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Version: 1.1

Safety Data Sheet According to Retained Regulation (EC) No 1907/2006 (UK-REACH)

Copper-Chromium Alloy Powder / CuCr Alloy Powder

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name: **Copper-Chromium Alloy Powder / CuCr Alloy Powder**

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: Metal powder for use in additive layer manufacturing.
Uses advised against: All other uses are strongly discouraged.

1.3 Details of the supplier of the safety data sheet

Supplier

Company name:	**Cunova GmbH**
Street:	Klosterstraße 29
City:	49074 Osnabrück DEUTSCHLAND Telefon: +49 (0)5 41-3 21-0 Fax: +49 (0)5 41-3 21-13 66 WEB: www.cunova.com
Responsible department:	ehs@cunova.com

Emergency telephone number
Giftinformationszentrum Nord, GIZ-Nord
Tel: +4955119240 (24/7, service provided in English)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Retained Regulation (EC) No 1272/2008 (GB-CLP Regulation).

GHS – Classification
Hazardous to the aquatic environment — Chronic hazard category 2

Hazard Statements:
H411 Toxic to aquatic life with long lasting effects

2.2 Label elements
Signal word: -
Pictogram: **GHS09**

Hazard Statements:
H411 Toxic to aquatic life with long lasting effects

Precautionary Statements:

P273 Avoid release to the environment.
P391 Collect spillage.

P501 Dispose of contents/container to waste disposal in accordance with local/regional/national regulations.

2.3 Other hazards
The ingredients of this product do not meet the criteria for classification as PBT or vPvB. Copper is suspected to have endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.2 Mixture

Chemical name	CAS No EC No Index No REACH No	Concentration	Classification	H-phrases
Copper	7440-50-8 231-159-6 029-024-00-X	≤ 99 %	Aquatic Chronic 2	H411
Niobium	7440-03-1 231-113-5	≤ 7 %	-	-
Chromium	7440-47-3 231-157-5	≤ 7%	-	-
Zirconium	7440-67-7 231-176-9	≤ 1 %	Pyr. Sol. 1 Water-react. 1	H250 H260
Titanium	7440-32-6 231-142-3	≤ 0,5 %	-	-
Silicon	7440-21-3 231-130-8	≤ 0,5 %	-	-

Full text of H-phrases: see Section 16.

Further information
Copper is suspected to have endocrine disrupting properties.
Copper alloys are special preparations according to Regulation (EC) No. 1907/2006 (REACH).

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
First responders: Ensure self-protection. IF exposed or if affected: Seek medical advice/call for medical assistance. Remove affected person from danger area and lie down.

After inhalation
IF INHALED: Remove person to fresh air and ensure unobstructed breathing. Seek medical attention if symptoms occur.

After skin contact
IF ON SKIN: Wash immediately with plenty of water and mild soap. If skin irritation occurs: Seek medical advice/attention.

After eye contact
IF IN EYES: Rinse cautiously with water for several minutes. Remove any contact lenses if possible. Continue to rinse. Consult a doctor if symptoms persist.

After ingestion
DO NOT induce vomiting. Rinse out mouth. Never administer anything by mouth to an unconscious person. Seek medical advice/medical assistance.

4.2 Most important symptoms and effects, both acute and delayed
Dust may irritate the eyes and respiratory tract.

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

SECTION 5: Firefighting measures

5.1 Extinguishing media
Copper alloys in their bulk state are normally non-combustible, but fine powders or dusts of the material can pose an additional risk in the event of a fire. Adapt fire-fighting measures to the particular situation.

Suitable extinguishing media
Metal fire extinguishing powder, dry sand, sodium chloride.

Extinguishing media which must not be used for safety reasons
Water, CO_2

5.2 Special hazards arising from the substance or mixture
In the event of fire, copper alloys above 400 ° C can form toxic metal oxides that pose a major inhalation hazard.

5.3 Advice for firefighters
Adapt fire-fighting measures to the environment. Do not take any measures that involve personal risk or have not been adequately trained. If it is safe to do so, remove the container from the danger

zone. Wear self-contained breathing apparatus (SCBA) with full face shield operating in positive pressure mode. Wear appropriate protective clothing/apparel that covers the entire body.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective gloves/protective clothing/eye protection/face protection. Remove contaminated clothing and wash before reuse. Ensure good ventilation. Avoid dust formation. Evacuate non-involved personnel from the area.

6.2 Environmental precautions
Avoid release into the environment. Do not allow to enter waters or drains. In case of uncontrolled release of larger quantities of the material into the environment, inform competent authorities and initiate appropriate environmental protection measures.

6.3 Methods and material for containment and cleaning up
Contain spillage. Pick up spilled material mechanically and place in a suitable waste container. Use vacuum suction with HEPA filters to clean up spilled material suppressing generation of airborne dust.

6.4 Reference to other sections
For information on safe handling see section 7.
For information on personal protection see section 8.
For information on disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Do not eat, drink, smoke or sniff when handling the product. Prevent contact with skin, eyes and clothing. Observe general workplace hygiene. Wash hands with soap and water before breaks, at the end of work and immediately after handling. Remove contaminated clothing and shoes immediately and do not wear outside of work area. Check gloves regularly for wear, leaks and contamination and replace accordingly. Keep away from food, feed and drink. Never store in containers that are used for, or can be mistaken for, food or beverage containers. Thoroughly clean work areas on a regular basis. Wear protective gloves/protective clothing/eye protection/face protection (see section 8.2). Remove contaminated clothing and wash before reuse.

Advice on fire and explosion protection
Avoid accumulation and swirling up of dust. Collect dust mechanically (e.g. with industrial vacuum cleaner).

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and containers
Store only in the original container. Store container in a well-ventilated and dark place. Keep

container tightly closed. Store in places without fire hazard, away from sources of sparks, ignition and heat. Protect from direct sunlight. Store under lock and key. Keep away from flammable materials. Keep away from food, beverages and animal feed. Observe and comply with all relevant local and national regulations concerning storage of containers.

Advice on combined storage
Keep separate from oxidizing agents.

Further information on storage conditions
Store in a dry place.

7.3 Specific end use(s)
Metal powder for use in additive layer manufacturing.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
According to EH40/2005 Workplace exposure limits

Substance	CAS no.	Workplace exposure limit				Comments
		Long-term exposure limit (8-hr TWA reference period)		Short-term exposure limit (15-minute reference period)		The Carc, Sen and Sk notations are not exhaustive
		ppm	mg/m³	ppm	mg/m³	
Chromium	7440-47-3	-	0.5	-	-	
Copper fume (as Cu)	7440-50-8	-	0.2	-	-	
Copper and compounds: dust and mists (as Cu)		-	1	-	2	
Silicon Inhalable dust Respirable dust	7440-21-3	- -	10 4	- -	- -	
Zirconium compounds (as Zr)			5		10	

8.2 Exposure controls

Protective and hygiene measures
General precautions to be observed when handling the product. Avoid contact with eyes. Avoid contact with skin. Wash hands before breaks and at the end of work. Avoid dust formation. Technical protective measures always take precedence over all other personal protective measures. The use of mechanical equipment such as mechanical extraction methods always take precedence over manual work.

Respiratory protection
In case of dust formation: Wear respiratory protection against dust particles. Observe wearing time and manufacturer's instructions for use. Recommended respiratory protection: Half/quarter masks with particle filter P3, identification colour: white.

Hand protection
Use gloves made of nitrile rubber, butyl rubber or PVC. The glove material must be impermeable and resistant to the substance. The selection of a suitable glove depends not only on the material, but also on other quality characteristics and varies from manufacturer to manufacturer. When selecting gloves, mechanical risks and cut hazards must also be taken into account.

Eye protection
Select safety goggles with side shields or full safety goggles in accordance with guideline EN 166 - Personal eye protection. In case of high risk, wear additional face shield.

Further skin protection
Wear suitable long-sleeved protective clothing when working. Full protective suit, if necessary. Body protective equipment must be selected in its design depending on the concentration and quantity of hazardous substances specific to the workplace. The personal protective equipment used must comply with the requirements of Regulation (EU) 2016/425 and amendments (CE marking).

Environmental exposure controls
Observe national emission regulations. Prevent product from entering drains, watercourses and soil.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: Colour Aggregate state	 Copper-red Solid
Particle Properties:	Particle size 5 - 200 µm
Odour:	odourless
odour threshold:	Not applicable.
pH:	Not applicable.
Melting point/freezing point:	1075 °C to 1150 °C
Initial boiling point and boiling range:	Not determined.
Flashpoint:	Not applicable.
Evaporation rate:	Not applicable.
Flammability (solid, gaseous):	The material in solid form not flammable.
Upper/Lower flammability and explosion limits:	Material not flammable or explosive in solid form.
Vapor pressure:	Not applicable.
Vapor density:	Not applicable.
Relative density:	No data available.
Density:	approx. 8.9 g/cm³ as solid metal, approx. 4.9 g/cm³ as alloy powder
Solubility (in water):	Not applicable.

Partition coefficient: n-octanol / water:	No data available.
Auto ignition temperature: Solid:	Not applicable.
Decomposition temperature:	Not applicable.
Viscosity:	Not applicable.
Explosive Properties:	Non-explosive in solid form.
Oxidizing Properties:	No oxidizing properties.

9.2 Other information
No further information available.

SECTION 10: Stability and reactivity

10.1 Reactivity
The alloys have no known reactivity in their solid form when used under intended conditions.

10.2 Chemical stability
The product is stable when used as intended.

10.3 Possibility of hazardous reactions
Contact with incompatible materials will result in a corrosion reaction.

10.4 Conditions to avoid
Sources of ignition, open light. Avoid contact with incompatible materials. Metal oxides may form in extreme heat.

10.5 Incompatible materials
Strong oxidizing agents, acids, bases, halogens, mercury, ammonia, acetylene.

10.6 Hazardous decomposition products
Various hazardous decomposition products may be formed upon contact with incompatible materials. In case of fire, formation of toxic metal oxides possible.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Retained Regulation (EC) No 1272/2008 (GB-CLP)

Toxicological testing

Acute toxicity

Acute toxicity oral:

Chromium	LD50 oral Rat Value: > 5000 mg/kg
Silicon	LD50 oral Rat Value: 3160 mg/kg

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

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

Sensitization of respiratory tract / skin
Based on the available data, the classification criteria are not met.

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

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

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

Specific target organ toxicity single exposure
Dust may irritate the eyes and respiratory tract.

Specific target organ toxicity repeated exposure
Based on the available data, the classification criteria are not met.

Aspiration risk
Based on the available data, the classification criteria are not met.

Other information
Copper is suspected of having endocrine-disrupting properties.

SECTION 12: Ecological information

12.1 Toxicity
Copper alloys pose a general ecotoxicological risk to the environment.

Acute Toxicity Fish:

Chromium	LC50 Fish (96 Hours) Minimum: 13.9 mg/l Maximum: 210 mg/l Median: 40.5 mg/l
Copper	LC50 Fish (96 Hours) Minimum: 0.0087 mg/l Maximum: 21 mg/l Median: 0.665 mg/l
Titanium	LC50 Fish (48 h) 10 mg/L

Acute Toxicity Algae:

Chromium	EC50 Algae (72 h) Minimum: 0.1 mg/l Maximum: 17.8 mg/l Median: 8.75 mg/l

Copper	EC50 Algae (72 or 96 Hours) Testing time: 72 Hours Minimum: 0.01 mg/l Maximum: 0.91 mg/l Median: 0.57 mg/l EC50 Algae (72 or 96 Hours) Testing time: 96 Hours Minimum: 0.04 mg/l Maximum: 9.2 mg/l Median: 7.9 mg/l
Titanium	EC50 for freshwater algae 36.6 mg/L

Acute Toxicity Crustaceans:

Chromium	LC50 Crustaceans (48 Hours) Minimum: 0.022 mg/l Maximum: 100 mg/l Median: 0.53 mg/l EC50 Crustaceans (48 Hours) Minimum: 0.07 mg/l Maximum: 0.07 mg/l Median: 0.07 mg/l
Copper	LC50 Crustaceans (48 Hours) Minimum: 0.000072 mg/l Maximum: 5.36 mg/l Median: 0.044 mg/l EC50 Crustaceans (48 Hours) Minimum: 0.0016 mg/l Maximum: 0.34 mg/l Median: 0.02 mg/l

12.2 Persistence and degradability
Not applicable for inorganic substances.

12.3 Bioaccumulative potential
Copper is an essential basic element; it is not accumulated but merely stored by some organisms for later use.

12.4 Mobility in soil
Copper alloys are practically insoluble in water.

12.5 Results of PBT and vPvB assessment
The substances in the product do not meet the criteria for classification as PBT or vPvB.

12.6. Other adverse effects

Copper is suspected of having endocrine-disrupting properties.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste management

During waste handling, attention must be paid to the safety instructions for handling the product. The waste product must be disposed of through a licensed operator or sent to a metal recovery facility capable of handling fine waste. Contaminated packaging must be disposed of according to local guidelines.

Disposal methods

Dispose of waste and residues in accordance with local government regulations and in compliance with all local, national, and international regulations.

SECTION 14: Transport information

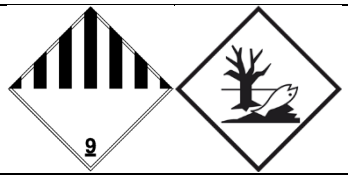
14.1 UN number

UN number	3077

14.2 UN proper shipping name

ADR / RID	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper)
IATA / IMDG	Environmentally hazardous substance, solid, n.o.s. (copper)

14.3 Transport hazard class(es).

ADR / RID	
Class	9
Danger number	90
Labels	
Classification	M7
Tunnel code	-
Limited quantity Exempted quantity	5 kg E1
IMDG	
Class	9
EmS	F-A, S-F
Limited quantity Exempted quantity	5 kg E1

Packing instructions IMDG	P002 LP02
IBC instructions	IBC08

14.4 Packaging group

ADR / RID	III
IMDG	III

14.5 Environmental hazards
Environmentally hazardous ingredients: copper.

14.6 Special precautions for user
For information on safe handling see section 7.
For information on personal protection see section 8.
For information on disposal see section 13.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable.

SECTION 15: Regulatory information

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

International regulatory information
European Agreement concerning the International Carriage of Dangerous Goods by Road (Accord européen relatif au transport international des marchandises Dangereuses par Route), ADR.

National legislation
UK-REACH regulation
GB-CLP regulation
EH40/2005 Workplace exposure limits, 2020.

All national and local legislation and regulations must be complied with.

15.2 Chemical safety assessment
A chemical safety assessment has not been carried out.

SECTION 16: Other information

Changes to the previous version
Version 1 – creation – 11.12.2023
Version 1.1 – update – 30.04.2024.
Section 1.4 was updated.

References to key literature and data sources
Regulation (EC) No 1907/2006 of the European Parliament and of the Council, REACH.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council, CLP.
C&L Inventory database (ECHA).
GESTIS – International limit values for chemical agents (database).
http://prevent.se (database).
REACH Registration dossiers - ECHA.

Phrase meaning

Pyr. Sol. 1	Pyrophoric solids, hazard category 1
Water-react. 1	Substance or mixture which in contact with water emits flammable gas, hazard category 1
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic hazard category 2
H250	Catches fire spontaneously if exposed to air
H260	In contact with water releases flammable gases which may ignite spontaneously
H411	Toxic to aquatic life with long lasting effects

Acronyms

ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
EC	European Communites
EWC	European Waste Catalogue
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
PBT	persistent, bioaccumulative and toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
UN	United Nations
vPvB	very persistent and very bioaccumulative

Further information

This safety data sheet provides information on the safety precautions required. All information provided in this safety data sheet is to the best of our current knowledge and cannot be taken as a general or legal reference for specific product properties.