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Revision date / version: 06.02.2018 / 0021  
Replacing version dated / version: 05.09.2017 / 0020  
Valid from: 06.02.2018  
PDF print date: 09.02.2018  
Marder-Spray 200 mL  
Art.: 1515

## 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

**Marder-Spray 200 mL**  
**Art.: 1515**

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

**Relevant identified uses of the substance or mixture:**

Biocide

**Uses advised against:**

No information available at present.

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

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LIQUI MOLY GmbH, Jerg-Wieland-Str. 4, 89081 Ulm-Lehr, Germany  
Phone:(+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:**

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**Telephone number of the company in case of emergencies:**

+49 (0) 700 / 24 112 112 (LMR)

### 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
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

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H222-Extremely flammable aerosol. H229-Pressurised container: May burst if heated.

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.

P410+P412-Protect from sunlight. Do not expose to temperatures exceeding 50 °C.

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

### 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 %).

Possible build up of explosive/highly flammable vapour/air mixture.

Danger of bursting (explosion) when heated

## SECTION 3: Composition/information on ingredients

Aerosol

### 3.1 Substance

n.a.

### 3.2 Mixture

Dimethyl ether	Substance for which an EU exposure limit value applies.
Registration number (REACH)	01-2119472128-37-XXXX
Index	603-019-00-8
EINECS, ELINCS, NLP	204-065-8
CAS	115-10-6
content %	30-50
Classification according to Regulation (EC) 1272/2008 (CLP)	Flam. Gas 1, H220

Ethanol	Substance with specific conc. limit(s) acc. to REACH-registration
Registration number (REACH)	01-2119457610-43-XXXX
Index	603-002-00-5
EINECS, ELINCS, NLP	200-578-6
CAS	64-17-5
content %	10-30
Classification according to Regulation (EC) 1272/2008 (CLP)	Flam. Liq. 2, H225 Eye Irrit. 2, H319

1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylindeno[5,6-c]pyran	
Registration number (REACH)	01-2119488227-29-XXXX
Index	603-212-00-7
EINECS, ELINCS, NLP	214-946-9
CAS	1222-05-5
content %	0,1-<0,25
Classification according to Regulation (EC) 1272/2008 (CLP)	Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1)

Geraniol	
Registration number (REACH)	---
Index	---
EINECS, ELINCS, NLP	203-377-1
CAS	106-24-1
content %	0,03

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

Skin Irrit. 2, H315  
Eye Dam. 1, H318  
Skin Sens. 1, H317

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.  
If the person is unconscious, place in a stable side position and consult a doctor.

**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**

Remove contact lenses.  
Wash thoroughly for several minutes using copious water. Seek medical help if necessary.

**Ingestion**

Typically no exposure pathway.  
Rinse the mouth thoroughly with water.  
Do not induce vomiting - give copious water to drink. Consult doctor immediately.

**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.  
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**

CO<sub>2</sub>  
Dry extinguisher  
Water jet spray  
Alcohol resistant foam

**Unsuitable extinguishing media**

High volume water jet

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

In case of fire the following can develop:  
Oxides of carbon  
Toxic gases  
Danger of bursting (explosion) when heated  
Explosive vapour/air or gas/air mixtures.  
Dangerous vapours heavier than air.  
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.

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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 contact with eyes or skin.

If applicable, caution - risk of slipping.

### 6.2 Environmental precautions

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

Prevent penetration into drains, cellars, working pits or other places in which accumulation could be hazardous.

If accidental entry into drainage system occurs, inform responsible authorities.

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

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

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

Active substance:

Soak up with absorbent material (e.g. universal binding agent, sand, diatomaceous earth) 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.

Avoid inhalation of the vapours.

Keep away from sources of ignition - Do not smoke.

Do not use on hot surfaces.

Avoid contact with eyes or skin.

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 feedingstuffs.

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.

Store product closed and only in original packing.

Not to be stored in gangways or stair wells.

Do not store with oxidizing agents.

Observe special regulations for aerosols!

Observe special storage conditions.

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

Store in a well ventilated place.

### 7.3 Specific end use(s)

No information available at present.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Ⓢ

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WEL-TWA: 400 ppm (766 mg/m <sup>3</sup> ) (WEL), 1000 ppm (1920 mg/m <sup>3</sup> ) (EU)	WEL-STEL: 500 ppm (958 mg/m <sup>3</sup> ) (WEL)	---
Monitoring procedures: - Compur - KITA-123 S (549 129)		
BMGV: ---	Other information: ---	

Ⓢ Chemical Name	Ethanol	Content %:10-30
WEL-TWA: 1000 ppm (1920 mg/m <sup>3</sup> )	WEL-STEL: ---	---
Monitoring procedures: - Compur - KITA-104 SA (549 210) - Draeger - Alcohol 25/a Ethanol (81 01 631) DFG (D) (Lösungsmittelgemische), Methode Nr. 6 DFG (E) (Solvent mixtures) - 1998, - 2002 - EU project BC/CEN/ENTR/000/2002-16 card 63-2 (2004)		
BMGV: ---	Other information: ---	

Ⓢ Chemical Name	Propane-1,2-diol	Content %:
WEL-TWA: 150 ppm (474 mg/m <sup>3</sup> ) (total, vapour and particulates), 10 mg/m <sup>3</sup> (particulates)	WEL-STEL: ---	---
Monitoring procedures: - Draeger - Alcohol 100/a (CH 29 701)		
BMGV: ---	Other information: ---	

Ⓢ WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period) EH40. AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany).  
 (8) = Inhalable fraction (2017/164/EU). (9) = Respirable fraction (2017/164/EU). | 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 (2017/164/EU). | BMGV = 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 exposure limit for this substance is repealed through the TRGS 900 (Germany) of January 2006 with the goal of revision.

## 8.2 Exposure controls

Dimethyl ether						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	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		PNEC	0,016	mg/l	
	Environment - water, sporadic (intermittent) release		PNEC	1,549	mg/l	
	Environment - sediment, marine		PNEC	0,069	mg/kg	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	471	mg/m <sup>3</sup>	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	1894	mg/m <sup>3</sup>	

1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylindeno[5,6-c]pyran						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	4,4	µg/l	
	Environment - marine		PNEC	0,44	µg/l	
	Environment - water, sporadic (intermittent) release		PNEC	47	µg/l	

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	Environment - sewage treatment plant		PNEC	1	mg/l	
	Environment - sediment, freshwater		PNEC	2	mg/kg	
	Environment - sediment, marine		PNEC	0,394	mg/kg	
	Environment - soil		PNEC	0,31	mg/kg	
	Environment - oral (animal feed)		PNEC	3,3	mg/kg	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	1,3	mg/m <sup>3</sup>	
Consumer	Human - dermal	Long term, systemic effects	DNEL	14,43	mg/kg bw/d	
Consumer	Human - oral	Long term, systemic effects	DNEL	0,75	mg/kg bw/d	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	5,29	mg/m <sup>3</sup>	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	28,85	mg/kg bw/d	

Ethanol						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	0,96	mg/l	
	Environment - marine		PNEC	0,79	mg/l	
	Environment - water, sporadic (intermittent) release		PNEC	2,75	mg/l	
	Environment - sewage treatment plant		PNEC	580	mg/l	
	Environment - sediment, freshwater		PNEC	3,6	mg/kg	
	Environment - soil		PNEC	0,63	mg/kg dry weight	
	Environment - oral (animal feed)		PNEC	0,72	mg/kg feed	
	Environment - sediment, marine		PNEC	2,9	mg/kg dry weight	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	950	mg/m <sup>3</sup>	
Consumer	Human - dermal	Short term, local effects	DNEL	950	mg/m <sup>3</sup>	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	114	mg/m <sup>3</sup>	
Consumer	Human - oral	Long term, systemic effects	DNEL	87	mg/kg	
Consumer	Human - dermal	Long term, systemic effects	DNEL	206	mg/kg bw/d	
Workers / employees	Human - inhalation	Short term, local effects	DNEL	1900	mg/m <sup>3</sup>	
Workers / employees	Human - inhalation	Short term, local effects	DNEL	950	mg/m <sup>3</sup>	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	343	mg/kg bw/d	

Geraniol						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note

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Consumer	Human - dermal	Long term, systemic effects	DNEL	7,5	mg/kg bw/d	
Consumer	Human - oral	Long term, systemic effects	DNEL	13,75	mg/kg	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	47,8	mg/m <sup>3</sup>	
Consumer	Human - dermal	Long term, local effects	DNEL	11,8	mg/cm <sup>2</sup>	
Workers / employees	Human - dermal	Long term, local effects	DNEL	11,8	mg/cm <sup>2</sup>	
Workers / employees	Human - dermal	Long term, systemic effects	DNEL	12,6	mg/kg	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	161	mg/m <sup>3</sup>	

Propane-1,2-diol						
Area of application	Exposure route / Environmental compartment	Effect on health	Descriptor	Value	Unit	Note
	Environment - freshwater		PNEC	260	mg/l	
	Environment - marine		PNEC	26	mg/l	
	Environment - sewage treatment plant		PNEC	2000	mg/l	
	Environment - sediment, freshwater		PNEC	572	mg/kg	
	Environment - sediment, marine		PNEC	57,2	mg/kg	
	Environment - soil		PNEC	50	mg/kg	
	Environment - water, sporadic (intermittent) release		PNEC	183	mg/l	
Consumer	Human - dermal	Long term, systemic effects	DNEL	213	mg/kg	
Consumer	Human - inhalation	Long term, systemic effects	DNEL	50	mg/m <sup>3</sup>	
Consumer	Human - oral	Long term, systemic effects	DNEL	85	mg/kg	
Consumer	Human - inhalation	Long term, local effects	DNEL	10	mg/m <sup>3</sup>	
Workers / employees	Human - inhalation	Long term, systemic effects	DNEL	168	mg/m <sup>3</sup>	
Workers / employees	Human - inhalation	Long term, local effects	DNEL	10	mg/m <sup>3</sup>	

### 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:

Chemical resistant protective gloves (EN 374).

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**Recommended**  
 Safety gloves made of fluorocarbon rubber (EN 374).  
 Minimum layer thickness in mm:  
 >= 0,4  
 Permeation time (penetration time) in minutes:  
 <= 480  
 Protective hand cream recommended.  
 The breakthrough times determined in accordance with EN 374 Part 3 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 A2 P2 (EN 14387), code colour brown, white  
 In case of emergency:  
 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

Physical state:	Aerosol. Active substance: liquid.
Colour:	Colourless
Odour:	Characteristic
Odour threshold:	Not determined
pH-value:	Not determined
Melting point/freezing point:	Not determined
Initial boiling point and boiling range:	n.a.
Flash point:	n.a.
Evaporation rate:	n.a.
Flammability (solid, gas):	n.a.
Lower explosive limit:	2,4 Vol-%
Upper explosive limit:	18,6 Vol-%
Vapour pressure:	5000 hPa (20°C)
Vapour density (air = 1):	Not determined
Density:	0,81 g/cm <sup>3</sup> (20°C)
Bulk density:	n.a.
Solubility(ies):	Not determined
Water solubility:	Not miscible
Partition coefficient (n-octanol/water):	Not determined
Auto-ignition temperature:	235 °C (Ignition temperature)
Auto-ignition temperature:	No
Decomposition temperature:	Not determined
Viscosity:	Not determined



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Explosive properties: Product is not explosive. Possible build up of explosive/highly flammable vapour/air mixture.  
 Oxidising properties: No

## 9.2 Other information

Miscibility: Not determined  
 Fat solubility / solvent: Not determined  
 Conductivity: Not determined  
 Surface tension: Not determined  
 Solvents content: Not determined

## 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

No dangerous reactions are known.

### 10.4 Conditions to avoid

Heating, open flame, ignition sources  
 Pressure increase will result in danger of bursting.

### 10.5 Incompatible materials

Avoid contact with strong 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).

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Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:						n.d.a.
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.

#### Dimethyl ether

Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by inhalation:	LC50	164	mg/l/4h	Rat		
Acute toxicity, by inhalation:	LC50	308	mg/l/4h	Rat		
Skin corrosion/irritation:						Not irritant
Serious eye damage/irritation:						Not irritant
Respiratory or skin sensitisation:						No (skin contact)

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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:						Negative
Reproductive toxicity:						Negative
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

Ethanol						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	10470	mg/kg	Rat	OECD 401 (Acute Oral Toxicity)	
Acute toxicity, by dermal route:	LD50	>2000	mg/kg	Rabbit	OECD 402 (Acute Dermal Toxicity)	
Acute toxicity, by inhalation:	LC50	124,7	mg/l/4h	Rat	OECD 403 (Acute Inhalation Toxicity)	
Skin corrosion/irritation:				Rabbit	OECD 404 (Acute Dermal Irritation/Corrosion)	Not irritant
Serious eye damage/irritation:				Rabbit	OECD 405 (Acute Eye Irritation/Corrosion)	Irritant
Respiratory or skin sensitisation:				Mouse	OECD 429 (Skin Sensitisation - Local Lymph Node Assay)	No (skin contact)
Germ cell mutagenicity:				Mouse	OECD 476 (In Vitro Mammalian Cell Gene Mutation Test)	Negative
Germ cell mutagenicity:				Salmonella typhimurium	OECD 471 (Bacterial Reverse Mutation Test)	Negative
Carcinogenicity:	NOAEL	>3000	mg/kg	Rat	OECD 451 (Carcinogenicity Studies)	24 mon
Reproductive toxicity:	NOAEL	5200	mg/kg bw/d	Rat		
Specific target organ toxicity - repeated exposure (STOT-RE):	NOAEL	1730	mg/kg/d	Rat	OECD 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)	Female
Specific target organ toxicity - repeated exposure (STOT-RE):	NOAL	>20	mg/l	Rat	OECD 403 (Acute Inhalation Toxicity)	Male

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Aspiration hazard:				Human being		No indications of such an effect.
Symptoms:						respiratory distress, drowsiness, unconsciousness, drop in blood pressure, vomiting, coughing, headaches, intoxication, drowsiness, mucous membrane irritation, dizziness, nausea
Experiences in humans:						Excessive alcohol consumption during pregnancy induces the foetus alcohol syndrome (reduced weight at birth, physical and mental disorders)., There is no sign that this syndrome is also caused by dermal or inhalative absorption.

1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylindeno[5,6-c]pyran						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	> 4640	mg/kg	Rat	OECD 401 (Acute Oral Toxicity)	
Acute toxicity, by dermal route:	LD50	> 6500	mg/kg	Rat	OECD 402 (Acute Dermal Toxicity)	
Skin corrosion/irritation:				Rabbit	OECD 404 (Acute Dermal Irritation/Corrosion)	Not irritant
Serious eye damage/irritation:				Rabbit	OECD 405 (Acute Eye Irritation/Corrosion)	Not irritant
Respiratory or skin sensitisation:				Guinea pig	OECD 406 (Skin Sensitisation)	No (skin contact)
Germ cell mutagenicity:					OECD 473 (In Vitro Mammalian Chromosome Aberration Test)	Negative
Reproductive toxicity:					OECD 426 (Developmental Neurotoxicity Study)	No indications of such an effect.
Specific target organ toxicity - repeated exposure (STOT-RE), oral:	NOAEL	150	mg/kg	Rat	OECD 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)	

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Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	3600	mg/kg	Rat		
Acute toxicity, by dermal route:	LD50	>5000	mg/kg	Rabbit		
Skin corrosion/irritation:				Rabbit	OECD 404 (Acute Dermal Irritation/Corrosion)	Skin Irrit. 2
Serious eye damage/irritation:				Rabbit	OECD 405 (Acute Eye Irritation/Corrosion)	Eye Dam. 1
Respiratory or skin sensitisation:				Mouse	OECD 429 (Skin Sensitisation - Local Lymph Node Assay)	Skin Sens. 1
Germ cell mutagenicity:					OECD 471 (Bacterial Reverse Mutation Test)	Negative
Symptoms:						respiratory distress, coughing, mucous membrane irritation

Propane-1,2-diol						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:	LD50	>20000	mg/kg	Rat		
Acute toxicity, by dermal route:	LD50	>2000	mg/kg	Rabbit		
Acute toxicity, by inhalation:	LC50	>20	mg/l/4h	Rabbit		Vapours
Skin corrosion/irritation:						Not irritant
Respiratory or skin sensitisation:						Not sensitising
Germ cell mutagenicity:					in vitro	Negative

## SECTION 12: Ecological information

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

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Toxicity / effect	Endpoint	Time	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.

Dimethyl ether							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC0	96h	2695	mg/l	Pimephales promelas		
12.1. Toxicity to fish:	LC50	96h	3082	mg/l	Salmo gairdneri		
12.1. Toxicity to fish:	LC50	96h	>4000	mg/l	Poecilia reticulata		
12.1. Toxicity to daphnia:	EC50	48h	>4000	mg/l	Daphnia magna		
12.1. Toxicity to algae:	EC0	96h	154,9	mg/l	Chlorella vulgaris	QSAR	
12.2. Persistence and degradability:		28d	5	%		OECD 301 D (Ready Biodegradability - Closed Bottle Test)	Not readily biodegradable

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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*m3/mol			No adsorption in soil.
12.5. Results of PBT and vPvB assessment							No PBT substance, No vPvB substance
Toxicity to bacteria:	EC10		>1600	mg/l	<i>Pseudomonas putida</i>		
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

Ethanol							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC50	96h	13000	mg/l	<i>Oncorhynchus mykiss</i>	OECD 203 (Fish, Acute Toxicity Test)	
12.1. Toxicity to daphnia:	LC50	48h	12340	mg/l	<i>Daphnia magna</i>		
12.1. Toxicity to algae:	EC50	72h	275	mg/l	<i>Chlorella vulgaris</i>	OECD 201 (Alga, Growth Inhibition Test)	
12.2. Persistence and degradability:			97	%		OECD 301 B (Ready Biodegradability - Co2 Evolution Test)	Readily biodegradable
12.3. Bioaccumulative potential:	BCF		0,66 - 3,2				
12.3. Bioaccumulative potential:	Log Pow		-0,32				Bioaccumulation is unlikely (LogPow < 1).
12.4. Mobility in soil:	H (Henry)		0,000138				
12.5. Results of PBT and vPvB assessment							No PBT substance, No vPvB substance
Toxicity to bacteria:			440	mg/l			
Other organisms:	NOEC/NOEL		280	mg/l	<i>Lemna gibba</i>	OECD 201 (Alga, Growth Inhibition Test)	

1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylindeno[5,6-c]pyran							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC50	21d	0,452	mg/l	<i>Lepomis macrochirus</i>	OECD 204 (Fish, Prolonged Toxicity Test - 14-Day Study)	
12.1. Toxicity to fish:	NOEC/NOEL	21d	0,093	mg/l	<i>Lepomis macrochirus</i>	OECD 204 (Fish, Prolonged Toxicity Test - 14-Day Study)	Clinical signs

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12.1. Toxicity to fish:	NOEC/NOEL	21d	0,182	mg/l	Lepomis macrochirus	OECD 204 (Fish, Prolonged Toxicity Test - 14-Day Study)	
12.1. Toxicity to fish:	LC50	96h	1,36	mg/l	Lepomis macrochirus	OECD 204 (Fish, Prolonged Toxicity Test - 14-Day Study)	calculated value
12.1. Toxicity to daphnia:	EC50	48h	0,47	mg/l	Acartia tonsa	ISO 14669	
12.1. Toxicity to daphnia:	NOEC/NOEL	21d	111	µg/l	Daphnia magna	OECD 211 (Daphnia magna Reproduction Test)	
12.1. Toxicity to daphnia:	EC50	48h	0,9	mg/l	Daphnia magna	OECD 202 (Daphnia sp. Acute Immobilisation Test)	calculated value
12.1. Toxicity to algae:	EC50	72h	> 0,854	mg/l	Pseudokirchneriella subcapitata	OECD 201 (Alga, Growth Inhibition Test)	
12.2. Persistence and degradability:		28d	~ 2	%		OECD 301 B (Ready Biodegradability - Co2 Evolution Test)	Not readily biodegradable
12.3. Bioaccumulative potential:	BCF		1584-2507		Lepomis macrochirus	OECD 305 (Bioconcentration - Flow-Through Fish Test)	
12.5. Results of PBT and vPvB assessment							No PBT substance, No vPvB substance

**Geraniol**

Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
12.1. Toxicity to fish:	LC50	96h	22	mg/l	Oncorhynchus mykiss		
12.1. Toxicity to fish:	NOEC/NOEL	96h	10	mg/l	Brachydanio rerio	OECD 203 (Fish, Acute Toxicity Test)	
12.1. Toxicity to daphnia:	EC50	48h	7,75	mg/l			
12.1. Toxicity to algae:	EC50	72h	13,1	mg/l	Desmodesmus subspicatus	OECD 201 (Alga, Growth Inhibition Test)	
12.2. Persistence and degradability:		28d	100	%		OECD 301 A (Ready Biodegradability - DOC Die-Away Test)	Readily biodegradable
12.3. Bioaccumulative potential:	Log Pow		2,6				Low
Toxicity to bacteria:	EC50		144	mg/l		OECD 209 (Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation))	

**Propane-1,2-diol**

Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
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12.1. Toxicity to fish:	LC50	96h	40613	mg/l	Oncorhynchus mykiss	OECD 203 (Fish, Acute Toxicity Test)	
12.1. Toxicity to daphnia:	LC50	48h	18340	mg/l	Ceriodaphnia spec.	OECD 202 (Daphnia sp. Acute Immobilisation Test)	
12.1. Toxicity to daphnia:	NOEC/NOEL	7d	13020	mg/l	Ceriodaphnia spec.		
12.1. Toxicity to algae:	EC50	48h	19000	mg/l	Pseudokirchneriella subcapitata	OECD 201 (Alga, Growth Inhibition Test)	
12.2. Persistence and degradability:		28d	81,7	%		OECD 301 F (Ready Biodegradability - Manometric Respirometry Test)	Readily biodegradable
12.3. Bioaccumulative potential:	BCF		0,09				valued
Toxicity to bacteria:	NOEC/NOEL	18h	>20000	mg/l	Pseudomonas putida		
Other information:	COD		1585	mg/g			

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### For the substance / mixture / residual amounts

EC disposal code no.:

The waste codes are recommendations based on the scheduled use of this product.

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.

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.

15 01 04 metallic packaging

15 01 10 packaging containing residues of or contaminated by hazardous substances

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:

UN 1950 AEROSOLS

14.3. Transport hazard class(es):

14.4. Packing group:

Classification code:

LQ:

14.5. Environmental hazards:

Tunnel restriction code:

#### Transport by sea (IMDG-code)

14.2. UN proper shipping name:

2.1

-

5F

1 L

Not applicable

D



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AEROSOLS  
 14.3. Transport hazard class(es): 2.1  
 14.4. Packing group: -  
 EmS: F-D, S-U  
 Marine Pollutant: n.a.  
 14.5. Environmental hazards: Not applicable

### Transport by air (IATA)

14.2. UN proper shipping name:  
 Aerosols, flammable  
 14.3. Transport hazard class(es): 2.1  
 14.4. Packing group: -  
 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
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): 98,8 %

Additional data acc. to Art. 69 (2), Regulation (EU) No 528/2012 (Biocide products):

The identity of every active substance and its concentration in metric units:

Geraniol  
 0,03 g/100 g

The uses:

Repellent

Biocidal product authorisation number (Regulation (EU) No. 528/2012):

n.d.a.

Observe incident regulations.

98,8% NK

Observe Regulation (EU) No 528/2012 concerning the placing of biocidal products on the market.

### 15.2 Chemical safety assessment

A chemical safety assessment is not provided for mixtures.



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## SECTION 16: Other information

Revised sections: 9  
 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
Aerosol 1, H222	Classification based on test data.
Aerosol 1, H229	Classification based on test data.

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.  
 H315 Causes skin irritation.  
 H317 May cause an allergic skin reaction.  
 H318 Causes serious eye damage.  
 H319 Causes serious eye irritation.  
 H400 Very toxic to aquatic life.  
 H410 Very toxic to aquatic life with long lasting effects.  
 H220 Extremely flammable gas.

Aerosol — Aerosols  
 Flam. Gas — Flammable gases (including chemically unstable gases)  
 Flam. Liq. — Flammable liquid  
 Eye Irrit. — Eye irritation  
 Aquatic Acute — Hazardous to the aquatic environment - acute  
 Aquatic Chronic — Hazardous to the aquatic environment - chronic  
 Skin Irrit. — Skin irritation  
 Eye Dam. — Serious eye damage  
 Skin Sens. — Skin sensitization

### Any abbreviations and acronyms used in this document:

AC Article Categories  
 acc., acc. to according, according to  
 ACGIH American Conference of Governmental Industrial Hygienists  
 ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= European Agreement concerning the International Carriage of Dangerous Goods by Road)  
 AOEL Acceptable Operator Exposure Level  
 AOX Adsorbable organic halogen compounds  
 approx. approximately  
 Art., Art. no. Article number  
 ATE Acute Toxicity Estimate according to Regulation (EC) 1272/2008 (CLP)  
 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)  
 BCF Bioconcentration factor  
 BGV Berufsgenossenschaftliche Vorschrift (= Accident Prevention Regulation)  
 BHT Butylhydroxytoluol (= 2,6-Di-t-butyl-4-methyl-phenol)  
 BMGV Biological monitoring guidance value (EH40, UK)  
 BOD Biochemical oxygen demand  
 BSEF Bromine Science and Environmental Forum  
 bw body weight

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CAS Chemical Abstracts Service  
 CEC Coordinating European Council for the Development of Performance Tests for Fuels, Lubricants and Other Fluids  
 CESIO Comité Européen des Agents de Surface et de leurs Intermédiaires Organiques  
 CIPAC Collaborative International Pesticides Analytical Council  
 CLP Classification, Labelling and Packaging (REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures)  
 CMR carcinogenic, mutagenic, reproductive toxic  
 COD Chemical oxygen demand  
 CTFA Cosmetic, Toiletry, and Fragrance Association  
 DMEL Derived Minimum Effect Level  
 DNEL Derived No Effect Level  
 DOC Dissolved organic carbon  
 DT50 Dwell Time - 50% reduction of start concentration  
 DVS Deutscher Verband für Schweißen und verwandte Verfahren e.V. (= German Association for Welding and Allied Processes)  
 dw dry weight  
 e.g. for example (abbreviation of Latin 'exempli gratia'), for instance  
 EC European Community  
 ECHA European Chemicals Agency  
 EEA European Economic Area  
 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)  
 ERC Environmental Release Categories  
 ES Exposure scenario  
 etc. et cetera  
 EU European Union  
 EWC European Waste Catalogue  
 Fax. Fax number  
 gen. general  
 GHS Globally Harmonized System of Classification and Labelling of Chemicals  
 GWP Global warming potential  
 HET-CAM Hen's Egg Test - Chorionallantoic Membrane  
 HGWP Halocarbon Global Warming Potential  
 IARC International Agency for Research on Cancer  
 IATA International Air Transport Association  
 IBC Intermediate Bulk Container  
 IBC (Code) International Bulk Chemical (Code)  
 IC Inhibitory concentration  
 IMDG-code International Maritime Code for Dangerous Goods  
 incl. including, inclusive  
 IUCLID International Uniform Chemicals Information Database  
 LC lethal concentration  
 LC50 lethal concentration 50 percent kill  
 LCLo lowest published lethal concentration  
 LD Lethal Dose of a chemical  
 LD50 Lethal Dose, 50% kill  
 LDLo Lethal Dose Low  
 LOAEL Lowest Observed Adverse Effect Level  
 LOEC Lowest Observed Effect Concentration  
 LOEL Lowest Observed Effect Level  
 LQ Limited Quantities  
 MARPOL International Convention for the Prevention of Marine Pollution from Ships  
 n.a. not applicable  
 n.av. not available  
 n.c. not checked  
 n.d.a. no data available  
 NIOSH National Institute of Occupational Safety and Health (United States of America)  
 NOAEC No Observed Adverse Effect Concentration  
 NOAEL No Observed Adverse Effect Level  
 NOEC No Observed Effect Concentration  
 NOEL No Observed Effect Level

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ODP Ozone Depletion Potential  
OECD Organisation for Economic Co-operation and Development  
org. organic  
PAH polycyclic aromatic hydrocarbon  
PBT persistent, bioaccumulative and toxic  
PC Chemical product category  
PE Polyethylene  
PNEC Predicted No Effect Concentration  
POCP Photochemical ozone creation potential  
ppm parts per million  
PROC Process category  
PTFE Polytetrafluorethylene  
REACH Registration, 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)  
SADT Self-Accelerating Decomposition Temperature  
SAR Structure Activity Relationship  
SU Sector of use  
SVHC Substances of Very High Concern  
Tel. Telephone  
ThOD Theoretical oxygen demand  
TOC Total organic carbon  
TRGS Technische Regeln für Gefahrstoffe (=Technical Regulations for Hazardous Substances)  
UN RTDG United Nations Recommendations on the Transport of Dangerous Goods  
VbF Verordnung über brennbare Flüssigkeiten (= Regulation for flammable liquids (Austria))  
VOC Volatile organic compounds  
vPvB very persistent and very bioaccumulative  
WEL-TWA, WEL-STEL WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period), WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period) (EH40, UK).  
WHO World Health Organization  
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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