

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**ACMOS 82-2405**

Revision date: 01.10.2018

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

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

Release spray

**Uses advised against**

Consumer uses: Private households (= general public = consumers)

Sector of uses [SU]: 21

Do not use for private purposes (household).

Relevant identified uses - Further information:

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

Sector of uses [SU]: 3

Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Sector of uses [SU]: 22

The product is intended for professional use.

**1.3. Details of the supplier of the safety data sheet****Manufacturer**

Company name: ACMOS CHEMIE KG

Street: Industriestrasse 49

Place: D-28199 Bremen

Post-office box: 10 10 69

D-28010 Bremen

Telephone: +49 (0)421-5189-0

Telefax: +49 (0)421-511415

e-mail: [acmos@acmos.com](mailto:acmos@acmos.com)

Contact person: Mr. Stephan Dryhaus

Internet: [www.acmos.com](http://www.acmos.com)

Responsible Department: Laboratory (Division: Occupational- / Product security) - see under section 16

**1.4. Emergency telephone number:**

+49 (0)551 19240 (Emergency information service / official advisory body:

Giftinformationszentrum Nord, Universität Göttingen, 24 h from mo. - su.)

Language(s) of Telephone Service: DE, EN

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Language(s) of Telephone Service: DE, EN

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No. 1272/2008**

Hazard categories:

Aerosol: Aerosol 1

Skin corrosion/irritation: Skin Irrit. 2

Specific target organ toxicity - single exposure: STOT SE 3

Hazardous to the aquatic environment: Aquatic Chronic 2

Hazard Statements:

Extremely flammable aerosol.

Pressurised container: May burst if heated.

Causes skin irritation.

May cause drowsiness or dizziness.

Toxic to aquatic life with long lasting effects.

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### 2.2. Label elements

**Regulation (EC) No. 1272/2008**

#### Hazard components for labelling

hydrocarbons, C7, n-alkanes, isoalkanes, cyclics  
 hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics  
 hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane  
 hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics

**Signal word:** Danger

**Pictograms:**



#### Hazard statements

H222 Extremely flammable aerosol.  
 H229 Pressurised container: May burst if heated.  
 H315 Causes skin irritation.  
 H336 May cause drowsiness or dizziness.  
 H411 Toxic to aquatic life with long lasting effects.

#### Precautionary statements

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 spray.  
 P273 Avoid release to the environment.  
 P280 Wear protective gloves/protective clothing/eye protection.  
 P312 Call a POISON CENTER/doctor if you feel unwell.  
 P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.  
 P501 Dispose of contents/container to hazardous and special waste in accordance with special provision 327 ADR.

#### Additional advice on labelling

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

### 2.3. Other hazards

Adverse physicochemical effects:  
 See section 9 for physical and chemical properties.  
 The vapour of the product is heavier than air and may accumulate below ground level, in pits, channels and basements in higher concentration.  
 The accumulation in lowlying or closed rooms can cause increased danger of fire and explosion.  
 Vapours can travel considerable distances to a source of ignition where they can ignite, flash back, or explode.  
 Vapours of flammable solvents can accumulate in the gas phase of closed container, especially during heat treatment.  
 Therefore keep away from fire and sources of ignition.  
 This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe).  
 The product will be applied by spraying.  
 In use may form flammable/explosive vapour-air mixture.  
 Even after use and until complete evaporation of the flammable components, there is still a danger of an explosive steam-air mixture forming.  
 The product does have a sealed spraying device.  
 Caution! Container under pressure.

Adverse human health effects and symptoms:  
 See section 11 for toxicological information.

Adverse environmental effects:  
 See section 12 for environmental information.

Other adverse effects:  
 Rapid evaporation of the liquid may cause frostbite.

Results of PBT-/vPvB-assessment:  
 See under section 12.5 - Results of PBT and vPvB assessment.

## SECTION 3: Composition/information on ingredients

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**3.2. Mixtures****Chemical characterization**

Aerosole: Active ingredients with propane/butane as propellant

**Hazardous components**

CAS No	Chemical name	Quantity		
	EC No	Index No	REACH No	
	GHS Classification			
64742-49-0	hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	30 - < 35 %		
	927-510-4		01-2119475515-33	
	Flam. Liq. 2, Skin Irrit. 2, STOT SE 3, Asp. Tox. 1, Aquatic Chronic 2; H225 H315 H336 H304 H411			
106-97-8	butane	30 - < 35 %		
	203-448-7	601-004-00-0		
	Flam. Gas 1, Liquefied gas; H220 H280			
74-98-6	propane	10 - < 15 %		
	200-827-9	601-003-00-5		
	Flam. Gas 1, Liquefied gas; H220 H280			
64742-49-0	hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane	5 - < 10 %		
	921-024-6		01-2119475514-35	
	Flam. Liq. 2, Skin Irrit. 2, STOT SE 3, Asp. Tox. 1, Aquatic Chronic 2; H225 H315 H336 H304 H411			
64742-49-0	hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics	5 - < 10 %		
	920-750-0		01-2119473851-33	
	Flam. Liq. 2, STOT SE 3, Asp. Tox. 1, Aquatic Chronic 2; H225 H336 H304 H411 EUH066			
64742-48-9	hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics	1 - < 5 %		
	927-241-2		01-2119471843-32	
	Flam. Liq. 3, STOT SE 3, Asp. Tox. 1, Aquatic Chronic 3; H226 H336 H304 H412 EUH066			
78-92-2	butan-2-ol	1 - < 5 %		
	201-158-5	603-127-00-5	01-2119475146-36	
	Flam. Liq. 3, Eye Irrit. 2, STOT SE 3, STOT SE 3; H226 H319 H335 H336			

Full text of H and EUH statements: see section 16.

**Further Information**

The above mentioned EC-No. (Provisional List Number 9xx-xxx-x) is a specific subset of the specified CAS-No. and was associated with the registration process automatically (without CAS-No. or numeric identifier). An official announcement by the EC inventory will follow after evaluation of substance identity by the ECHA. The new nomenclature of hydrocarbon solvents is only related with group names of the HSPA (Hydrocarbon Solvents Producers Association). The previously used CAS-No. continues serving as a reference for different global inventories. The classification of hydrocarbon mixtures made in consideration of the applicable notes in annex VI of regulation (EC) No. 1272/2008.

**SECTION 4: First aid measures****4.1. Description of first aid measures****General information**

Remove affected person from the danger area and lay down.  
Take off immediately all contaminated clothing and wash it before reuse.  
Put victim at rest, cover with a blanket and keep warm.  
Do not leave affected person unattended.  
If a person vomits when lying on his back, place him in the recovery position.  
If breathing is irregular or stopped, administer artificial respiration.  
If unconscious place in recovery position and seek medical advice.  
Never give anything by mouth to an unconscious person or a person with cramps.  
In the event of cardiac arrest immediately perform cardiopulmonary resuscitation.  
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Self-protection of the first aider:

Wear personal protection equipment (refer to section 8).

First Aid.

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Notes for the doctor:

No special measures are necessary.

**After inhalation**

Remove victim out of the danger area.

Provide fresh air.

In the case of lung irritation: Primary treatment using corticoide spray, eg. Auxiloson spray, Pulmicort-dosage-spray. (Auxiloson and Pulmicort are registered trademarks.) Call a physician immediately.

Consult a doctor immediately in the case of inhaling spray mist and show him packing or label.

**After contact with skin**

Wash immediately with:

Water and soap

Rub greasy ointment into the skin.

Do not wash with:

Solvents/Thinner

In case of skin irritation, consult a physician.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Remove contact lenses, if present and easy to do. Continue rinsing.

If present: Initial treatment with Previn. (Previn is a registered trademark).

Protect uninjured eye.

**After ingestion**

Do NOT induce vomiting.

Give nothing to eat or drink.

Never give anything by mouth to an unconscious person or a person with cramps.

Call a physician immediately.

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

The following symptoms may occur:

Cough

Dyspnoea

Cyanosis (blue coloured blood)

Acidosis

Depression of central nervous system

Headache

Nausea

Drowsiness

Dizziness

Inebriation

Unconsciousness

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

Treat symptomatically.

Regulation of the blood circulation, possible shock treatment.

Where appropriate artificial ventilation.

**SECTION 5: Firefighting measures****5.1. Extinguishing media****Suitable extinguishing media**

Water mist

Extinguishing powder (ABC-powder)

Foam

Carbon dioxide (CO<sub>2</sub>)

Fire class (DIN EN 2): B (Fires of liquids or liquid turning substances).

**Unsuitable extinguishing media**

Full water jet

Water spray jet

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

In principle, fire gasses of organic materials have to be classified as toxic to the respiratory system.

Burning produces heavy smoke.

Hazardous combustion products:

Carbon monoxide



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carbon dioxide (CO<sub>2</sub>)  
Hydrocarbons  
Pyrolysis products, toxic

### **5.3. Advice for firefighters**

Usual measures of preventive and averting fire protection.  
Co-ordinate fire-fighting measures to the fire surroundings.  
Do not inhale explosion and combustion gases.  
Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.  
Beware of reignition.  
Use caution when applying carbon dioxide in confined spaces. Carbon dioxide can displace oxygen.  
Move undamaged containers from immediate hazard area if it can be done safely.  
Use water spray jet to protect personnel and to cool endangered containers.  
Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters  
Wear a self-contained breathing apparatus and chemical protective clothing.  
DIN-/EN-Norms: EN 469  
Firefighting protective clothing.

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## **SECTION 6: Accidental release measures**

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

Avoid contact with skin, eyes and clothes.  
Do not breathe vapour/aerosol.  
Remove all sources of ignition.  
Remove persons to safety.  
Be aware that gases can spread at ground level (heavier than air) and pay attention to the wind direction.  
Provide adequate ventilation.

For non-emergency personnel:  
Use personal protection equipment.  
Walk out of the danger zone and notify trained personnel.  
Emergency procedures:  
Keep the factory emergency plan and the information chain.

For emergency responders:  
Use personal protection equipment.  
The personal protective equipment must be adapted to the situation.  
Suitable material:  
See under section 8.2 - Personal protection equipment.

### **6.2. Environmental precautions**

Do not allow to enter into surface water or drains.  
Do not allow to enter into soil/subsoil.  
Ensure waste is collected and contained.  
Suppress gases/vapours/mists with water spray jet.  
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

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

For containment:  
Repair leaks if without risk.  
Move containers from spill area.  
Prevent spread over a wide area (e.g. by containment or oil barriers).  
Remove from the water surface (e.g. skimming, sucking).  
Cover drains.

For cleaning up:  
Clean-up methods - large spillage:  
Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents).  
Shovel into suitable container for disposal.  
Local authorities should be advised if significant spillages cannot be contained.  
Clean-up methods - small spillage:  
Clear spills immediately.  
Wipe up with absorbent material (eg. cloth, fleece).  
Collect in closed and suitable containers for disposal.



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Clear contaminated areas thoroughly.  
Recommended cleansing agent:  
Clean with detergents. Avoid solvent cleaners.  
Retain contaminated washing water and dispose it.  
Ensure all waste water is collected and treated via a waste water treatment plant.  
Ventilate affected area.

Suitable material for taking up:  
Sand  
Kieselguhr  
Universal binder  
Absorbing material, organic

Unsuitable material for taking up:  
None known

### **6.4. Reference to other sections**

Personal protection equipment: see section 8

Disposal: see section 13

## **SECTION 7: Handling and storage**

### **7.1. Precautions for safe handling**

#### **Advice on safe handling**

Measures to prevent aerosol and dust generation:  
All work processes must always be designed so that the following is as low as possible:  
Inhalation of vapours or spray/mists  
Eye contact  
Skin contact

Technical ventilation of workplace  
Vapours are heavier than air.  
Provide room air exhaust at ground level.  
During filling, metering and sampling should be used if possible:  
Splashproof grounded devices  
Devices with local exhaust  
Use only in a exhaust booth with integrated air filter.  
Use in ventilated spray booths only.  
Recirculation of exhaust air is not recommended.

#### **Advice on protection against fire and explosion**

Measures to prevent fire:  
The product is: Extremely flammable.  
Vapours can form explosive mixtures with air.  
Reignition possible over considerable distance.  
Vapours are heavier than air, spread along floors and form explosive mixtures with air.  
Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches.  
Use explosion-proof machinery, apparatus, ventilation facilities, tools etc.  
Use non-sparking tools.  
Flammable vapours can accumulate in head space of closed systems.  
Only use the material in places where open light, fire and other flammable sources can be kept away.  
Keep away from sources of heat (e.g. hot surfaces), sparks and open flames.  
Usual measures for fire prevention.  
Fire-fighting equipment on the basis of class B.  
Wear anti-static footwear and clothing

Measures according to German "Explosion rules" required:  
Prevention measures regarding formation of explosible atmosphere (restriction and supervision of concentration, inertisation, airtightness, ventilation, warning device, etc.).  
Prevention measures regarding ignition of explosible atmosphere (zone graduation, removing of ignition sources, explosion-proof electrical installation, earthing, etc.).  
Constructive measures for restriction of effects regarding explosions (resistance to pressure of explosions, discharge of pressure of explosions, suppression of explosions, etc.).

#### **Further information on handling**

Environmental precautions:  
Shafts and sewers must be protected from entry of the product.  
Transfer wash-downs in sealed containers.



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For restriction of emission on volatile organic compounds (VOC) the solvent vapours should be supplied to an exhaust air purification facility (filter, gas washer, incineration).

Advices on general occupational hygiene:

Wear personal protection equipment (refer to section 8).

Minimum standard for preventive measures while handling with working materials are specified in the TRGS 500.

General industrial hygiene practice.

Handle in accordance with good industrial hygiene and safety practice.

Working places should be designed to allow cleaning at any time.

Floors, walls and other surfaces in the hazard area must be cleaned regularly.

Clean spray booth and exhaust hood completely with every product change.

When using do not eat, drink, smoke, sniff.

Thorough skin-cleansing after handling the product.

Used working clothes should not be worn outside the work area.

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

#### **Requirements for storage rooms and vessels**

Suitable floor material:

Floors should be impervious, resistant to liquids and easy to clean.

Protect against:

Heat

Cold

Recommended storage temperature: +10 ... +30 °C

Keep away from:

Food and feedingstuffs

Packaging materials:

Suitable container/equipment material:

Keep/Store only in original container.

Unsuitable container/equipment material:

See under section 8.2 - Hand protection.

#### **Hints on joint storage**

Do not store together with:

Storage class:

1 (Explosive hazardous substances)

4.1 A (Other potentially explosive hazardous substances)

4.1 B (flammable solids)

4.2 (Pyrophoric or self-heating substances)

4.3 (Hazardous substances that release flammable gases when in contact with water)

5.1 A (Highly oxidising substances)

5.1 B (Oxidising substances)

5.1 C (Ammonium nitrate and preparations containing ammonium nitrate)

5.2 (Organic peroxides and self-reactive substances)

6.2 (Infectious substances)

7 (Radioactive substances)

#### **Further information on storage conditions**

Technical measures and storage conditions:

The valid water and zoning ordinances must be observed.

Heating causes rise in pressure with risk of bursting.

Keep away from sources of ignition - No smoking.

Keep in a cool, well-ventilated place.

Keep container tightly closed.

Protect containers against damage.

Ensure adequate ventilation of the storage area.

Store small packages in a suitable, robust cabinet.

Do not store outside.

See also instructions on the label.

### **7.3. Specific end use(s)**

Recommendation:

Possibilities for substitution and references to less hazardous products:

This product was designed for a special application purpose and optimized appropriately.

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In case of questions regarding product and application, please contact our field service in line with customer service or our technical sales department.  
Observe technical data sheet.

Industrial sector specific solutions:

Hazardous substance information systems of professional associations:

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Exposure limits (EH40)**

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
78-92-2	Butan-2-ol	100	308		TWA (8 h)	WEL
		150	462		STEL (15 min)	WEL
106-97-8	Butane	600	1450		TWA (8 h)	WEL
		750	1810		STEL (15 min)	WEL
-	Cycloalkanes >= C7	-	800		TWA (8 h)	WEL
110-82-7	Cyclohexane	100	350		TWA (8 h)	WEL
		300	1050		STEL (15 min)	WEL
68476-85-7	Liquefied petroleum gas	1000	1750		TWA (8 h)	WEL
		1250	2180		STEL (15 min)	WEL
142-82-5	n-Heptane	500	2085		TWA (8 h)	WEL
110-54-3	n-Hexane	20	72		TWA (8 h)	WEL
-	Normal and branched chain alkanes >= C7 (it excludes n-heptane)	-	1200		TWA (8 h)	WEL
-	Normal and branched chain alkanes C5 - C6 (it excludes n-hexane)	-	1800		TWA (8 h)	WEL



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**DNEL/DMEL values**

CAS No	Substance	Exposure route	Effect	Value
64742-49-0	hydrocarbons, C7, n-alkanes, isoalkanes, cyclics			
Worker DNEL, long-term		dermal	systemic	300 mg/kg bw/day
Worker DNEL, long-term		inhalation	systemic	2085 mg/m <sup>3</sup>
Consumer DNEL, long-term		dermal	systemic	149 mg/kg bw/day
Consumer DNEL, long-term		inhalation	systemic	447 mg/m <sup>3</sup>
Consumer DNEL, long-term		oral	systemic	149 mg/kg bw/day
64742-49-0	hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane			
Worker DNEL, long-term		inhalation	systemic	2035 mg/m <sup>3</sup>
Worker DNEL, long-term		dermal	systemic	773 mg/kg bw/day
Consumer DNEL, long-term		inhalation	systemic	608 mg/m <sup>3</sup>
Consumer DNEL, long-term		dermal	systemic	699 mg/kg bw/day
Consumer DNEL, long-term		oral	systemic	699 mg/kg bw/day
64742-49-0	hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics			
Worker DNEL, long-term		inhalation	systemic	2035 mg/m <sup>3</sup>
Worker DNEL, long-term		dermal	systemic	773 mg/kg bw/day
Consumer DNEL, long-term		inhalation	systemic	608 mg/m <sup>3</sup>
Consumer DNEL, long-term		dermal	systemic	699 mg/kg bw/day
Consumer DNEL, long-term		oral	systemic	699 mg/kg bw/day
64742-48-9	hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics			
Worker DNEL, acute		inhalation	systemic	1300 mg/m <sup>3</sup>
Worker DNEL, long-term		inhalation	local	840 mg/m <sup>3</sup>
Worker DNEL, acute		inhalation	local	1100 mg/m <sup>3</sup>
Consumer DNEL, acute		inhalation	systemic	1200 mg/m <sup>3</sup>
Consumer DNEL, long-term		inhalation	local	180 mg/m <sup>3</sup>
Consumer DNEL, acute		inhalation	local	640 mg/m <sup>3</sup>
78-92-2	butan-2-ol			
Worker DNEL, long-term		dermal	systemic	405 mg/kg bw/day
Worker DNEL, long-term		inhalation	systemic	212 mg/m <sup>3</sup>
Consumer DNEL, long-term		dermal	systemic	203 mg/kg bw/day
Consumer DNEL, long-term		inhalation	systemic	52 mg/m <sup>3</sup>
Consumer DNEL, long-term		oral	systemic	15 mg/kg bw/day

**PNEC values**

CAS No	Substance	Value
78-92-2	butan-2-ol	
Freshwater		47,1 mg/l
Marine water		47,1 mg/l
Freshwater sediment		196,19 mg/kg
Marine sediment		196,19 mg/kg
Secondary poisoning		1000 mg/kg
Micro-organisms in sewage treatment plants (STP)		761 mg/l
Soil		11,58 mg/kg

**Additional advice on limit values**

GESTIS - International Limit Values - Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA):

<http://limitvalue.ifa.dguv.de>

Country information (EU)

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<http://www.dguv.de/ifa/fachinfos/occupational-exposure-limit-values/foreign-and-eu-limit-values/index.jsp>  
 Country information (GB) (<http://www.hse.gov.uk/pubns/books/eh40.htm>)  
 Occupational Exposure Limits of EU-memberstates - European Agency for Safety and Health at Work (OSHA)  
 (<http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm>)  
 Source of law: EH40 (GB) (<http://www.hse.gov.uk>)

### Recommended monitoring procedures:

Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents (BS EN 14042):

Personal air monitoring  
 Room air monitoring  
 Test tube  
 Gas warning system  
 Biological monitoring

### Preliminary concentration measurements:

Suitable detector tubes for measuring the current concentration in the air at the workplace: DRÄGER test tubes - short-term tubes (<http://www.gasmesstechnik.de>)  
 DRÄGER test tubes - Short-term tubes - Alcohol 100 / a (lower alcohols, measuring range: 100 - 3000 ppm, response time: 90 sec) (<http://www.gasmesstechnik.de>)  
 DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 10 / a (n-octane, measuring range: 10 - 300 ppm, response time: 60 sec) (<http://www.gasmesstechnik.de>)  
 DRÄGER test tubes - Short-term tubes - Petroleum hydrocarbons 100 / a (n-octane, measuring range: 100 - 2500 ppm, response time: 30 sec) (<http://www.gasmesstechnik.de>)

exceeding exposure limit values, Skin contact: Preventive industrial medical examinations are to be carried out. Preventive industrial medical examinations are to be offered.  
 See under section 15.1 - National regulations.

Exposure limits at intended use:

### DNEL-/PNEC-values:

There are no exposure scenarios attached in the Appendix of this Safety Data Sheet.

### Risk management measures according to used control banding approach:

Control banding for chemicals according to the ILO CHEMICAL CONTROL TOOLKIT (ICCT): ICCT-Guidelines and Control Guidance Sheets ([http://www.ilo.org/legacy/english/protection/safework/ctrl\\_banding/toolkit/main\\_guide.pdf](http://www.ilo.org/legacy/english/protection/safework/ctrl_banding/toolkit/main_guide.pdf))

### Used model:

Consider appropriate model solutions according to good engineering practices on designing the working process, if available.

## 8.2. Exposure controls



### Appropriate engineering controls

Substance/mixture related measures to prevent exposure during identified uses:

Technical measures to prevent exposure:

Design of appropriate work processes and engineering controls and the use of adequate materials (model solutions as certified working methods, working appliance according to the state of the art, models of working times).

Organisational measures to prevent exposure:

Execution of collective protection measures at source and appropriate organisational measures (local exhaust ventilation, ventilation by technical means, general ventilation, measures on averting a danger at breakdowns / at emergencies / after accidents, first-aid-measures, manner related measures: operating instruction / instruction of employees, occupational medicine health precaution).



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Structural measures to prevent exposure:

Execution of individual and personnel protection measures (personal protective equipment - PPE).

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn. Technical measures and the application of suitable work processes have priority over personal protection equipment.

References for design of technical equipment:

See under section 7.1 - Precautions for safe handling.

Summary of the risk management measures for exposure scenario:

Use only the following product amount per time unit:

No information available.

Minimum room-width and room-height for handling/application:

No information available.

Minimum room ventilation rate for handling/application (air changes per hour):

No information available.

### Individual protection measures, such as personal protective equipment

#### Eye/face protection

If required according to hazard assessment:

Suitable eye protection:

Eye glasses with side protection (EN 166)

Recommended eye protection articles:

UVEX I-VO / UVEX I-3 / UVEX SUPER OTG

Or comparable articles from other companies.

#### Hand protection

Skin protection:

Preventive skin protection.:

Draw up skin protection programme.

Before starting work, apply solvent-resistant skincare preparations.

e.g. sansibal® / sansibon®, dualin® (PETER GREVEN PHYSIODERM)

Wash hands before breaks and after work.

e.g. ecosan®, topscrub® soft / topscrub® extra / topscrub® nature (PETER GREVEN PHYSIODERM)

After cleaning apply high-fat content skin care cream.

e.g. physioderm® creme, cura soft® / cUrea soft® (PETER GREVEN PHYSIODERM)

Apply skin care products after work.

If required according to hazard assessment:

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.

The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.

Decrease wearing protection gloves to an inevitable degree to avoid skin rash.

Technical and organizational protective actions have to be preferred.

Breakthrough times and swelling properties of the material must be taken into consideration.

Check leak tightness/impermeability prior to use.

Wear cotton undermitten if possible.

Change preventive gloves once by hour or use special skin-protective preparations for protective gloves carrier,

e.g. physioderm® proGlove (PETER GREVEN PHYSIODERM)

Take recovery periods for skin regeneration.

Do not wear gloves near rotary machines and tools.

Dispose preventive gloves after defect or expiry of wearing time. Replace when worn.

In the case of wanting to use the gloves again, clean them before taking off and air them well.

Wearing time with permanent contact:

Suitable gloves type:

Gloves with long cuffs

Recommended glove articles:

Suitable materials at long term, direct contact (Recommended: Preventive index 6, accordingly > 480 min. permeation time in accordance to EN 374):

Nitrile rubber / NBR (KCL-CAMATRIL VELOURS® - Art. No. 730) - Layer thickness: 0,4 mm

Fluorine rubber / FKM / Viton (KCL-VITOJECT® - Art. No. 890) - Layer thickness: 0,7 mm

Or comparable articles from other companies.



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Unsuitable material:  
Butyl caoutchouc (butyl rubber)  
NR (natural rubber, natural latex)

Wearing time with occasional contact (splashes):  
Suitable gloves type:  
Disposable gloves  
Recommended glove articles:  
Suitable materials at short term contact or splash (Recommended: Preventive index 3, accordingly > 60 min. permeation time in accordance to EN 374):  
Disposable gloves of special nitrile rubber / NBR (KCL-DERMATRIL® P - Art. No. 743) - Layer thickness: 0,2 mm  
Or comparable articles from other companies.

The statements are based on self-tests, literary reference and information of glove manufacturers or have been derived from similar substances by analogy.  
Source: CHEMIKALIEN-MANAGER - KCL software for hand protection.  
It has to be noticed, that daily time of use of chemical protective gloves may be quite shorter in practice because of many factors of influence (e.g. thermal and mechanical stress as well as special conditions on the floor) than the permeation time determined in accordance to EN 374.  
The respective permeation time doubles/halves at about 1,5 times larger/lower layer thickness.  
Declared permeation times according to EN 374 are not carried out under practical conditions. Therefore a maximum wearing time up to 50 % of breakthrough time is recommended.  
They relate to the pure solvent as mean component.

Barrier creams are not substitutes for body protection.

### Skin protection

If required according to hazard assessment:  
Suitable protective clothing:  
Overall, Natural fibres (e.g. cotton) (EN 340)  
For the protection against direct skin contact, body protective clothing is essential (in addition to the usual working clothes).  
When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.  
DIN-/EN-Norms: DIN EN 468  
Chemical protection clothing (Disposable suit antistatic)  
Type 6 limited splash-tight  
Type 5 Particle-tight (method B)  
Type 4 Spray-tight  
Recommended protective clothing articles:  
TYVEK CLASSIC PLUS (DU PONT)  
Or comparable articles from other companies.

Chemical resistant safety shoes with conductible sole (EN ISO 20345)

Wash contaminated clothing prior to re-use.  
Used working clothes should not be worn outside the work area.  
Street clothing should be stored separately from work clothing.

Thermal hazards:  
No thermal hazards during use of this product.

### Respiratory protection

If required according to hazard assessment:  
Respiratory protection necessary at:  
aerosol or mist formation + exceeding exposure limit values +  
high concentrations / prolonged exposure / insufficient ventilation / insufficient exhaust  
Use only respiratory protection equipment with CE-symbol including four digit test number.  
Filter types: A, B, E, K. Class 1: Maximum permitted contaminant concentration in inhaled air = 1000 mL/m<sup>3</sup> (0.1 % by vol.); class 2: maximum permitted contaminant concentration in inhaled air = 5000 mL/m<sup>3</sup> (0.5 % by vol.); class 3: maximum permitted contaminant concentration in inhaled air = 10000 mL/m<sup>3</sup> (1.0 % by vol.)  
The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.  
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).  
The use of filter equipment requires a minimum oxygen content of 17 Vol-% in the surrounding atmosphere and that the maximum permitted gas concentration - normally 0,5 Vol-% - is not exceeded.

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Suitable respiratory protection apparatus:

Half-face mask or quarter facepiece: maximum use concentration for substances with exposure limits: P1 filter: up to a max. of 4 times the exposure limit. P2 filter: up to a max. of 10 times the exposure limit. P3 filter: up to a max. of 30 times the expo.

Recommended respiratory protection articles:

Half mask or quarter mask with combination filter A1P1/A2P2 for gases, vapors and particles. (EN 140, EN 14387)  
Filtering half mask or quarter mask with combination filter FFA1 P1/FFA2P2 for gases, vapors and particles. (EN 405)  
Gas filtering Half-face mask FFA (EN 405)  
Model 4251 (FFA1P1 - 1000 ml/m<sup>3</sup>) / 4255 (FFA2P2SL - 5000 ml/m<sup>3</sup>) (3M)  
Half-face mask or Quarter-face mask with gas filter (EN 140, EN 14387)  
Filter type 6051 (A1 - 1000 ml/m<sup>3</sup>) / 6055 (A2 - 5000 ml/m<sup>3</sup>) (3M)  
Full-face mask with gas filter (EN 136, EN 14387)  
Gas filter type: A, Indication colour: brown  
Or comparable articles from other companies.

**Environmental exposure controls**

Environmental exposure controls:  
Technical measures to prevent exposure:  
Discharge exhaust air only with suitable separators to atmosphere.  
Organisational measures to prevent exposure:  
Should not be released into the environment.  
Structural measures to prevent exposure:

Use the following recovery and/or abatement technique for cleaning waste gases:

Exhaust air scrubber  
Adsorption  
Incineration

Further information see under section 6.2 - Environmental precautions.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Physical state: aerosol  
Colour: white  
Odour: characteristic

**Test method**

pH-Value: not applicable

**Changes in the physical state**

Melting point: not determined  
Initial boiling point and boiling range: > -42 °C literature value  
Sublimation point: not applicable  
Softening point: not applicable  
Pour point: not applicable  
Flash point: > -97 °C literature value

**Flammability**

Solid: not applicable (Aerosol)  
Gas: not applicable (Aerosol)

**Explosive properties**

In use may form flammable/explosive vapour-air mixture.

The statements for steam pressure, ignition point and explosion levels apply to the solvent / solvent mixture.

Lower explosion limits: 0,6 vol. % literature value  
Upper explosion limits: 11,0 vol. % literature value  
Ignition temperature: > 200 °C literature value

**Auto-ignition temperature**

Solid: Not pyrophoric.  
Gas: Not pyrophoric.  
Decomposition temperature: not determined

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**Oxidizing properties**

not relevant

Vapour pressure: < 3000 hPa literature value  
(at 20 °C)Vapour pressure: < 7000 hPa literature value  
(at 50 °C)Density (at 20 °C): 0,645 g/cm<sup>3</sup> calculated.

Bulk density: not applicable (Aerosol)

Water solubility: partially soluble: < 50 g/L literature value  
(at 20 °C)**Solubility in other solvents**

miscible with most organic solvents

Partition coefficient: not applicable (Mixtures)

Viscosity / dynamic: not applicable

Viscosity / kinematic: not applicable

Flow time: not applicable

Vapour density: ~ 2.0 (Air=1) literature value  
(at 25 °C)

Evaporation rate: not determined

Solvent separation test: not applicable

**9.2. Other information**

Solid content: not determined

Temperature class (DIN EN 60079-0): T 3 (T &gt; +200 °C ... &lt;= +300 °C)

Limiting oxygen concentration (LOC) (DIN EN 14756): No data available

Explosion group: IIA

Maximum experimental safe gap (MESG) (IEC 60079-1-1): &gt; 0,9 mm

Minimum ignition current (MIC) (IEC 60079-11): No data available

Minimum ignition energy (MIE) (DIN EN 13673-1): No data available

Odour threshold: 500 ppm ((butane), literature value)

Molecular weight: No data available

Data apply to the main component.

Conductivity (ASTM D 2624): No data available

Surface tension: No data available

Fat solubility (g/L): No data available

Calculated oxidation potential of the mixture (OP): not relevant

The product is a foam aerosol.

specific heat of combustion (Delta Hc(i)) in kJ/g: &gt;= 30 kJ/g

Solvent content (%): 56 %

Propellant content (%): 41 %

Substance group relevant properties:

Data relevant with regard to physical hazard classes (supplemental)

Explosives

not applicable:

Flammable gases

not applicable (Aerosol)

flammable aerosols

Extremely flammable aerosol.

In use may form flammable/explosive vapour-air mixture.

Oxidising gases

Not oxidising. / not applicable (Aerosol)

Gases under pressure

not applicable (Aerosol)

The packed gas is solved in a solvent phase under pressure.

Flammable liquids

not applicable (Aerosol)

flammable solids

not applicable (Aerosol)

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Self-reactive substances and mixtures  
not applicable

Pyrophoric liquids  
Not pyrophoric. / not applicable (Aerosol)

Pyrophoric solids  
Not pyrophoric. / not applicable (Aerosol)

self-heating substances and mixtures  
not applicable

Substances or mixtures which, in contact with water, emit flammable gases  
not applicable

Oxidising liquids  
Not oxidising. / not applicable (Aerosol)

Oxidising solids  
Not oxidising. / not applicable (Aerosol)

Organic peroxides  
not applicable

Corrosive to metals.  
Not corrosive to metals.

**SECTION 10: Stability and reactivity****10.1. Reactivity**

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

**10.2. Chemical stability**

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

**10.3. Possibility of hazardous reactions**

No hazardous reaction when handled and stored according to provisions.

**10.4. Conditions to avoid**

Heat, flames and sparks.

Further information see under section 7.2 - Conditions for safe storage, including any incompatibilities.

Further information see under section 10.5 - Incompatible materials.

**10.5. Incompatible materials**

Violent reaction with:

Oxidising agent, strong

Further information see under section 7.1 - Precautions for safe handling.

**10.6. Hazardous decomposition products**

Does not decompose when used for intended uses.

No known hazardous decomposition products.

Under fire conditions: See under section 5.2 - Special hazards arising from the substance or mixture.

**SECTION 11: Toxicological information****11.1. Information on toxicological effects****Toxicokinetics, metabolism and distribution**

There are no data available on the preparation/mixture itself.

The product has not been tested.

Information on likely routes of exposure /

Symptoms related to the physical, chemical and toxicological characteristics:

See under section 4.2 - Most important symptoms and effects, both acute and delayed.

Exposure route:

In case of ingestion:

Aspiration hazard: not relevant

The product does have a sealed spraying device.

In case of skin contact:

irritant.

erythema (redness)

Prolonged or repeated skin contact may cause removal of natural fat from the skin resulting in dermatitis (skin inflammation).

In case of inhalation:

slightly irritant but not relevant for classification.

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Narcotic effects

In case of eye contact:  
slightly irritant but not relevant for classification.  
Conjunctival redness.

Delayed and immediate effects as well as chronic effects from short and long-term exposure:  
Inhalative specific target organ toxicity (single exposure)

Interactive effects:  
Not relevant

Absence of specific data:  
No data is available on the product itself. Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.  
However, some data are not complete regarding particular main components. Nevertheless according to the experience of the manufacturer there are no other hazards expected than those which are already mentioned on the label.

Mixture versus substance information:  
Not relevant

**Acute toxicity**

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

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
64742-49-0	hydrocarbons, C7, n-alkanes, isoalkanes, cyclics				
	oral	LD50 > 5840 mg/kg	Rat	Supplier / ECHA	
	dermal	LD50 > 2800 mg/kg	Rat	Supplier / ECHA	
	inhalation (4 h) vapour	LC50 > 23,3 mg/l	Rat	Supplier / ECHA	OECD 403
74-98-6	propane				
	inhalation gas	LC50 > 800000 ppm	Rat	ECHA	[15 min]
64742-49-0	hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane				
	oral	LD50 > 5840 mg/kg	Rat	ECHA	
	dermal	LD50 > 2800 mg/kg	Rat	ECHA	
	inhalation (4 h) vapour	LC50 > 25,2 mg/l	Rat	ECHA	
64742-49-0	hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics				
	oral	LD50 > 5840 mg/kg	Rat	ECHA	
	dermal	LD50 > 2800 mg/kg	Rat	ECHA	
	inhalation (4 h) vapour	LC50 > 23,3 mg/l	Rat	ECHA	OECD 403
64742-48-9	hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics				
	oral	LD50 > 5000 mg/kg	Rat	Supplier / ECHA	OECD 401
	dermal	LD50 > 5000 mg/kg	Rabbit	Supplier / ECHA	OECD 402
	inhalation (4 h) aerosol	LC50 > 5,6 mg/l	Rat	ECHA	OECD 403
78-92-2	butan-2-ol				
	oral	LD50 2054 mg/kg	Rat [male]	ECHA	OECD 423
	dermal	LD50 > 2000 mg/kg	Rat	ECHA	OECD 402



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**Irritation and corrosivity**

Causes skin irritation.

Serious eye damage/eye irritation: Based on available data, the classification criteria are not met.

**Sensitising effects**

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

**Carcinogenic/mutagenic/toxic effects for reproduction**

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

**STOT-single exposure**

May cause drowsiness or dizziness. (hydrocarbons, C7, n-alkanes, isoalkanes, cyclics)

**STOT-repeated exposure**

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

**Aspiration hazard**

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

**SECTION 12: Ecological information****12.1. Toxicity**

Aquatic toxicity:

Acute (short-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to crustacea:

There are no data available on the preparation/mixture itself. The product has not been tested.

Acute (short-term) toxicity to aquatic algae and cyanobacteria:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) toxicity to crustacea:

There are no data available on the preparation/mixture itself. The product has not been tested.

Chronic (long-term) fish toxicity:

There are no data available on the preparation/mixture itself. The product has not been tested.

Toxicity to other aquatic plants/organisms:

No data available (Substances/Ingredient)

Terrestrial toxicity:

Acute and subchronic bird toxicity:

No data available (Substances/Ingredient)

Bird reproduction toxicity:

No data available (Substances/Ingredient)

Acute earthworm toxicity:

No data available (Substances/Ingredient)

Chronical earthworm toxicity (reproduction):

No data available (Substances/Ingredient)

Useful insect toxicity:

No data available (Substances/Ingredient)

Acute plant toxicity:

No data available (Substances/Ingredient)

Chronic plant toxicity:

No data available (Substances/Ingredient)

Toxicity to soil macroorganisms except of arthropods:

No data available (Substances/Ingredient)

Effects on soil microorganisms:

No data available (Substances/Ingredient)

Behaviour in waste water treatment plants:

Due to its low solubility in water the product is almost completely mechanically separated in biological sewage plants.

Observe local regulations concerning effluent treatment.



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	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
64742-49-0	hydrocarbons, C7, n-alkanes, isoalkanes, cyclics					
	Acute fish toxicity	LL50 > 13,4 mg/l	96 h	Oncorhynchus mykiss	Supplier / ECHA	OECD 203
	Acute algae toxicity	ErC50 10-30 mg/l	72 h	Pseudokirchneriella subcapitata	Supplier / ECHA	OECD 201
	Acute crustacea toxicity	EL50 3 mg/l	48 h	Daphnia magna	Supplier / ECHA	OECD 202
	Fish toxicity	NOEC 1,534 mg/l	28 d	Oncorhynchus mykiss	Supplier / ECHA	[growth rate]
	Algae toxicity	NOEC 6,3 mg/l	4 d	Pseudokirchneriella subcapitata	Supplier / ECHA	OECD 201
	Crustacea toxicity	NOEC 0,17 mg/l	21 d	Daphnia magna	Supplier / ECHA	OECD 211
	Acute bacteria toxicity	(26,81 mg/l)	0 h	Tetrahymena pyriformis	ECHA	[48h] [growth]
106-97-8	butane					
	Acute fish toxicity	LC50 24,11 mg/l	96 h	Fish	ECHA	
	Acute algae toxicity	ErC50 7,71 mg/l	96 h	Green algae	ECHA	
	Acute crustacea toxicity	EC50 14,22 mg/l	48 h	Daphnia	ECHA	
74-98-6	propane					
	Acute fish toxicity	LC50 49,9 mg/l	96 h	Fish	ECHA	ECOSAR v1.00
	Acute algae toxicity	ErC50 19,37 mg/l	96 h	Algae	ECHA	ECOSAR v1.00
	Acute crustacea toxicity	EC50 69,43 mg/l	48 h	Daphnia	ECHA	ECOSAR v1.00
64742-49-0	hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane					
	Acute fish toxicity	LC50 11,4 mg/l	96 h	Oncorhynchus mykiss	ECHA	OECD 203
	Acute algae toxicity	ErC50 10 - 30 mg/l	72 h	Raphidocelis	ECHA	OECD 201
	Acute crustacea toxicity	EC50 3 mg/l	48 h	Daphnia magna	ECHA	OECD 202
	Fish toxicity	NOEC 2,045 mg/l	28 d	Oncorhynchus mykiss	ECHA	
	Algae toxicity	NOEC 3 mg/l	3 d	Pseudokirchneriella subcapitata	ECHA	OECD 201
	Crustacea toxicity	NOEC 1 mg/l	21 d	Daphnia magna	ECHA	OECD 211
64742-49-0	hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics					
	Acute fish toxicity	LC50 3-10 mg/l	96 h	Oncorhynchus mykiss	ECHA	OECD 203
	Acute algae toxicity	ErC50 10-30 mg/l	72 h	Pseudokirchneriella subcapitata	ECHA	OECD 201
	Acute crustacea toxicity	EC50 4,6-10 mg/l	48 h	Daphnia magna	ECHA	OECD 202
	Fish toxicity	NOEC 0,574 mg/l	28 d	Oncorhynchus mykiss	ECHA	
	Algae toxicity	NOEC 10 mg/l	3 d	Pseudokirchneriella subcapitata	ECHA	OECD 201
	Crustacea toxicity	NOEC 0,17 mg/l	21 d	Daphnia magna	ECHA	OECD 211
64742-48-9	hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics					
	Acute fish toxicity	LC50 > 10 - < 30 mg/l	96 h	Oncorhynchus mykiss	Supplier / ECHA	OECD 203
	Acute algae toxicity	ErC50 > 1000 mg/l	72 h	Pseudokirchneriella subcapitata	Supplier / ECHA	OECD 201
	Acute crustacea toxicity	EC50 > 22 - < 46 mg/l	48 h	Daphnia magna	Supplier / ECHA	OECD 202
	Fish toxicity	NOEC 0,182 mg/l	28 d	Oncorhynchus mykiss	ECHA	
	Algae toxicity	NOEC < 1 mg/l	3 d	Pseudokirchneriella subcapitata	Supplier / ECHA	OECD 201

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	Crustacea toxicity	NOEC mg/l	0,317	21 d	Daphnia magna	ECHA	
	Acute bacteria toxicity	(1065 mg/l)			Tetrahymena pyriformis	ECHA	[48 h]
78-92-2	butan-2-ol						
	Acute fish toxicity	LC50	2993 mg/l	96 h	Pimephales promelas	ECHA	OECD 203
	Acute algae toxicity	ErC50	2029 mg/l	96 h	Pseudokirchneriella subcapitata	ECHA	OECD 201
	Acute crustacea toxicity	EC50	308 mg/l	48 h	Daphnia magna	ECHA	OECD 202
	Algae toxicity	NOEC	1240 mg/l	4 d	Pseudokirchneriella subcapitata	ECHA	OECD 201
	Acute bacteria toxicity	(> 500 mg/l)			Pseudomonas putida	Supplier / ECHA	DIN 38412 p8 [16h]

**12.2. Persistence and degradability**

Abiotic degradation:

Physicochemical elimination:

Oxidation:

not applicable (Mixtures)

Hydrolysis:

not applicable (Mixtures)

Photochemical elimination:

Photolysis:

not applicable (Mixtures)

Ozonolysis:

not applicable (Mixtures)

Biodegradation:

not applicable (Mixtures)

CAS No	Chemical name			
	Method	Value	d	Source
	Evaluation			
64742-49-0	hydrocarbons, C7, n-alkanes, isoalkanes, cyclics			
	OECD 301 F	98 %	28	Supplier / ECHA
	readily biodegradable			
106-97-8	butane			
	Gas exchange-biodegradation experiment	> 70 %	10	ECHA
	readily biodegradable			
74-98-6	propane			
	EPI Suite v4, BioHCwin v1.01	50 %	3	ECHA
	readily biodegradable			
64742-49-0	hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane			
	OECD 301 F	98 %	28	ECHA
	readily biodegradable			
64742-49-0	hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics			
	OECD 301 F	98 %	28	ECHA
	readily biodegradable			
64742-48-9	hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics			
	OECD 301 F	89 %	28	Supplier / ECHA
	readily biodegradable			
78-92-2	butan-2-ol			
	EU Method C.5 / EU Method C.6	86 %	5	ECHA
	readily biodegradable			

**12.3. Bioaccumulative potential**

not applicable (Mixtures)

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**Partition coefficient n-octanol/water**

CAS No	Chemical name	Log Pow
106-97-8	butane	2,8
74-98-6	propane	1,09
78-92-2	butan-2-ol	0,65

**12.4. Mobility in soil**

Surface tension:

See under section 9.1 - Information on basic physical and chemical properties.

Distribution:

Water-air (volatility rate, Henry-constant):

not applicable (Mixtures)

Product is easily volatile.

The information about ecology refers to the main components.

Soil-Water (Adsorption coefficient):

not applicable (Mixtures)

Soil-Air (volatility rate):

not applicable (Mixtures)

Product is easily volatile.

The information about ecology refers to the main components.

This product contains one or more hydrocarbon UVCB's. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

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

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

**12.6. Other adverse effects**

Ozone depletion potential (ODP):

No data available (Substances/Ingredient)

Photochemical ozone creation potential (POCP):

No data available (Substances/Ingredient)

Global warming potential (GWP):

No data available (Substances/Ingredient)

Endocrine disrupting potential:

No data available

AOX: Product does not contain any organic halogens.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Disposal recommendations**

Waste treatment options:

Send to a hazardous waste incinerator facility under observation of official regulations.

Dispose of waste according to applicable legislation.

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

Properties of waste which render it hazardous:

Irritant.

Ecotoxic

Evidence for disposal must be provided.

Consult the appropriate local waste disposal expert about waste disposal.

Waste for recycling is to be classified and labelled.

For recycling, contact recycling exchanges.

May not be disposed or deposited together with domestic garbage.

Do not mix with other wastes.

Do not flush into surface water or sanitary sewer system.

Do not dispose of waste into sewer.

Before discharge in public drains (e.g. residues of washing- and rinsing liquids) please observe the relevant regulations. In case of further questions please contact your waste- or environmental representative or the responsible authority.

Clean IBCs or drums at approved facility only.

The waste producer is responsible for correct coding and designation of his wastes.

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the

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industry and process.

List of proposed waste codes/waste designations in accordance with EWC:

**List of Wastes Code - residues/unused products**

160504 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; gases in pressure containers (including halons) containing hazardous substances; hazardous waste

**List of Wastes Code - used product**

160504 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; gases in pressure containers and discarded chemicals; gases in pressure containers (including halons) containing hazardous substances; hazardous waste

**List of Wastes Code - contaminated packaging**

150111 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); metallic packaging containing a hazardous solid porous matrix (for example asbestos), including empty pressure containers; hazardous waste

**Contaminated packaging**

 Other disposal recommendations:  
none

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

Dispose of contents/container to hazardous and special waste in accordance with special provision 327 ADR.

**SECTION 14: Transport information**
**Land transport (ADR/RID)**

<b>14.1. UN number:</b>	UN1950
<b>14.2. UN proper shipping name:</b>	AEROSOLS
<b>14.3. Transport hazard class(es):</b>	2
<b>14.4. Packing group:</b>	-
Hazard label:	2.1



Classification code:	5F
Special Provisions:	190 327 344 625
Limited quantity:	1 L
Excepted quantity:	E0
Transport category:	2
Hazard No:	-
Tunnel restriction code:	D

**Other applicable information (land transport)**

Provision(s), multilateral agreement(s): Not applicable

Maximum permissible total quantity per unit of carriage according to subsection 1.1.3.6 ADR/RID: 333 kg.

Factor out of category of carriage (= 2) to calculate the quantity per unit of carriage: 3.

**Inland waterways transport (ADN)**
**Other applicable information (inland waterways transport)**

Not classified for this transport way.

**Marine transport (IMDG)**

<b>14.1. UN number:</b>	UN1950
<b>14.2. UN proper shipping name:</b>	AEROSOLS (Naphtha (Petroleum), hydrotreated, light)
<b>14.3. Transport hazard class(es):</b>	2.1
<b>14.4. Packing group:</b>	-
Hazard label:	2.1



Marine pollutant:	P
Special Provisions:	63, 190, 277, 327, 344, 959
Limited quantity:	1000 mL

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Excepted quantity: E0  
EmS: F-D, S-U

**Other applicable information (marine transport)**

Exception(s): Not applicable

Marking: UN 1950 AEROSOLS, [LTD QTY: --- (Amdt. 38-16)]

**Air transport (ICAO-TI/IATA-DGR)**

**14.1. UN number:** UN1950  
**14.2. UN proper shipping name:** AEROSOLS, FLAMMABLE  
**14.3. Transport hazard class(es):** 2.1  
**14.4. Packing group:** -  
Hazard label: 2.1



Special Provisions: A145 A167 A802  
Limited quantity Passenger: 30 kg G  
Passenger LQ: Y203  
Excepted quantity: E0  
IATA-packing instructions - Passenger: 203  
IATA-max. quantity - Passenger: 75 kg  
IATA-packing instructions - Cargo: 203  
IATA-max. quantity - Cargo: 150 kg

**Other applicable information (air transport)**

ERG Kodex: 10L

The state variations in chapter 2.8.1 and the operator variations in chapter 2.8.3 for shipping of dangerous goods in limited quantities according to chapter 2.7 of the valid ICAO/IATA Dangerous Goods Regulations have to be observed.

The rulings for dangerous goods by air mail according to chapter 2.4 of the valid ICAO/IATA Dangerous Goods Regulations and the conventions of the Universal Postal Union (UPU) as well as the clauses of the relevant National Postal Administration have to be observed. Airmail: prohibited.

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: Yes



Danger releasing substance: Naphtha (Petroleum), hydrotreated, light

**14.6. Special precautions for user**

Further information see under section 6, 7, 8.

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

No bulk transport in accordance with IBC code.  
It is sold exclusively in traffic legally authorized and appropriate packaging.

**Other applicable information**

Postal, express and courier services:  
Postal service (national):  
Refer to your National Postal Administration.  
Express freight / special delivery:  
Refer to your National Postal Administration.  
Courier service (national):  
The general conditions of business of the particular courier service have to be observed.

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Restrictions on use (REACH, annex XVII):  
Entry 3, Entry 57  
2010/75/EU (VOC): 97 % (626 g/l)

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Authorisations and/or restrictions on use:

Authorisations:

Authorisation of Chemicals (REACH) as regards Annex XIV:

not relevant

Restrictions on use:

Restriction of chemicals (REACH) as regards annex XVII:

not relevant

Informations on Regulation (EC) No. 1272/2008 - Annex VI, Part 1:

Note P is valid: The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0,1 % w/w benzene (EINECS No 200-753-7) (&lt; 1 mg/kg - DIN 51405, ASTM D 4367).

Other regulations (EU):

Regulation (EC) No. 1005/2009 - Substances that deplete the ozone layer:

not relevant

Regulation (EC) No. 648/2004 and No 907/2006 - Detergents:

not relevant

Regulation (EC) No. 649/2012 - Export and import of dangerous chemicals:

not relevant

Regulation (EU) 2019/1021 - Persistent organic pollutants:

not relevant

Regulation (EC) No. 428/2009 and No. 388/2012 and No. 1382/2014 - Control of exports, or transfer, brokering and transit of dual-use goods (Dual-Use Regulation):

not relevant

Regulation (EC) No. 273/2004 - Drug precursors:

not relevant

Regulation (EC) No. 111/2005 - Definition of rules for the monitoring of trade in drug precursors between the Union and third countries:

not relevant

Directive 2012/18/EC - Control of major accident hazards involving dangerous substances (Seveso III):

ANNEX I, PART 1 (Categories of dangerous substances):

P3a (PHYSICAL HAZARDS) - FLAMMABLE AEROSOLS (Column 1)

Quantities: &gt; 150.000 kg (Column 2) / &gt; 500.000 kg (Column 3)

E2 (ENVIRONMENTAL HAZARDS) - Hazardous to the Aquatic Environment in Category Chronic 2 (Column 1)

Quantities: &gt; 200.000 kg (Column 2) / &gt; 500.000 kg (Column 3)

Directive 2004/42/EC - Use of organic solvents in certain paints and lacquers:

not relevant

Directive 2010/75/EU - Industrial Emissions Directive (Directive IE) - succession to Directive 1999/13/EC - Limitation of emissions of volatile organic compounds (VOC-Directive):

When using this substance / mixture it has to be checked whether the activities are subject to the the requirements of IE-RL, Chapter V (installations and activities with the use of organic solvents - VOC).

Aerosol directive (75/324/EEC):

In accordance with Aerosol directive (75/324/EEC)

Biocide directive (98/8/EC):

not relevant

Regulation (EU) No. 528/2012 on biocides:

not relevant

Observe in addition any national regulations!

EC-Chemical inventories: All ingredients are listed in EINECS / ELINCS or excepted from listing.

**National regulatory information**

Employment restrictions:

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

**Additional information**



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Other regulations, restrictions and prohibition regulations:

European product inventories (Registration status on mixtures):

Kemikalieinspektionen / Produktregistret / Swedish Chemicals Inspectorate - Keml (<http://www.kemi.se>):

This product was registered.

Schweizerische Eidgenossenschaft - Bundesamt für Gesundheit - BAG (<http://www.bag.admin.ch>) / Anmeldestelle

Chemikalien (<http://www.cheminfo.ch>) / Informationssystem für gefährliche und umweltrelevante Stoffe - IGS

(<http://igs.naz.ch/index.html>):

This product was registered.

International chemical inventories (Registration status on substances): No data available

### **15.2. Chemical safety assessment**

For the following substances of this mixture a chemical safety assessment has been carried out:

hydrocarbons, C7, n-alkanes, isoalkanes, cyclics

hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane

hydrocarbons, C7-C9, n-alkanes, isoalkanes, cyclics

hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics

butan-2-ol

## **SECTION 16: Other information**

### **Changes**

This version replaces all former issues.

Changes made in this revision see section: 8, 15.

### **Abbreviations and acronyms**

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

ATE: Acute Toxicity Estimate.

CAS: Chemical Abstracts Service.

CEN: Comité Européen de Normalisation (European Committee for Standardisation).

CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.

C&L: Classification & Labeling.

DNEL: Derived No-Effect Level.

EAK: European Waste Catalogue (replaced by LoW – see below).

EC50: Effective concentration, 50 percent.

ECHA: European Chemicals Agency.

EC: European community.

EINECS: European Inventory of Existing Commercial Chemical Substances.

ELINCS: European List of Notified Chemical Substances.

EN: European standard.

EWC: European Economic Community.

EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).

EU: European Union.

GHS: Globally Harmonized System of Classification and Labelling of Chemicals.

HSPA: Hydrocarbon Solvents Producers Association.

IATA-DGR: International Air Transport Association Dangerous Goods Regulations.

IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code).

IC50 / ErC50: Inhibitory concentration, 50 percent.

ICAO-TI: International Civil Aviation Organization Technical Instruction.

IMDG: International Maritime Dangerous Goods.

ISO: A standard of International Standards Organisation.

IUPAC: International Union for Pure and Applied Chemistry.

LC50: Lethal concentration, 50 percent.

LD50: Lethal Dose, 50 percent.

log Kow (Pow): octanol-water partition coefficient.

LoW: List of Wastes (see <http://ec.europa.eu/environment/waste/framework/list.htm>).

LQ: Limited Quantities.

MARPOL: Maritime Pollution Convention (Convention for the Prevention of Pollution from Ships).

OC: Operational Conditions.



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OECD: Organisation for Economic Co-operation and Development.  
OSHA: Occupational Safety and Health Agency.  
PBT: Persistent, bioaccumulabe and toxic.  
PEC: Predicted Effect Concentration.  
PNEC: Predicted No-Effect Concentration.  
PPE: Personal Protection Equipment.  
(Q)SAR: Quantitative-Structure-Activity-Relationship.  
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals; Regulation (EC) No 1907/2006.  
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.  
RMM: Risk Management Measure.  
SVHC: Substances of Very High Concern.  
STOT - RE: Specific Target Organ Toxicity - Repeated Exposure.  
STOT - SE: Specific Target Organ Toxicity - Single Exposure.  
UN: United Nations.  
UVCB: Substances of Unknown or Variable composition, Complex reaction products or Biological materials.  
vPvB: Very persistent and very bioaccumulable.  
WoE: Weight of Evidence.

For abbreviations and acronyms, see table at <http://abbrev.esdscom.eu>

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

Classification	Classification procedure
Aerosol 1; H222-H229	On basis of test data
Skin Irrit. 2; H315	Bridging principle "Aerosols"
STOT SE 3; H336	Bridging principle "Aerosols"
Aquatic Chronic 2; H411	Calculation method

**Relevant H and EUH statements (number and full text)**

H220 Extremely flammable gas.  
H222 Extremely flammable aerosol.  
H225 Highly flammable liquid and vapour.  
H226 Flammable liquid and vapour.  
H229 Pressurised container: May burst if heated.  
H280 Contains gas under pressure; may explode if heated.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H336 May cause drowsiness or dizziness.  
H411 Toxic to aquatic life with long lasting effects.  
H412 Harmful to aquatic life with long lasting effects.  
EUH066 Repeated exposure may cause skin dryness or cracking.

**Further Information**

Full text of all R-, H-, EUH-phrases which are referred to in section 2 and 3 of this safety data sheet - see previous list.  
These (this) R-, H-, EUH-phrases/R-, H-, EUH-phrase apply/applies to the substance(s) of content, however, it does not necessarily show the classification of the product.

**Training references:**

Yearly briefing and instruction of employees by means of operating instructions according to article 8 of EC-directive 98/24/EC.

**Recommended restriction of application:**

For more reference to application see separate product information. Please refer to our internet website for more information (<http://www.acmos.com>).

**Sources of most important data used for creation of the data sheet:**

The classification corresponds to current EC-lists, but is completed by statements of technical literature and company data. Other public accessible sources:

Regulation (EC) No. 1907/2006 (REACH) in the valid version in each case

Regulation (EC) No. 1272/2008 (CLP) in the valid version in each case

Occupational Exposure Limits of EU-memberstates - European Agency for Safety and Health at Work (OSHA) (<http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm>)

Transport regulations according to ADR, IMDG-Code and IATA-DGR in the valid versions in each case

MERCK Chemical Databases - MERCK Chemicals (<http://www.merck-chemicals.com>)

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Further information and practical guides on the internet:

European Chemicals Agency - ECHA (<http://echa.europa.eu>)

The access to European Union law - EUR-Lex (<http://eur-lex.europa.eu>)

Health and Safety Executive (<http://www.hse.gov.uk>) / Control of Substances Hazardous to Health Regulations - COSHH (<http://www.coshh-essentials.org.uk/Home.asp>)

Pollution Prevention and Control Act and Pollution Prevention and Control Regulations

Health and Safety Executive - HSE - Leaflets for Chemicals (<http://www.hse.gov.uk/pubns/chindex.htm>)

Inquiry office: Laboratory (Division: Occupational- /Product security)

Contact person: Mr. Dryhaus (Telephone: +49-421-5189-0, Telefax: +49-421-5189-871)

Office hours: Mo - Th from 7.30 - 16.15 h and Fr from 7.30 - 13.30 h. Out of office hours no call diversion.