

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH)

Revision date: 10 Jan 2022

Print date: 26 Jan 2022

Version: 1.1



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## FK3201

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

#### \* 1.1. Product identifier

Trade name/designation:

FK3201

Other means of identification:

Cu-thick film paste for alumina & pre-oxidized AlN

Article No.:

10131

#### \* 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture:

thick film ink

Relevant identified uses:

**Life cycle stage [LCS]**

**IS:** Use at industrial sites

**Sector of uses [SU]**

**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites

**Product Categories [PC]**

**PC 9a:** Coatings and paints, thinners, paint removers

**Process categories [PROC]**

**PROC 10:** Roller application or brushing

**Environmental release categories [ERC]**

**ERC 5:** Use at industrial site leading to inclusion into/onto article

**Article categories [AC]**

**AC 0:** Other

#### 1.3. Details of the supplier of the safety data sheet

**Supplier (manufacturer/importer/only representative/downstream user/distributor):**

**Fraunhofer IKTS-DD, TFC, RS**

Dickschichttechnik und funktioneller Druck | Thick-Film Technology and Functional Printing

Winterbergstraße 28

01277 Dresden

Germany

**Telephone:** +49-351-2553-7916

**Telefax:** +49-351-2554-236

**E-mail:** service@ikts-tfc.de

**Website:** www.ikts.fraunhofer.de

**E-mail (competent person):** service@ikts-tfc.de

#### \* 1.4. Emergency telephone number

Richard Schmidt, +49-351-2553-7916/-7900 (Only available during office hours.)

### SECTION 2: Hazards identification

#### \* 2.1. Classification of the substance or mixture

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

Hazard classes and hazard categories	Hazard statements	Classification procedure
self-heating substances and mixtures ( <i>Self-heat. 1</i> )	H251: Self-heating: may catch fire.	On basis of test data.
Acute toxicity (oral) ( <i>Acute Tox. 4</i> )	H302: Harmful if swallowed.	Calculation method.
Hazardous to the aquatic environment ( <i>Aquatic Acute 1</i> )	H400: Very toxic to aquatic life.	Calculation method.

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Hazard classes and hazard categories	Hazard statements	Classification procedure
Hazardous to the aquatic environment (Aquatic Chronic 2)	H411: Toxic to aquatic life with long lasting effects.	Calculation method.

### \* 2.2. Label elements

#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms:



**GHS02**  
Flame



**GHS07**  
Exclamation mark



**GHS09**  
Environment

Signal word: Danger

Hazard statements for physical hazards	
H251	Self-heating: may catch fire.
Hazard statements for health hazards	
H302	Harmful if swallowed.
Hazard statements for environmental hazards	
H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

#### Supplemental hazard information: —

Precautionary statements Prevention	
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing and eye/face protection.
Precautionary statements Response	
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Precautionary statements Disposal	
P501	Dispose of contents/container to Dispose of waste according to applicable legislation..

#### Special rules for supplemental label elements for certain mixtures:

7,5 % percent of the mixture consists of ingredient(s) of unknown acute toxicity (dermal).

19,1 % percent of the mixture consists of ingredient(s) of unknown acute toxicity (inhalative).

### 2.3. Other hazards

No data available



## SECTION 3: Composition/information on ingredients

### \* 3.2. Mixtures

#### Description:

Precious metals, glass and inorganic additives embedded in an organic vehicle.

#### Hazardous ingredients / Hazardous impurities / Stabilisers:

Product identifiers	Substance name Classification according to Regulation (EC) No 1272/2008 [CLP]	Concentration
<b>CAS No.:</b> 7440-50-8 <b>EC No.:</b> 231-159-6	<b>copper</b> Acute Tox. 4 (H302), Aquatic Acute 1 (H400), Aquatic Chronic 2 (H411), Self-heat. 1 (H251)  <b>Danger</b>	47 - ≤ 95 weight-%
<b>CAS No.:</b> 8000-41-7 <b>EC No.:</b> 232-268-1	<b>Terpineol</b> Eye Irrit. 2 (H319), Skin Irrit. 2 (H315)  <b>Warning</b>	5 - ≤ 9 weight-%

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Product identifiers	Substance name Classification according to Regulation (EC) No 1272/2008 [CLP]	Concentration
CAS No.: 1317-39-1 EC No.: 215-270-7	<b>dicopper oxide</b> Acute Tox. 4 (H332, H302), Aquatic Acute 1 (H400), Aquatic Chronic 1 (H410), Eye Dam. 1 (H318)  <b>Danger</b> M-factor (acute): 100 M-factor (chronic): 10 <b>Acute Toxicity Estimate</b> ATE (oral): 500 mg/kg ATE (inhalation, dust/mist): 3.34 mg/l	0 - ≤ 1 weight-%

Full text of H- and EUH-phrases: see section 16.

## SECTION 4: First aid measures

### \* 4.1. Description of first aid measures

#### General information:

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove victim out of the danger area. Remove contaminated, saturated clothing. If unconscious but breathing normally, place in recovery position and seek medical advice. Do not leave affected person unattended.

#### Following inhalation:

Provide fresh air. In case of respiratory tract irritation, consult a physician.

#### In case of skin contact:

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing.

#### After eye contact:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an ophthalmologist.

#### Following ingestion:

Rinse mouth. Get medical advice/attention if you feel unwell.

#### Self-protection of the first aider:

Use personal protection equipment. No direct artificial respiration to be given by first aider.

### 4.2. Most important symptoms and effects, both acute and delayed

No data available

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

Treat symptomatically.

## SECTION 5: Firefighting measures

### \* 5.1. Extinguishing media

#### Suitable extinguishing media:

alcohol resistant foam, Extinguishing powder, Carbon dioxide (CO<sub>2</sub>). Co-ordinate fire-fighting measures to the fire surroundings.

#### Unsuitable extinguishing media:

Water

### \* 5.2. Special hazards arising from the substance or mixture

#### Hazardous combustion products:

Gases/vapours, toxic (CO, CO<sub>2</sub>)

### 5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

### 5.4. Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

**Personal precautions:**

Remove persons to safety.

**Protective equipment:**

Wear protective gloves/protective clothing/eye protection/face protection.

#### 6.1.2. For emergency responders

**Personal protection equipment:**

Personal protection equipment: see section 8

### 6.2. Environmental precautions

Do not allow to enter into surface water or drains.

### \* 6.3. Methods and material for containment and cleaning up

**For containment:**

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

### 6.4. Reference to other sections

Safe handling: see section 7 Personal protection equipment: see section 8 Disposal: see section 13

### 6.5. Additional information

Use appropriate container to avoid environmental contamination.

## SECTION 7: Handling and storage

### \* 7.1. Precautions for safe handling

**Protective measures**

**Advices on safe handling:**

Wear personal protection equipment (refer to section 8).

**Fire prevent measures:**

The formation of combustible vapours is possible at temperatures above: 88 °C Keep away from sources of ignition - No smoking.

**Environmental precautions:**

Do not allow to enter into surface water or drains.

**Advices on general occupational hygiene**

When using do not eat, drink or smoke. Avoid contact with eyes and skin.

### \* 7.2. Conditions for safe storage, including any incompatibilities

**Technical measures and storage conditions:**

Store in a well-ventilated place.

**Packaging materials:**

Keep/Store only in original container.

**Requirements for storage rooms and vessels:**

Keep container tightly closed.

**Hints on storage assembly:**

Prohibition on mixed storage has to be followed

**Storage class (TRGS 510, Germany):** 4.2 - Pyrophoric or self-heating substances

**Further information on storage conditions:**

Keep in a cool, well-ventilated place.

### 7.3. Specific end use(s)

**Recommendation:**

Observe technical data sheet.

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## SECTION 8: Exposure controls/personal protection

### \* 8.1. Control parameters

#### 8.1.1. Occupational exposure limit values

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
WEL (GB)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
WEL (GB)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ② 2 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
CZ	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ② 2 mg/m <sup>3</sup> ⑤ (Prach, vdechovatelná frakce)
CZ	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.1 mg/m <sup>3</sup> ② 0.2 mg/m <sup>3</sup> ⑤ (pára, alveolární frakce)
PL	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup>
MY	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (Debu-debu dan kabus dikira sebagai Cu)
MY	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (Asap)
Québec (CA)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
NL	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.1 mg/m <sup>3</sup> ② 0.03 mg/m <sup>3</sup> ⑤ (inadembare fractie)
BG	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.1 mg/m <sup>3</sup> ⑤ (съединения, разтворим Изчисление Ва)
BG	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (съединения, разтворим Изчисление Ва), (неорганичен)
OSHA (US)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.1 mg/m <sup>3</sup> ⑤ (Smoke; calculated as Cu)
RO	copper CAS No.: 7440-50-8 EC No.: 231-159-6	② 0.2 mg/m <sup>3</sup> ⑤ (Fum, calculat ca Cu)
RO	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.5 mg/m <sup>3</sup> ② 1.5 mg/m <sup>3</sup> ⑤ (Pulbere)
ACGIH (US)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)

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Alberta (CA)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
Alberta (CA)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist)
BC (CA)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
BC (CA)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup>
TW	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (##)
TW	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (## # #)
RU	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.5 mg/m <sup>3</sup> ③ 1 mg/m <sup>3</sup>
OSHA (US)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
NIOSH (US)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup>
ACGIH (US)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
Québec (CA)	copper CAS No.: 7440-50-8 EC No.: 231-159-6	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke, calculated as Cu)
WEL (GB)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
WEL (GB)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ② 2 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
CZ	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ② 2 mg/m <sup>3</sup> ⑤ (Prach, vdechovatelná frakce)
CZ	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.1 mg/m <sup>3</sup> ② 0.2 mg/m <sup>3</sup> ⑤ (pára, alveolární frakce)
PL	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup>
MY	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (Debu-debu dan kabus dikira sebagai Cu)

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MY	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (Asap)
Québec (CA)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
NL	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.1 mg/m <sup>3</sup> ② 0.03 mg/m <sup>3</sup> ⑤ (inadembare fractie)
BG	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.1 mg/m <sup>3</sup> ⑤ (съединения, разтворим Изчисление Ва)
BG	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (съединения, разтворим Изчисление Ва), (неорганичен)
OSHA (US)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.1 mg/m <sup>3</sup> ⑤ (Smoke; calculated as Cu)
RO	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	② 0.2 mg/m <sup>3</sup> ⑤ (Fum, calculat ca Cu)
RO	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.5 mg/m <sup>3</sup> ② 1.5 mg/m <sup>3</sup> ⑤ (Pulbere)
ACGIH (US)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
Alberta (CA)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
Alberta (CA)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist)
BC (CA)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke)
BC (CA)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup>
TW	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (##)
TW	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (## # #)
RU	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.5 mg/m <sup>3</sup> ③ 1 mg/m <sup>3</sup>
OSHA (US)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)

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Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
NIOSH (US)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup>
ACGIH (US)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 1 mg/m <sup>3</sup> ⑤ (Dusts and mist calculated as Cu)
Québec (CA)	dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	① 0.2 mg/m <sup>3</sup> ⑤ (Smoke, calculated as Cu)

### 8.1.2. Biological limit values

No data available

### 8.1.3. DNEL-/PNEC-values

No data available

## \* 8.2. Exposure controls

### 8.2.1. Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment.

### 8.2.2. Personal protection equipment



#### Eye/face protection:

Eye glasses with side protection (EN 166)

#### Skin protection:

Tested protective gloves must be worn (EN ISO 374). Suitable material: NBR (Nitrile rubber) 0,8 mm. Breakthrough time: 480 min.

#### Respiratory protection:

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

### 8.2.3. Environmental exposure controls

See section 7. No additional measures necessary.

## SECTION 9: Physical and chemical properties

### \* 9.1. Information on basic physical and chemical properties

#### Appearance

**Physical state:** Liquid

**Colour:** dark red

**Odour:** not determined

#### Safety relevant basis data

Parameter	Value	at °C	① Method ② Remark
pH	<i>not determined</i>		
Melting point	≥ 15 - ≤ 35 °C		② Overtaken from SDS of the organic solvent of the paste (CAS#8000-41-7)
Freezing point	<i>not determined</i>		
Initial boiling point and boiling range	≥ 217 - ≤ 218 °C		② Overtaken from SDS of the organic solvent of the paste (CAS#8000-41-7)



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Parameter	Value	at °C	① Method ② Remark
Decomposition temperature	<i>not determined</i>		
Flash point	89.4 °C		② GESTIS material database of German "IFA", accessed on 10.1.2022
Evaporation rate	<i>not determined</i>		
Auto-ignition temperature	= 264 °C		① @980 hPa ② Overtaken from SDS of the organic solvent of the paste (CAS#8000-41-7)
Upper/lower flammability or explosive limits	<i>not determined</i>		
Vapour pressure	<i>not determined</i>		
Vapour density	<i>not determined</i>		
Density	= 4.7 g/cm <sup>3</sup>	25 °C	② calculated from ingredients
Relative density	<i>not determined</i>		
Bulk density	<i>not determined</i>		
Water solubility	= 2.54 g/l	20 °C	① OECD 105 ② Overtaken from SDS of the organic solvent of the paste (CAS#8000-41-7)
Partition coefficient: n-octanol/water	= 2.6		② GESTIS material database of German "IFA", accessed on 10.01.2022
Dynamic viscosity	<i>not determined</i>		
Kinematic viscosity	<i>not determined</i>		

### 9.2. Other information

No data available

## SECTION 10: Stability and reactivity

### \* 10.1. Reactivity

Self-heating: may catch fire.

### 10.2. Chemical stability

The product is chemically stable under recommended conditions of storage, use and temperature.

### 10.3. Possibility of hazardous reactions

No known hazardous reactions.

### 10.4. Conditions to avoid

Do not store at temperatures above 30°C

### 10.5. Incompatible materials

Acid, Alkali (lye), Oxidising agent, strong

### \* 10.6. Hazardous decomposition products

No known hazardous decomposition products.

## SECTION 11: Toxicological information

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

Substance name	Toxicological information
Terpineol CAS No.: 8000-41-7 EC No.: 232-268-1	<b>LD<sub>50</sub> oral:</b> =4,300 mg/kg (Ratte) OECD 401 <b>LD<sub>50</sub> dermal:</b> >2,000 mg/kg (Rat) OECD 402
dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	<b>ATE (oral)<sup>1</sup>:</b> 500 mg/kg <b>ATE (inhalation, dust/mist)<sup>1</sup>:</b> 3.34 mg/l

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Substance name	Toxicological information
	<b>LD<sub>50</sub> oral:</b> 470 mg/kg (Rat) <b>LD<sub>50</sub> dermal:</b> >2,000 mg/kg (Rat)

<sup>1</sup>: Acute Toxicity Estimate. Harmonised (legal) classification.

### Acute oral toxicity:

Harmful if swallowed.

### Acute dermal toxicity:

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

### Acute inhalation toxicity:

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

### Skin corrosion/irritation:

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

### Serious eye damage/irritation:

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

### Respiratory or skin sensitisation:

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

### Germ cell mutagenicity:

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

### Carcinogenicity:

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

### Reproductive toxicity:

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

### STOT-single exposure:

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

### STOT-repeated exposure:

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

### Aspiration hazard:

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

### Additional information:

No data available

## 11.2. Information on other hazards

No data available

## SECTION 12: Ecological information

### \* 12.1. Toxicity

Substance name	Toxicological information
copper CAS No.: 7440-50-8 EC No.: 231-159-6	<b>LC<sub>50</sub></b> : ≥0.0087 - ≤21 mg/l 4 d (fish)
Terpineol CAS No.: 8000-41-7 EC No.: 232-268-1	<b>LC<sub>50</sub></b> : =70 mg/l 4 d (fish, Danio rerio (zebrafish)) OECD 203 <b>LC<sub>50</sub></b> : ≈68 mg/l 3 d (Algae/water plant, Pseudokirchneriella subcapitata) OECD 201 <b>LC<sub>50</sub></b> : =73 mg/l 2 d (crustaceans, Daphnia magna (Big water flea)) OECD 202
dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	<b>LC<sub>50</sub></b> : 0.17 mg/l 4 d (fish, Cyprinodon variegatus) <b>EC<sub>50</sub></b> : 0.5 mg/l 2 d (crustaceans, Daphnia Magna)

### Aquatic toxicity:

Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

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### \* 12.2. Persistence and degradability

Substance name	Biodegradation	Remark
copper CAS No.: 7440-50-8 EC No.: 231-159-6	not determined	GESTIS material database of German "IFA", accessed on 02.06.2016
Terpineol CAS No.: 8000-41-7 EC No.: 232-268-1	—	SDB Terpineol Version 6.4 von Sigma Aldrich (englisch), überarbeitet am 23.03.2021; WGK laut Kenn-Nummer 3.477 nach AwSV, Anlage 1 (4)
dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	not determined	WGK: Einstufung nach der Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS)

### \* 12.3. Bioaccumulative potential

**Partition coefficient: n-octanol/water:**

= 2.6; Remark: GESTIS material database of German "IFA", accessed on 10.01.2022

### 12.4. Mobility in soil

No data available

### \* 12.5. Results of PBT and vPvB assessment

Substance name	Results of PBT and vPvB assessment
copper CAS No.: 7440-50-8 EC No.: 231-159-6	This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.
Terpineol CAS No.: 8000-41-7 EC No.: 232-268-1	—
dicopper oxide CAS No.: 1317-39-1 EC No.: 215-270-7	—

### 12.6. Endocrine disrupting properties

No data available

### 12.7. Other adverse effects

No data available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Handle contaminated packages in the same way as the substance itself.

#### 13.1.1. Product/Packaging disposal

**Waste codes/waste designations according to EWC/AVV**

**Waste code product**

16 05 06 *	laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals
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\*: Evidence for disposal must be provided.

#### Waste treatment options

**Appropriate disposal / Product:**

Dispose of waste according to applicable legislation. Consult the appropriate local waste disposal expert about waste disposal.

**Appropriate disposal / Package:**

Completely emptied packages can be recycled.

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## SECTION 14: Transport information

Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
<b>14.1. UN number or ID number</b>			
UN 3186	UN 3186	UN 3186	UN 3186
<b>14.2. UN proper shipping name</b>			
SELF-HEATING LIQUID, INORGANIC, N.O.S. (copper)	SELF-HEATING LIQUID, INORGANIC, N.O.S. (copper)	SELF-HEATING LIQUID, INORGANIC, N.O.S. (copper)	SELF-HEATING LIQUID, INORGANIC, N.O.S. (copper)
<b>14.3. Transport hazard class(es)</b>			
 4.2	 4.2	 4.2	 4.2
<b>14.4. Packing group</b>			
II	II	II	II
<b>14.5. Environmental hazards</b>			
		 MARINE POLLUTANT	No
<b>14.6. Special precautions for user</b>			
<b>Special provisions:</b> 274 <b>Limited quantity (LQ):</b> 0 <b>Excepted Quantities (EQ):</b> E2 <b>Hazard identification number (Kemler No.):</b> 30 <b>Classification code:</b> S3 <b>Tunnel restriction code:</b> (D/E)	<b>Special provisions:</b> 274 <b>Limited quantity (LQ):</b> 0 <b>Excepted Quantities (EQ):</b> E2 <b>Classification code:</b> S3	<b>Special provisions:</b> 274 <b>Limited quantity (LQ):</b> 0 <b>Excepted Quantities (EQ):</b> E2 <b>EmS-No.:</b> F-A, S-J	<b>Special provisions:</b> A3 <b>Excepted Quantities (EQ):</b> E2

### 14.7. Maritime transport in bulk according to IMO instruments

No data available

## SECTION 15: Regulatory information

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

No data available

### 15.2. Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

## SECTION 16: Other information

### 16.1. Indication of changes

1.1.	Product identifier
1.2.	Relevant identified uses of the substance or mixture and uses advised against
1.4.	Emergency telephone number
2.1.	Classification of the substance or mixture
2.2.	Label elements
3.2.	Mixtures
4.1.	Description of first aid measures

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5.1.	Extinguishing media
5.2.	Special hazards arising from the substance or mixture
6.3.	Methods and material for containment and cleaning up
7.1.	Precautions for safe handling
7.2.	Conditions for safe storage, including any incompatibilities
8.1.	Control parameters
8.2.	Exposure controls
9.1.	Information on basic physical and chemical properties
10.1.	Reactivity
10.6.	Hazardous decomposition products
11.1.	Information on hazard classes as defined in Regulation (EC) No 1272/2008
12.1.	Toxicity
12.2.	Persistence and degradability
12.3.	Bioaccumulative potential
12.5.	Results of PBT and vPvB assessment
14.1.	UN number or ID number
14.2.	UN proper shipping name
14.3.	Transport hazard class(es)
14.4.	Packing group
14.5.	Environmental hazards
14.6.	Special precautions for user
16.1.	Indication of changes
16.3.	Key literature references and sources for data

### 16.2. Abbreviations and acronyms

No data available

### \* 16.3. Key literature references and sources for data

GESTIS material database of German "IFA", accessed on 10.01.2022

### 16.4. Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

Hazard classes and hazard categories	Hazard statements	Classification procedure
self-heating substances and mixtures ( <i>Self-heat. 1</i> )	H251: Self-heating: may catch fire.	On basis of test data.
Acute toxicity (oral) ( <i>Acute Tox. 4</i> )	H302: Harmful if swallowed.	Calculation method.
Hazardous to the aquatic environment ( <i>Aquatic Acute 1</i> )	H400: Very toxic to aquatic life.	Calculation method.
Hazardous to the aquatic environment ( <i>Aquatic Chronic 2</i> )	H411: Toxic to aquatic life with long lasting effects.	Calculation method.

### 16.5. Relevant R-, H- and EUH-phrases (Number and full text)

Hazard statements	
H251	Self-heating: may catch fire.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

### 16.6. Training advice

No data available

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### 16.7. Additional information

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

\* Data changed compared with the previous version