30

Literature references:

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878.

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	Classification procedure
Aquatic Acute 1; H400; Very toxic to aquatic life	On basis of test data
Aquatic Chronic 2; H411; Toxic to aquatic life with long lasting	On basis of test data
effects	

Legend

ADR European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN European Agreement on the International Transport of Dangerous Goods by Inland Waterways RID Regulations concerning the international railway transport of dangerous goods

CLP Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

DNEL Derived No Effect Level

IATA International Air Transport Association

ICAO International Civil Aviation Organization

IMDG International Maritime Dangerous Goods

LTEL Long Term Exposure Limit

STEL Short Term Exposure Limit

PBT Persistent, Bioaccumulative and Toxic

PNEC Predicted No Effect Concentration

REACH Registration, Evaluation, Authorisation and Restriction of Chemicals

vPvB very Persistent and very bioaccumalitive

OECD Organisation for Economic Cooperation and Development

SCL Specific Concentration Limit

Disclaimer: This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date compiled. However, no warranty, guarantee or representation is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.