

BUTANE

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Product Name: BUTANE

1. Substance and Company Identification

1.1 Product identifier

Trade Name: **Butane**
Name according to 67/548/EEC: ES 270-681-9 Hydrocarbons, C3 - C4
Other Names: Liquefied petroleum gases; LPG
Marketing authorisation number: **01-2119486557-22-0008**

1.2 Relevant identified uses of the substance and uses advised against

Butane is used as an industrial heating fluid especially for household heating, mainly for mobile gas appliances.

Butane shall not be used for other purposes not specified by a relevant process documentation. The use of butane in a facility not approved for its use, is strictly prohibited.

1.3 Details of the Supplier of the Material Safety Data Sheet

1.3.1 Business Name and Identification No.

ČESKÁ RAFINĚRSKÁ, a.s.	Company ID: 62741772
Záluží 2	Tax ID: CZ62741772
Litvínov	www.ceskarafinerska.cz
Post Code 436 70	E-mail: info@crc.c

1.3.2 Place of Business

Litvínov Refinery	Kralupy Refinery
P. O. BOX 47	P. O. BOX 96
436 01 <u>Litvínov</u>	278 01 <u>Kralupy n/Vlt.</u>
Phone: +420 476 163 567	+420 315 718 500
Fax: +420 476 165 086	+420 315 718 640
www.crc.cz	info@crc.cz

1.3.3 Person in Charge of the Material Safety Data Sheet

Ing. Václav Pražák	Phone: +420 476 164 308
	E-mail: vaclav.prazak@crc.cz

1.4 Emergency Phone Number

1.4.1 TRINS (Transport Information and Emergency System)

It provides around-the-clock expert as well as practical assistance in handling emergency situations in connection with the transport and storage of hazardous chemical substances in the territory of the Czech Republic. The assistance is provided via fire brigade operational centres or via UNIPETROL RPA, s.r.o. Litvínov - the regional centre number 1 + the national coordination centre TRINS.

TRINS Contact: Mgr. Jaroslav Porteš; phone: +420 476 165 253, E-mail: jaroslav.portes@unipetrol.cz

1.4.2 Toxicological Information Centre

Address: Na Bojišti 1, 120 00 Prague 2
Telephone: +420 224 919 293, +420 224 915 402

Information on Health Risks Only - Acute poisoning of people and animals.

2. Hazard Identification

2.1 Substance Classification

2.1.1 According to Regulation (EC) No. 1272/2008

With respect to the buta-1,3-diene content not exceeding 0.1% (wt), butane is classified as an extremely flammable liquefied gas.

2.1.2 According to Council Directive 67/548/EEC

With respect to the buta-1,3-diene content not exceeding 0.1% (wt), butane is classified as an extremely flammable liquefied gas.

2.2 Label Elements

2.2.1 According to Regulation (EC) No. 1272/2008



Hazard Indication:	GHS02	GHS04
Signal Words:		Danger (Dgr)
Hazard Phrases (H-phrases):		H220; H280
Instruction for safe handling (P-phrases):		P102; P210; P377; P381; P410+P403

2.2.2 According to Council Directive 67/548/EEC



Hazard Indication:	F+
Specific Risk Level (R-phrases):	R12
Instructions for Safe Handling (S-phrases):	S2; S9; S16; S33

2.3 Other Hazards

2.3.1 PBT Information

According to the criteria in the Annex XIII to the Regulation no. 1907/2006, the product does not contain PBT or vPvB substances.

2.3.2 Other Hazardous Impacts

Gaseous LPGs are heavier than air and may accumulate in lower locations. It forms an explosive mixture with air. Higher concentrations of LPG vapours may have narcotic effects, cause headache, nausea, irritation of the eyes and respiratory tract.

LPG is kept under pressure in pressure vessels. When released into a space with atmospheric pressure, they vaporize by boiling at temperatures as low as -45°C , therefore there is a danger of frostbite in the case of contact of the liquefied gas and skin.

3. Composition / Information on Ingredients

3.1 Preparation Composition, Concentration Limits and Ingredients Classification

The product contains the following hazardous substances:

<i>Substance (name)</i>	<i>Content (% V/V)</i>	<i>Number CAS</i>	<i>Number ES.</i>	<i>Registration number</i>
Hydrocarbons C3 – C4; Refinery gas	> 99	68476-40-4	270-681-9	01-2119486557-22-0008

3.2 Chemical Specification

Butane is a mixture of liquefied hydrocarbons mainly with four carbon atoms in the molecule; butadiene content is lower than 0.1 Wt%.

4 First aid instructions

4.1 General instructions

When handling the product, it is necessary to observe all the requirements related to health and safety at work in compliance with the applicable legislation and this Material Safety Data Sheet.

In the case of risk of unconsciousness, transport in the recovery position.

4.2 Inhalation Hazards

Remove to fresh air, provide rest, prevent from walking. If breathing has stopped, apply mouth-to-mouth resuscitation. Seek medical attention promptly.

4.3 Contact with skin

Wash skin with water and soap, rinse, change clothes. In the case of frostbite, do not use any ointments or powders; cover the frostbite with sterile gauze and seek medical attention.

4.4 Contact with Eye

Flush eyes carefully with plenty of water and obtain medical attention.

4.5 Ingestion

Give water in case of ingestion. Do not induce vomiting. Seek medical attention promptly.

5 Fire Fighting Measures

5.1 Suitable Extinguishing Media

Foam, powder, carbon dioxide, water spray in the case of extensive fires

5.2 Unsuitable extinguishing media

Water jet (only suitable for cooling).

5.3 Special Hazards

Product vapours form an explosive mixture with air. It burns with a sooty flame in air. Carbon monoxide may be released. LPG vaporizes quickly and forms cool mists; the gas is heavier than air and may form explosive mixtures in lower locations or above water surfaces. When released into the space with atmospheric pressure, it vaporizes by boiling at temperatures as low as -45°C.

5.4 Special Protective Equipment for Fire Fighters

Fire-resistant clothing, self-contained breathing apparatus.

6 Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Prevent contamination of clothes and shoes, prevent skin and eye contact. To escape a contaminated area, use a respirator fitted with an organic vapour cartridge. Do not smoke. Remove all potential sources of ignition. Evacuate all persons who are not participating in salvage operations.

6.2 Environmental Precautions

Prevent further leakage. Guard the area. Do not drain into sewers. Prevent entry into soil and water.

6.3 Methods and Material for Containment and Cleaning Up

Depending on the situation, drain or absorb into a suitable porous material and dispose of in compliance with the applicable waste legislation.

6.4 Reference to Other Sections

See sections 8 and 13

7 Handling and Storage

7.1 Measures for Safe Handling

When handling hazardous chemical substances and chemical preparations, everybody is obliged to protect human health and the environment and observe the warning symbols of hazards, standard phrases marking the degree of risk and standard instructions for safe handling.

7.2 Conditions for Safe Storing of Substances and Mixtures, including Incompatible Substances and Mixtures

The ČSN 65 0201 standard applies to storage. The ČSN 38 6462 standard applies to design, construction, testing and operating of equipment with LPG. The premises must be equipped in accordance with ČSN 75 3415. Keep in a well-ventilated area away from ignition sources. Electrical equipment must conform to the respective regulations. Protect from electrostatic charges. Do not smoke.

7.3 Specific Final Use

Butane is used as an industrial heating fluid especially for household heating, mainly for mobile gas appliances, in laboratories or industry. It may only be used for such purposes and in such facility that is approved for its use. Never drain into sewers.

8 Exposure Controls / Personal Protection

8.1 Exposure Limits

8.1.1 According to Government Resolution no. 361/2007 Coll.

		butane
PEL	mg/m ³	2 350
NPK-P	mg/m ³	4 700

8.1.2 DNEL according to CSR

N/A.

8.2 Exposure Controls

General safety and sanitary precautions: never eat, drink or smoke when working with LPG. Before meals and drinks and after work wash the skin with warm water and soap and apply a suitable moisturizing cream.

8.2.1 Employee Exposure Controls

<i>Respiratory protection:</i>	Respirator with cartridge against organic gases and vapours of organic substances.
<i>Eye protection:</i>	Chemical type goggles.
<i>Hand protection:</i>	Safety gloves.
<i>Skin protection:</i>	Protective clothing

8.2.2 Environmental Exposure Controls

See also Clauses 2.1, 6.2 and 16.3.

9 Physical and Chemical Properties

9.1 Basic Physical and Chemical Properties

<i>Physical state (at 20 °C):</i>	liquid
<i>Colour:</i>	colourless
<i>Odour:</i>	characteristic hydrocarbon odour
<i>Density at 15°C:</i>	530 to 580 kg/m ³
<i>Boiling point range:</i>	-42 to 0°C
<i>Relative vapour density:</i>	approx. 2 (air =1)
<i>Solubility in water:</i>	negligible
<i>Vapour pressure/20°C:</i>	max. 0.5 MPa
<i>Flash point:</i>	< -40°C
<i>Concentration explosion limits:</i>	lower: 1.5% (V/V) upper: 11.0 % (V/V)
<i>Maximum Experimental Safe Gap</i>	> 0.9 mm

9.2 Additional information

<i>Pour point:</i>	< -40°C
<i>Ignition point:</i>	< -40°C
<i>Self-ignition temperature:</i>	approx. 430 to 465 ° C
<i>Critical pressure:</i>	approx. 3.7 MPa
<i>Calorific value:</i>	approx. 50 MJ/kg

10 Stability and Reactivity

10.1 Reactivity

The product is stable at normal use conditions.

10.2 Chemical stability

The product is stable at normal use conditions.

10.3 Possibility of Hazardous Chemical Reactions

When burning with limited air carbon monoxide can be released.

10.4 Conditions to Avoid

Concentrations within explosion limits, presence of ignition sources, contact with naked flames.

10.5 Incompatible Materials

Oxidizing agents.

10.6 Hazardous Decomposition Products

None under normal conditions; incomplete burning can produce carbon monoxide and soot.

11 Toxicological Information

11.1 Acute toxicity

N/A.

11.2 Skin Causticity / Irritation

N/A.

11.3 Serious Damage / Irritation to Eyes

N/A.

11.4 Respiratory / Skin Sensitisation

N/A.

11.5 Mutagenic Impacts in Elementary Cells

N/A.

11.6 Carcinogenicity:

N/A.

11.7 Reproductive Toxicity

N/A.

11.8 STOT - Single Exposure

N/A.

11.9 STOT - Repeated Exposure

N/A.

11.10 Inhalation Hazards

N/A.

12 Ecological Information

12.1 Toxicity

N/A.

12.2 Persistency and Degradability

N/A.

12.3 Bio-Accumulative Potential

N/A.

12.4 Mobility in Soil:

N/A.

12.5 PBT Assessment Results

N/A.

12.6 Other Adverse Effects

N/A.

13 Disposal Considerations

13.1 Legal Regulations on Wastes

In accordance with Act No. 185/2001 Coll., on wastes, as amended, including related regulations and provisions, the product is classified as follows: **not applicable**.

13.2 Substance Disposal

Wastes and unused residues are disposed of in compliance with the applicable legislation on wastes, usually by incineration in the reserved incinerators. Dumping is inappropriate.

13.3 Contaminated Container Disposal

LPGs are supplied in road and railway tank cars. Decontamination and disposal of these containers follows the applicable ADR/RID regulations.

14 Transportation

The product is usually transported using railway and road tank cars.

Nomenclature and labelling in accordance with the European Agreement on Dangerous Goods RID/ADR as amended:

GASEOUS HYDROCARBONS,	Hazard ID No.:	23	Classification code:	2F
LIQUEFIED MIXTURE, N.O.S.	UN no.:	1965	Class:	2
(A – butane mixture)			Packing group:	---



15 Regulatory Information

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

- Act No. 258/2000 Coll., on public health protection, as amended, including the related regulations and provisions
- Act No. 262/2006 Coll., the Labour Code, as amended, including the related regulations and provisions
- Government Regulation No. 361/2007 Coll., on Occupational Safety, as amended, including the related regulations and provisions

15.2 Chemical Safety Assessment

Has been performed.

15.3 Other Regulatory Information

15.3.1 Act No. 86/2002 Coll., on air conservation

The product is subject to the respective provisions of Act No. 86/2002 Coll., on air conservation, as amended, including the related regulations and provisions. Pursuant to Section 2 Para n) of the aforesaid Act, the product is a volatile organic substance.

15.3.2 ČSN 65 0201 Flammable Liquids – Plants and Storage Facilities

Under normal conditions, it is the gaseous substance that is not subject to this standard. In the liquefied state, the product is classified as Class I flammability product in accordance with ČSN 65 0201.

15.3.3 ČSN 33 0371 Non-explosive Electrical Equipment – Explosive Mixtures – Classification and Test Methods

In accordance with ČSN 33 0371, the product is classified in the T1 temperature class and IIA explosion group.

16 Other Information Applying to the Dangerous Chemical Substance or Preparation

16.1 Information on Changes

All changes in this safety data sheet were made in accordance with the new data on substance hazardousness gained during its registration process and in accordance with the requirements of the regulation no. 1907/2006/EC and the regulation no. 1272/2008.

16.2 Used literature

- Regulation (EC) No. 1907/2006 of the European Parliament and the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended, including related rules and regulations
- Regulation of the European Parliament and of the Council (EC) no. 1272/2008 dated 16 December 2008 on classification, labelling and packaging of substances and mixture, as amended, including related rules and regulations
- Act No. 86/2002 Coll., on air conservation, as amended, including the related regulations and provisions
- Act No. 111/1994 Coll., on road transport, as amended, including the related regulations and provisions (ADR)
- Act No. 185/2001 Coll., on wastes, as amended, including the related regulations and provisions
- Act No. 254/2001 Coll., Water Act, as amended, including the related regulations and provisions
- Act No. 258/2000 Coll., on public health protection, as amended, including the related regulations and provisions
- Act No. 262/2006 Coll., the Labour Code, as amended, including the related regulations and provisions
- Act No. 266/1994 Coll., on railways, as amended, including the related regulations and provisions (RID)
- Act No. 356/2003 Coll., on chemical substances and chemical preparations, as amended, including the related regulations and provisions
- Government Regulation No. 361/2007 Coll., on Occupational Safety, as amended, including the related regulations and provisions
- ČSN 33 0371 Non-explosive Electrical Equipment – Explosive Mixtures – Classification and Test Methods
- ČSN 38 6462 Gas Supply – LPG – Pressure Stations, Distribution and Use
- ČSN 65 0201 Flammable Liquids – Plants and Storage Facilities
- ČSN 75 3415 Protection of Water from Petroleum Products – Facilities for Petroleum Products Handling and Storage
- ČSN 65 6481 Liquefied petroleum gases – Fuel gases – Propane, butane and their mixtures – Technical requirements and test methods

16.3 List of Used R-Phrases and H-Phrases, S-Phrases and P-Phrases

16.3.1 Standards Phrases for Specific Degree of Risk (R-Phrases)

R12 Extremely flammable

16.3.2 Hazard phrases (H-phrases):

H220 Extremely flammable gas

H280 Contains gas under pressure; may explode if heated

16.3.3 Standard Instructions for Safe Handling (S-Phrases)

S2 Keep out of the reach of children

S9 Keep container in a well-ventilated place

S16 Keep away from sources of ignition - No smoking

S33 Take precautionary measures against static discharges

16.3.4 Instructions for Safe Handling (P-phrases):

P102 Keep out of the reach of children

P210 Keep away from open flames and hot surfaces. – No smoking

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely

P381 Remove all sources of ignition if you can do it without risk

P410+P403 Protect from sunlight. Store in a well-ventilated place

16.4 Training Instructions

Trainings are carried out in accordance with the requirements of the Labour Code and Act No. 258/2000 Coll.

16.5 Other Information

The information contained in this Material Safety Data Sheet applies to the specified product only and is based on our current knowledge and experience and need not be comprehensive. The user is responsible for the proper handling of the product in accordance with the applicable legislation.