

Safety data sheet according to Regulation (EC) No 1907/2006, Annex II

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

1.1 Product identifier

KUPFER-SPRAY 250 mL
Art.: 1520

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

Relevant identified uses of the substance or mixture:
 Lubricant
 No information available at present.

1.3 Details of the supplier of the safety data sheet

LIQUI MOLY GmbH
 Jerg-Wieland-Str. 4
 89081 Ulm-Lehr
 Tel.: (+49) 0731-1420-0
 Fax: (+49) 0731-1420-88

Qualified person's e-mail address: info@chemical-check.de, k.schnurbusch@chemical-check.de Please DO NOT use for requesting Safety Data Sheets.

1.4 Emergency telephone number Emergency information services / official advisory body:

Telephone number of the company in case of emergencies:
 +49 (0) 700 / 24 112 112 (LMFR)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) 1272/2008 (CLP)

Hazard class	Hazard category	Hazard statement
Asp. Tox.	1	H304-May be fatal if swallowed and enters airways.
STOT SE	3	H336-May cause drowsiness or dizziness.
Aquatic Acute	1	H400-Very toxic to aquatic life.
Aquatic Chronic	2	H411-Toxic to aquatic life with long lasting effects.
Aerosol	1	H222-Extremely flammable aerosol.
Aerosol	1	H229-Pressurised container: May burst if heated.

2.2 Label elements

Labeling according to Regulation (EC) 1272/2008 (CLP)



Danger

H336-May cause drowsiness or dizziness. H410-Very toxic to aquatic life with long lasting effects. H222-Extremely flammable aerosol. H229-Pressurised container. May burst if heated.

P101-If medical advice is needed, have product container or label at hand. P102-Keep out of reach of children. P210-Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P211-Do not spray on an open flame or other ignition source. P251-Do not pierce or burn, even after use. P261-Avoid breathing vapours or spray. P273-Avoid release to the environment.

P312-Call a POISON CENTRE / doctor if you feel unwell.
 P405-Store locked up. P410+P412-Protect from sunlight. Do not expose to temperatures exceeding 50 °C.
 P501-Dispose of contents / container to an approved waste disposal facility.

EUH066-Repeated exposure may cause skin dryness or cracking.

Without adequate ventilation, formation of explosive mixtures may be possible.
Pentane

2.3 Other hazards

The mixture does not contain any vPvB substance (vPvB = very persistent, very bioaccumulative) or is not included under XIII of the regulation (EC) 1907/2006 (< 0.1 %).

The mixture does not contain any PBT substance (PBT = persistent, bioaccumulative, toxic) or is not included under XIII of the regulation (EC) 1907/2006 (< 0.1 %).

SECTION 3: Composition/information on ingredients

Aerosol

3.1 Substance

3.2 Mixture

Registration number (REACH)	Substance for which an EU exposure limit value applies.
Index	---
EINECS, ELINCS, NLP	601-006-00-1
CAS	203-682-4
content %	109-66-0
Classification according to Regulation (EC) 1272/2008 (CLP)	30-50
	Aquatic Chronic 2, H411
	Asp. Tox. 1, H304
	STOT SE 3, H336
	Flam. Liq. 2, H229

Dimethyl ether

Registration number (REACH)	Substance for which an EU exposure limit value applies.
Index	01-2119472128-37-XXXX
EINECS, ELINCS, NLP	603-019-00-8
CAS	204-065-8
content %	115-10-6
Classification according to Regulation (EC) 1272/2008 (CLP)	20-40
	Flam. Gas 1A, H220

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Copper	
Registration number (REACH)	01-2119480154-42-XXXX
Index	---
EINECS, ELINCS, NLP	231-159-6
CAS	7440-50-8
Content %	2,5-10
Classification according to Regulation (EC) 1272/2008 (CLP)	Acute Tox. 4, H302 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=1)

For the text of the H-phrases and classification codes (GHS/CLP), see Section 16.
 The substances named in this section are given with their actual, appropriate classification!
 For substances that are listed in appendix VI, table 3.1 of the regulation (EC) no. 1272/2008 (CLP regulation) this means that all notes that may be given here for the named classification have been taken into account.

SECTION 4: First aid measures

4.1 Description of first aid measures

First-aiders should ensure they are protected!
 Never pour anything into the mouth of an unconscious person!
Inhalation
 Remove person from danger area.
 Supply person with fresh air and consult doctor according to symptoms.
Skin contact
 Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap, in case of irritation of the skin (flare), consult a doctor.
Eye contact
 Wash thoroughly for several minutes using copious water. Seek medical help if necessary.
 Keep Data Sheet available.
Ingestion
 Call doctor immediately - have Data Sheet available.
 Do not induce vomiting.
 Danger of aspiration.

4.2 Most important symptoms and effects, both acute and delayed

If applicable delayed symptoms and effects can be found in section 11 and the absorption route in section 4.1.
 The following may occur:
 Irritation of the respiratory tract
 Coughing
 Headaches

Effects/damages the central nervous system

With long-term contact:

Dermatitis (skin inflammation)

Product removes fat.

Other dangerous properties cannot be ruled out.

In certain cases, the symptoms of poisoning may only appear after an extended period / after several hours.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, jet spray

CO₂

Extinguisher powder

Foam

Unsuitable extinguishing media

High volume water, jet

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5.2 Special hazards arising from the substance or mixture

In case of fire the following can develop:

Oxides of carbon

Metal oxides

Toxic pyrolysis products.

Danger of explosion by prolonged heating.

Explosive vapour/air or gas/air mixtures.

In case of spreading near the ground, flashback to distance sources of ignition is possible.

5.3 Advice for firefighters

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

Protective respirator with independent air supply.

According to size of fire.

Full protection, if necessary.

Cool container at risk with water.

Dispose of contaminated extinction water according to official regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove possible causes of ignition - do not smoke.

Ensure sufficient supply of air.

Avoid inhalation, and contact with eyes or skin.

6.2 Environmental precautions

Prevent from entering drainage system.

Prevent surface and ground-water infiltration, as well as ground penetration.

6.3 Methods and material for containment and cleaning up

If spray or gas escapes, ensure ample fresh air is available.

Active substance.

Soak up with absorbent material (e.g. universal binding agent) and dispose of according to Section 13.

6.4 Reference to other sections

For personal protective equipment see Section 8 and for disposal instructions see Section 13.

SECTION 7: Handling and storage

In addition to information given in this section, relevant information can also be found in section 8 and 6.1.

7.1 Precautions for safe handling

7.1.1 General recommendations

Ensure good ventilation.

Keep away from sources of ignition - Do not smoke.

Take measures against electrostatic charging, if appropriate.

Do not use on hot surfaces.

Eating, drinking, smoking, as well as food-storage, is prohibited in work-room.

Observe directions on label and instructions for use.

Use working methods according to operating instructions.

7.1.2 Notes on general hygiene measures at the workplace

General hygiene measures for the handling of chemicals are applicable.

Wash hands before breaks and at end of work.

Keep away from food, drink and animal feedstuffs.

Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

7.2 Conditions for safe storage, including any incompatibilities

Keep out of access to unauthorised individuals.

Not to be stored in gangways or stair wells.

Store product closed and only in original packing.

Observe special regulations for aerosols!

Do not store with oxidizing agents.

Keep protected from direct sunlight and temperatures over 50 °C.

Store in a well ventilated place.

Observe special storage conditions.

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7.3 Specific end uses(s)

No information available at present.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Chemical Name	Pentane	Content %:30-50
WEL-TWA: 1800 mg/m ³ (600 ppm) (WEL), 3000 mg/m ³ (1000 ppm) (EU)	WEL-STEL: ---	---
Monitoring procedures:	- Compur - KITA-113 SB(C) (549 388) - Draeger - Pentane 100/a (67.24 701) - DFG (D) (Lösungsmittelgemische Meth, Nr. 1), DFG (E) (Solvent mixtures 1) - 1998, 2002	
BMGV: ---	Other information: ---	
Chemical Name	Dimethyl ether	Content %:2,5- <10
WEL-TWA: 400 ppm (766 mg/m ³) (WEL), 1000 ppm (1920 mg/m ³) (EU)	WEL-STEL: 500 ppm (958 mg/m ³) (WEL)	---
Monitoring procedures:	- Compur - KITA-129 S (549 129)	
BMGV: ---	Other information: ---	
Chemical Name	Copper	Content %:2,5- <10
WEL-TWA: 1 mg/m ³ (dusts and mists, as Cu)	WEL-STEL: 2 mg/m ³ (dusts and mists, as Cu)	---
Monitoring procedures:	ISO 15202 (Workplace air - Determination of metals and metalloids in airborne particulate matter by Inductively Coupled Plasma Atomic Emission Spectrometry), Part 1-3 - 2000 (Part 1), 2001 (Part 2), 2004 (Part 3) - EU project BC/CEN/ENTR/000/2002-16 card 84-1 (2004) - MDHS 91 (Metals and metalloids in workplace air by X-ray fluorescence spectrometry) - 1998 - EU project BC/CEN/ENTR/000/2002-16 card 84-2 (2004) - NIOSH 7029 (Copper (dust and fume)) - 1994 - NIOSH 7300 (Elements by ICP (nitric/perchloric ashing)) - 2003 - NIOSH 7303 (Elements by ICP (Hot block HCl/HNO ₃ digestion)) - 2003 - OSHA ID-121 (Metal and metalloid particulates in workplace atmospheres (Atomic absorption)) - 2002 - EU project BC/CEN/ENTR/000/2002-16 card 84-10 (2004) - OSHA ID-125G (Metal and metalloid particulates in workplace atmospheres (ICP)) - 2002 - OSHA ID-206 (ICP analysis of metal/metalloid particulates from solder operations) - 1991	
BMGV: ---	Other information: ---	
Chemical Name	Oil mist, mineral working fluids, ACGIH	Content %:
WEL-TWA: 5 mg/m ³ (Mineral oil, excluding metal)	WEL-STEL: ---	---
Monitoring procedures:	- Draeger - Oil Mist 1/a (67 33 031)	
BMGV: ---	Other information: ---	
Chemical Name	Copper, fume	Content %:
WEL-TWA: 0.2 mg/m ³	WEL-STEL: ---	---
Monitoring procedures:	ISO 15202 (Workplace air - Determination of metals and metalloids in airborne particulate matter by Inductively Coupled Plasma Atomic Emission Spectrometry), Part 1-3 - 2000 (Part 1), 2001 (Part 2), 2004 (Part 3) - EU project BC/CEN/ENTR/000/2002-16 card 84-1 (2004) - MDHS 91 (Metals and metalloids in workplace air by X-ray fluorescence spectrometry) - 1998 - EU project BC/CEN/ENTR/000/2002-16 card 84-2 (2004) - NIOSH 7029 (Copper (dust and fume)) - 1994 - NIOSH 7300 (Elements by ICP (nitric/perchloric ashing)) - 2003 - NIOSH 7303 (Elements by ICP (Hot block HCl/HNO ₃ digestion)) - 2003 - OSHA ID-121 (Metal and metalloid particulates in workplace atmospheres (Atomic absorption)) - 2002 - EU project BC/CEN/ENTR/000/2002-16 card 84-10 (2004)	
BMGV: ---	Other information: ---	

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OSHA ID-125G (Metal and metalloid particulates in workplace atmospheres (ICP)) - 2002 OSHA ID-206 (ICP analysis of metal/metalloid particulates from solder operations) - 1991	Other information: ---	---
BMGV: ---	Other information: ---	
Chemical Name	Butane	Content %:
WEL-TWA: 600 ppm (1450 mg/m ³)	WEL-STEL: 750 ppm (1810 mg/m ³)	---
Monitoring procedures:	- Compur - KITA-221 SA (549 459)	
BMGV: ---	Other information: ---	
Chemical Name	Isobutane	Content %:
WEL-TWA: 1000 ppm (EX) (ACGIH)	WEL-STEL: ---	---
Monitoring procedures:	- Compur - KITA-113 SB(C) (549 388)	
BMGV: ---	Other information: ---	

Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
Pentane	Environment - water, sporadic (intermittent)		PNEC	880	µg/l	
	Environment - freshwater		PNEC	230	µg/l	
	Environment - marine		PNEC	3600	µg/l	
	Environment - sewage treatment plant		PNEC	1,2	mg/kg dw	
	Environment - sediment, freshwater		PNEC	1,2	mg/kg dw	
Consumer	Human - oral	Long term, systemic effects	DNEL	0,55	mg/kg dw	
	Human - dermal	Long term, systemic effects	DNEL	214	mg/kg bw/d	
Consumer	Human - dermal	Long term, systemic effects	DNEL	214	mg/kg bw/d	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	643	mg/m ³	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	3000	mg/m ³	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	432	mg/kg bw/d	

Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
Dimethyl ether	Environment - freshwater		PNEC	0,155	mg/l	
	Environment - sediment, freshwater		PNEC	0,681	mg/kg	
	Environment - soil		PNEC	0,045	mg/kg	
	Environment - sewage treatment plant		PNEC	160	mg/l	
	Environment - marine, sporadic (intermittent)		PNEC	0,016	mg/l	
Consumer	Human - dermal	Long term, systemic effects	PNEC	0,069	mg/kg	
	Human - inhalation	Long term, systemic effects	DNEL	471	mg/m ³	

Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	1894	mg/m3
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Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
Copper	Environment - freshwater		PNEC	7,8	µg/l	
	Environment - marine		PNEC	5,2	µg/l	
	Environment - sediment, freshwater		PNEC	87	mg/kg dry weight	
	Environment - sediment, marine		PNEC	676	mg/kg dry weight	
	Environment - soil		PNEC	65,5	mg/kg dry weight	
Consumer	Environment - sewage treatment plant		PNEC	230	µg/l	
	Human - inhalation	Long term, systemic effects	DNEL	0,041	mg/kg bw/day	

(8) WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period) EH40, AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany).
 (9) = Inhalable fraction (Directive 2017/164/EU, Directive 2004/37/CE).
 (10) = Inhalable fraction (Directive 2017/164/EU, Directive 2004/37/CE).
 (11) = Inhalable fraction (Directive 2004/37/CE). (12) = Inhalable fraction, Respirable fraction in those Member States that implement, on the date of the entry into force of this Directive, a biomonitoring system with a biological limit value not exceeding 0.002 mg Cd/g creatinine in urine (Directive 2004/37/CE). I WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period).
 (8) = Inhalable fraction (2017/164/EU), (9) = Respirable fraction (2017/164/EU), (10) = Short-term exposure limit value in relation to a reference period of 1 minute (2017/2398/EU), I BM(GV = Biological monitoring guidance value EH40, BGW = "Biologischer Grenzwert" (biological limit value, Germany) Other information: Sen = Capable of causing occupational asthma, SK = Can be absorbed through skin, Carc = Capable of causing cancer and/or heritable genetic damage.
 ** = The substance can cause sensitisation of the skin and of the respiratory tract (Directive 2004/37/CE). (14) = The substance can cause sensitisation of the skin (Directive 2004/37/CE).

8.2 Exposure controls
8.2.1 Appropriate engineering controls
 Ensure good ventilation. This can be achieved by local suction or general air extraction.
 If this is insufficient to maintain the concentration under the WEL or AGW values, suitable breathing protection should be worn.
 Applies only if maximum permissible exposure values are listed here.
 Suitable assessment methods for reviewing the effectiveness of protection measures adopted include metrological and non-metrological investigative techniques.
 These are specified by e.g. BS EN 14042.
 BS EN 14042 "Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents".

8.2.2 Individual protection measures, such as personal protective equipment
 General hygiene measures for the handling of chemicals are applicable.
 Wash hands before breaks and at end of work.
 Keep away from food, drink and animal feedingstuffs.
 Remove contaminated clothing and protective equipment before entering areas in which food is consumed.
 Eye/face protection:
 Tight fitting protective goggles with side protection (EN 166).
 Skin protection - Hand protection:
 Solvent resistant protective gloves (EN 374).
 If applicable
 Protective gloves in butyl rubber (EN 374).
 Minimum layer thickness in mm:
 0,8
 Permeation time (penetration time) in minutes:
 0,8

> 120
 Protective nitrile gloves (EN 374).
 Minimum layer thickness in mm:
 0,33
 Permeation time (penetration time) in minutes:
 480
 Protective hand cream recommended.
 The breakthrough times determined in accordance with EN 16523-1 were not obtained under practical conditions.
 The recommended maximum wearing time is 50% of breakthrough time.
 Skin protection - Other:
 Protective working garments (e.g. safety shoes EN ISO 20345, long-sleeved protective working garments).
 Respiratory protection:
 Normally not necessary.
 If OES or MEL is exceeded,
 Filter A P3 (EN 14387), code colour brown, white
 At high concentrations:
 Respiratory protection appliance (insulation device) (e.g. EN 137 or EN 138)
 Observe wearing time limitations for respiratory protection equipment.
 Thermal hazards:
 Not applicable
 Additional information on hand protection - No tests have been performed.
 In the case of mixtures, the selection has been made according to the knowledge available and the information about the contents.
 Selection of materials derived from glove manufacturer's indications.
 Final selection of glove material must be made taking the breakthrough times, permeation rates and degradation into account.
 Selection of a suitable glove depends not only on the material but also on other quality characteristics and varies from manufacturer to manufacturer.
 In the case of mixtures, the resistance of glove materials cannot be predicted and must therefore be tested before use.
 The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.

8.2.3 Environmental exposure controls
 No information available at present.

SECTION 9: Physical and chemical properties
9.1 Information on basic physical and chemical properties
 Aerosol, Active substance liquid,
 Colour:
 Not determined
 Characteristic
 Odour:
 Not determined
 pH-value:
 n.a.
 Not determined
 Melting point/freezing point:
 Not determined
 Initial boiling point and boiling range:
 Not determined
 Flash point:
 n.a.
 Evaporation rate:
 Not determined
 Flammability (solid, gas):
 Not determined
 Lower explosive limit:
 Not determined
 Upper explosive limit:
 Not determined
 Vapour pressure:
 250-350 kPa
 Vapour density (air = 1):
 Not determined
 Density:
 0,67 g/ml (20°C)
 n.a.
 Bulk density:
 Not determined
 Solubility(ies):
 Insoluble
 Water solubility:
 Not determined
 Partition coefficient (n-octanol/water):
 Not determined
 Auto-ignition temperature:
 Not determined
 Decomposition temperature:
 Not determined
 Viscosity:
 n.a.

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Explosive properties:
 Oxidising properties:
 9.2 Other information

Miscibility:
 Fat solubility / solvent:
 Conductivity:
 Surface tension:
 Solvents content:

SECTION 10: Stability and reactivity

10.1 Reactivity

The product has not been tested.

10.2 Chemical stability

Stable with proper storage and handling.

10.3 Possibility of hazardous reactions

Hazardous reactions will not occur during storage and handling under normal conditions.

10.4 Conditions to avoid

Pressure increase will result in danger of bursting.

Heating, open flame, ignition sources

10.5 Incompatible materials

Avoid contact with oxidizing agents.

10.6 Hazardous decomposition products

No decomposition when used as directed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Possibly more information on health effects, see Section 2.1 (classification).

Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	ATE	>2000	mg/kg			calculated value
Acute toxicity, by dermal route:						n.d.a.
Acute toxicity, by inhalation:						n.d.a.
Skin corrosion/irritation:						n.d.a.
Serious eye damage/irritation:						n.d.a.
Respiratory or skin sensitisation:						n.d.a.
Germ cell mutagenicity:						n.d.a.
Carcinogenicity:						n.d.a.
Reproductive toxicity:						n.d.a.
Specific target organ toxicity - single exposure (STOT-SE):						n.d.a.
Specific target organ toxicity - repeated exposure (STOT-RE):						n.d.a.
Aspiration hazard:						n.d.a.
Symptoms:						n.d.a.

Pentane Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	>16000	mg/kg	Rat		
Acute toxicity, by dermal route:	LD50	5000	mg/kg	Mouse		
Acute toxicity, by dermal route:	LD50	>2000	mg/kg	Rabbit		
Acute toxicity, by inhalation:	LC50	>100	mg/l/4h	Rat		

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Skin corrosion/irritation:						Mild irritant, Repeated exposure may cause skin dryness or cracking.
Serious eye damage/irritation:						Mild irritant
Respiratory or skin sensitisation:						Not sensitising
Germ cell mutagenicity:					OECD 471 (Bacterial Reverse Mutation Test)	Negative
Aspiration hazard:						Yes
Symptoms:						drowsiness, vomiting, cramps, drowsiness, mucous membrane irritation

Dimethyl ether Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by inhalation:	LC50	164	mg/l/4h	Rat		Not irritant
Skin corrosion/irritation:						Not irritant
Serious eye damage/irritation:						No (skin contact)
Respiratory or skin sensitisation:						
Germ cell mutagenicity:					OECD 471 (Bacterial Reverse Mutation Test)	Negative
Germ cell mutagenicity:					OECD 473 (In Vitro Mammalian Chromosome Aberration Test)	Negative
Germ cell mutagenicity:					OECD 477 (Genetic Toxicology - Sex-Linked Recessive Lethal Test in Drosophila melanogaster)	Negative
Carcinogenicity:	NOAEC	47000	mg/m3	Rat	OECD 453 (Combined Chronic Toxicity/Carcinogenicity Studies)	Negative
Reproductive toxicity:	NOAEL	5000	ppm	Rat	OECD 414 (Prenatal Developmental Toxicity Study)	
Specific target organ toxicity - repeated exposure (STOT-RE):	NOAEC	47106	mg/kg	Rat	OECD 452 (Chronic Toxicity Studies)	Negative(2 a)
Aspiration hazard:						No
Symptoms:						unconsciousness, headaches, mucous membrane irritation, dizziness, nausea and vomiting, frostbite, gastrointestinal disturbances, respiratory distress, circulatory collapse

Copper						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	300-500	mg/kg	Rat	OECD 423 (Acute Oral Toxicity - Acute Toxic Class Method)	
Acute toxicity, by dermal route:	LD50	>2000	mg/kg	Rat	OECD 402 (Acute Dermal Toxicity)	
Acute toxicity, by inhalation:	LC50	>5,11	mg/l/4h	Rat	OECD 436 (Acute Inhalation Toxicity - Acute Toxic Class Method)	
Skin corrosion/irritation:				Rabbit	OECD 404 (Acute Dermal Irritation/Corrosion)	Not irritant
Respiratory or skin sensitisation:				Guinea pig	OECD 406 (Skin Sensitisation)	No (skin contact)
Germ cell mutagenicity:				Salmonella typhimurium	OECD 471 (Bacterial Reverse Mutation Test)	Negative
Germ cell mutagenicity:				Mouse	Regulation (EC) 440/2008 B:12 (MAMMALIAN ERYTHROCYTE MICRONUCLEUS TEST)	Negative

Butane						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by inhalation:	LC50	658	mg/l/4h	Rat	OECD 471 (Bacterial Reverse Mutation Test)	Negative
Aspiration hazard:						No
Symptoms:						ataxia, breathing difficulties, drowsiness, unconsciousness, frobrite, disturbed heart rhythm, headaches, cramps, intoxication, dizziness, nausea and vomiting.

Isobutane						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by inhalation:	LC50	658	mg/l/4h	Rat		Not irritant
Serious eye damage/irritation:						Negative
Germ cell mutagenicity:				Rabbit	OECD 471 (Bacterial Reverse Mutation Test)	
Aspiration hazard:						No
Symptoms:						unconsciousness frobrite, headaches, cramps, dizziness, nausea and vomiting.

SECTION 12: Ecological information

Possibly more information on environmental effects, see Section 2.1 (classification).

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Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:						n.d.a.
12.1. Toxicity to daphnia:						n.d.a.
12.1. Toxicity to algae:						n.d.a.
12.2. Persistence and degradability:						n.d.a.
12.3. Bioaccumulative potential:						n.d.a.
12.4. Mobility in soil:						n.d.a.
12.5. Results of PBT and vPvB assessment:						n.d.a.
12.6. Other adverse effects:						n.d.a.
Other information:						According to the recipe, contains no AOX.

Pentane						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
12.5. Results of PBT and vPvB assessment:						No PBT substance. No vPvB substance
12.1. Toxicity to fish:	LC50	9,87	mg/l	Salmo gairdneri		
12.1. Toxicity to fish:	LC50	9,87	mg/l	Oncorhynchus mykiss		
12.1. Toxicity to fish:	LC50	9,99	mg/l	Lepomis macrochirus		
12.1. Toxicity to daphnia:	EC50	9,74	mg/l	Daphnia magna		
12.2. Persistence and degradability:	Log Pow	70	%			
12.3. Bioaccumulative potential:		3,39				calculated value

Dimethyl ether						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC0	2695	mg/l	Pimephales promelas		
12.1. Toxicity to fish:	LC50	3082	mg/l	Salmo gairdneri		
12.1. Toxicity to fish:	LC50	>4,1	mg/l	Poecilia reticulata		
12.1. Toxicity to daphnia:	EC50	>4,4	mg/l	Daphnia magna		
12.1. Toxicity to algae:	EC50	154,9	mg/l	Chlorella vulgaris		
12.2. Persistence and degradability:		5	%		OECD 301 D (Ready Biodegradability - Closed Bottle Test)	Not readily biodegradable
12.3. Bioaccumulative potential:	Log Pow	-0,07				Bioaccumulation is unlikely (LogPow < 1), 25°C (pH 7)
12.4. Mobility in soil:	H (Henry)	518,6	Pa·m ³ /mol			No adsorption in soil.
12.5. Results of PBT and vPvB assessment:						No PBT substance. No vPvB substance
Toxicity to bacteria:	EC-10	>1600	mg/l	Pseudomonas putida		

Other information:					Does not contain any organically bound halogens which can contribute to the AOX value in waste water. DIN EN 1485
Water solubility:	45,60	mg/l			25°C
Butane					
Toxicity / effect	Endpoint	Time	Value	Unit	Notes
12.1. Toxicity to fish:	LC50	96h	24,11	mg/l	
12.1. Toxicity to daphnia:	LC50	48h	14,22	mg/l	
12.3. Bioaccumulative potential:	Log Pow		2,98		A notable biological accumulation potential is not to be expected (LogPow 1-3).
12.5. Results of PBT and vPvB assessment					No PBT substance. No vPvB substance

Isobutane					
Toxicity / effect	Endpoint	Time	Value	Unit	Notes
12.3. Bioaccumulative potential:					A notable biological accumulation potential is not to be expected (LogPow 1-3).
12.1. Toxicity to fish:	LC50	96h	27,98	mg/l	
12.1. Toxicity to algae:	EC50	96h	7,71	mg/l	
12.2. Persistence and degradability:					Readily biodegradable
12.5. Results of PBT and vPvB assessment					No PBT substance. No vPvB substance

SECTION 13: Disposal considerations

13.1 Waste treatment methods

For the substance / mixture / residual amounts

The waste codes are recommendations based on the scheduled use of this product. EC disposal code no.:
 Owing to the user's specific conditions for use and disposal, other waste codes may be allocated under certain circumstances. (2014/955/EU)
 16 05 04 gases in pressure containers (including halons) containing hazardous substances
 Recommendation:

- Sewage disposal shall be discouraged.
- Pay attention to local and national official regulations.
- Approved rubbish dump for special refuse
- Take full aerosol cans to problem waste collection.
- Take emptied aerosol cans to valuable material collection.

For contaminated packing material

- Pay attention to local and national official regulations.
- Recommendation:
- Do not perforate, cut up or weld uncleaned container.

SECTION 14: Transport information

General statements

14.1. UN number: 1950

Transport by road/by rail (ADR/RID)

14.2. UN proper shipping name: AEROSOLS
 14.3. Transport hazard class(es): 2.1
 14.4. Packing group: 1
 Classification code: 5F
 1L
 environmentally hazardous
 D

Transport by sea (IMDG-code)

14.2. UN proper shipping name: AEROSOLS (PENTANES)
 14.3. Transport hazard class(es): 2.1
 14.4. Packing group: 1
 EmS: F-D S-U
 Marine Pollutant: Yes
 14.5. Environmental hazards: environmentally hazardous

Transport by air (IATA)

14.2. UN proper shipping name: Aerosols, flammable
 14.3. Transport hazard class(es): 2.1
 14.4. Packing group: 1
 14.5. Environmental hazards: Not applicable

14.6. Special precautions for user

Persons employed in transporting dangerous goods must be trained. All persons involved in transporting must observe safety regulations. Precautions must be taken to prevent damage.

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

Freight as packaged goods rather than in bulk, therefore not applicable. Minimum amount regulations have not been taken into account. Danger code and packing code on request. Comply with special provisions.

SECTION 15: Regulatory information

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

Observe restrictions:
 Comply with national regulations/laws governing the protection of young people at work (national implementation of the Directive 94/33/EC)!
 Comply with trade association/occupational health regulations.

Directive 2012/18/EU ("Seveso III"), Annex I, Part 1 - The following categories apply to this product (others may also need to be considered according to storage, handling etc.):

Hazard categories	Notes to Annex I	Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of - Lower-tier requirements	Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of - Upper-tier requirements
E1		100	200
E2		200	500
P3a	11.1	150 (netto)	500 (netto)

The Notes to Annex 1 of Directive 2012/18/EU, in particular those named in the tables here and notes 1-6, must be taken into account when assigning categories and qualifying quantities.

Directive 2010/75/EU (VOC): < 87,5 %

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 Valid from: 30.04.2020
 PDF print date: 30.04.2020
 KUPFER-SPRAY 250 mL
 Art.: 1520

Directive 2010/75/EU (VOC):

< 586 g/l

15.2 Chemical safety assessment

A chemical safety assessment is not provided for mixtures.

SECTION 16: Other information

3

Revised sections:
 Employee training in handling dangerous goods is required.
 These details refer to the product as it is delivered.
 Employee instruction/training in handling hazardous materials is required.

Classification and processes used to derive the classification of the mixture in accordance with the ordinance (EG) 1272/2008 (CLP):

Classification in accordance with regulation (EC) No. 1272/2008 (CLP)	Evaluation method used
Asp. Tox. 1, H304	Classification according to calculation procedure.
STOT SE 3, H336	Classification according to calculation procedure.
Aquatic Acute 1, H400	Classification according to calculation procedure.
Aquatic Chronic 2, H411	Classification according to calculation procedure.
Aerosol 1, H222	Classification according to calculation procedure.
Aerosol 1, H229	Classification according to calculation procedure.

The following phrases represent the posted Hazard Class and Risk Category Code (GHS/CLP) of the product and the constituents (specified in Section 2 and 3).
 H225 Highly flammable liquid and vapour.
 H302 Harmful if swallowed.
 H304 May be fatal if swallowed and enters airways.
 H336 May cause drowsiness or dizziness.
 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.
 H220 Extremely flammable gas.

Asp. Tox. — Aspiration hazard
 STOT SE — Specific target organ toxicity - single exposure - narcotic effects
 Aquatic Acute — Hazardous to the aquatic environment - acute
 Aquatic Chronic — Hazardous to the aquatic environment - chronic
 Aerosol — Aerosols
 Flam. Liq. — Flammable liquid
 Flam. Gas — Flammable gases
 Acute Tox. — Acute toxicity - oral

Any abbreviations and acronyms used in this document:

acc., acc. to according to
 ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= European Agreement concerning the International Carriage of Dangerous Goods by Road)
 AOX Adsorbable organic halogen compounds
 approx. approximately
 Art., Art. no. Article number
 ASTM ASTM International (American Society for Testing and Materials)
 BAM Bundesanstalt für Materialforschung und -prüfung (Federal Institute for Materials Research and Testing, Germany)
 BAuA Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (= Federal Institute for Occupational Health and Safety, Germany)
 BSEF The International Bromine Council
 bw body weight

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Chemical Abstracts Service
 Classification, Labelling and Packaging (REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures)

CMR carcinogenic, mutagenic, reproductive toxic

DMEL Derived Minimum Effect Level

DNEL Derived No Effect Level

dw dry weight

e.g. for example (abbreviation of Latin 'exempli gratia'), for instance

EC European Community

ECHA European Chemicals Agency

EEC European Economic Community

EINECS European Inventory of Existing Commercial Chemical Substances

ELINCS European List of Notified Chemical Substances

EN European Norms

EPA United States Environmental Protection Agency (United States of America)

et cetera

EU European Union

EVAL Ethylene-vinyl alcohol copolymer

Fax, Fax number

genl. general

GHS Globally Harmonized System of Classification and Labelling of Chemicals

GWP Global Warming potential

IARC International Agency for Research on Cancer

IATA International Air Transport Association

IBC (Code) International Bulk Chemical (Code)

IMDG-code International Maritime Code for Dangerous Goods

incl. including, inclusive

IUCLID International Uniform Chemical Information Database

LQ Limited Quantities

MARPOL International Convention for the Prevention of Marine Pollution from Ships

n.a. not applicable

n.a.v. not available

not checked

n.d.a. no data available

OECD Organisation for Economic Co-operation and Development

org. organic

PBT persistent, bioaccumulative and toxic

PE Polyethylene

PNEC Predicted No Effect Concentration

ppt parts per million

PVC Polyvinylchloride

REACHRegistration, Evaluation, Authorisation and Restriction of Chemicals (REGULATION (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals)

REACH-IT List-No. 9xx-xxx-x No. is automatically assigned, e.g. to pre-registrations without a CAS No. or other numerical identifier. List Numbers do not have any legal significance, rather they are purely technical identifiers for processing a submission via REACH-IT.

RID Règlement concernant le transport International ferroviaire de marchandises Dangereuses (= Regulation concerning the International Carriage of Dangerous Goods by Rail)

SVHC Substances of Very High Concern

Tel. Telephone

UN RTDG United Nations Recommendations on the Transport of Dangerous Goods

VOC Volatile organic compounds

vPvB very persistent and very bioaccumulative

wwt wet weight

The statements made here should describe the product with regard to the necessary safety precautions - they are not meant to guarantee definite characteristics - but they are based on our present up-to-date knowledge.
 No responsibility.

These statements were made by

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