HALBLEITER MATERIAL

Material Safety Data Sheet

Copper Powder

Report No.: VIH240830001-1
Version: 2.1
Preparation Date: 08/30/2024
Revision Date: 08/30/2024

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product Name	Copper
Product No.	2900PD
Formula	Cu
CAS No.	7440-50-8
Synonyms	None

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

Identified uses	Laboratory chemicals, Scientific research
Uses advised against	Consulting manufacturers

1.3 Details of the supplier of the safety data sheet

Company Name	VI HALBLEITERMATERIAL GmbH
Street	Bergener Straße 14.,
City	Hannover
State	Niedersachsen
Zip Code	30625
Country	Germany
Tel	0049 1626484175
Email	info@vimaterial.de
Website	https://vimaterial.de/

1.4 Emergency telephone number

Emergency Phone #	0049 1626484175

2. Hazards Identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Flammable solids	Category 1
Acute aquatic hazard	Category 1
Chronic aquatic hazard	Category 1

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal Word	Danger
Label	

Hazard Statements

H228	Flammable solid.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements

P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.
P370+P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391	Collect spillage
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards

In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment.

This product does not contain any known or suspected endocrine disruptors.

3. Composition/information on ingredients

3.1 Substances

Chemical Family	Metal

Component	CAS No.	EC No.	Concentration
Copper (Cu)	7440-50-8	231-159-6	<=100%

4. First aid measures

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4.1 Description of first aid measures

General Treatment	If symptoms persist, call a physician.
Inhalation	Remove victim to fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.
Skin	Take off immediately all contaminated clothing. Rinse skin with water/ shower. Seek medical attention.
Eyes	Rinse with pure water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek medical attention.
Ingestion	Make victim drink water (two glasses at most). Seek medical attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed, are included on labelling (Section 2.2) and in Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

1	Based on the symptoms that appear, provide targeted treatment.
2	Be aware that symptoms may be delayed.

5. Firefighting Measures

5.1 Extinguishing Media

Suitable extinguishing media	Use CO_2, sand, extinguishing powder.
Unsuitable extinguishing media	Water

5.2 Special hazards arising from the substance or mixture

1	Copper oxides
2	Flammable
3	Ambient fires may release harmful vapors.

5.3 Advice for firefighters

1	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
2	Fight fire from a safe distance and with adequate protection.
3	Do not allow firefighting water to enter drains or water courses.
4	Collect contaminated firefighting water separately.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Remove persons to safety. Use personal protective equipment as required. Avoid dust formation. Remove all sources of ignition.
For emergency responders	Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental Precautions

1	Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill	Covering of drains, Take up mechanically.
Advice on how to clean up a spill	Take up mechanically. Take care not to raise dust.
Other information relating to spills and releases	Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

7. Handling and Storage

7.1 Precautions for safe handling

Recommendations	Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid ingestion and inhalation. Avoid dust formation. Do not get in eyes, on skin, or on clothing.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do

	not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

Ventilation requirements	Keep containers tightly closed in a dry, cool and well-ventilated place.
Flammability hazards	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Incompatible materials	See section 10.5.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. Exposure Controls/Personal Protection

8.1 Control parameters

Substance	CAS No.	Source	TWA (8 h)/ mg/m³	Remarks
Copper (metal, dusts and mists)	7440-50-8	TRGS 900 (DE)	1	Inhalable fraction
Copper (fumes)	7440-50-8	TRGS 900 (DE)	0.1	Respirable fraction
Copper (metal, dusts and mists)	7440-50-8	EU SCOEL (Indicative OEL)	1	Inhalable fraction
Copper (fumes)	7440-50-8	EU SCOEL (Indicative OEL)	10.1	Respirable fraction
Copper (metal, dusts and mists)	7440-50-8	ACGIH TLV (USA)	1	TLV-TWA; Inhalable fraction
Copper (fumes)	7440-50-8	ACGIH TLV (USA)	0.2	TLV-TWA; Respirable fraction

Notes:
TWA: Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

8.2 Exposure controls

Appropriate engineering controls

1	Ensure that eyewash stations and safety showers are close to the workstation location.
2	Ensure adequate ventilation, especially in confined areas.

3	Use explosion-proof electrical/ventilating/lighting equipment.
4	Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles) (European standard - EN166) and face protection.

Skin protection

-Hand Protection

Protective gloves (The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.)

-Other protection measures

Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must useappropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit andbeusedand maintained properly.

Large scale/emergency use	Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposurelimitsare exceeded or if irritation or other symptoms are experienced Recommended Filter type: Particulates filter conforming to EN 143
Small scale/Laboratory use	Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposurelimits are exceeded or if irritation or other symptoms are experienced. Recommended half mask:- Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

9. Physical and Chemical Characteristics

9.1 Information on basic physical and chemical properties

Physical State	Powder Solid
Colour	Reddish-brown
Odor	Odorless
Melting Point/Range	1083 °C
Boiling Point/Range	2567 °C
Flammability (liquid)	Not applicable
Flammability (solid, gas)	No data available
Explosion limits	No data available
Flash Point	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
pH	No data available
Viscosity	Not applicable
Water Solubility	0.001 g/l at 30 °C - insoluble
Solubility in other solvents	No data available
Partition Coefficient (n-octanol/water)	No data available
Vapor Pressure	No data available
Density / Specific Gravity	8.94 g/cm^3
Vapor Density	Not applicable
Particle characteristics	No data available

9.2 Other information

Molecular formula	Cu
Molecular weight	63.54 g/mol
Evaporation Rate	Not applicable - Solid

10. Stability and reactivity

10.1 Reactivity

None known, based on information available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous Polymerization: No data available

Hazardous Reactions: No data available.

10.4 Conditions to avoid

Excess heat. Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Exposure to moist air or water.

10.5 Incompatible materials

Oxidizing agents.

10.6 Hazardous decomposition products

In the event of fire: see section 5

11. Toxicological information

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

Acute toxicity	Oral:	LD50 - rat (male/female) - 300 - 500 mg/kg bw.
	Dermal:	LC50 - rat (male/female) - > 5.11 mg/L air.
	Inhalation:	LD50 - rat (male/female) - > 2 000 mg/kg bw.
Skin corrosion/irritation	No data available.	
Serious eye damage/irritation	No data available.	
Respiratory or skin sensitization	Respiratory	No data available.
	Skin	No data available.
Germ cell mutagenicity	No data available.	
Carcinogenicity	No data available.	
Reproductive toxicity	No data available.	
STOT - single exposure	No data available.	
STOT - repeated exposure	No data available.	
Aspiration hazard	Not applicable. Solid	

11.2 Information on other hazards

Endocrine Disrupting Properties: Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

12. Ecological Information

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas - 0.193 mg/L - 96 h.
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia - 0.033 - 0.792 mg/L - 48 h
Toxicity to algae	Static test ErC50 - Chlorella vulgaris (Fresh water algae) - 0.06 - 0.9 mg/L - 72 h
Toxicity to microorganisms	No data available.

12.2 Persistence and degradability

Persistence	No data available.
Degradability	No data available.

12.3 Bioaccumulative potential

Bioaccumulative potential	No data available.

12.4 Mobility in soil

Mobility in soil	No data available.

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment.

12.6 Endocrine disrupting properties

Endocrine Disruptor Information	This product does not contain any known or suspected endocrine disruptors.

12.7 Other adverse effects

Persistent Organic Pollutant	This product does not contain any known or suspected substance
Ozone Depletion Potential	This product does not contain any known or suspected substance

13. Disposal Considerations

13.1 Waste treatment methods

Dispose of in accordance with all applicable local and national regulations. Use recovery/recycling where feasible, otherwise incineration is the recommended method of disposal. Empty containers may contain hazardous residues. Do not cut, puncture or weld on or near to the container. Labels should not be removed from containers until they have been cleaned. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers.

14. Transport information

IMDG

14.1. UN number	UN 3089

14.2. UN Proper shipping name	Metal powders, flammable, n.o.s. (Copper Powder)
14.3. Transport hazard class(es)	4.1
14.4. Packaging group	III

ADR/RID/ADN

14.1. UN number	UN 3089
14.2. UN Proper shipping name	Metal powders, flammable, n.o.s. (Copper Powder)
14.3. Transport hazard class(es)	4.1
14.4. Packaging group	III

ICAO-IATA/DGR

14.1. UN number	UN 3089
14.2. UN Proper shipping name	Metal powders, flammable, n.o.s. (Copper Powder)
14.3. Transport hazard class(es)	4.1
14.4. Packaging group	III

14.5. Environmental hazards	Yes
14.6. Special precautions for user	No special precautions required
14.7. Maritime transport in bulk according to IMO instruments	Not applicable, packaged goods

15. Regulatory information

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

International Inventories

Component	EINECS	EC Inventory	TSCA	IECSC	NZIoC	PICCS	KECL	DSL
Copper (Cu)	√	√	√	√	√	√	√	√

[EINECS]	European Inventory of Existing Commercial Chemical Substances
[EC Inventory]	EC Inventory
[TSCA]	United States Toxic Substances Control Act Inventory
[IECSC]	Chinese Chemical Inventory of Existing Chemical Substances
[NZIoC]	New Zealand Inventory of Chemicals
[PICCS]	Philippines Inventory of Chemicals and Chemical Substances
[KECL]	Korea Existing Chemicals List

[DSL] Canada Domestic Substances List

Note: "√" Listed
"×" No data / Not listed

Authorisation/Restrictions according to EU REACH

Component	CAS No.	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC1907/2006) article 59 -Candidate List of Substances of Very HighConcern (SVHC)
Copper (Cu)	7440-50-8	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links:
https://echa.europa.eu/substances-restricted-under-reach

Seveso III Directive (2012/18/EC)

Component	CAS No.	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) -Qualifying Quantities for Safety ReportRequirements
Copper (Cu)	7440-50-8	Not applicable	Not applicable

Regulation (EC) No. 649/2012 (Export and import of hazardous chemicals):
Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
Take note - applicable where occupational exposure occurs.

National Regulations - Germany:

- **TRGS 900 (Technical Rules for Hazardous Substances – Occupational Exposure Limits):**
  Copper metal dusts and mists:
  - Inhalable fraction (AGW): 1 mg/m^3
  - Respirable fraction (AGW for fumes): 0.1 mg/m^3
- **TA Luft (Technical Instructions on Air Quality Control):** Not data available.
- **Water Hazard Classification (WGK, self classification):** WGK 2 – hazardous to water.

National Regulations – United Kingdom:

- ❖ Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.

  Workplace Exposure Limits (WELs) as defined in EH40/2005:

  - Copper dusts and mists: TWA: 1 mg/m^3
  - Copper fume: TWA: 0.2 mg/m^3

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

16. Other information

Revision information

Preparation date	08/30/2024
Revision date	08/30/2024
Revision reason	Creation.

Abbreviations and acronyms

CAS	Chemical Abstracts Service
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulation concerning the International Carriage of Dangerous Goods by Rail
IATA	International Air Transportation Association
IMDG	International Maritime Dangerous Goods
LC50	Lethal Concentration 50%
LD50	Lethal Dose 50%
TWA	Time Weighted Average
STOT	Specific target organ toxicity
PBT	Persistent, Bioaccumulative, Toxic
vPvB	Very Persistent, very Bioaccumulative
WEL	Workplace exposure limit

References

[1] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

[2] ECHA - European Chemicals Agency, website: https://echa.europa.eu/

[3] eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

[4] Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

[5] HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

[6] IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

[7] IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

[8] ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

List of relevant phrases (code and full text as stated in chapter 2 and 3)

H228	Flammable solid.
H410	Very toxic to aquatic life with long lasting effects.

Disclaimer

The information of this safety data sheet is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products. For further information please contact info@vimaterial.de.