


| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

SECTION 1: SUBSTANCE/MIXTURE AND COMPANY/PLANT IDENTIFICATION

1.1 Product identifier

- Trading name: Butane
- Chemical name: Hydrocarbons C3 - C4
- Other names: Liquidized crude oil gases, LPG
- REACH registration number: 01-2119486557-22-0008
- Index number: 649-199-00-1
- CAS number: 68476-40-4
- ES number: 270-681-9

1.2 Designated use of the substance or mixture and its unrecommended uses

1.2.1 Designated use

Intermediate product for the production of chemicals and as a heating medium, particularly for households and especially for portable gas appliances.

1.2.2 Unrecommended uses

No unrecommended uses were specified during the registration process; at the same time, the product must not be used in any other way than specified in Point 1.2.1 or Subsection 7.3. It is strictly forbidden to use butane in devices that have not been approved for its use.

1.3 Detailed information about the safety data sheet supplier

1.3.1 Business name and identification number

ORLEN Unipetrol RPA s.r.o., Záluží 1, 436 70 Litvínov, Czech Republic

Business Identification Number: 275 97 075

☎: 420 476 161 111

fax: 420 476 619 553

unipetrolrpa@orlenunipetrol.cz

www.orlenunipetrolrpa.cz

1.3.2 Business location

Litvínov Refinery

Záluží 1

436 01 Litvínov

tel.: +420 476 163 567

fax: +420 476 165 086

Kralupy Refinery

O. Wichterleho 809

278 01 Kralupy n/Vlt.

+420 315 718 500

+420 315 718 640


1.3.3 Email address of the technically competent persons who is responsible for the safety data sheet:

reach.unirpa@orlenunipetrol.cz

1.4 Emergency phone number

- CONTROLroom of ORLEN Unipetrol RPA s.r.o. ☎:+420 476 163 111 (NON STOP)
- Toxicological information center (TIS) ☎:+420 224 919 293 (NON STOP)
 Na bojišti 1, 120 00 Prague 2, Czech Republic ☎:+420 224 915 402 (NON STOP)
 e-mail: tis@vfn.cz
- Transportation information and accident system (TRINS) ☎:+420 476 163 111 (NON STOP)

Note: Emergency phone numbers for the EU countries are included in section 16

| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

SECTION 2: HAZARD IDENTIFICATION

2.1 Substance or mixture classification



The product is classified as hazardous pursuant to Directive (EC) No. 1272/2008 CLP:

FLAMMABLE GAS

GAS UNDER PRESSURE

| |
|--|
| Flam. gas, 1A, H220, GHS02, Dgr |
| Liquefied gas, H280, GHS04, Dgr |

2.2 Marking elements

| | | |
|--|--|---|
| <i>product identifiers</i> | BUTANE HYDROCARBONS C3 – C4, LIQUIDIZED CRUDE OIL GASES, LPG index number: 649-199-00-1 | |
| <i>warning hazard symbol</i> |   | |
| <i>signal word</i> | HAZARD | |
| <i>H-sentences (standard hazard sentences)</i> | H220 H280 | Extremely flammable gas Contains gas under pressure; may explode if heated. |
| <i>P-instructions (safe handling instructions)</i> | P102 P210 P377 P381 P410+P403 | Keep out of reach of children. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Protect from sunlight. Store in a well-ventilated place. |
| <i>additional information</i> | Only for professional users | |
| ORLEN Unipetrol RPA s.r.o. Záluží 1, 436 70 Litvínov, Czech Republic ☎: +420 476 161 111, +420 476 163 111 | | |


2.3 Other hazards

Information if a given substance or mixture complies with the criteria set for PBT or vPvB substances is included in subsection 12.5.

Butane in its gaseous state is heavier than the air and can thus accumulate in low places. It creates an explosive mixture when mixed with the air. Butane vapors in high concentrations can have narcotic effects, can cause headaches, nausea, eye and airways irritation. The product can accumulate static electricity.

Butane is stored under pressure in butane bottles. When it enters areas exposed to atmospheric pressure, it starts evaporating due to boiling under temperatures of up to –45 °C. That is why frostbites can occur when the liquidized gas comes into contact with skin.

Released gas displaces oxygen, thus creating a risk of suffocation. This explosion and suffocation risk is particularly present below the terrain level and in enclosed areas.

| | | |
|---|--|---|
|  | BUTANE <i>SAFETY DATA SHEET</i> pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

SECTION 3: COMPOSITION / INFORMATION ABOUT INDIVIDUAL COMPONENTS

3.1 Substances

| | |
|-----------------------|----------------------|
| substance name: | HYDROCARBONS C3 - C4 |
| index number (index): | 649-199-00-1 |
| CAS number: | 68476-40-4 |
| ES number: | 270-681-9 |

3.2 Mixtures

Not applicable, the product is a substance.

SECTION 4: FIRST AID INSTRUCTIONS

4.1 First aid description

4.1.1 General instructions

When administering first aid, observe your own safety.

Call for the ambulance (155 Czech Republic, 120 EU) and observe the provided instructions until its arrival. Secure vitally important functions of the victim. If the victim is not breathing normally even when you tilt his/her head back, conduct resuscitation by pressing his/her chest approximately 5 cm deep with a frequency of 100-120 pushes per minute. If you are trained in rescue breathing, execute 2 inhalations after every 30 pushes of the chest. Do not interrupt the heart massage until the ambulance personnel arrives.

Do not give anything to consume to people who are unconscious or who are experiencing cramps. Put them in the recovery position.

4.1.2 Upon inhalation

In order to ensure your own safety, transport the victim to fresh air, do not let him/her become cold and seek medical assistance.

4.1.3 Upon contact with skin

Do not remove clothes in the case of frostbites. Do not rub the frostbitten spots. Cover them only with sterile dressing or a clean piece of fabric. Seek medical assistance.

4.1.4 If the products hits eyes


Should the victim wear contact lenses, remove them. Immediately seek professional medical assistance if the liquidize gas comes into contact with eyes since the eyes could become seriously damaged if frostbitten.

4.1.5 Upon ingestion

Ingestion does not represent a probable exposure manner. However mouth and lips can develop frostbites if they come into contact with the liquidize gas. In that case rinse your mouth with lukewarm water and seek professional medical assistance immediately.

4.2 The most important acute and delayed symptoms and effects

Depending on the exposure dose, the substance can cause headache, nausea, dizziness, breathing difficulties or even breathing stoppages, cramps and unconsciousness. Ingestion can cause vomiting and, as a result of that, the vomit can get into lungs (aspiration) and pulmonary edema can occur (chemical pneumonia), which can result in death. Direct contact with eyes or skin can cause their temporary irritation. Longer exposures of skin to the substance can degrease it.

| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

4.3 Instructions related to immediate medical assistance and special treatment

Should the product hit eyes or enter airways, medical assistance has to be sought immediately.

SECTION 5: FIRE EXTINGUISHING MEASURES

5.1 Fire extinguishers

Suitable fire extinguishers: heavy foam, water spray or water mist.

Unsuitable fire extinguishers: direct water stream.

Extinguishing small fires: powder or snow (CO₂) fire extinguishers, dry sand or fire extinguishing foam.

5.2 Special hazards related to the given substance or mixture

Do not attempt to extinguish the fire if the leak source is not removed. If this is not possible, let the fire die out on its own and keep cooling containers in the fire surroundings using water. A strong reaction or explosion can occur otherwise. Vapors can spread quite far and, should they come in contact with an ignition source, can cause a reverse flare and subsequent explosion and/or fire. The gas is heavier than the air. It accumulates by the ground and in enclosed areas, where an explosion and suffocation can occur. Containers with the substance can explode when heated. Its burning can create toxic smokes that contain carbon monoxide, carbon dioxide and unburned carbohydrates.

5.3 Instructions for fire fighters

Limit penetration of the fire extinguishing liquid polluted with the given substance to the sewerage system, surface and underground water and soil to a minimum. When leaked into the sewerage system, there is a risk of an explosion and subsequent burning.

Cool the tanks containing the product with water spray because they can explode due to heat.

Do not use foam and water simultaneously since water decomposes the foam.

Protection equipment for the fire fighters: fully protective clothing and insulation breathing apparatus.

SECTION 6: ACCIDENTAL LEAK MEASURES

6.1 People protection measures, protective equipment and emergency procedures

Seal the accident location and prevent access to the endangered area. Stay on the windward side. Leaks of this product can cause fires. That is why you need to remove all possible ignition sources. Do not smoke and do not handle open flame. If possible, ensure adequate ventilation of the enclosed areas. Prevent contact with the substance and its vapors. When rectifying the given extraordinary event/accident consequences, use all the recommended personal protection equipment (see Subsection 8.2). Evacuate all people from the endangered area in the case of larger accidents. If initiated, the substance vapors below the terrain level and in enclosed areas (including the sewerage system space) can explode or suffocate people.

6.2 Measures for the protection of the environment

Eliminate any further leaks of the substance and fence off the location. Prevent penetration of leaking liquidized gas into the sewerage system.


6.3 Methods and material for leak limitation and for cleaning

When the liquidized gas leaks, its evaporation quickly increases without an efficient possibility to influence this process. Use water spray for reducing the vapors in the air. Increase ventilation intensity at the leak location, particularly in the case of enclosed areas, and monitor the gas concentration. In cold weather, when the product can remain in its liquid state due to low temperatures, pump the leaked substance into enclosed containers prior to its processing.

6.4 References to other sections

For recommended personal protection aids, see Subsection 8.2 (“Limiting exposure”).

For recommended waste removal procedures, see Section 13 (“Removal instructions”).

| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

SECTION 7: HANDLING AND STORAGE

7.1 Safe handling measures

General safety and hygienic measures: Use it only in well ventilated areas with no ignition sources. Adopt measures that eliminate any possible static electricity discharge. Do not use compressed air for filling, emptying or other handling of the tanks. Do not forget that even empty packages can contain residues of flammable vapors and do not conduct activities, such as welding, cutting, grinding, etc., in their proximity. When entering enclosed areas that are not ventilated, always use protection of your airways.

Observe the personal hygiene rules. Immediately take off polluted parts of your clothing. Do not smoke, drink or eat while working! Thoroughly wash your hands and uncovered parts of your body by water and soap and, if necessary, apply a suitable reparation cream after work and before eating. Do not bring polluted clothes, footwear and protection equipment to eating areas.

7.2 Safe storage conditions for substances and mixtures, including incompatible substances and mixtures

Storage packages have to be properly closed, marked and grounded. Do not store the product nearby incompatible materials, such as oxidation agents. Store it in well ventilated areas, away from the reach of ignition sources. Electric devices have to be implemented pursuant to the corresponding regulations. Protect the areas against static electricity. Smoking is prohibited.

7.3 Specific final use(s)

Butane is used as a heating medium, particularly for heating households, laboratories or industrial facilities. It is also used for deasphalting and selective refining of mineral oils. It can be used only for the purposes and in devices that have been approved for its use. Never pour the product into the sewerage system.

SECTION 8: LIMITING EXPOSURE / PERSONAL PROTECTION EQUIPMENT

8.1 Control parameters

8.1.1 Limit worksite exposure values

Government Directive No. 361/2007 Coll., which determines the occupational health protection condition, as amended, specifies the following acceptable exposure limits (PEL) and the highest acceptable concentrations (NPK-P) of chemical substances in the air in the Czech Republic:

| Name | CAS number | PEL [mg.m ⁻³] | NPK-P [mg.m ⁻³] | Note |
|------|------------|--|-----------------------------|------|
| LPG | 68476-85-7 | 1800 | 4000 | |
| | | Does not exist for butane. The table shows values for propane-butane (LPG) | | |

Note 1: The meaning of the PEL and NPK-P abbreviations can be found in Section 16.

Note 2: The limit exposure values for the worksites throughout the EU countries are stated in Section 16.

8.1.2 DNEL/DMEL values

DNEL values used for the evaluation:
Not specified


Note: The meaning of the DNEL and DMEL abbreviations can be found in Section 16.

8.1.3 PNEC values

PNEC (secondary exposure, oral): 20.3 mg/kg

Pursuant to Paragraph 2 of Appendix IX to the REACH Directive, no bioaccumulation study is necessary in water environments. The substance has a low bioaccumulation potential and since the octanol log partition coefficient of this category is lower than 3, it does not represent a secondary poisoning risk. Moreover, the substance is not classified as toxic.

Note: The meaning of the DNEL and DMEL abbreviations can be found in Section 16.

| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

8.2 Limiting exposure

8.2.1 Technical protection measures for limiting exposure of people and of the environment

Employees have to have personal protective equipment available to them. These aids have to correspond to the character of the conducted activities. They have to be also equipped with a suitable protection of their airways when the used technical means cannot guarantee the exposure of their airways would not endanger health or life of people. When using the protective equipment continuously while working, appropriate safety breaks have to be included, provided the character of the given PPE requires it. All PPE has to be continuously maintained in a usable condition. Should it become damaged or polluted, it has to be replaced immediately.

8.2.2 Individual protective measures

Should there be a risk of an increased exposure while handling the product or should the exposure increase, for example, as a result of an accident or an extraordinary event, the employees have to have available personal protection equipment (PPE) for the protection of their airways, eyes, hands and skin, which correspond to the character of the conducted activities. They have to be also equipped with a suitable protection of their airways when the used technical means cannot guarantee compliance with the exposure limits specified for the given work environment or when the exposure of their airways could endanger their health. When using the protective equipment continuously while working, appropriate safety breaks have to be included, provided the character of the given PPE requires it. All PPE has to be continuously maintained in a usable condition. Should it become damaged or polluted, it has to be replaced immediately.

RECOMMENDED PERSONAL PROTECTION EQUIPMENT (PPE):

(particular types of the protective equipment have to be chosen based on the type of the conducted activity and based on the quantity and concentration of the given hazardous substance/mixture at the worksite)

- **airways protection:** insulation breathing apparatus when entering an area, atmosphere of which is not demonstrably safe;
- **eyes / face protection:** protective goggles/face shield that complies with EN 166 when handling devices under pressure;
- **hands protection:** protective gloves that protect against cold and possible frostbites when handling the liquidized product;
the following materials protect against the effects of the substance:

| | <i>glove material</i> | <i>layer thickness</i> | <i>penetration time</i> |
|---|-----------------------|------------------------|-------------------------|
| common work activities (staining possibility) | natural latex | 1 mm | 10 minutes |
| leak / accident repair | viton | 0.7 mm | 480 minutes |

- **protection of other body parts:** antistatic and inflammable clothes and antistatic footwear
- **heat hazard:** irrelevant when used as specified.

8.2.3 Limiting the exposure of the environment

Prevent product leaks to locations where its accumulation could be dangerous.

BUTANE

valid issue: 31. 03. 2021 – version 9(3)

SAFETY DATA SHEET
pursuant to (EC) Directive No. 1907/2006 (REACH) as amended

revision: 01.02.2018 - issue 9
substitutes: 15.03.2017 - issue 8
original issue: 30.05.2001

SECTION 9: PHYSICAL AND CHEMICAL CHARACTERISTICS

9.1 Information about the basic physical and chemical characteristics

The information has been adopted from the corresponding registration documentation, unless stated otherwise.

| CHARACTERISTIC | UNIT | VALUE | SOURCE | NOTE |
|---|-----------------------|---------------------|--------|---|
| phase | | gas | CSR | at 20 °C |
| color | | colorless | CSR | |
| odor | | odorless | CSR | |
| limit odor value | [mg.m ⁻³] | | | CSR does not state |
| pH value | | irrelevant | | CSR does not state |
| melting point / freezing point | [°C] | -188 - -138 | CSR | |
| initial boiling point / boiling point range | [°C] | -161 – -0.5 | CSR | impact of the variable UVCB composition |
| flash point | [°C] | -104 - -60 | CSR | |
| evaporation speed | butyl acetate = 1 | | | CSR does not state |
| flammability (solid substances, gases) | | Extremely flammable | CSR | |
| upper explosion / flammability limit | % | 15 | CSR | |
| bottom explosion / flammability limit | % | 1.8 | CSR | |

BUTANE

valid issue: 31. 03. 2021 – version 9(3)

SAFETY DATA SHEET
pursuant to (EC) Directive No. 1907/2006 (REACH) as amended

revision: 01.02.2018 - issue 9
substitutes: 15.03.2017 - issue 8
original issue: 30.05.2001

| CHARACTERISTIC | UNIT | VALUE | SOURCE | NOTE |
|---|-------------------------------------|---|--------|---|
| vapor pressure | [Pa] | | CSR | no study related to the vapors pressure is necessary since the boiling point of the substance is lower than 30 °C |
| vapor density | air = 1 | | | CSR does not state |
| relative density | Water=1 | 0,423-0,589 | CSR | at 25 °C |
| water solubility | [mg.l ⁻¹] | 24.4 – 60.4 | CSR | |
| partition coefficient: n-octanol/water | [log Kow] | 1.09 – 2.8 | CSR | |
| self-ignition point | [°C] | 287-537 | CSR | |
| disintegration point | | it does not disintegrate at normal temperatures when being used | | CSR does not state |
| kinematic viscosity | [mm ² .s ⁻¹] | | | CSR does not state |
| explosive characteristics | | the substance is not explosive | CSR | |
| oxidation characteristics | | none | CSR | |

9.2 Other information

Not required.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity


The product is stable under normal conditions.

10.2 Chemical stability

The product is stable under normal conditions.

10.3 Possibility of hazardous chemical reactions

It can release carbon monoxide when burning in an environment with a lack of oxygen.

| | | |
|---|--|---|
|  | BUTANE <i>SAFETY DATA SHEET</i> pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

10.4 Conditions that have to be avoided

Concentrations within the explosion limits, presence of ignition sources, contact with open flame.

10.5 Incompatible materials

Oxidation agents.

10.6 Hazardous disintegration products

None under normal conditions; carbon monoxide and soot can be created when burning in an environment with a lack of oxygen.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information about toxicological effects

11.1.1 Toxicological effects of the substance/mixture

| HAZARD CLASS | DATA FROM THE REGISTRATION DOCUMENTATION | EVALUATION |
|---------------------------------------|--|---|
| | DESCRIPTION AND RESULT | |
| Acute toxicity | there is currently no information available that would suggest that the substance has any of the given characteristics | it does not comply with the classification criteria |
| Causticity / irritant effect for skin | | |
| Serious damage / eye irritation | | |
| Sensibility | | |
| Mutagenicity in reproductive cells | | |
| Carcinogenicity | | |
| Toxic for reproduction | | |
| STOT – one-time exposure | | |
| STOT – repeated exposure | | |
| Inhalation hazard | | |

11.1.2 Information about probable exposure ways


The exposure can occur by inhalation or penetration of individual components through skin.

11.1.3 Symptoms and effects (acute, delayed and chronic after short-term as well as long-term exposure)

The product displaces oxygen. Lack of oxygen causes fatigue, sleepiness, faintness, dizziness, nausea, vomiting, loss of coordination, attention disorder, judgment errors, confusion. The victim does not have to be aware of the fact he/she is suffocating and can quickly fall unconscious and suffocate. Frostbites can occur upon contact with the cooled liquidized gas. Should frostbites occur, the frostbitten spots are pale, cold and insensitive; later on, they can redden, get swollen and the victim can feel tingling, burning and pain. The substance can cause hereditary genetic changes and it can also cause or support the origin of cancer in humans.

11.1.4 Interactive effects

No interactions occur if the product is used appropriately.

| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

SECTION 12: ENVIRONMENTAL INFORMATION

12.1 Toxicity

| | | | |
|--|------------------|--|--------|
| Water environment | fish | LC ₅₀ (96 h, fish) = 24.11 – 147.54 mg/l | (Q)SAR |
| | invertebrates | LC ₅₀ (96 h, invertebrates) = 7.02 – 69.43 mg/l | (Q)SAR |
| | seaweed | EC ₅₀ (96 h, seaweed) = 7.71 – 16.5 mg/l | (Q)SAR |
| Microbiological activity (waste water treatment plant) | activated sludge | In compliance with Column 2 of Appendix X, no long-term toxicity study related to sediment organisms needs to be conducted since the assessment of chemical safety pursuant to Appendix I did not indicate any need for further examination of the substance effects | |

Note: Significance of the LC₅₀, EL₅₀ and LL₅₀ abbreviations is included in Section 16.

12.2 Persistence and degradability

Since the product is a gas under normal pressure and temperature, the standard biodegradability tests are technically difficult to conduct and the results may not be relevant. Application of the (Q)SAR method resulted in a conclusion that the product is not easily biodegradable..

12.3 Bioaccumulation potential

Since the value of the partition coefficient n-octanol/water (log Kow) is smaller than 3 (1.09 – 2.8), no bioaccumulation of the product is expected.

12.4 Mobility in the soil

Because of the value of the partition coefficient n-octanol/water (log Kow < 3), no product sorption to a sediment or soil is expected.

12.5 PBT and vPvB assessment results

The substance is not PBT / vPvB.

12.6 Other negative impacts

Pursuant to Appendix 1 to Water Act No. 254/2001 Coll., the product is not considered hazardous and harmful substance.

It does not contain ozone-harming substances pursuant to the Montreal Protocol and its Copenhagen Amendment.

SECTION 13: REMOVAL INSTRUCTIONS

13.1 Waste management methods

When product residues need to be removed (for example, unused or leaked product), the valid European Union legislature, national legislature and valid local regulations have to be observed. Hand the waste over for removal to an appropriately qualified person with the appropriate authorization.

Recommended waste classification pursuant to Regulation No. 93/2016 Coll. (Waste Catalogue)

13.1.1 Catalogue number

The gases that are supplied in pressure bottles can not be included among waste and thus cannot be assigned a catalogue number.

13.1.2 Recommended waste removal method

Incinerate the product residues designated for removal using a suitable burner and protection against reverse flare of the flame.

13.1.3 Contaminated packaging liquidation methods

Irrelevant. If not packaged, it is transported by road tankers.

13.1.4 Measures for limiting exposure when handling waste

Never discharge the unusable product residues to the environment. Doing so could create an explosive mixture with the air. Do not flash the liquidized product that leaked during an extraordinary event or accident to the sewerage system. Proceed in compliance with the instructions stated in Section 6 (“Accidental leak measures”) and in Subsection 8.2 (“Limiting exposure”) and comply with all valid legal regulations related to the protection of people, the air and water.

NOTE: the stated information applies to the delivered, still unused material. Should an already used material become waste, it is up to the waste originator to assign a code to it pursuant to the given field and usage process and to determine its liquidation method.

SECTION 14: TRANSPORT INFORMATION**14.1 UN number**

1965

14.2 Official (UN) transport name

GASEOUS HYDROCARBONS, MIXTURE, LIQUIDIZED, J.N (mixture A – butane).

14.3 Transport hazard class/classes

2

14.4 Packaging group

14.5 Environmental hazard

14.6 Special safety measures for the users

None.

14.7 Mass transport pursuant to Appendix II to MARPOL73/78 and the IBC regulation

Irrelevant. The product is transported in railway tankers or road tankers.

14.8 Other information

Hazard number: 23

Classification code: 2F

Safety symbol: 2

**SECTION 15: REGULATION INFORMATION****15.1 Regulations related to safety, health and the environment / specific legal regulations related to the given substance or mixture****15.1.1 European Union**

EP and Council (EC) Directive No. 1907/2006 (REACH) as amended

REGISTRATION (HEAD II OF THE REACH DIRECTIVE):

the product has been fully registered as a substance

APPROVAL PROCESS (HEAD VII OF THE REACH DIRECTIVE)

the product is not listed on the list of substances included in Appendix XIV of Directive (EC) No. 1907/2006 REACH and the approval obligation thus does not apply to it

SAFETY DATA SHEET

pursuant to (EC) Directive No. 1907/2006 (REACH) as amended

revision: 01.02.2018 - issue 9

substitutes: 15.03.2017 - issue 8

original issue: 30.05.2001

LIMITATIONS (HEAD VIII OF THE REACH DIRECTIVE):

the product must not be placed on the market for being sold to the public, with the exception of cosmetic products, medicines and fuels defined in more detail in record 28 of Appendix XVII of Directive (EC) No. 1907/2006 REACH

EP and Council (EC) Directive No. 1272/2008 (CLP), as amended

the product has been classified in compliance with the above stated directive; the obligations related to packaging and package marking of hazardous chemical substances apply to the product only if it is put on the market in packages that are subject to the marking obligation pursuant to Directive CLP

EP and Council (EC) Directive No. 649/2012 on exporting and importing hazardous chemical substances, as amended

the product is not subject to any special export or import limitations

15.1.2 Czech Republic

Act No. 350/2011 Coll. on chemical substances and chemical mixtures, as amended

the CHLAP system notification obligation does not apply to the product

Act No. 258/2000 Coll., on Protection of Public Health, as amended

the obligation to prepare corresponding Handling Rules applies to the product

Act No. 254/2001 Coll., on Waters, as amended

Act No. 201/2012 Coll., on Air Protection, as amended

Act No. 185/2001 Coll., on Waste, as amended

Government Directive No. 361/2007 Coll., which determines occupational health protection conditions, as amended

Act No. 224/2015 Coll., on prevention of serious accidents caused by selected dangerous chemicals or chemical mixtures, as amended

15.2 Chemical safety assessment

The chemical safety assessment was conducted as a part of the substance registration process. The substance complies with the criteria for being classified as hazardous pursuant to Directive (EC) No. 1272/2008 CLP from the perspective of its physical and chemical characteristics. However, it does not comply with the criteria for being classified as hazardous for human health or the environment, it is not carcinogenic, mutagenic or toxic for reproduction (CMR). Moreover, it is not persistent, bioaccumulative and toxic (PBT) or highly persistent or highly bioaccumulative (vPvB).

No exposure scenario has been prepared as a part of the collective submission. The information related to safe handling of the substance has been incorporated in the safety data sheet.

SECTION 16: OTHER INFORMATION**Changes made during the revision**

29.01.2018: The safety data sheet was completely redone. The values have been verified in CSR (CONCAWE) and the entire safety data sheet has been transformed into the format used at Unipetrol RPA, s.r.o.

20.3.2020: ID number and addresses of refineries corrected in subsection 1.3.

23.4.2020: In subsection 9.1 changed the density parameter to the relative density parameter

16.12.2020: In subsection 2.1, the flammability classification was changed from "Flam. gas. 1" to "Flam. gas. 1A" (COMMISSION REGULATION (EU) 2019/521 of 27 March 2019)

31.3.2021: In subsection 1.3.1, changed the legal identity of the company and logo

Abbreviated words and abbreviations used in the text

| | |
|-----|--|
| ADR | European Agreement Concerning the International Carriage of Dangerous Goods by Road |
| CAS | Registration number assigned by the "Chemical Abstracts Service" of the "American Chemical Society" |
| CLP | Directive (EC) No. 1272/2008 on Classification, Labelling and Packaging of Chemical Substances and Mixtures, implemented into the European legislature by GHS (United Nations' Globally Harmonized System) |

BUTANE

valid issue: 31. 03. 2021 – version 9(3)

SAFETY DATA SHEET

pursuant to (EC) Directive No. 1907/2006 (REACH) as amended

revision: 01.02.2018 - issue 9

substitutes: 15.03.2017 - issue 8

original issue: 30.05.2001

| | |
|------------------------------------|---|
| CMR | Carcinogenic, mutagenic or toxic for reproduction |
| ČSN EN (ISO) | European standard incorporated into the system of the Czech technical standards |
| CSR | Chemical Safety Report |
| DMEL | Exposure level that corresponds to a low and possibly theoretical risk, which should be considered an acceptable risk (for threshold-less effects, i.e. no exposure level without an effect exists) |
| DNEL | Exposure level derived from toxicological data, during which no negative impacts on the health of people occur |
| DW | Data waiving |
| EC ₅₀ | Effect concentration that results in immobilization of 50% of individuals |
| ErC ₅₀ | Effect concentration that results in a 50% reduction of the seaweed growth speed |
| ECHA | European Chemicals Agency |
| EL ₅₀ | Effective loading speed that is necessary for a 50% immobilization |
| ES | Official number of the chemical substance in the European Union: EINECS from the European Inventory of Existing Commercial Substances, or ELINCS from the European List of Notified Chemical Substances, or NLP from the “No Longer Polymer“ list of substances |
| HSDB | Hazardous Substances Data Bank |
| IATA | International Air Transport Association |
| IBC | International regulation for the construction and equipment of boats that transport hazardous chemicals in bulk (“Intermediate Bulk Container”) |
| IC ₅₀ | Inhibition concentration that results in inhibition of 50% of individuals |
| ICAO | International Civil Aviation Organization |
| ICE | “Intervention in Chemical Transport Emergencies” program |
| IMDG | International Maritime Dangerous Goods |
| IMO | International Maritime Organisation |
| ISO | International Organization for Standardization |
| LC ₅₀ /LD ₅₀ | Lethal concentration/level that results in death of 50% of individuals |
| LL ₅₀ | Introduction speed of the tested substance that results in a 50% mortality rate |
| LOEC/LOEL | Lowest Observed Effect Concentration/Level |
| log K _{oc} | Logarithm for the partition coefficient of carbon and water in soil |
| log K _{ow} | Logarithm for the n-octanol/water partition coefficient |
| MARPOL | International convention on preventing pollution from boats |
| nf | Not feasible |
| NOAEC/NOAEL | Highest “no observed adverse effect concentration/level” |
| NOEC/NOEL | Highest “no observed effect concentration/level” |
| NPK-P | Highest acceptable chemical substance concentration in the air (substance concentration that employees can be exposed for a maximum of 15 minutes; nevertheless, this concentration must never be exceeded) |

SAFETY DATA SHEET

pursuant to (EC) Directive No. 1907/2006 (REACH) as amended

revision: 01.02.2018 - issue 9

substitutes: 15.03.2017 - issue 8

original issue: 30.05.2001

| | |
|-----------|--|
| OECD | Organization for Economic Co-operation and Development |
| PPA | Personal protective aids |
| UN | United Nations |
| (Q)SAR | Theoretical mathematic model, using of which can be used for determining the given substance characteristics based on the chemical substance structure and activity (“Quantitative Structure-Activity Relationship”) |
| PBT, vPvB | Persistent, bioaccumulative and toxic, highly persistent and highly bioaccumulative |
| PEL | Acceptable exposure limit of a given chemical substance in the air (exposure value that employees can be exposed to during the entire shift time (8 hours) even all their lives without endangering their health) |
| PNEC | Estimated concentration, during which hazardous effects in the given environmental component do not occur |
| REACH | Directive (EC) No. 1907/2006 on the Registration, Evaluation and Authorisation of Chemicals |
| RID | Regulation Concerning the International Carriage of Dangerous Goods by Rail |
| SDS | Safety Data Sheet |
| STOT | Specific Target Organ Toxicity |
| SU | Scientifically Unjustified |
| TRINS | Transportation information and accident system |
| UACRON | Chemical database (The University of Akron). |
| UN number | Four-digit substance or item identification number adopted from the UN ample regulations |
| UVCB | Substances of Unknown or Variable composition, Complex reaction products or Biological materials |

Data sources used for preparing safety data sheets

Appendixes I, IV, VI and VII to Directive (EC) No. 1272/2008 CLP, as amended

First aid principles upon exposure to chemical substances (doc. MUDr. Daniela Pelclová and col.)

Registration documentation of the substances pursuant to Directive (EC) No. 1907/2006 REACH


Decision of the European Agency for Chemical Substances ECHA No. SUB-D-2114160418-49-01/F on the registration pursuant to Directive (EC) No. 1907/2006 REACH

Training instructions

People who handle the product have to be acquainted with the related handling risks and with the requirements related to the protection of health and of the environment (see the corresponding stipulations of the Labor Code).

Access to information

Pursuant to Article 35 of Directive (EC) No. 1907/2006 REACH, all employers have to allow access to the information stated on the safety data sheets to all employees who use the given product or who are exposed to its effects while working, as well as to representatives of these employees.

| | | |
|---|---|---|
|  | <h1>BUTANE</h1> <p>SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended</p> | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

Limit worksite exposure values for the EU countries (see Point 8.1.1)

butane data (CAS number 68476-40-4)

| Name | Country | 8-hour limit [mg.m ⁻³] | short-term limit [mg.m ⁻³] |
|--------|---|---|---|
| Butane | European Union (Regulation 2000/39/ES) | no limit values for the given substances have been defined | |
| | Hungary | | |
| | Germany | | |
| | Poland | | |

8-hour limit: measured and calculated value in relation to an eight-hour reference period as a time-weighted average
 short-term limit: exposure limit value, which should not be exceeded and which corresponds to 15 minutes

Emergency phone numbers for the EU countries (see Section 1.4)

| National centers (NON STOP) | | TOXICOLOGY (first aid information) | ICE (SDS information) | |
|-----------------------------|---|---------------------------------------|--------------------------|--------------------------|
| Belgium |  | +32/70245245 | Belintra | +32/35699232 |
| Bulgaria |  | +359/29154378 | | |
| Croatia |  | +385/12348342 | | |
| Czech Republic |  | +420/224-919293; 915402 | TRINS | +420/47 6163111; 6163267 |
| Denmark |  | +45/82121212 | PIBF/RVK | +45/45906000 |
| Estonia |  | +372/6269379 | | |
| Finland |  | +358/9471977 | | |
| France |  | +33/(0)140054848 | Transaid | +33/298331010 |
| Ireland |  | +353/18092566 | | |
| Italy |  | +39/063054343 | SET | +39/0362512868 |
| Cyprus |  | +357/1401 | | |


BUTANE

SAFETY DATA SHEET
pursuant to (EC) Directive No. 1907/2006 (REACH) as amended

valid issue: 31. 03. 2021 – version 9(3)

revision: 01.02.2018 - issue 9
substitutes: 15.03.2017 - issue 8
original issue: 30.05.2001

| National centers (NON STOP) | | TOXICOLOGY (first aid information) | ICE (SDS information) | |
|-----------------------------|---|---------------------------------------|--------------------------|--------------------------|
| Lithuania |  | +370/52362052 | | |
| Latvia |  | +371/67042473 | | |
| Luxembourg |  | +32/70245245 (see Belgium) | | |
| Hungary |  | +36/80201199 | VERIK | +36/23552205 |
| Malta |  | +356/21450000 | | |
| Germany |  | +49/3019240 | TUIS | +49/6216043333 |
| Holland |  | +31/302748888 | TRC | +31/102468642 |
| Poland |  | +48/226196654 | SPOT | +48/243657032 |
| Portugal |  | +351/808250143 | | |
| Austria |  | +43/14064343 | TUIS | +49/6216043333 |
| Greece |  | +30/2107793777 | | |
| Romania |  | +40/212106282 | | |
| Slovakia |  | +421/254774166 | DINS | +421/317754112; 2771 |
| Slovenia |  | +386/41635500 | | |
| Spain |  | +34/915620420 | CERET | +34 915373 248; 238 |
| Sweden |  | +46/(0)104566700 | KEMIAKUTEN | +46/8337043; 170970 |
| Great Britain |  | 8448920111 | Chemsafe | +44/123 5836002; 5753363 |

| | | |
|---|--|---|
|  | BUTANE SAFETY DATA SHEET pursuant to (EC) Directive No. 1907/2006 (REACH) as amended | valid issue: 31. 03. 2021 – version 9(3) |
| | | revision: 01.02.2018 - issue 9 substitutes: 15.03.2017 - issue 8 original issue: 30.05.2001 |

Declaration: *The safety data sheet has been prepared in compliance with Directive (EC) No. 1907/2006 REACH. It contains information that is necessary for ensuring occupational health and safety and protection of the environment. This information has been stated in good spirits, it corresponds to the current level of knowledge and experience and complies with our valid legal regulations. The stated information does not replace the corresponding qualitative specification and it cannot be considered a guarantee of suitability and usability of this product for a particular application. It is the responsibility of the product user to assess accuracy of the information for particular applications, during which the product characteristics can be influenced by various factors. The consumer is responsible for complying with the valid regional legal regulations.*

APPENDIX TO THE SAFETY DATA SHEET

EXPOSURE SCENARIO PURSUANT TO ARTICLE 31 OF DIRECTIVE OF THE EUROPEAN PARLIAMENT AND COUNCIL (EC) NO. 1907/2006 (REACH)

Pursuant to the chemical safety report (CSR) submitted by the main registrant when registering the product, no exposure scenarios for any identified use of the product is necessary to prepare and state in the appendix to the safety data sheet.

Justification: Butane does not comply with the criteria for being classified as hazardous for human health or the environment, it is not carcinogenic, mutagenic or toxic for reproduction (CMR). Moreover, it is not persistent, bioaccumulative and toxic (PBT) or highly persistent or highly bioaccumulative (vPvB). It means that there is no risk, for which it would be necessary to determine suitable measures for its management. That is why the exposure does not have to be assessed and exposure scenarios prepared.