

PRODUCT SAFETY DATA SHEET

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

1.1. Product Identifiers

Product Name:	Bronze Powder
CAS-No.:	Mixture
EC No.:	Mixture
REACH registration number (Copper)	01-2119480154-42-XXXX
REACH registration number (Tin)	01-2119486474-28-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

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1.4. Emergency Contact Information

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e-mail ronaldbritton@colorlord.com Competent persons: Andrew Thompson, Paul Ives

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:



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, Tin Alloy

Synonyms: Bronze in powder form

Chemical Composition:

Chemical name	EINECS N°	CAS N°	REACH registration N°	Conc. (% w/w)	Hazard class and category code	Hazard statement
Copper	231-159-6	7440-50-8	01-2119480154-42-XXXX	40 – 99%	Aquatic Acute 1 Aquatic Chronic 3	H400 H412
Tin*	231-141-8	7440-31-5	01-2119486474-28-XXXX	< 50%	Not classified	-

*Substance with a community exposure limit.

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice: First aid followed by medical attention.

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Inhalation:	Move exposed person to fresh air. Keep warm and at rest. Seek medical attention as soon as possible. Maintain an open airway. Loosen tight clothing such as collar, tie, belt or waistband.
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:

None

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.

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6.4 Reference to other sections:

See also sections 8 and 13

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:

Copper

Short term value: 2mg/m³ (dusts and mists)

Long term value: 0.2 mg/m³ (fumes); 1 mg/m³ (dusts and mists)

Tin

Short term value: 4mg/m³ (dusts and mists)

Long term value: 2 mg/m³ (dusts and mists)

DNELs

Copper:

Worker - Long Term systemic effects (oral) -	No data
Worker - Acute - Local effects (oral) -	No data.
Worker - Long Term systemic effects (inhalation) -	No data.
Worker - Long Term local effects (inhalation) -	1mg/m ³ .
Worker - Acute - Systemic effects (inhalation) -	No data.
Worker - Acute - Local effects (inhalation) -	1mg/m ³
Worker - Long Term - Systemic effects (dermal) -	137 mg/kg bw/day.
Worker - Long Term - Local effects (dermal) -	No data.
Worker - Acute - Systemic effects (dermal) -	273 mg/kg bw/day.
Worker - Acute - Local effects (dermal) -	No data.

PNECs:

Copper:

Environmental sediment estuarine	288 mg/kg dry weight
Environmental sediment freshwater	87 mg/kg dry weight
Environmental sediment marine	676 mg/kg dry weight
Environmental soil	65.5 mg/kg dry weight
Environmental freshwater	7.8 µg/l dissolved copper
Environmental marine water	5.2 µg/l dissolved copper
Environmental Sewage Treatment Plant	230 µg/l

National exposure control limits must be considered where appropriate.

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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.

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:	Bronze coloured powder
b) Odour:	odourless
c) Odour threshold	no data available
d) pH	no data available
e) Melting point/freezing point	Cu 1083°C Sn 232°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	no data available
k) Vapour pressure	no data available
l) Vapour density	no data available
m) Relative density	8.1 – 8.9 g/cm ³ at 20°C
n) Specific Weight	no data available

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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	no data available
s) Viscosity	no data available
t) Explosive properties	non explosive
u) Oxidizing properties	no data available

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 (Substances in preparation / mixtures)

All test data taken from existing ECHA registration for the substance.

Acute toxicity - Ingestion: Based on available data, the classification criteria are not met.

Copper: Not classified > 2500 mg/kg bw LD50 (rat) OECD 423

Tin: Not classified > 2000 mg/kg bw LD50 (rat) OECD 423

Acute toxicity - Inhalation: Based on available data, the classification criteria are not met.

Copper: Not classified > 5.11 mg/L air LC50 (rat) OECD 436

Tin: Not classified > 4.75 mg/L air (analytical) IC50 (rat) OECD 403

Acute toxicity - Skin Contact: Based on available data, the classification criteria are not met.

Copper: Not classified > 2000 mg/kg bw LD50 (rat) OECD 402

Tin: Not classified > 2000 mg/kg bw LD50 (rat) OECD 402

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Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Copper: Non-irritant (rabbit) OECD 404

Tin: Non-irritant (rabbit) OECD 404

Serious eye damage/irritation: Based on available data, the classification criteria are not met.

Copper: Non-irritant (rabbit) OECD 405

Tin: Non-irritant (rabbit) OECD 405

Respiratory or skin sensitization: Based on available data, the classification criteria are not met.

Skin sensitization - Copper: Negative (guinea pig) OECD 406

Tin: Not sensitizing - human and guinea pig, rat and mouse data. Study report 2008

Respiratory sensitization - Not Classified. No data

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

In vitro - Copper: No evidence of mutagenic effects (Salmonella) OECD 471

Tin: No evidence of mutagenic effects (S. Typhimurium) OECD 471

In vivo - Copper: No evidence of mutagenic effects (rat) OECD 486

Carcinogenicity: Based on available data, the classification criteria are not met.

Copper: No evidence of carcinogenic effects.

Tin: No evidence of carcinogenic effects (rat) Unnamed study

Reproductive toxicity: Based on available data, the classification criteria are not met.

Toxicity for reproduction - Copper: No evidence of reproductive effects (rat) OECD 416

Tin: No evidence of reproductive effects (rat) OECD 421

Development toxicity -

Copper: NOAEL 7.5mg Cu/kg bw/day (rat) OECD 414

Tin: NOAEL 1000 mg/kg/day (rat) OECD 414

STOT - single exposure: Based on available data, the classification criteria are not met.

Copper: No evidence of respiratory tract irritation could be observed (rat) OECD 423

Tin: No treatment related adverse effects were noted during the study (rat) OECD 423

STOT - repeated exposure: Based on available data, the classification criteria are not met.

Ingestion - Copper: NOAEL: 1000 ppm (mouse) EU Method B.26

Tin: NOEL: 1000 > mg/kg bw/day (rat) OECD 407

Inhalation - Copper: NOAEL > 2 mg/m³ air (rat) OECD 412

Tin: No data

Skin Contact - Copper: No data

Tin: No data

Aspiration hazard: Based on available data, the classification criteria are not met. Solid.

11.2 Other information

None known.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity: Aquatic Acute 1; Very toxic to aquatic life.

Copper: This classification is applicable to copper powders with particle size >10µm 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).

Tin: Not classified. 7-day NOEC 100µg/L (fish) EPA 1002.0

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Chronic toxicity: Aquatic Chronic 3; Harmful to aquatic life with long lasting effects.
Copper: Aquatic Chronic 3; see text above; Acute Toxicity Copper.
Tin: Not classified. 7-day NOEC 100ug/L (fish) EPA 1002.0

12.2 Persistence and degradability

Not applicable for inorganic substances

12.3 Bioaccumulative potential

The mixture has no potential for bioaccumulation

12.4 Mobility in soil

The mixture 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 Other adverse effects

None known.

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 (*)	(*)

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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

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

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 - None.

Water Framework Directive - Copper: Metal compound - Main pollutant, Annex VIII

Candidate List of Substances of Very High Concern for Authorisation - Not Applicable

15.1.2 National Regulations

Not applicable

15.1.3 Chemical Safety Assessment

A REACH chemical safety assessment has been carried out for copper

16. OTHER INFORMATION

Products covered by this data sheet include:

Spherical Bronze Powder: 89/11, 85/15, 80/20 – All grades.

Irregular Bronze Powder: 90/10, 85/15, 80/20, 60/40, 65/35, 50/50 – All grades

(This list is not exhaustive)

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Legend

LTEL Long Term Exposure Limit
 STEL Short Term Exposure Limit
 DNEL Derived No Effect Level
 PNEC Predicted No Effect Concentration
 PBT Persistent, Bioaccumulative and Toxic
 vPvB very Persistent and very bioaccumulative
 OECD Organisation for Economic Cooperation and Development
 SCL Specific Concentration Limit
 ADR European Agreement concerning the International Carriage of Dangerous Goods by Road
 RID Regulations concerning the international railway transport of dangerous goods
 IMDG International Maritime Dangerous Goods
 IATA International Air Transport Association
 ICAO International Civil Aviation Organization

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