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

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

* **1.1. Product identifier**

Trade name/designation:

RAVENOL Air Filter Oil Spray

Article No.:
1360301

UFI:
EM8J-QC0H-11CD-U9HE

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

Use of the substance/mixture:
Technical Spray

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

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

Ravensberger Schmierstoffvertrieb GmbH
Produktsicherheit
Jöllenbecker Str. 2
33824 Werther
Germany
Telephone: +49 5203 9719 0
Telefax: +49 5203 9719 40
E-mail: kontakt@ravenol.de
Website: www.ravenol.de

E-mail (competent person): sdb@ravenol.de

* **1.4. Emergency telephone number**

24 hr. emergency phone number, 24h: +49 700 24 112 112 (Contract ID: RAV) / +1 872 5888271 (Contract ID: RAV)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Hazard classes and hazard categories	Hazard statements	Classification procedure
Aerosols *(Aerosol 1)*	H222; H229: Extremely flammable aerosol. Pressurised container: May burst if heated.	On basis of test data.
Aspiration hazard *(Asp. Tox. 1)*	H304: May be fatal if swallowed and enters airways.	Calculation method.
STOT-single exposure *(STOT SE 3)*	H336: May cause drowsiness or dizziness.	Calculation method.

* **2.2. Label elements**

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

Hazard pictograms:

GHS02
Flame

GHS07
Exclamation mark

Signal word: Danger

Hazard components for labelling:
Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics

Hazard statements for physical hazards	
H222	Extremely flammable aerosol.
H229	Pressurised container: May burst if heated.

Hazard statements for health hazards	
H336	May cause drowsiness or dizziness.

Supplemental hazard information	
EUH066	Repeated exposure may cause skin dryness or cracking.

Precautionary statements	
P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.

Precautionary statements Prevention	
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.
P271	Use only outdoors or in a well-ventilated area.

Precautionary statements Response	
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER/doctor/Emergency telephone number if you feel unwell.

Precautionary statements Storage	
P405	Store locked up.
P410 + P412	Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.

Precautionary statements Disposal	
P501	Dispose of contents/container to an appropriate recycling or disposal facility.

2.3. Other hazards

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

SECTION 3: Composition/information on ingredients

*
3.2. Mixtures

Hazardous ingredients / Hazardous impurities / Stabilisers:

Product identifiers	**Substance name** **Classification according to Regulation (EC) No 1272/2008 [CLP]**	**Concentration**
CAS No.: 75-28-5 EC No.: 200-857-2 Index No.: 601-004-00-0 REACH No.: 01-2119485395-27	**isobutane** Flam. Gas 1A (H220), Press. Gas (Liq.) (H280) Danger	50 – < 100 Vol-%
CAS No.: 1174921-73-3 EC No.: 927-241-2 REACH No.: 01-2119471843-32	**Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics** Aquatic Chronic 3 (H412), Asp. Tox. 1 (H304), Flam. Liq. 3 (H226), STOT SE 3 (H336) Danger	20 – < 25 Vol-%
CAS No.: 74-98-6 EC No.: 200-827-9 Index No.: 601-003-00-5 REACH No.: 01-2119486944-21	**propane** Flam. Gas 1A (H220), Press. Gas (Liq.) (H280) Danger	5 – < 10 Vol-%
CAS No.: 64742-48-9 EC No.: 918-481-9 REACH No.: 01-2119457273-39	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** Asp. Tox. 1 (H304) Danger	5 – < 10 Vol-%

Product identifiers	Substance name Classification according to Regulation (EC) No 1272/2008 [CLP]	Concentration
CAS No.: 106-97-8 EC No.: 203-448-7 Index No.: 601-004-00-0 REACH No.: 01-2119474691-32	**butane** Flam. Gas 1A (H220), Press. Gas (Liq.) (H280) Danger	1 – < 3 Vol-%
CAS No.: 1471316-72-9 EC No.: 939-603-7 REACH No.: 01-2119978241-36	**Benzenesulfonic acid, di-C10-14-alkyl derivs., calcium salts** Skin Sens. 1B (H317) Warning	< 0.1 Vol-%

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

SECTION 4: First aid measures

* 4.1. Description of first aid measures

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

Following inhalation:
Provide fresh air. Consult a doctor immediately in the case of inhaling spray mist and show him packing or label.

In case of skin contact:
After contact with skin, wash immediately with plenty of water and soap. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention. Repeated exposure may cause skin dryness or cracking.

After eye contact:
After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Following ingestion:
Rinse mouth thoroughly with water. Do NOT induce vomiting. Consult a doctor immediately.

Self-protection of the first aider:
Use personal protection equipment. No direct artificial respiration to be given by first aider.

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

The following symptoms may occur: Headache, Dizziness, Nausea, fatigue, skin irritation
May cause drowsiness or dizziness.
Repeated exposure may cause skin dryness or cracking.

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

Treat symptomatically. Call a POISON CENTER.

SECTION 5: Firefighting measures

* 5.1. Extinguishing media

Suitable extinguishing media:
Co-ordinate fire-fighting measures to the fire surroundings.
Carbon dioxide (CO2)
Extinguishing powder
alcohol resistant foam
Use water spray jet to protect personnel and to cool endangered containers.

Unsuitable extinguishing media:
Full water jet

5.2. Special hazards arising from the substance or mixture

Extremely flammable aerosol. Pressurized container: May burst if heated.

Hazardous combustion products:
Nitrogen oxides (NOx), Carbon monoxide, Carbon dioxide (CO2), aldehydes, carbon black, Gases/vapours, toxic

* 5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus.

5.4. Additional information

Move undamaged containers from immediate hazard area if it can be done safely. Do not inhale explosion and combustion gases. 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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Personal precautions:

Use personal protection equipment. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Protective equipment:

Personal protection equipment: see section 8

Emergency procedures:

Remove all sources of ignition. Remove persons to safety. Provide adequate ventilation.

6.1.2. For emergency responders

Personal protection equipment:

Use appropriate respiratory protection.

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6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains. 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:

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

For cleaning up:

Clean contaminated articles and floor according to the environmental legislation.

Other information:

Treat the recovered material as prescribed in the section on waste disposal.

6.4. Reference to other sections

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

SECTION 7: Handling and storage

*

7.1. Precautions for safe handling

Protective measures

Advices on safe handling:

Pressurised container: May burst if heated. Do not pierce or burn, even after use. If handled uncovered, arrangements with local exhaust ventilation should be used if possible. Do not breathe gas/vapour/aerosol.
Wear personal protection equipment (refer to section 8). When using do not eat, drink, smoke, sniff. Wash hands before breaks and after work. Do not put any product-impregnated cleaning rags into your trouser pockets. Use appropriate container to avoid environmental contamination.

Fire prevent measures:

Do not spray on naked flames or any incandescent material. Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F. Keep away from sources of ignition - No smoking.

Measures to prevent aerosol and dust generation:

Use only in well-ventilated areas.

Environmental precautions:

Shafts and sewers must be protected from entry of the product.

Advices on general occupational hygiene

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

7.2. Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:
Keep container tightly closed in a cool, well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Requirements for storage rooms and vessels:
Observe legal regulations and regulations.

Hints on storage assembly:
Do not store together with:
Oxidizing agent
Pyrophoric or self-heating substances
Food and feedingstuffs

Storage class (TRGS 510, Germany): 2B – Aerosol dispensers and lighters

Further information on storage conditions:
Protect against: Frost, UV-radiation/sunlight
maximum storage temperature: 50 °C

7.3. Specific end use(s)

Recommendation:
Observe technical data sheet.

SECTION 8: Exposure controls/personal protection

*

8.1. Control parameters

8.1.1. Occupational exposure limit values

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
CH from 1 Jan 2022	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 800 ppm (1,900 mg/m³) ② 3,200 ppm (7,600 mg/m³) ⑤ Tox: ZNS
HTP (FI)	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 800 ppm (1,900 mg/m³) ② 1,000 ppm (2,400 mg/m³) ⑤ liite 4
MAK (AT)	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	② 1,600 ppm (3,800 mg/m³) ⑤ (max. 3x60 min./SchichtMomentanwert)
BE from 3 Oct 2018	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	② 980 ppm (2,370 mg/m³)
EE	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 800 ppm (1,900 mg/m³)
TSH (SK) from 1 May 2019	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 1,000 ppm (2,400 mg/m³) ⑤ karc 1A
SI	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 1,000 ppm (2,400 mg/m³) ② 4,000 ppm (9,600 mg/m³)
KR from 20 Mar 2018	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 800 ppm
BC (CA) from 1 Mar 2022	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	② 1,000 ppm ⑤ EX
IE from 21 Aug 2018	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	② 1,000 ppm
NIOSH (US)	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 800 ppm (1,900 mg/m³)

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
ACGIH (US) from 1 Jan 2017	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 1,000 ppm
TRGS 900 (DE)	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 1,000 ppm (2,400 mg/m³) ② 4,000 ppm (9,600 mg/m³) ⑤ DFG
MAK (AT)	**isobutane** CAS No.: 75-28-5 EC No.: 200-857-2	① 800 ppm (1,900 mg/m³)
CH from 1 Jan 2022	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³) ② 4,000 ppm (7,200 mg/m³) ⑤ Tox: Formal; Messmeth: NIOSH
PL	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,800 mg/m³
NO	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 500 ppm (900 mg/m³)
HTP (FI)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 800 ppm (1,500 mg/m³) ② 1,100 ppm (2,000 mg/m³) ⑤ liite 4
TRGS 900 (DE)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³) ② 4,000 ppm (7,200 mg/m³) ⑤ DFG
BG	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,800 mg/m³
DK	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³) ② 2,000 ppm (3,600 mg/m³)
BE	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm
MAK (AT)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	② 2,000 ppm (3,600 mg/m³) ⑤ (max. 3x60 min./Schicht, Momentanwert)
RO	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 778 ppm (1,400 mg/m³) ② 1,000 ppm (1,800 mg/m³)
EE	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
Alberta (CA)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm
MAK (AT)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
SI	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³) ② 4,000 ppm (7,200 mg/m³)
TW	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
IS	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
MY from 1 Jan 2000	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 2,500 ppm
GR from 1 Oct 2016	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
LV from 7 Apr 2015	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
IDLH (US) from 1 Jan 1994	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 2,100 ppm [10% LEL]
ES from 8 Jun 2023	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm
OSHA (US)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
NIOSH (US)	**propane** CAS No.: 74-98-6 EC No.: 200-827-9	① 1,000 ppm (1,800 mg/m³)
PL	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 300 mg/m³ ② 900 mg/m³
TRGS 900 (DE) from 30 Nov 2017	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 300 mg/m³ ② 600 mg/m³ ⑤ (C9-C14 Aliphaten)
VLA (FR)	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 1,000 mg/m³ ② 1,500 mg/m³ ⑤ (hydrocarbures C9-C12)
DFG (DE) from 1 Jul 2019	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 50 ppm (300 mg/m³) ② 100 ppm (600 mg/m³)
NO	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 50 ppm (275 mg/m³) ⑤ (White Spirit (aromatinnhold < 22 %))
CH from 1 Jan 2022	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 50 ppm (300 mg/m³) ② 100 ppm (600 mg/m³) ⑤ Tox: ZNS
MAK (AT)	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 200 mL/m³ ② 400 mL/m³ ⑤ (für Kohlenwasserstoffgemische mit einem Gehalt an aromatischen Kohlenwasserstoffen von weniger als 1 %, an n-Hexan von weniger als 5 % und an Cyclo-/ Isohexanen von weniger als 25 %)
MAK (AT)	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 170 mL/m³ ② 340 mL/m³ ⑤ (für Kohlenwasserstoffgemische mit einem Gehalt an aromatischen Kohlenwasserstoffen von weniger als 1 %, an n-Hexan von weniger als 5 % und an Cyclo-/ Isohexanen von 25 % oder mehr)

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
WEL (GB)	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 1,200 mg/m³ ⑤ (> or = C7, Normal and branched chain alkanes)
WEL (GB)	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 800 mg/m³ ⑤ (> or = C7, Cycloalkanes)
SI from 4 Dec 2018	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 700 mg/m³
RO from 21 Aug 2018	**Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics** CAS No.: 64742-48-9 EC No.: 918-481-9	① 700 mg/m³ ② 1,000 mg/m³
MY from 1 Jan 2000	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)
CH from 1 Jan 2022	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³) ② 3,200 ppm (7,600 mg/m³) ⑤ Tox: ZNS
MAK (AT)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)
PL	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,900 mg/m³ ② 3,000 mg/m³
TRGS 900 (DE)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm (2,400 mg/m³) ② 4,000 ppm (9,600 mg/m³) ⑤ DFG
NO	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 250 ppm (600 mg/m³)
IE from 5 Dec 2011	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm
HTP (FI)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³) ② 1,000 ppm (2,400 mg/m³) ⑤ liite 4
DK	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 500 ppm (1,200 mg/m³) ② 1,000 ppm (2,400 mg/m³)
MAK (AT)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	② 1,600 ppm (3,800 mg/m³) ⑤ (max. 3x60 min./Schicht, Momentanwert)
BG	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,900 mg/m³
HR	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 600 ppm (1,450 mg/m³) ② 750 ppm (1,810 mg/m³) ⑤ Karc 1A, Muta 1B
BE from 3 Oct 2018	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	② 980 ppm (2,370 mg/m³)

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
EE	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,500 mg/m³)
Alberta (CA) from 1 Jun 2018	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm
ES from 1 Jan 2015	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm
LV	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 300 mg/m³
BC (CA) from 1 Jun 2018	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	② 1,000 ppm ⑤ EX
TSH (SK) from 1 May 2019	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm (2,400 mg/m³) ⑤ karc 1A
VLA (FR)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)
WEL (GB)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 600 ppm (1,450 mg/m³) ② 750 ppm (1,810 mg/m³)
SI	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm (2,400 mg/m³) ② 4,000 ppm (9,600 mg/m³)
TW	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)
KR	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)
IS	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 500 ppm (1,200 mg/m³)
HU	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 2,350 mg/m³ ② 9,400 mg/m³ ⑤ N
GR from 1 Oct 2016	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm (2,350 mg/m³)
JP	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 500 ppm (1,200 mg/m³)
RU	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 300 mg/m³ ③ 900 mg/m³
IDLH (US) from 1 Jan 2016	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,600 ppm [>10% LEL]
NIOSH (US)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)
ACGIH (US) from 1 Jan 2017	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 1,000 ppm

Limit value type (country of origin)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
Québec (CA)	**butane** CAS No.: 106-97-8 EC No.: 203-448-7	① 800 ppm (1,900 mg/m³)

8.1.2. Biological limit values
No data available

8.1.3. DNEL-/PNEC-values

Substance name	DNEL value	① DNEL type ② Exposure route
Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics CAS No.: 1174921-73-3 EC No.: 927-241-2	871 mg/m³	① DNEL worker ② Long-term – inhalation, systemic effects

* 8.2. Exposure controls

8.2.1. Appropriate engineering controls
See section 7. No additional measures necessary.

8.2.2. Personal protection equipment

Eye/face protection:
Suitable eye protection: Eye glasses with side protection
DIN-/EN-Norms EN 166

Skin protection:
Hand protection
Suitable material: NBR (Nitrile rubber)
Thickness of the glove material: ≥ 0,45 mm
Breakthrough time: 480 min
Breakthrough times and swelling properties of the material must be taken into consideration.
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.
For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.
Tested protective gloves must be worn: EN ISO 374
Suitable protective clothing: Protective clothing

Respiratory protection:
Wear breathing apparatus if exposed to vapours/dusts/aerosols.
Suitable respiratory protection apparatus: Combination filtering device
Filtering device with filter or ventilator filtering device of type: AX
Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).

8.2.3. Environmental exposure controls
See section 7. No additional measures necessary.

SECTION 9: Physical and chemical properties

* 9.1. Information on basic physical and chemical properties

Appearance
Physical state: Aerosol
Colour: brown
Odour: characteristic

Safety relevant basis data

Parameter	Value	at °C	① Method ② Remark
pH	*not applicable*		
Initial boiling point and boiling range	-42 °C		
Decomposition temperature	*not applicable*		
Flash point	-80 °C		
Evaporation rate	*No data available*		
Upper/lower flammability or explosive limits	0.5 – 9.4 Vol-%		
Vapour pressure	*No data available*		
Density	783 kg/m³	20 °C	
Bulk density	*not applicable*		
Water solubility	practically insoluble		
Partition coefficient: n-octanol/water	*not applicable*		
Kinematic viscosity	< 7 mm²/s	40 °C	

* **9.2. Other information**

The information relates to the active ingredient.

SECTION 10: Stability and reactivity

10.1. Reactivity

Extremely flammable aerosol.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Extremely flammable aerosol. Pressurized container: May burst if heated. Do not expose to temperatures above 50 °C.Heating causes rise in pressure with risk of bursting.

10.4. Conditions to avoid

Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. Vapours can form explosive mixtures with air. Take precautionary measures against static discharge.

10.5. Incompatible materials

Oxidizing agent
Pyrophoric or self-heating substances

10.6. Hazardous decomposition products

Nitrogen oxides (NOx), Carbon monoxide, Carbon dioxide (CO2), carbon black, aldehydes
Gases/vapours, toxic

Further information

Do not mix with other chemicals.

SECTION 11: Toxicological information

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

isobutane CAS No.: 75-28-5 EC No.: 200-857-2
LC_{50} Acute inhalation toxicity (vapour): 1,237 mg/L
Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics CAS No.: 1174921-73-3 EC No.: 927-241-2
LD_{50} oral: >15,000 mg/kg (Rat) Study report (1977)
LD_{50} dermal: >5,000 mg/kg (Rabbit) Study report (1993)
LC_{50} Acute inhalation toxicity (vapour): >4,951 mg/L 4 h (Rat)

Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics CAS No.: 64742-48-9 EC No.: 918-481-9
LD_{50} oral: >5,000 mg/kg (Rat)
LD_{50} dermal: >5,000 mg/kg (Rabbit)
LC_{50} Acute inhalation toxicity (vapour): >5 mg/L 4 h (Rat)
LC_{50} Acute inhalation toxicity (dust/mist): >5.266 mg/L 4 h (rat) OECD Guideline 403 (Acute Inhalation Toxicity)
butane CAS No.: 106-97-8 EC No.: 203-448-7
LC_{50} Acute inhalation toxicity (gas): 658 ppmV 4 h (Rat) GESTIS

Acute oral toxicity:
Based on available data, the classification criteria are not met.

Acute dermal toxicity:
Based on available data, the classification criteria are not met.

Acute inhalation toxicity:
Based on available data, the classification criteria are not met.

Skin corrosion/irritation:
Repeated exposure may cause skin dryness or cracking.

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

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
Based on available data, the classification criteria are not met.

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

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

STOT-single exposure:
May cause drowsiness or dizziness.

STOT-repeated exposure:
Based on available data, the classification criteria are not met.

Aspiration hazard:
Observe risk of aspiration if vomiting occurs.
For viscosity data, see section 9.

Additional information:
No information available.

* 11.2. Information on other hazards

Endocrine disrupting properties:
This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

Other information:
No information available.

SECTION 12: Ecological information

* 12.1. Toxicity

isobutane CAS No.: 75-28-5 EC No.: 200-857-2
LC_{50}: 91.42 mg/L 4 d (fish) United States Environmental Protection A
LC_{50}: 91.42 mg/L 4 d (fish)
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia pulex (water flea)) USEPA OPPT Risk Assessment Division (200
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia)
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia sp.)
ErC_{50}: 19.37 mg/L 4 d (Algae/water plant) USEPA OPPT Risk Assessment Division (200
ErC_{50}: 19.37 mg/L 4 d (Algae/water plant, Algae)

Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics CAS No.: 1174921-73-3 EC No.: 927-241-2
LC_{50}: >1,000 mg/L 4 d (fish, Oncorhynchus mykiss)
EC_{50}: >1,000 mg/L 2 d (crustaceans, Daphnia magna)
NOEC: 0.182 mg/L 28 d (fish, Oncorhynchus mykiss (Rainbow trout)) CONCAWE, Brussels, Belgium (2010)
NOEC: 0.317 mg/L 21 d (crustaceans, Daphnia magna (Big water flea)) Company report (2010)
NOEC: 0.182 mg/L 28 d (fish, Oncorhynchus mykiss)
ErC_{50}: >1,000 mg/L 3 d (Algae/water plant, Pseudokirchneriella subcapitata)
ErC_{50}: >1,000 mg/L 3 d (Algae/water plant, Pseudokirchneriella subcapitata)
propane CAS No.: 74-98-6 EC No.: 200-827-9
LC_{50}: 49.9 mg/L 4 d (fish, fish) United States Environmental Protection A
LC_{50}: 49.9 mg/L 4 d (fish)
LC_{50}: 24.11 – 147.54 mg/L 4 d (fish)
LC_{50}: 14.22 – 69.43 mg/L 2 d (crustaceans)
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia pulex (water flea))
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia)
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia sp.)
EC_{50}: 7.71 – 19.37 mg/L 4 d (Algae/water plant)
EC_{50}: 69.43 mg/L
ErC_{50}: 19.37 mg/L 4 d (Algae/water plant, Algae/water plant) USEPA OPPT Risk Assessment Division (200)
ErC_{50}: 19.37 mg/L 4 d (Algae/water plant, Algae)
ErC_{50}: 19.37 mg/L
Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics CAS No.: 64742-48-9 EC No.: 918-481-9
LC_{50}: >1,000 mg/L 4 d (fish, Oncorhynchus mykiss (Rainbow trout))
EC_{50}: >1,000 mg/L 2 d (crustaceans, Daphnia magna (Big water flea))
ErC_{50}: >1,000 mg/L 4 d (Algae/water plant, Pseudokirchneriella subcapitata)
butane CAS No.: 106-97-8 EC No.: 203-448-7
LC_{50}: 49.9 mg/L 4 d (fish, fish) United States Environmental Protection A
LC_{50}: 49.9 mg/L 4 d (fish)
LC_{50}: 24.11 – 147.54 mg/L 4 d (fish)
LC_{50}: 14.22 – 69.43 mg/L 2 d (crustaceans)
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia pulex (water flea)) USEPA OPPT Risk Assessment Division (200)
EC_{50}: 69.43 mg/L 2 d (crustaceans, Daphnia)
EC_{50}: 7.71 – 19.37 mg/L 3 d (Algae/water plant)
EC_{50}: 69.43 mg/L
ErC_{50}: 19.37 mg/L 4 d (Algae/water plant, Algae/water plant) USEPA OPPT Risk Assessment Division (200)
ErC_{50}: 19.37 mg/L 4 d (Algae/water plant)

Assessment/classification:
The substance/mixture does not fullfill the criteria of the acute aquatic toxicity according to Regulation (EC) No 1272/2008 [CLP], Annex I.

Additional ecotoxicological information:
Do not allow uncontrolled discharge of product into the environment.

*
12.2. Persistence and degradability

propane CAS No.: 74-98-6 EC No.: 200-827-9
Biodegradation: not applicable
Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics CAS No.: 64742-48-9 EC No.: 918-481-9
Biodegradation: Yes, rapidly
butane CAS No.: 106-97-8 EC No.: 203-448-7
Biodegradation: not applicable

Additional information:
The product has not been tested.

12.3. Bioaccumulative potential

isobutane CAS No.: 75-28-5 EC No.: 200-857-2
Log K_{OW}: 1.09
Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics CAS No.: 1174921-73-3 EC No.: 927-241-2
Bioconcentration factor (BCF): 144.3
propane CAS No.: 74-98-6 EC No.: 200-827-9
Log K_{OW}: 1.09
Bioconcentration factor (BCF): 13.18
butane CAS No.: 106-97-8 EC No.: 203-448-7
Log K_{OW}: 1.09
Bioconcentration factor (BCF): 33.88

Partition coefficient: n-octanol/water:
not applicable

Accumulation / Evaluation:
The product has not been tested.

12.4. Mobility in soil
The product has not been tested.

*

12.5. Results of PBT and vPvB assessment

isobutane CAS No.: 75-28-5 EC No.: 200-857-2
Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.
Hydrocarbons, C9-C10, n-alcanes, isoalcanes, cyclics, <2% aromatics CAS No.: 1174921-73-3 EC No.: 927-241-2
Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.
propane CAS No.: 74-98-6 EC No.: 200-827-9
Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.
Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics CAS No.: 64742-48-9 EC No.: 918-481-9
Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.
butane CAS No.: 106-97-8 EC No.: 203-448-7
Results of PBT and vPvB assessment: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.
Benzenesulfonic acid, di-C10-14-alkyl derivs., calcium salts CAS No.: 1471316-72-9 EC No.: 939-603-7
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. Endocrine disrupting properties
This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7. Other adverse effects
No information available.

SECTION 13: Disposal considerations

*

13.1. Waste treatment methods
Do not allow to enter into surface water or drains. Dispose of waste according to applicable legislation.

13.1.1. Product/Packaging disposal

Waste codes/waste designations according to EWC/AVV
Directive 2008/98/EC (Waste Framework Directive)

HP 3	Flammable
HP 4	Irritant — skin irritation and eye damage
HP 14	Ecotoxic

Waste code packaging

15 01 04	metallic packaging

Waste treatment options

Appropriate disposal / Product:
Dispose of waste according to applicable legislation.

Appropriate disposal / Package:
Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

13.2. Additional information

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

SECTION 14: Transport information

Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1. UN number or ID number			
UN 1950	UN 1950	UN 1950	UN 1950
14.2. UN proper shipping name			
AEROSOLS	AEROSOLS	AEROSOLS	AEROSOLS
14.3. Transport hazard class(es)			
 2.1	 2.1	 2.1	 2.1
14.4. Packing group			
		-	
* **14.5. Environmental hazards**			
No	No	No	No data available
* **14.6. Special precautions for user**			
Limited quantity (LQ): 1L **Classification code:** 5F **Tunnel restriction code:** (D)	**Limited quantity (LQ):** 1L **Classification code:** 5F	**Limited quantity (LQ):** 1L **EmS-No.:** F-D; S-U	No data available

14.7. Maritime transport in bulk according to IMO instruments

No transport as bulk according to IBC Code.

SECTION 15: Regulatory information

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

15.1.1. EU legislation

Other regulations (EU):
Hazard categories:
• P3a 'Flammable' aerosols Category 1 or 2, containing flammable gases Category 1 or 2 or flammable liquids

Named dangerous substances:
• Liquefied flammable gases, Category 1 or 2 (including liquefied petroleum gas) and natural gas
Use restriction according to REACH annex XVII, no.: 3, 28, 40, 75

Aerosol Directive (75/324/)

Maximum VOC content of the product in a ready to use condition: 775,17 g/L

Directive 2004/42/EC on the limitation of emissions of volatile organic compounds:
Volatile organic compounds (VOC) content in percent by weight: 99 weight-%

15.1.2. National regulations

[DE] National regulations

Restrictions of occupation

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.

Störfallverordnung (12. BImschV)

for substances contained in the product:

Hazard categories:

• P3a 'Flammable' aerosols Category 1 or 2, containing flammable gases Category 1 or 2 or flammable liquids

Named dangerous substances:

• Liquefied flammable gases, Category 1 or 2 (including liquefied petroleum gas) and natural gas

Technische Anleitung zur Reinhaltung der Luft (TA-Luft)

Remark:

To follow: 5.2.5

Water hazard class

WGK:

1 - slightly hazardous to water

Source:

Self-classification (mixture; calculation rule).

Technische Regeln für Gefahrstoffe

TRGS 500
TRGS 510

Berufsgenossenschaftliche Vorschriften (DGUV-Vorschriften)

Berufsgenossenschaftliche Informationen (DGUV-Informationen) 868
Berufsgenossenschaftliche Regeln (DGUV-Regeln) 189, 190, 192, 195

[SK] National regulations

Other regulations, restrictions and prohibition regulations

Zákon č. 67/2010 Z.z., o podmienkach uvedenia chemických látok a chemických zmesí na trh a o zmene a
doplnení niektorých zákonov (chemický zákon).
Zákon č. 124/2006 Z. z. o bezpečnosti a ochrane zdravia pri práci a o zmene a doplnení niektorých zákonov.
Zákon NR SR č. 355/2007 Z.z., o ochrane, podpore a rozvoji verejného zdravia a o zmene a doplnení niektorých
zákonov, v znení neskorších predpisov.
Nariadenie vlády SR 471/2011 Z.z., ktorým sa mení nariadenie vlády Slovenskej republiky č. 355/2006 Z. z.
o ochrane zamestnancov pred rizikami súvisiacimi s expozíciou chemickým faktorom pri práci, Príloha č.1.
Zákon č. 79/2015 Z.z. o odpadoch v znení neskorších predpisov.
Vyhláška MV SR č. 96/2004 Z.z., ktorou sa ustanovujú zásady protipožiarnej bezpečnosti pri manipulácii a
skladovaní horľavých kvapalín, ťažkých vykurovacích olejov a rastlinných a živočíšnych tukov a olejov.
Zákon NR SR č. 137/2010 Z.z. o ovzduší v znení neskorších predpisov.
Zákon č. 319/2013 Z.z. o pôsobnosti orgánov štátnej správy pre sprístupňovanie biocídnych výrobkov na trh a ich
používanie a o zmene a doplnení niektorých zákonov (biocídny zákon).

15.2. Chemical Safety Assessment

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

SECTION 16: Other information

*

16.1. Indication of changes

1.1.	Product identifier
1.3.	Details of the supplier of the safety data sheet
1.4.	Emergency telephone number
2.2.	Label elements
3.2.	Mixtures

4.1.	Description of first aid measures
4.3.	Indication of any immediate medical attention and special treatment needed
5.1.	Extinguishing media
5.3.	Advice for firefighters
6.2.	Environmental precautions
7.1.	Precautions for safe handling
8.1.	Control parameters
8.2.	Exposure controls
9.1.	Information on basic physical and chemical properties
9.2.	Other information
11.1.	Information on hazard classes as defined in Regulation (EC) No 1272/2008
11.2.	Information on other hazards
12.1.	Toxicity
12.2.	Persistence and degradability
12.5.	Results of PBT and vPvB assessment
13.1.	Waste treatment methods
14.5.	Environmental hazards
14.6.	Special precautions for user
15.1.	Safety, health and environmental regulations/legislation specific for the substance or mixture
16.1.	Indication of changes
16.2.	Abbreviations and acronyms
16.3.	Key literature references and sources for data
16.5.	List of relevant hazard statements and/or precautionary statements from sections 2 to 15

* 16.2. Abbreviations and acronyms

See overview table at www.euphrac.eu
For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

* 16.3. Key literature references and sources for data

EC 1907/2006 - REACH Regulation
1272/2008 EC - Regulation on classification, labeling and packaging of substances and mixtures, and amending Directives 67/548/EEC and 1999/45/EC and Regulation (EC) No 1907/2006
Regulation (EC) No 1907/2006 (REACH), Annex II
European Chemicals Agency (ECHA), C & L classification and labeling inventory
European Chemicals Agency (ECHA), ECHA CHEM Registered substances
OECD The Global Portal to Information on Chemical Substances (ChemPortal)
Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA): GESTIS substance database and International limit values for chemical substances
Federal Environment Agency, Section IV 2.4: Documentation and Information Centre substances hazardous to water Rigoletto (catalog substances hazardous to water)

Substance name	Type	source of supply
Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, < 2 % aromatics CAS No.: 64742-48-9 EC No.: 918-481-9	Classification of the substance or mixture; LC_{50} Acute inhalation toxicity (dust/mist)	Source: European Chemicals Agency, http://echa.europa.eu/

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

Hazard classes and hazard categories	Hazard statements	Classification procedure
Aerosols *(Aerosol 1)*	H222; H229: Extremely flammable aerosol. Pressurised container: May burst if heated.	On basis of test data.
Aspiration hazard *(Asp. Tox. 1)*	H304: May be fatal if swallowed and enters airways.	Calculation method.
STOT-single exposure *(STOT SE 3)*	H336: May cause drowsiness or dizziness.	Calculation method.

* 16.5. List of relevant hazard statements and/or precautionary statements from sections 2 to 15

Hazard statements	
H220	Extremely flammable gas.
H226	Flammable liquid and vapour.
H280	Contains gas under pressure; may explode if heated.
H304	May be fatal if swallowed and enters airways.
H317	May cause an allergic skin reaction.
H336	May cause drowsiness or dizziness.
H412	Harmful to aquatic life with long lasting effects.

16.6. Training advice

No data available

16.7. Additional information

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

* Data changed compared with the previous version.