

Created on: 30.04.2024
Replaces SDS: 11.12.2023
Version: 1.1

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

Copper-Cobalt Alloy Powder / CuCo Alloy Powder



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

1.1 Product identifier

Trade name: Copper-Cobalt Alloy Powder / CuCo Alloy Powder

Synonyms: CuNiCoSi

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

1.4 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

Skin sensitization, hazard category 1

Respiratory sensitization, hazard category 1

Germ cell mutagenicity, hazard category 2

Carcinogenicity, hazard category 1B

Reproductive toxicity, hazard category 1B

Specific target organ toxicity — repeated exposure, hazard category 2

Hazardous to the aquatic environment — Chronic, hazard category 2

Hazard Statements:

H317 May cause an allergic skin reaction

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

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- H341 Suspected of causing genetic defects
- H350 May cause cancer
- H360F May damage fertility
- H373 May cause damage to organs through prolonged or repeated exposure
- H411 Toxic to aquatic life with long lasting effects

2.2 Label elements

Signal word: **Danger**

Pictogram: **GHS08, GHS09**



Hazard Statements:

- H317 May cause an allergic skin reaction
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H341 Suspected of causing genetic defects
- H350 May cause cancer
- H360F May damage fertility
- H373 May cause damage to organs through prolonged or repeated exposure
- H411 Toxic to aquatic life with long lasting effects

Precautionary Statements:

- P201 Obtain special instructions before use.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P308+P313 IF exposed or concerned: Get medical advice/attention.

2.3 Other hazards

The ingredients of this product do not meet the criteria for classification as PBT or vPvB. Nickel and cobalt are CMR substances. Nickel and cobalt are skin sensitising, cobalt is additionally respiratory sensitising. Nickel is a REACH Annex XVII listed substance. Copper is suspected of having 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

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Copper	≤ 99,5 %	7440-50-8 231-159-6 029-024-00-X	Aquatic Chronic 2	H411
Nickel	≤ 3%	7440-02-0 231-111-4 028-002-01-4	Skin Sens. 1 Carc. 2 STOT RE 1 Aquatic Chronic 3	H317 H351 H372 H412
Cobalt	≤ 2 %	7440-48-4 231-158-0 027-001-00-9	Skin Sens. 1 Resp. Sens. 1 Muta. 2 Carc. 1B Repr. 1B Aquatic Chronic 4	H317 H334 H341 H350 H360F H413
Silicon	≤ 1,5 %	7440-21-3 231-130-8	-	-

Full text of H-phrases: see Section 16.

Further information

Nickel and cobalt are CMR substances. Nickel and cobalt are skin sensitising, cobalt is additionally respiratory sensitising. Nickel is a REACH Annex XVII listed substance. Copper is suspected of having 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.

After ingestion

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

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4.2 Most important symptoms and effects, both acute and delayed

Dust may irritate the eyes and respiratory tract. The product is skin sensitizing and respiratory sensitizing.

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, CO₂

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

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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

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Substance	CAS no.	Workplace exposure limit				Comments The Carc, Sen and Sk notations are not exhaustive
		Long-term exposure limit (8-hr TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg/m ³	ppm	mg/m ³	
Cobalt and Cobalt compounds (as Co)		-	0.1	-	-	Carc (cobalt dichloride and sulphate), Sen
Copper fume (as Cu)	7440-50-8	-	0.2	-	-	
Copper and compounds: dust and mists (as Cu)		-	1	-	2	
Nickel and its inorganic compounds (except nickel tetracarbonyl): water-soluble nickel comp. (as Ni) nickel and water- insoluble nickel comp. (as Ni)		-	0.1	-	-	Sk, Carc (nickel oxides and sulphides) Sen (nickel sulphate)
		-	0.5	-	-	
Silicon Inhalable dust Respirable dust	7440-21-3	-	10	-	-	
		-	4	-	-	

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

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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	Copper-red
Aggregate state	Solid
Particle Properties:	Particle size 5 - 200 µm
Odour:	odourless
odour threshold:	Not applicable.
pH:	Not applicable.
Melting point/freezing point:	1075 °C to 1085 °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/cm ³ as solid metal, approx. 4.9 g/cm ³ 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.

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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:

Cobalt	LD50 oral rat Value: 6171 mg/kg
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Skin corrosion / irritation

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

Serious eye damage / irritation

Mechanical eye irritation possible.

Sensitization of respiratory tract / skin

The product is skin sensitizing and respiratory sensitizing: May cause an allergic skin reaction. May

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cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ cell mutagenicity

Cobalt is suspected of being germ cell mutagenic.

Carcinogenicity

The product is classified as carcinogenic.

Reproductive toxicity

Cobalt is toxic to reproduction.

Specific target organ toxicity single exposure

Dust may irritate the eyes and respiratory tract.

Specific target organ toxicity repeated exposure

May cause damage to organs through prolonged or repeated exposure.

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:

Copper	LC50 Fish (96 Hours) Minimum: 0.0087 mg/l Maximum: 21 mg/l Median: 0.665 mg/l
Nickel	LC50 Fish (96 Hours) Minimum: 0.0000475 mg/l Maximum: 350 mg/l Median: 40 mg/l

Acute Toxicity Algae:

Copper	EC50 Algae (72 bzw. 96 Hours) Testing time: 72 Hours Minimum: 0.01 mg/l Maximum: 0.91 mg/l Median: 0.57 mg/l EC50 Algae (72 bzw. 96 Hours) Testing time: 96 Hours Minimum: 0.04 mg/l Maximum: 9.2 mg/l
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	Median: 7.9 mg/l
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Acute Toxicity Crustaceans:

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
Nickel	LC50 Crustaceans (48 Hours) Minimum: 1.28 mg/l Maximum: 9.28 mg/l Median: 8.85 mg/l
	EC50 Crustaceans (48 Hours) Minimum: 1 mg/l Maximum: 1 mg/l Median: 1 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

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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
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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	5 kg
Exempted quantity	E1
IMDG	
Class	9
EmS	F-A, S-F
Limited quantity	5 kg
Exempted quantity	E1
Packing instructions IMDG	P002 LP02
IBC instructions	IBC08

14.4 Packaging group

ADR / RID	III
IMDG	III

14.5 Environmental hazards

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Environmentally hazardous ingredients: copper, nickel.

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.

REACH ANNEX XVII:

Chemical Designation	CAS-No.
Nickel	7440-02-0

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).

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REACH Registration dossiers - ECHA.

Phrase meaning

Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic hazard category 2
Aquatic Chronic 3	Hazardous to the aquatic environment — Chronic hazard category 3
Aquatic Chronic 4	Hazardous to the aquatic environment — Chronic hazard category 4
Carc. 1B	Carcinogenicity, hazard category 1B
Carc. 2	Carcinogenicity, hazard category 2
Muta. 2	Germ cell mutagenicity, hazard category 2
Repr. 1B	Reproductive toxicity, hazard category 1B
Resp. Sens. 1	Respiratory sensitization, hazard category 1
Skin Sens. 1	Skin sensitisation, hazard category 1
STOT RE 1	Specific target organ toxicity — repeated exposure, hazard category 1
STOT RE 2	Specific target organ toxicity — repeated exposure, hazard category 2

H317	May cause an allergic skin reaction
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer
H351	Suspected of causing cancer
H360F	May damage fertility
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

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 Communities
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

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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.