Safety Data Sheet

Ultraweld Cast Iron Weld Metal

Version number: 7.0 Revision: 2022-03-09

SECTION 1: Identification

1.1 Product identifier

Trade name **Ultra Shot and NUWTube Weld Metal**

Alternative name(s)

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

Relevant identified uses Industrial use
Welding and soldering product

1.3 Details of the supplier of the safety data sheet

Harger
301 Ziegler Drive
Grayslake, IL 60030
T 847-548-8700

1.4 Emergency telephone number

No Additional Information Avaliable

Emergency information service

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Section	Hazard class	Category	Hazard class and category	Hazard statement
A.1O	acute toxicity (oral)	4	Acute Tox. 4	H302
A.1I	acute toxicity (inhal.)	4	Acute Tox. 4	H332
A.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318

Code	Supplemental hazard information
HNOC002	may be harmful in contact with skin (GHS category 5: acutely toxic - dermal)
HNOC008	very toxic to aquatic life with long lasting effects (GHS category 1: aquatic toxicity - acute and/or chronic)

For full text of abbreviations: see SECTION 16.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- signal word Danger
- pictograms

GHS05, GHS07

- hazard statements

H302+H332 Harmful if swallowed or if inhaled.
H318 Causes serious eye damage.

- precautionary statements

P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/eye protection/face protection.
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a poison center/doctor.
P330	Rinse mouth.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

- hazardous ingredients for labelling

Contains: dicopper oxide; aluminium powder (stabilised).

2.3 Other hazards

There is no additional information.

Hazards not otherwise classified

May be harmful in contact with skin (GHS category 5: acutely toxic - dermal).
Very toxic to aquatic life with long lasting effects (GHS category 1: aquatic toxicity - acute and/or chronic).

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture)

3.2 Mixtures

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
DiCopper oxide	CAS No 1317-39-1	< 80	Acute Tox. 4 / H302 Acute Tox. 4 / H332 Eye Dam. 1 / H318 HNOC002 HNOC008		
Copper Powder	CAS No 7440-50-8	< 10	HNOC008		
aluminium powder (stabilized)	CAS No 7429-90-5	< 10	Acute Tox. 3 / H331 Flam. Sol. 1 / H228 Water-react. 2 / H261		T(a)
copper oxide	CAS No 1317-38-0 1344-70-3	< 5	HNOC001 HNOC002 HNOC008		
Calcium dicilicide	CAS No 12013-56-8	< 5	Water-react. 2 / H261		
Calcium Fluoride	CAS No 7789-75-5	< 5	HNOC003 HNOC007		

Notes
T(a): This substance is marketed in a form which has the physical properties as indicated

Remarks

For full text of H-phrases: see SECTION 16. All the percentages given are percentages by weight unless stated otherwise.

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

Following skin contact

Brush off loose particles from skin. Rinse skin with water/shower.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Welding fumes: headaches and dizziness may occur. Cough, pain, choking, and breathing difficulties. Nausea. Varying degrees of pulmonary injury.

4.3 Indication of any immediate medical attention and special treatment needed

For specialist advice physicians should contact the poison centre.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

D-Powder; Sand

Unsuitable extinguishing media

Water. Foam.

5.2 Special hazards arising from the substance or mixture

Deposited combustible dust has considerable explosion potential.

Hazardous combustion products

During fire hazardous fumes/smoke could be produced.

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Ventilate affected area. Control of dust.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases. Wear personal protective equipment/face protection.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Do not allow firefighting water to enter drains or water courses.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains. Take up mechanically. Avoid dust formation.

Advice on how to clean up a spill

Take up mechanically.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas.

- specific notes/details

Dust deposits may accumulate on all deposition surfaces in a technical room.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- explosive atmospheres

Removal of dust deposits.

- flammability hazards

Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge.

- incompatible substances or mixtures

Observe compatible storage of chemicals. Keep away from alkalis, oxidising substances, acids.

Control of the effects

Protect against external exposure, such as

High temperatures. UV-radiation/sunlight. Static discharges. Moisture.

Consideration of other advice

Store in a well-ventilated place. Keep container tightly closed. Do not use product if exposed to moisture (discard product).

- ventilation requirements

Keep any substance that emits harmful vapors or gases in a place that allows these to be permanently extracted. Use local and general ventilation.

- packaging compatibilities

Keep only in original container.

7.3 Specific end use(s)

There is no additional information.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Notation	Source
US	particulates not otherwise classified (PNOC)		PEL	1,766	15			partml, i, dust	29 CFR 1910.1000
US	particulates not otherwise classified (PNOC)		PEL	529.5	5			partml, r, dust	29 CFR 1910.1000
US	aluminium	7429-90-5	PEL		15			Al, i, dust	29 CFR 1910.1000
US	aluminium	7429-90-5	PEL		5			Al, r, dust	29 CFR 1910.1000
US	aluminium	7429-90-5	TLV®		1			r	ACGIH® 2022
US	copper	7440-50-8	PEL		1			Cu, dm	29 CFR 1910.1000
US	copper	7440-50-8	PEL		0.1			Cu, fume	29 CFR 1910.1000
US	copper	7440-50-8	TLV®		1			dm, Cu	ACGIH® 2022
US	copper	7440-50-8	TLV®		0.2			fume, Cu	ACGIH® 2022

Notation

Al	calculated as Al (aluminum)
Cu	calculated as Cu (copper)
dm	as dusts and mists
dust	as dust
fume	as fume
i	inhalable fraction
partml	particles/ml
r	respirable fraction
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
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

Relevant DNELs/DMELs/PNECs and other threshold levels

Relevant DNELs of components of the mixture

Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
dicopper oxide	1317-39-1	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
dicopper oxide	1317-39-1	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
dicopper oxide	1317-39-1	DNEL	137 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
dicopper oxide	1317-39-1	DNEL	0.041 mg/kg bw/day	human, oral	consumer (private households)	chronic - systemic effects
dicopper oxide	1317-39-1	DNEL	0.082 mg/kg bw/day	human, oral	consumer (private households)	acute - systemic effects
granulated copper	7440-50-8	DNEL	1 mg/m³	human, inhalatory	worker (industry)	acute - local effects
granulated copper	7440-50-8	DNEL	20 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
granulated copper	7440-50-8	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
granulated copper	7440-50-8	DNEL	20 mg/m³	human, inhalatory	consumer (private households)	acute - systemic effects
granulated copper	7440-50-8	DNEL	137 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
granulated copper	7440-50-8	DNEL	273 mg/kg bw/day	human, dermal	worker (industry)	acute - systemic effects
granulated copper	7440-50-8	DNEL	1 mg/m³	human, inhalatory	consumer (private households)	chronic - local effects
granulated copper	7440-50-8	DNEL	1 mg/m³	human, inhalatory	consumer (private households)	acute - local effects
granulated copper	7440-50-8	DNEL	137 mg/kg bw/day	human, dermal	consumer (private households)	chronic - systemic effects
granulated copper	7440-50-8	DNEL	273 mg/kg bw/day	human, dermal	consumer (private households)	acute - systemic effects
granulated copper	7440-50-8	DNEL	0.041 mg/kg bw/day	human, oral	consumer (private households)	chronic - systemic effects
aluminium powder (stabilised)	7429-90-5	DNEL	3.72 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
aluminium powder (stabilised)	7429-90-5	DNEL	3.72 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
aluminium powder (stabilised)	7429-90-5	DNEL	3.95 mg/kg bw/day	human, oral	consumer (private households)	chronic - systemic effects
copper(II) oxide	1317-38-0 1344-70-3	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
copper(II) oxide	1317-38-0 1344-70-3	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
copper(II) oxide	1317-38-0 1344-70-3	DNEL	137 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant DNELs of components of the mixture

Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
copper(II) oxide	1317-38-0 1344-70-3	DNEL	0.041 mg/kg bw/day	human, oral	consumer (private households)	chronic - systemic effects
copper(II) oxide	1317-38-0 1344-70-3	DNEL	0.082 mg/kg bw/day	human, oral	consumer (private households)	acute - systemic effects
Calcium Fluoride	7789-75-5	DNEL	5 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Calcium Fluoride	7789-75-5	DNEL	1 mg/m³	human, inhalatory	consumer (private households)	chronic - systemic effects
Calcium Fluoride	7789-75-5	DNEL	0.02 mg/kg bw/day	human, oral	consumer (private households)	chronic - systemic effects

Relevant PNECs of components of the mixture

Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
dicopper oxide	1317-39-1	PNEC	7.8 µg/l	aquatic organisms	freshwater	short-term (single instance)
dicopper oxide	1317-39-1	PNEC	5.2 µg/l	aquatic organisms	marine water	short-term (single instance)
dicopper oxide	1317-39-1	PNEC	230 µg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
dicopper oxide	1317-39-1	PNEC	87 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
dicopper oxide	1317-39-1	PNEC	676 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
dicopper oxide	1317-39-1	PNEC	65 mg/kg	terrestrial organisms	soil	short-term (single instance)
granulated copper	7440-50-8	PNEC	7.8 µg/l	aquatic organisms	freshwater	short-term (single instance)
granulated copper	7440-50-8	PNEC	5.2 µg/l	aquatic organisms	marine water	short-term (single instance)
granulated copper	7440-50-8	PNEC	230 µg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
granulated copper	7440-50-8	PNEC	87 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
granulated copper	7440-50-8	PNEC	676 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
granulated copper	7440-50-8	PNEC	65 mg/kg	terrestrial organisms	soil	short-term (single instance)
aluminium powder (stabilised)	7429-90-5	PNEC	20 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
copper(II) oxide	1317-38-0 1344-70-3	PNEC	7.8 µg/l	aquatic organisms	freshwater	short-term (single instance)
copper(II) oxide	1317-38-0 1344-70-3	PNEC	5.2 µg/l	aquatic organisms	marine water	short-term (single instance)

Relevant PNECs of components of the mixture

Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
copper(II) oxide	1317-38-0 1344-70-3	PNEC	230 µg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
copper(II) oxide	1317-38-0 1344-70-3	PNEC	87 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
copper(II) oxide	1317-38-0 1344-70-3	PNEC	676 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
copper(II) oxide	1317-38-0 1344-70-3	PNEC	65 mg/kg	terrestrial organisms	soil	short-term (single instance)
Calcium Fluoride	7789-75-5	PNEC	0.37 mg/l	aquatic organisms	freshwater	short-term (single instance)
Calcium Fluoride	7789-75-5	PNEC	0.022 mg/l	aquatic organisms	marine water	short-term (single instance)
Calcium Fluoride	7789-75-5	PNEC	104.8 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Calcium Fluoride	7789-75-5	PNEC	21.8 mg/kg	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

Handling in enclosed plants. General ventilation. Use local exhaust ventilation: exhaust ventilation welding fumes.

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection

Skin protection

Suitable protective equipment.

- hand protection

In the case of wanting to use the gloves again, clean them before taking off and air them well.
Use heat resistant gloves when handling molten product. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- type of material

Nitrile rubber

- material thickness

Use gloves with a minimum material thickness: ≥ 0,38 mm.

- other protection measures

Gauntlets.

Respiratory protection

In case of inadequate ventilation wear respiratory protection: dustiness, welding fumes.

Environmental exposure controls

Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	solid (powder, granular)
Color	dark grey
Particle	no data available
Odor	characteristic

Other safety parameters

pH (value)	not applicable
Melting point/freezing point	>1,000 °C
Initial boiling point and boiling range	2,500 °C at 1,013 hPa calculated value, referring to a component of the mixture
Flash point	not determined
Evaporation rate	not determined
Flammability (solid, gas)	this material is combustible, but will not ignite readily
Vapor pressure	not determined
Density	2,900 – 3,100 $^{kg}/_{m^3}$
Vapor density	this information is not available

Solubility(ies)

- water solubility	0 $^{mg}/_{cm^3}$

- n-octanol/water (log KOW)	this information is not available
Auto-ignition temperature	>1,059 °C (relative self-ignition temperature for solids) calculated value, referring to a component of the mixture
Decomposition temperature	no data available

Viscosity not relevant (solid matter)

- kinematic viscosity	not relevant

Explosive properties	none
Oxidizing properties	none

9.2 Other information

There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Keep away from heat.

Hints to prevent fire or explosion

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

10.5 Incompatible materials

Oxidizers. Acids. Alkalis.

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Harmful if swallowed. Harmful if inhaled.

- acute toxicity estimate (ATE)

Exposure route	ATE
Oral	1,861 $^{mg}/_{kg}$
Inhalation: dust/mist	1.72 $^{mg}/_{l}$/4h

- acute toxicity of components of the mixture

Acute toxicity estimate (ATE) of components of the mixture

Name of substance	CAS No	Exposure route	ATE
dicopper oxide	1317-39-1	oral	1,340 $^{mg}/_{kg}$
dicopper oxide	1317-39-1	inhalation: dust/mist	1.5 $^{mg}/_{l}$/4h
aluminium powder (stabilised)	7429-90-5	inhalation: dust/mist	>0.888 $^{mg}/_{l}$/4h

Acute toxicity of components of the mixture

Name of substance	CAS No	Exposure route	Endpoint	Value	Species
dicopper oxide	1317-39-1	oral	LD50	1,340 $^{mg}/_{kg}$	rat
dicopper oxide	1317-39-1	dermal	LD50	>2,000 $^{mg}/_{kg}$	rat
aluminium powder (stabilised)	7429-90-5	oral	LD50	>15,900 $^{mg}/_{kg}$	rat
aluminium powder (stabilised)	7429-90-5	inhalation: dust/mist	LC50	>0.888 $^{mg}/_{l}$/4h	rat
copper(II) oxide	1317-38-0 1344-70-3	oral	LD50	>2,500 $^{mg}/_{kg}$	rat
copper(II) oxide	1317-38-0 1344-70-3	dermal	LD50	>2,000 $^{mg}/_{kg}$	rat
Calcium Fluoride	7789-75-5	inhalation: dust/mist	LC50	>5,070 $^{mg}/_{m^3}$/4h	rat

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Shall not be classified as a respiratory or skin sensitizer.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

SECTION 12: Ecological information

12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
dicopper oxide	1317-39-1	LC50	193 $^{\mu g}/_{l}$	fish	96 h
granulated copper	7440-50-8	LC50	193 $^{\mu g}/_{l}$	fish	96 h
copper(II) oxide	1317-38-0 1344-70-3	LC50	193 $^{\mu g}/_{l}$	fish	96 h
Calcium Fluoride	7789-75-5	EC50	48 $^{mg}/_{l}$	aquatic invertebrates	96 h
Calcium Fluoride	7789-75-5	NOEC	170.5 $^{mg}/_{l}$	microorganisms	48 h

Aquatic toxicity (chronic) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
granulated copper	7440-50-8	NOEC	11.4 $^{\mu g}/_{l}$	fish	45 d
Calcium Fluoride	7789-75-5	NOEC	14.6 $^{mg}/_{l}$	microorganisms	20 h

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Endocrine disrupting properties

None of the ingredients are listed.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packages

Only packagings which are approved (e.g. acc. to DOT) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself. Inorganic wastes containing dangerous substances.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number

DOT	UN 3077
IMDG-Code	UN 3077
ICAO-TI	UN 3077

14.2 UN proper shipping name

DOT	Environmentally hazardous substance, solid, n.o.s.
IMDG-Code	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
ICAO-TI	Environmentally hazardous substance, solid, n.o.s.
Technical name (Hazardous ingredients)	dicopper oxide, granulated copper

14.3 Transport hazard class(es)

DOT	9
IMDG-Code	9
ICAO-TI	9

14.4 Packing group

DOT	III
IMDG-Code	III
ICAO-TI	III

14.5 Environmental hazards

hazardous to the aquatic environment

Environmentally hazardous substance (aquatic environment)	dicopper oxide, granulated copper

14.6 Special precautions for user

There is no additional information.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

No data available.

Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - additional information

Particulars in the shipper's declaration	UN3077, Environmentally hazardous substance, solid, n.o.s., (contains: dicopper oxide, Copper Powder), 9, III
Reportable quantity (RQ)	55,556 lbs (25,222 kg) (Copper Powder)
Danger label(s)	9, fish and tree

Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	8, 146, 335, 384, A112, B54, B120, IB8, IP3, N20, N91, T1, TP33
ERG No	171

International Maritime Dangerous Goods Code (IMDG) - additional information

Marine pollutant	yes (hazardous to the aquatic environment) (DiCopper oxide)
Danger label(s)	9, fish and tree

Special provisions (SP)	274, 335, 966, 967, 969
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-F
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Environmental hazards	yes (hazardous to the aquatic environment)
Danger label(s)	9, fish and tree

Special provisions (SP)	A97, A158, A179, A197, A215
Excepted quantities (EQ)	E1
Limited quantities (LQ)	30 kg

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) all ingredients are listed

Superfund Amendment and Reauthorization Act (SARA TITLE III)

- The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

none of the ingredients are listed

- Specific Toxic Chemical Listings (EPCRA Section 313)

Toxics Release Inventory: Specific Toxic Chemical Listings			
Name of substance	**CAS No**	**Remarks**	**Effective date**
Copper Powder	7440-50-8		1987-01-01
aluminium powder (stabilised)	7429-90-5	fume or dust	1987-01-01

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

- List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

Name of substance	CAS No	Remarks	Statutory code	Final RQ pounds (Kg)
Copper Powder	7440-50-8	[4]	2	5000 (2270)

Legend

2 "2" indicates that the source is section 307(a) of the Clean Water Act

[4] No reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers (0.004 inches).

Clean Air Act

none of the ingredients are listed

Right to Know Hazardous Substance List

- Cleaning Product Right to Know Act Substance List (CA-RTK)

Name acc. to inventory	CAS No	Functionality	Authoritative Lists
Copper	7440-50-8		CDC 4th National Exposure Report CWA 303(c) CWA 303(d) OEHHA RELs
Aluminum	7429-90-5		ATSDR Neurotoxicants CA MCLs CWA 303(d)
Fluorides			CA MCLs OEHHA RELs

- Toxic or Hazardous Substance List (MA-TURA)

Name acc. to inventory	CAS No	DEP CODE	PBT / HHS / LHS	PBT / HHS Threshold	De Minimis Concentration Threshold
Copper	7440-50-8				1.0 %
Copper Compounds		1015			1.0 %
Copper Compounds		1015			1.0 %
Aluminum (fume or dust)	7429-90-5				1.0 %
Copper Compounds		1015			1.0 %

- Hazardous Substances List (MN-ERTK)

Name acc. to inventory	CAS No	References	Remarks
Dust, Inert or Nuisance (When toxic impurities are not present, for example, quartz less than 1 percent.)		A	dust
Welding fumes		A	fume
Copper, (as Cu)	7440-50-8	A, O	dust mist
Copper	7440-50-8	A, O	fume
Aluminum pyro powders	7429-90-5	A	
Aluminum welding fumes	7429-90-5	A	fume
Aluminum, metal	7429-90-5	A	dust
Fluoride, as F	16984-48-8	A, N, O	dust
Fluorides, inorganic		N	

Legend

A	American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1992-93", available from ACGIH
dust	If the substance poses an airborne particulate exposure hazard, the substance is followed by the word "dust."
fume	Small solid particles formed by the condensation of vapors of solid materials.
N	National Institute for Occupational Safety and Health (NIOSH), "Recommendations for Occupational Safety and Health Standards," August 1988, available from NIOSH, Publications Dissemination Office, Division of Standards Development and Technology Transfer

Legend
O Occupational Safety and Health Administration (OSHA), Safety and Health Standards, Code of Federal Regulations, title 29, part 1910, subpart Z, "Toxic and Hazardous Substances, 1990." General information: Minnesota Department of Labor and Industry, Occupational Safety and Health Division

- Hazardous Substance List (NJ-RTK)

Name acc. to inventory	CAS No	Remarks	Classifications
copper	7440-50-8		
copper compounds			
ALUMINUM	7429-90-5		F3 R1
copper compounds			
CALCIUM SILICIDE (CALCIUM SILICIDE (CaSi2), CALCIUM SILICON)	12013-56-8		F3 R1
fluorides			

Legend
F3 Flammable - Third Degree
R1 Reactive - First Degree

- Hazardous Substance List (Chapter 323) (PA-RTK)

Name acc. to inventory	CAS No	Classification
WELDING FUMES		
COPPER	7440-50-8	*, E
ALUMINUM	7429-90-5	E
COPPER	7440-50-8	*, E

Legend
* Any compound of this substance is also an environmental hazard
E Environmental hazard

- Hazardous Substance List (RI-RTK)

Name of substance	CAS No	References
COPPER BASED ALUMINOTHERMIC WELDING MATERIALS		T
Copper Powder	7440-50-8	T
aluminium powder (stabilised)	7429-90-5	T, F

Legend
F Flammability (NFPA®)
T Toxicity (ACGIH®)

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

none of the ingredients are listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

Category	Rating	Description
Chronic	/	none
Health	3	major injury likely unless prompt action is taken and medical treatment is given
Flammability	1	material that must be preheated before ignition can occur
Physical hazard	1	material that is normally stable but can become unstable (self-react) at high temperatures and pressures. Material may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors
Personal protection	-	

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	1	material that must be preheated before ignition can occur
Health	3	material that, under emergency conditions, can cause serious or permanent injury
Instability	0	material that is normally stable, even under fire conditions
Special hazard	~~W~~	material that can form potentially explosive mixtures with water

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

SECTION 16: Other information, including date of preparation or last revision

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)
1.2	Uses advised against: Do not use for squirting or spraying.	
2.2	- hazardous ingredients for labelling: dicopper oxide	- hazardous ingredients for labelling: Contains: dicopper oxide; aluminium powder (stabilised).
2.3	Other hazards: Of no significance.	Other hazards: There is no additional information.
5.3	Special protective equipment for firefighters: Self-contained breathing apparatus (EN 133). Standard protective clothing for firefighters.	Special protective equipment for firefighters: Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.
7.1	- measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas. Ground/bond container and receiving equipment.	- measures to prevent fire as well as aerosol and dust generation: Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas.
7.1	Specific notes/details: Dust deposits may accumulate on all deposition surfaces in a technical room. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.	Specific notes/details: Dust deposits may accumulate on all deposition surfaces in a technical room.
7.2	- packaging compatibilities: Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.	- packaging compatibilities: Keep only in original container.

Section	Former entry (text/value)	Actual entry (text/value)
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)
8.1		Relevant DNELs of components of the mixture: change in the listing (table)
8.1		Relevant PNECs of components of the mixture: change in the listing (table)
8.2	Skin protection: Suitable protective equipment.	Skin protection: wear protective clothing Suitable protective equipment.
8.2		Type of material: Nitrile rubber
8.2		Material thickness: Use gloves with a minimum material thickness: ≥ 0,38 mm.
8.2	Environmental exposure controls: Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.	Environmental exposure controls: Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.
9.1		Particle: no data available
9.1	Initial boiling point and boiling range: not determined	Initial boiling point and boiling range: 2,500 °C at 1,013 hPa calculated value, referring to a component of the mixture
9.1	Flash point: not applicable	Flash point: not determined
9.1	Explosion limits of dust clouds: not determined	
9.1	Partition coefficient	
9.1	Auto-ignition temperature: not determined	Auto-ignition temperature: >1,059 °C (relative self-ignition temperature for solids) calculated value, referring to a component of the mixture
9.1		Decomposition temperature: no data available
9.1		Kinematic viscosity: not relevant
10.2	Chemical stability: See below "Conditions to avoid".	Chemical stability: The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
11.1		Acute toxicity estimate (ATE) of components of the mixture: change in the listing (table)
12.1		Aquatic toxicity (acute) of components of the mixture: change in the listing (table)
12.1		Aquatic toxicity (chronic) of components of the mixture: change in the listing (table)
14.2	Technical name (Hazardous ingredients): dicopper oxide, Copper	Technical name (Hazardous ingredients): dicopper oxide, granulated copper

Section	Former entry (text/value)	Actual entry (text/value)
14.5	Environmentally hazardous substance (aquatic environment): dicopper oxide, Copper	Environmentally hazardous substance (aquatic environment): dicopper oxide, granulated copper
14.7	Index number: 3077	
14.7	Proper shipping name: Environmentally hazardous substance, solid, n.o.s.	
14.7	Reportable quantity (RQ): 50,000 lbs (22,700 kg) (Copper Powder)	Reportable quantity (RQ): 55,556 lbs (25,222 kg) (Copper Powder)
14.7	Class: 9	
14.7	Packing group: III	
14.7	Special provisions (SP): 8, 146, 335, A112, B54, B120, IB8, IP3, N20, T1, TP33	Special provisions (SP): 8, 146, 335, 384, A112, B54, B120, IB8, IP3, N20, N91, T1, TP33
14.7	UN number: 3077	
14.7	Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	
14.7	Class: 9	
14.7	Packing group: III	
14.7	Marine pollutant: yes (hazardous to the aquatic environment)	Marine pollutant: yes (hazardous to the aquatic environment) (DiCopper oxide)
14.7	UN number: 3077	
14.7	Proper shipping name: Environmentally hazardous substance, solid, n.o.s.	
14.7	Class: 9	
14.7	Packing group: III	
14.7	Special provisions (SP): A97, A158, A179, A197	Special provisions (SP): A97, A158, A179, A197, A215
15.1		Cleaning Product Right to Know Act Substance List (CA-RTK)
15.1		Cleaning Product Right to Know Act Substance List (CA-RTK): change in the listing (table)
15.1		Toxic or Hazardous Substance List (MA-TURA)
15.1		Toxic or Hazardous Substance List (MA-TURA): change in the listing (table)
15.1		Hazardous Substances List (MN-ERTK)
15.1		Hazardous Substances List (MN-ERTK): change in the listing (table)

Section	Former entry (text/value)	Actual entry (text/value)
15.1		Hazardous Substance List (NJ-RTK): change in the listing (table)
15.1		Hazardous Substance List (Chapter 323) (PA-RTK)
15.1		Hazardous Substance List (Chapter 323) (PA-RTK): change in the listing (table)
15.1		Hazardous Substance List (RI-RTK)
15.1		Hazardous Substance List (RI-RTK): change in the listing (table)
16		Abbreviations and acronyms: change in the listing (table)

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
29 CFR 1910.1000	29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits)
49 CFR US DOT	49 CFR U.S. Department of Transportation
ACGIH®	American Conference of Governmental Industrial Hygienists
ACGIH® 2022	From ACGIH®, 2022 TLVs® and BEIs® Book. Copyright 2022. Reprinted with permission. Information on the proper use of the TLVs® and BEIs®: http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/tlv-bei-position-statement
Acute Tox.	Acute toxicity
ATE	Acute Toxicity Estimate
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DEP CODE	Department of Environmental Protection Code
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
DOT	Department of Transportation (USA)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EmS	Emergency Schedule
ERG No	Emergency Response Guidebook - Number
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
Flam. Sol.	Flammable solid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
HHS	Higher hazard substance
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air

Abbr.	Descriptions of used abbreviations
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LHS	Lower hazard substance
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NFPA®	National Fire Protection Association (United States)
NOEC	No Observed Effect Concentration
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PEL	Permissible exposure limit
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
RTECS	Registry of Toxic Effects of Chemical Substances (database of NIOSH with toxicological information)
STEL	Short-term exposure limit
TLV®	Threshold Limit Values
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative
Water-react.	Material which, in contact with water, emits flammable gases

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.
Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

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

Code	Text
H228	Flammable solid.
H261	In contact with water releases flammable gas.
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H332	Harmful if inhaled.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.