

## CF 8KYS H722 E-1

Version number: SDSCH 1.0

Date of compilation: 06.11.2018

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

#### 1.1 Product identifier

Trade name	<b>CF 8KYS H722 E-1</b>
<b>Other names or synonyms</b>	<i>CF 8KYS H722 E-1</i>
Registration number (REACH)	not relevant (mixture)
Article number	35452

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

Relevant identified uses	Professional use Brazing paste Goods for resale Welding and soldering products (with flux coatings or flux cores), flux products Industrial use
Uses advised against	For professional users only.

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

C.HAFNER GmbH + Co. KG  
Maybachstr. 4  
71299 Wimsheim  
Germany

Telephone: +49-704490333-0  
Telefax: +49-70449033-40  
e-Mail: Website: [www.c-hafner.de](http://www.c-hafner.de)

Additional information

Manufacturer					
Country	Name	Postal code/city	Telephone	Telefax	Website
Switzerland	HILDERBRAND & CIE SA	1226 Thonêx Geneve	+41-22-349-0024	+41-22-349-0281	<a href="http://www.hilderbrand.ch">www.hilderbrand.ch</a>

Supplier of the product					
Country	Name	Postal code/city	Telephone	Telefax	Website
Germany	C.HAFNER GmbH + Co. KG	71299 Wimsheim	+49-7044-90333-0	+49-7044-9033-40	<a href="http://www.c-hafner.de">www.c-hafner.de</a>

Importer					
Country	Name	Postal code/city	Telephone	Telefax	Website
Germany	C.HAFNER GmbH + Co. KG	71299 Wimsheim	+49-7044-90333-0	+49-7044-9033-40	<a href="http://www.c-hafner.de">www.c-hafner.de</a>

e-mail (competent person) [michael.huber@c-hafner.de](mailto:michael.huber@c-hafner.de) (Dr. Michael Huber)

National contact  
Dr. Michael Huber  
Telephone: +49-7231-424021-406  
e-mail: [Michael.huber@c-hafner.de](mailto:Michael.huber@c-hafner.de)

#### 1.4 Emergency telephone number

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Emergency information service      This number is only for medical emergencies  
Opening hours      24h-Notrufnummer

Poison centre						
Country	Name	Postal code/city	Telephone	Telefax	Website	Opening hours
Germany	Gemeinsames Giftinformationszentrum Erfurt	99089 Erfurt	+49 (0)361-730 730	0361-73073-17	ggiz-erfurt.de	Mon - Fri 00:00 - 00:00

**1.5 Additional relevant and available information**

**1.6 Remarks**      there is no additional information

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

Classification acc. to GHS

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.1O	acute toxicity (oral)	4	Acute Tox. 4	H302
3.1D	acute toxicity (dermal)	5	Acute Tox. 5	H313
3.1I	acute toxicity (inhal.)	5	Acute Tox. 5	H333
4.1A	hazardous to the aquatic environment - acute hazard	1	Aquatic Acute 1	H400
4.1C	hazardous to the aquatic environment - chronic hazard	1	Aquatic Chronic 1	H410

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

Spillage and fire water can cause pollution of watercourses.

**2.2 Label elements**

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

- Signal word      warning

- Pictograms

GHS07, GHS09



- Hazard statements

H302      Harmful if swallowed.  
H313+H333      May be harmful in contact with skin or if inhaled.  
H410      Very toxic to aquatic life with long lasting effects.

- Precautionary statements

P264      Wash thoroughly after handling.  
P270      Do not eat, drink or smoke when using this product.  
P273      Avoid release to the environment.  
P301+P312      IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.  
P304+P312      IF INHALED: Call a POISON CENTER/doctor if you feel unwell.  
P312      Call a POISON CENTER/doctor if you feel unwell.  
P330      Rinse mouth.  
P391      Collect spillage.

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- Precautionary statements

P501 Dispose of contents/container to industrial combustion plant.

- Hazardous ingredients for labelling

Copper, Silver (< 1 mm), White Mineral Oil, Boric acid

**2.3 Other hazards**

Inhalation of dust may cause respiratory irritation.

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**


Description of the mixture

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
Silver (< 1 mm)	CAS No 7440-22-4  EC No 231-131-3  REACH Reg. No 01-2119555669-21-0024	25 - < 50	Acute Tox. 5 / H303 Acute Tox. 5 / H313 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410	
Zinc	CAS No 7440-66-6  EC No 231-175-3  Index No 030-001-00-1  REACH Reg. No 01-2119467174-37-xxxx	10 - < 25	Acute Tox. 5 / H303 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410	
White Mineral Oil	CAS No 8042-47-5  EC No 232-455-8  REACH Reg. No 01-2119487078-27-xxxx	10 - < 25	Acute Tox. 5 / H313 Acute Tox. 5 / H333 Asp. Tox. 1 / H304	
Copper	CAS No 7440-50-8  EC No 231-159-6  REACH Reg. No 01-2119480154-42-xxxx	10 - < 25	Acute Tox. 3 / H301 Acute Tox. 4 / H312 Acute Tox. 5 / H333 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410	 

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Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
Potassium tetrafluoroborate	CAS No 14075-53-7  EC No 237-928-2  REACH Reg. No 01-2119968922-24-xxxx	10 – < 25	Acute Tox. 5 / H303 Acute Tox. 5 / H333	
Boric acid	CAS No 10043-35-3  EC No 233-139-2  Index No 005-007-00-2  REACH Reg. No 01-2119486683-25-xxxx	1 – < 5	Acute Tox. 5 / H303 Acute Tox. 5 / H313 Repr. 1B / H360FD	

Name of substance	Identifier	Specific Conc. Limits	M-Factors
Silver (< 1 mm)	CAS No 7440-22-4  EC No 231-131-3		M-factor (acute) = 1000.0 M-factor (chronic) = 100.0
Boric acid	CAS No 10043-35-3  EC No 233-139-2	Repr. 1B; H360FD: C ≥ 5.5 %	

For full text of abbreviations: see SECTION 16.

## 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

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

#### Following skin contact

Wash with plenty of soap and water.

#### Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

#### Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

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

Symptoms and effects are not known to date.

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media

Water, Foam, ABC-powder

Unsuitable extinguishing media

Water jet

### 5.2 Special hazards arising from the substance or mixture

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate 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

Wear self-contained breathing apparatus

## SECTION 6: Accidental release measures

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

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

### 6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains, Take up mechanically

Advices 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

Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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**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. Use only in well-ventilated areas. Ground/bond container and receiving equipment.
- 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.

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.

Consideration of other advice

- Ventilation requirements  
Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted.
- Packaging compatibilities  
Only packagings which are approved (e.g. acc. to ADR) may be used.

**7.3 Specific end use(s)**

See section 16 for a general overview.

**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]	Source
DE	boric acid	10043-35-3	AGW		0.5		1	TRGS 900
DE	boric acid	10043-35-3	MAK		10		10	DFG
DE	silver	7440-22-4	AGW		0.1		0.8	TRGS 900
DE	copper	7440-50-8	MAK		0.01		0.02	DFG
DE	zinc	7440-66-6	MAK		2		4	DFG
DE	zinc	7440-66-6	MAK		0.1		0.4	DFG
DE	white mineral oil (petroleum)	8042-47-5	MAK		5		20	DFG
DE	white mineral oil (petroleum)	8042-47-5	AGW		5		20	TRGS 900
EU	silver	7440-22-4	IOELV		0.1			2017/164/EU

Notation

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)

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**Notation**

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 of components of the mixture**

Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Silver (< 1 mm)	7440-22-4	DNEL	0.1 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Zinc	7440-66-6	DNEL	83 mg/kg bw/day	human, dermal	worker (industry)	chronic - local effects
Zinc	7440-66-6	DNEL	83 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Zinc	7440-66-6	DNEL	5 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Copper	7440-50-8	DNEL	20 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	acute - systemic effects
Copper	7440-50-8	DNEL	137 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Copper	7440-50-8	DNEL	273 mg/kg bw/day	human, dermal	worker (industry)	acute - systemic effects
Potassium tetrafluoroborate	14075-53-7	DNEL	496 µg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Potassium tetrafluoroborate	14075-53-7	DNEL	20.5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Boric acid	10043-35-3	DNEL	8.3 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Boric acid	10043-35-3	DNEL	392 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

**8.1.4.5 Relevant PNECs of components of the mixture**

Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Silver (< 1 mm)	7440-22-4	PNEC	0.04 µg/l	aquatic organisms	freshwater	short-term (single instance)
Silver (< 1 mm)	7440-22-4	PNEC	0.86 µg/l	aquatic organisms	marine water	short-term (single instance)
Silver (< 1 mm)	7440-22-4	PNEC	0.025 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Silver (< 1 mm)	7440-22-4	PNEC	438.1 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Silver (< 1 mm)	7440-22-4	PNEC	438.1 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Silver (< 1 mm)	7440-22-4	PNEC	1.41 mg/kg	terrestrial organisms	soil	short-term (single instance)
Zinc	7440-66-6	PNEC	20.6 µg/l	aquatic organisms	freshwater	short-term (single instance)
Zinc	7440-66-6	PNEC	6.1 µg/l	aquatic organisms	marine water	short-term (single instance)
Zinc	7440-66-6	PNEC	100 µg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)

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Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Zinc	7440-66-6	PNEC	117.8 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Zinc	7440-66-6	PNEC	56.5 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Zinc	7440-66-6	PNEC	35.6 mg/kg	terrestrial organisms	soil	short-term (single instance)
Copper	7440-50-8	PNEC	7.8 µg/l	aquatic organisms	freshwater	short-term (single instance)
Copper	7440-50-8	PNEC	5.2 µg/l	aquatic organisms	marine water	short-term (single instance)
Copper	7440-50-8	PNEC	230 µg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Copper	7440-50-8	PNEC	87 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Copper	7440-50-8	PNEC	676 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Copper	7440-50-8	PNEC	65 mg/kg	terrestrial organisms	soil	short-term (single instance)
Potassium tetrafluoroborate	14075-53-7	PNEC	2 mg/l	aquatic organisms	freshwater	short-term (single instance)
Potassium tetrafluoroborate	14075-53-7	PNEC	0.2 mg/l	aquatic organisms	marine water	short-term (single instance)
Potassium tetrafluoroborate	14075-53-7	PNEC	1 mg/l	aquatic organisms	water	intermittent release
Potassium tetrafluoroborate	14075-53-7	PNEC	55 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Boric acid	10043-35-3	PNEC	2.9 mg/l	aquatic organisms	freshwater	short-term (single instance)
Boric acid	10043-35-3	PNEC	13.7 mg/l	aquatic organisms	water	intermittent release
Boric acid	10043-35-3	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Boric acid	10043-35-3	PNEC	5.7 mg/kg	terrestrial organisms	soil	short-term (single instance)
Boric acid	10043-35-3	PNEC	2.9 mg/l	aquatic organisms	marine water	short-term (single instance)

### 8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

Preventive skin protection (barrier creams/ointments) is recommended.



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**- Hand protection**

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374 and regulation (EU) Nr. 2016/425. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.

**- Type of material**

NR: natural rubber, latex, CR: chloroprene (chlorobutadiene) rubber, NBR: acrylonitrile-butadiene rubber, FKM: fluoroelastomer

**- Other protection measures**

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

**Respiratory protection**

Filtering half mask (EN 149). Adequate particulate filter (EN 143). P3 (filters at least 99,95 % of airborne particles, colour code: White). Anti-dust respirator (FFP3).

**Environmental exposure controls**

Use appropriate container to avoid environmental contamination. 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 (waxy)
Colour	yellow
Odour	odourless

**Other safety parameters**

pH (value)	not applicable
Melting point/freezing point	695 °C
Initial boiling point and boiling range	218 °C at 101.3 kPa
Flash point	not applicable
Evaporation rate	not determined
Flammability (solid, gas)	non-combustible
Explosion limits of dust clouds	not determined
Vapour pressure	0.01 kPa at 20 °C
Density	not determined
Vapour density	this information is not available
Relative density	information on this property is not available
Solubility(ies)	not determined

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Partition coefficient

- n-octanol/water (log KOW)	this information is not available
Auto-ignition temperature	325 °C (auto-ignition temperature (liquids and gases)) >1,059 °C (relative self-ignition temperature for solids)
Viscosity	not relevant (solid matter)
Explosive properties	none
Oxidising properties	none

**9.2 Other information**

Of no significance.

Temperature class (EU, acc. to ATEX)	T2 (maximum permissible surface temperature on the equipment: 300°C)
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**SECTION 10: Stability and reactivity**

**10.1 Reactivity**

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

**10.2 Chemical stability**

See below "Conditions to avoid".

**10.3 Possibility of hazardous reactions**

No known hazardous reactions.

**10.4 Conditions to avoid**

There are no specific conditions known which have to be avoided.

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**

Oxidisers

**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 according to GHS (1272/2008/EC, CLP)**

Acute toxicity

Harmful if swallowed. May be harmful in contact with skin. May be harmful if inhaled.

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- Acute toxicity estimate (ATE)

Oral 1,291 mg/kg  
Dermal 3,643 mg/kg

Acute toxicity estimate (ATE) of components of the mixture			
Name of substance	CAS No	Exposure route	ATE
Silver (< 1 mm)	7440-22-4	oral	2,500 mg/kg
Silver (< 1 mm)	7440-22-4	dermal	2,500 mg/kg
Zinc	7440-66-6	oral	2,500 mg/kg
White Mineral Oil	8042-47-5	dermal	2,500 mg/kg
White Mineral Oil	8042-47-5	inhalation: vapour	25 mg/l/4h
White Mineral Oil	8042-47-5	inhalation: dust/mist	6.5 mg/l/4h
Copper	7440-50-8	oral	300 mg/kg
Copper	7440-50-8	dermal	2,000 mg/kg
Copper	7440-50-8	inhalation: dust/mist	5.11 mg/l/4h
Potassium tetrafluoroborate	14075-53-7	oral	2,500 mg/kg
Potassium tetrafluoroborate	14075-53-7	inhalation: dust/mist	5.3 mg/l/4h
Boric acid	10043-35-3	oral	2,600 mg/kg
Boric acid	10043-35-3	dermal	2,500 mg/kg

Acute toxicity of components of the mixture					
Name of substance	CAS No	Exposure route	Endpoint	Value	Species
Silver (< 1 mm)	7440-22-4	oral	LD50	>2,000 mg/kg	rat
Silver (< 1 mm)	7440-22-4	dermal	LD50	>2,000 mg/kg	rat
Zinc	7440-66-6	oral	LD50	>2,000 mg/kg	rat
White Mineral Oil	8042-47-5	oral	LD50	>5,000 mg/kg	rat
White Mineral Oil	8042-47-5	inhalation: dust/mist	LC50	>5 mg/l/4h	rat
White Mineral Oil	8042-47-5	dermal	LD50	>2,000 mg/kg	rabbit
Copper	7440-50-8	oral	LD50	300 mg/kg	rat
Copper	7440-50-8	inhalation: dust/mist	LC50	5.11 mg/l/4h	rat
Copper	7440-50-8	dermal	LD50	2,000 mg/kg	rat
Potassium tetrafluoroborate	14075-53-7	oral	LD50	>2,000 mg/kg	rat
Potassium tetrafluoroborate	14075-53-7	inhalation: dust/mist	LC50	>5,300 mg/m <sup>3</sup> /4h	rat
Boric acid	10043-35-3	oral	LD50	>2,600 mg/kg	rat
Boric acid	10043-35-3	dermal	LD50	>2,000 mg/kg	rabbit

**Skin corrosion/irritation**

Shall not be classified as corrosive/irritant to skin.

**Serious eye damage/eye irritation**

Shall not be classified as seriously damaging to the eye or eye irritant.

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**Respiratory or skin sensitisation**

Shall not be classified as a respiratory or skin sensitiser.

**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 (STOT)**

Shall not be classified as a specific target organ 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**

Acc. to 1272/2008/EC: Very toxic to aquatic life with long lasting effects.

Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV): WGK 1, slightly hazardous to water (Germany)

Aquatic toxicity (acute) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Silver (< 1 mm)	7440-22-4	LC50	1.2 µg/l	fish	96 h
Silver (< 1 mm)	7440-22-4	ErC50	2.52 µg/l	algae	72 h
Silver (< 1 mm)	7440-22-4	EC50	0.82 µg/l	algae	72 h
Zinc	7440-66-6	LC50	439 µg/l	fish	96 h
Zinc	7440-66-6	EC50	1,833 µg/l	aquatic invertebrates	48 h
White Mineral Oil	8042-47-5	LL50	>100 mg/l	fish	96 h
Copper	7440-50-8	LC50	193 µg/l	fish	96 h
Potassium tetrafluoroborate	14075-53-7	LC50	760 mg/l	fish	96 h
Potassium tetrafluoroborate	14075-53-7	EC50	>100 mg/l	aquatic invertebrates	48 h
Potassium tetrafluoroborate	14075-53-7	ErC50	>100 mg/l	algae	72 h

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Aquatic toxicity (chronic) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Silver (< 1 mm)	7440-22-4	EC50	0.8 µg/l	aquatic invertebrates	7 d
Zinc	7440-66-6	LC50	330 µg/l	fish	95 h
Zinc	7440-66-6	EC50	7.1 mg/l	aquatic invertebrates	24 h
Potassium tetra-fluoroborate	14075-53-7	EC50	550 mg/l	microorganisms	18 h

**12.2 Persistence and degradability**

Data are not available.

**12.3 Bioaccumulative potential**

Data are not available.

Bioaccumulative potential of components of the mixture				
Name of substance	CAS No	BCF	Log KOW	BOD5/COD
Silver (< 1 mm)	7440-22-4	70		
Zinc	7440-66-6	60,960		
Boric acid	10043-35-3		-1.09 (pH value: 7.5, 22 °C)	

**12.4 Mobility in soil**

Data are not available.

**12.5 Results of PBT and vPvB assessment**

Data are not available.

**12.6 Other adverse effects**

Endocrine disrupting potential

The mixture contains substance(s) with an endocrine disrupting potential.

Endocrine disrupting chemicals (EDC)				
Name of substance	CAS No	Combined category	Human health category	Wildlife category
Boric acid	10043-35-3	CAT1	CAT1	CAT2

Legend

CAT1 Category 1 - evidence of endocrine disruption in at least one species using intact animals  
 CAT2 Category 2 - at least some in vitro evidence of biological activity related to endocrine disruption

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

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**Relevant provisions relating to waste**

Properties of waste which render it hazardous

- HP 10 toxic for reproduction
- HP 14 ecotoxic

- Product

06 04 99 wastes not otherwise specified

- Product residues

06 04 99 wastes not otherwise specified

- Packagings

- 15 01 02 plastic packaging
- 15 01 10x packaging containing residues of or contaminated by dangerous substances

Recovery operations

R4 recycling/reclamation of metals and metal compounds

**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** 3077
- 14.2 UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
 Technical name (hazardous ingredients) Silver (< 1 mm), Zinc
- 14.3 Transport hazard class(es)**  
 Class 9
- 14.4 Packing group** III (substance presenting low danger)
- 14.5 Environmental hazards** hazardous to the aquatic environment
- 14.6 Special precautions for user**  
 Provisions for dangerous goods (ADR) should be complied within the premises.
- 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code**  
 The cargo is not intended to be carried in bulk.

**Information for each of the UN Model Regulations**

**Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)**

- UN number 3077
- Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
- Class 9
- Classification code M7
- Packing group III
- Danger label(s) 9, fish and tree



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Environmental hazards	YES (hazardous to the aquatic environment)
Special provisions (SP)	274, 335, 375, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
Transport category (TC)	3
Tunnel restriction code (TRC)	-
Hazard identification No	90

**International Maritime Dangerous Goods Code (IMDG)**

UN number	3077
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class	9
Marine pollutant	YES (hazardous to the aquatic environment)
Packing group	III
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)**

UN number	3077
Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Class	9
Environmental hazards	YES (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	9, fish and tree



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

**SECTION 15: Regulatory information**

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

**Relevant provisions of the European Union (EU)**

**List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list**

Substance of Very High Concern (SVHC)			
Name acc. to inventory	CAS No	Listed in	Remarks
boric acid	10043-35-3	Candidate list	Repr. A57c

Legend

candidate list Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV  
Repr. A57c Toxic for reproduction (article 57c)

**Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II**

none of the ingredients are listed

**Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)**

Pollutant release and transfer registers (PRTR)			
Name of substance	CAS No	Remarks	Threshold for releases to air (kg/year)
Zinc	7440-66-6	(8)	200
Copper	7440-50-8	(8)	100

Legend

(8) All metals shall be reported as the total mass of the element in all chemical forms present in the release

**Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)**

none of the ingredients are listed

**National regulations (Germany)**

**Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV)**

Wassergefährdungsklasse, WGK 1 slightly hazardous to water  
(water hazard class)

**Storage of hazardous substances in non-stationary containers (TRGS 510) (Germany)**

Storage class (LGK) 13 (non-combustible solids)

**15.2 Chemical Safety Assessment**

For this substance a chemical safety assessment has been carried out.



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### SECTION 16: Other information

#### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2017/164/EU	Comission Directive establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
Acute Tox.	Acute toxicity
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
AGW	Workplace exposure limit
Aquatic Acute	Hazardous to the aquatic environment - acute hazard
Aquatic Chronic	Hazardous to the aquatic environment - chronic hazard
Asp. Tox.	Aspiration hazard
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
COD	Chemical oxygen demand
DFG	Deutsche Forschungsgemeinschaft MAK-und BAT-Werte-Liste, Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe, Wiley-VCH, Weinheim
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
LGK	Lagerklasse (storage class according to TRGS 510, Germany)
log KOW	n-Octanol/water
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
M-factor	Means a multiplying factor. It is applied to the concentration of a substance classified as hazardous to the aquatic environment acute category 1 or chronic category 1, and is used to derive by the summation method the classification of a mixture in which the substance is present

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Abbr.	Descriptions of used abbreviations
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
Repr.	Reproductive toxicity
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	Short-term exposure limit
SVHC	Substance of Very High Concern
TRGS	Technische Regeln für Gefahrstoffe (technical rules for hazardous substances, Germany)
TRGS 900	Arbeitsplatzgrenzwerte (TRGS 900)
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative

### Key literature references and sources for data

Globally Harmonized System of Classification and Labelling of Chemicals ("Purple book").

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### Classification procedure

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 chapter 2 and 3)

Code	Text
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H303	May be harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H313	May be harmful in contact with skin.
H333	May be harmful if inhaled.
H360FD	May damage fertility. May damage the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

### Disclaimer

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