

SAFETY DATA SHEET

in accordance with Regulation (EC) No. 1907/2006 (REACH), as amended and Commission Regulation (EU) No 2020/878

revision: 09/08/2022 – Edition 10
replaces: 01/06/2018 – Edition 9
original edition: 30/05/2001**SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1. Product Identifier**

- Commercial name: Propane-butane
- Chemical name: Hydrocarbons, C3–C4
- Other names: Liquefied petroleum gases, LPG
- REACH registration number: 01-2119486557-22-0008
- Index number: 649-199-00-1
- CAS number: 68476-40-4
- EC code: 270-681-9
- UFI code: not relevant

1.2. Relevant Identified Uses of the Substance or Mixture and Uses Advised Against**1.2.1. Identified uses**

An intermediate for the production of chemicals, as a heating medium, primarily for heating purposes in households, especially in portable gas appliances.

1.2.2. Uses advised against

No uses advised against have been determined at the registration; at the same time, the product may not be used in any way other than that specified in Clause 1.2.1 or Subsection 7.3. It is strictly forbidden to use propane-butane in the equipment that is not approved for its use.

1.3. Details of the Supplier of the Safety Data Sheet**1.3.1. Commercial Name and Identification Number**

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

Identification No.: 275 97 075

☎: +420 476 161 111

Fax: +420 476 619 553

unipetrolrpa@orlenunipetrol.czwww.orlenunipetrolrpa.cz**1.3.2. Place of Business****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 Professionally Qualified Person Responsible for the Safety Data Sheet:reach.unirpa@orlenunipetrol.cz**1.4. Emergency Telephone Number**

- CONTROLroom of ORLEN Unipetrol RPA s.r.o. ☎:+420 476 163 111 (NON STOP)
- Toxicological information centre (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
- Transport Information and Emergency System (TIES) ☎:+420 476 163 111 (NON STOP)

Note: Emergency telephone numbers for EU countries are listed in Section 16

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SECTION 2. IDENTIFICATION OF HAZARDOUSNESS

2.1. Classification of the Substance or Mixture

The product is classified as hazardous in the sense of Regulation (EC) No. 1272/2008 CLP:

FLAMMABLE GAS, CATEGORY 1A; H220

Flam. gas. 1A, H220

GAS UNDER PRESSURE

Liquefied gas, H280

Notice: The full text of the H-statements marked with a code is given in Section 2.2.

2.2. Label Elements

product identifiers	<p>PROPANE-BUTANE HYDROCARBONS C3–C4, LIQUEFIED PETROLEUM GASES, LPG index number: 649-199-00-1</p>	
hazard warning symbol		
signal word	DANGER	
H-statements (standard hazard statements)	H220 H280	Extremely flammable gas Contains gas under pressure: may explode if heated
P-precautions (precautions for safe handling)	P102 P210 P377 P381 P410+P403	Keep out of reach of children Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Leaking gas fire: Do not extinguish, unless leak can be stopped safely In case of leakage, eliminate all ignition sources. Protect from sunlight. Store in a well-ventilated place
additional Information	For professional users only	
<p>ORLEN Unipetrol RPA s.r.o. Záluží 1, 436 70 Litvínov, Czech Republic ☎: +420 476 161 111, +420 476 163 111</p>		

2.3. Other Hazards

Information on whether a substance or mixture meets the criteria for PBT or vPvB is provided in Subsection 12.5. Propane-butane is heavier than air in the gaseous state and may accumulate in low-lying places. They form an explosive mixture with air. Vapours of the propane-butane may have a narcotic effect at higher concentrations, cause headaches, nausea, eye irritation and respiratory tract irritation. The product may accumulate static electricity.

Propane-butane is stored under pressure in cylinders. When discharged into a space with atmospheric pressure, evaporation by boiling occurs at temperatures of up to -45 °C, therefore there is a risk of frostbite when the liquefied gas comes into contact with the skin.

The released gas displaces oxygen and there is a risk of suffocation. This risk of explosion and suffocation particularly threatens in the areas below the ground level or in confined spaces.

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The substance is not included in the Candidate List according to Article 59 (1) of the REACH Regulation due to endocrine disrupting properties.

The meaning of abbreviations used in this section is given in Section 16.

SECTION 3. COMPOSITION/INFORMATION ON COMPONENTS**3.1. Substances**

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

NOTE: The substance does not contain nanoform

3.2. Mixtures

It does not apply, the product is a substance.

SECTION 4. FIRST AID INSTRUCTIONS**4.1. Description of first aid measures****4.1.1. General instructions**

When providing first aid, take care of your own safety.

Call medical first aid (155 CZ, 112 EU) and follow its instructions until they arrive. Ensure the activity of vital functions. If the affected person is not breathing normally even after the head has been tightened, perform resuscitation by compressing the chest to a depth of about 5cm at a frequency of 100 – 120 per minute. If you are trained in artificial respiration, carry out 2 breaths after every 30 chest compressions. Do not stop the heart massage until the rescue service arrives.

If the person is unconscious or if he/she has spasms, do not administer anything in his/her mouth, just place him/her in a stabilised position.

4.1.2. If you inhale

With respect to own safety, transport the affected person to fresh air, do not let him/her get chilled and seek medical attention.

4.1.3. If in contact with skin

If frostbites occur, do not remove frozen clothing. Do not rub frostbitten places, just cover with a sterile bandage or clean cloth. Secure medical attention.

4.1.4. If eyes are affected

If the affected person wears contact lenses remove them. Seek medical attention immediately if eyes come into contact with liquefied gas, as there is a risk of serious damage to the eyes if they freeze.

4.1.5. After ingestion

Ingestion is not a likely method of exposure. Only contact with liquefied gas can cause the frostbites of the mouth and lips. In this case, rinse your mouth with lukewarm water and seek medical attention immediately.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Depending on the size of the exposure, the substance may cause headaches, nausea, dizziness, difficulty in breathing, pulmonary arrest, convulsions and unconsciousness. In case of ingestion, spontaneous vomiting may occur, with the risk of lung penetration (aspiration) and the occurrence of pulmonary oedema (chemical

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pneumonia), which may cause death. Direct eye or skin contact may cause their transient irritation. Longer skin exposure to the substance may cause skin degreasing.

4.3. Instruction of Any Immediate Medical Attention and Special Treatment Needed

In case of eye contact, ingestion and/or penetrating the respiratory tract, immediate medical attention is required.

SECTION 5. MEASURES FOR EXTINGUISHING FIRE**5.1. Extinguishing Agents**

Appropriate extinguishing agents: heavy foam, water spray or water mist.

Inappropriate extinguishing agents: direct water jet.

Extinguishing small fires: powder or snow extinguisher (CO₂), dry sand or foam.

5.2. Special Hazards Arising from the Substance or Mixture

Do not extinguish fire until the source of leakage is removed. If this is not possible, allow the fire to burn out and only cool the containers around the fire with water. Otherwise there is a risk of a violent reaction or explosion. Vapours may pervade considerable distances and, in contact with an ignition source, they may cause flashback, resulting in subsequent explosion and/or fire. Gas is heavier than air and accumulates at ground level and in confined spaces where there is a risk of explosion and suffocation. Tanks with the substance can explode under the influence of heat. Combustion may produce toxic fumes containing carbon monoxide, carbon dioxide and unburned hydrocarbons.

5.3. Advice for Fire Fighters

Minimise the penetration of the extinguishing agent contaminated by the substance into the sewer system, surface and ground water and into soil. There is a risk of explosion and subsequent burning if leaking into the sewerage system.

Spray tanks with the substance with water because they may explode due to heat.

Do not use foam and water at the same time because water decomposes foam.

Protective equipment for fire fighters: complete protective suit and insulating breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES**6.1. Personal Precautions, Protective Equipment and Emergency Procedures**

Close the place of the accident and prevent access to the threatened area. Stay on the windward side. If this product leaks, there is a risk of fire and therefore remove all possible sources of ignition, do not smoke and do not handle open fire. If possible, ensure adequate ventilation of closed space. Avoid contact with the substance and its vapours. When disposing of the consequences of an emergency/accident, use all recommended personal protective equipment (see Subsection 8.2). In case of major accidents, evacuate persons from the entire endangered area. In the premises below the level of the ground and in confined spaces (including the sewerage system) there is a risk of suffocation and substance vapours explosion in the event of initiation.

6.2. Environmental Precautions

Prevent further leakage of the substance and enclose the place of leak. If liquefied gas leaks, prevent it from entering the sewerage system.

6.3. Methods and Material for Containment and Cleaning Up

When liquefied gas flows out, it evaporates rapidly without the possibility of influencing it effectively. Use a water shower to reduce air vapour. Increase the intensity of ventilation at the point of leakage, especially in confined spaces, and monitor gas concentration. In cold weather, where low temperatures may keep the product in a liquid state, safely pump the leaked substance into closed containers before subsequent processing.

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6.4. Reference to Other Sections

For recommended personal protective equipment, see Subsection 8.2 ("Exposure limitation"). Refer to Section 13 ("Removal instructions") for the recommended waste disposal method.

SECTION 7. HANDLING AND STORING

7.1. Precautions for Safe Handling

General safety and sanitary measures: Use only in well-ventilated spaces where there are no sources of ignition, take precautions against the possible occurrence of static electricity discharge. Do not use compressed air for filling, emptying or other handling. Remember that even empty containers may contain residual flammable vapours, so do not perform activities such as welding, cutting, grinding, etc. in their vicinity. Always use respiratory protection when entering confined unventilated areas.

Observe the rules of personal hygiene. Immediately take off the contaminated parts of clothing. During work refrain from eating, drinking and smoking! After work and before eating or drinking, thoroughly wash your hands and uncovered parts of the body with water and soap, or treat with a suitable repairing cream. Do not place contaminated clothing, footwear and protective equipment in the eating room.

7.2. Conditions for Safe Storage of Substances and Mixtures, Including Any Incompatible Substances and Mixtures

Storage containers must be sealed and properly labelled and grounded. Do not store near incompatible materials such as oxidising agents. Store in a well-ventilated place away from sources of ignition. Electrical equipment must be designed in accordance with the relevant regulations. Protect against static electricity. Restriction of smoking

7.3. Specific end use(s)

Propane-butane is used as a heating medium mainly for heating purposes in households, laboratories or industry. It is also used for deasphalting and selective refining of mineral oils. It may only be used for those purposes and in the equipment that is approved for its use. Never pour out into a sewerage system.

SECTION 8. LIMITING EXPOSITION / PERSONAL PROTECTION EQUIPMENT

8.1. Control Parameters

8.1.1. Exposure limit values at the workplace

The following permissible exposure limits (PELs) and maximum allowable concentrations (NPV-P) of chemicals in the air at workplaces within the Czech Republic are set by Government Regulation No. 361/2007 Coll., laying down the conditions for occupational safety, as amended:

Name	CAS code	PEL [mg.m ⁻³]	NPK-P [mg.m ⁻³]	Note
Propane-butane	68476-40-4	1800	4000	

Note 1: The explanation of the meaning of the PEL and NPK-P abbreviations is in Section 16.

Note 2: Exposure limit values at workplaces for EU countries are given in Section 16.

8.1.2. DNEL/DMEL values

DNEL values used for evaluation:

DNEL (dermal route of exposure): 2.21 mg/kg/day

DNEL (inhalation route of exposure): 23.4 mg/kg/day or 0.35 mg/m³

Note: The explanation of the meaning of the DNEL / DMEL abbreviations is provided in Section 16.

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8.1.3. PNEC values

Not specified

In accordance with Paragraph 2 of Annex IX to REACH Regulation, it is not necessary to perform a bioaccumulation study in the aquatic environment. The substance has a low potential for bioaccumulation as this category has a distribution coefficient of log octanol less than 3, does not present a risk of secondary poisoning and, in addition, this substance is not classified as toxic.

Note: The explanation of the meaning of the DNEL/DMEL abbreviations is provided in Section 16.

8.2. Exposure Limitations

8.2.1. Technical protective measures to limit exposure of persons and the environment

Employees must have personal protective equipment appropriate to the nature of the activities performed. Appropriate respiratory protection must also be provided where it is not possible to ensure by technical means that exposure to the respiratory system does not endanger human health or life. Continuous use of this equipment for permanent work requires safety breaks if the nature of the PPE requires so. All PPE must be continuously kept in a usable condition and replaced immediately if damaged or contaminated.

8.2.2. Individual protection measures

In case of risk of increased exposure during handling the product or an increase in exposure, e.g. due to an accident or an emergency, workers must have at their disposal personal protective equipment (PPE) for the protection of the respiratory tract, eyes, hands and skin, which correspond to the nature of the activities carried out. Appropriate respiratory protection must also be provided where it is not possible to ensure compliance with the occupational exposure limits by technical means or to ensure that exposure to the respiratory system does not endanger human health. Continuous use of this equipment for permanent work requires safety breaks if the nature of the PPE requires so. All PPE must be continuously kept in a usable condition and replaced immediately if damaged or contaminated.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

(specific type of protective equipment must be chosen in accordance with the type of activity being carried out and the quantity and concentration of the hazardous substance/mixture at the workplace)

- **respiratory protection:** self-contained breathing apparatus when entering a room whose atmosphere is not demonstrably safe;
- **eye/face protection:** goggles / face shield complying with EN 166 when handling the device under pressure;
- **hand protection:** protective gloves protecting against cold and possible frostbites when handling the liquefied product;
the following materials protect against the chemical action of the substance:

	<i>gloves material</i>	<i>layer thickness</i>	<i>penetration time</i>
ordinary working activity (possibility of splashes)	natural latex	1mm	10 minutes
leakage/crash disposal	viton	0.7 mm	480 minutes

- **protection of other parts of the body:** antistatic non-flammable protective clothing and antistatic footwear
- **thermal hazard:** is not relevant at the designated way of use.

8.2.3. Limitation of the environment exposure

Avoid product spillage to areas where its accumulation could be dangerous.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

The information is taken from the registration documentation unless otherwise stated.

attribute	unit	value	source/method	note
state of matter		gas	CSR	at 20°C
colour		colorless	CSR	
odour		odorless		
melting point / freezing point	[°C]	-188 - -138	CSR	
initial boiling point / boiling point range	[°C]	-161 - -0,5	CSR	influence of variable composition of UVCB
flammability		extremely flammable	CSR	
upper explosive limit	%	15	CSR	
lower explosive limit	%	1,8	CSR	
flash point	[°C]	-104 - -60	CSR	
spontaneous ignition temperature	[°C]	287-537	CSR	
decomposition temperature		does not decompose at normal operating temperatures		CSR does not state
pH		not relevant (non-polar substances)		CSR does not state
viscosity kinematic	[mm ² .s ⁻¹]	data not available		
solubility in water	[mg.l ⁻¹]	24,4-60,4	CSR	
relative density	water=1	0,423-0,589	CSR	at 15°C
distributive coefficient: n-octanol/water	[log Koc]	1,09-2,8	CSR	

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attribute	unit	value	source/method	note
vapour pressure	[Pa]	it is not necessary to perform a vapor pressure study as this substance has a boiling point lower than 30 ° C	CSR	RVP
relative vapour density	air=1	1,9	ELGAS	CSR does not state
particle characteristics		-		not applicable - it is a gas

9.2. Additional Information

9.2.1. Information concerning physical hazard classes

Extremely flammable gas

9.2.2. Other security features

They are not available.

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

When burning in the absence of air, carbon monoxide may be released.

10.4. Conditions to Avoid

Creation of concentrations within limits of explosiveness, presence of ignition sources, contact with open fire.

10.5. Incompatible Materials

Oxidisers.

10.6. Hazardous Decomposition Products

None under normal conditions, carbon monoxide and carbon black may be produced in the event of combustion in the absence of air.

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SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on 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 to demonstrate that the substance has any of these properties	does not meet the criteria for classification
Causticity / skin irritation		
Serious eye damage/irritation		
Sensitisation		
Germ cell mutagenicity		
Carcinogenicity		
Toxicity for reproduction		
STOT – one-time exposure		
STOT – repeated exposure		
inspiration hazard		

11.1.2. Information on likely exposure routes

Exposure may occur by inhalation as well as by penetration of the product components through skin.

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

The product displaces oxygen. Lack of oxygen causes fatigue, sleepiness, listlessness, dizziness, nausea, vomiting, loss of coordination, impaired attention, errors of reasoning, confusion. The affected person may not even realise that he/she is suffocating, without warning there may be rapid unconsciousness and suffocation. Frostbites may occur in contact with chilled liquefied gas. In the case of frostbites, the frostbitten places are pale, cold and insensitive, later it may turn red, swell, tingling, burning and pain will occur. The substance can cause hereditary genetic changes and cause or promote human cancer.

11.1.4. Interactive effects

There are no interactions with the designated use.

11.2. Information on other hazards

The Substance is not included in the Candidate List under Article 59 (1) of the REACH (due to endocrine disrupting properties or for any other reason).

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity

aqueous environment	fish	LC ₅₀ (96h, fish) = 24.11 – 147.54 mg/l	(Q)SAR
	invertebrates	EL ₅₀ (96h, invertebrates) = 69.43 mg/l	(Q)SAR
	algae	EL ₅₀ (96h, algae) = 16.5 mg/l	(Q)SAR
Microbiological activity (WWTP)	activated sludge	In accordance with column 2 of Annex X, a long-term toxicity study on sediment organisms need not be performed as	

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		the chemical safety assessment according to Annex I did not indicate the need to investigate further the effects of the substance.
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Note: The explanation of the meaning of the LC₅₀, EL₅₀ and LL₅₀ abbreviations is provided in Section 16.

12.2. Persistence and Decomposability

With respect to the fact that the product is a gas at normal pressure and temperature, standard biodegradability tests are technically difficult to perform and the results may not be relevant. Using the (Q)SAR method, it was concluded that the product is not readily biodegradable.

12.3. Bioaccumulation Potential

Due to the fact that the value of the distributive coefficient n-octanol/water (log Kow) is less than 3 – 1.09 (1.09–2.8), a strong bio-accumulation of the product is not expected.

12.4. Mobility in Soil

Due to the low value of the distributive coefficient n-octanol/water (log Kow < 3), sorption of the product to sediment or soil is not expected.

12.5. Results of PBT and vPvB Assessment

The substance is not PBT/vPvB.

12.6. Endocrine disrupting properties

The Substance is not included in the Candidate List under Article 59 (1) of the REACH due to endocrine disrupting properties.

12.7. Other Adverse Effects

The product is not for the purposes of Water Act No. 254/2001 Coll. considered a hazardous harmful substance. It does not contain ozone-depleting substances under the Montreal Protocol and its Copenhagen Amendment.

SECTION 13. INSTRUCTIONS FOR REMOVAL

13.1. Waste Management Methods

If the rest of the product (e.g. unused or leaked product) has to be removed, the applicable European Union legislation and national and local regulations need to be observed. Hand over the waste for disposal to a professionally qualified person with the appropriate authorisation.

Recommended waste classification pursuant Decision 2000/532 / EC on the list of wastes covered by Directive of the European Parliament and of the Council (Waste Catalogue)

13.1.1. Catalogue number

Gases that are not supplied in cylinders may not be classified as waste and be assigned a number as per the catalogue.

13.1.2. Recommended method of waste disposal

Burn the rest of the product to be removed with a suitable burner against backfiring.

13.1.3. Methods of disposal of contaminated containers

Not relevant The product is not packaged, it is transported by tank trucks.

13.1.4. Measures to limit exposure in waste management

Never discharge any unused product into an environment where there is a risk of creation of explosive mixtures with air. In the case of emergency or accident, do not flush liquefied product spilled into the sewerage system. Follow the instructions in Section 6 (“Accidental Release Measures”) and Subsection 8.2 (“Exposure Reduction”) and comply with all applicable statutory provisions for the protection of persons, air and water.

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NOTICE: the stated information relates to the supplied, already unused material. In the event when the material already used becomes a waste, it is on the waste producer to assign it a code in accordance with the industry and the process of use and to determine the method of its disposal.

SECTION 14. TRANSPORT INFORMATION**14.1. Number UN or ID-number**

1965

14.2. Official (UN) Designation for Transport

GASEOUS HYDROCARBONS, MIXTURE, LIQUEFIED, J.N (mixture B – propane-butane).

14.3. Class/Classes of Transport Hazard

2

14.4. Package Group

14.5. Environmental Hazards

14.6. Special Precautions for the User

None.

14.7. Maritime bulk transport according to IMO instruments

N/A The product is transported in railway and road tank wagons.

14.8. Additional Information

Hazard number 23

Classification code: 2F

Safety mark: 2

**SECTION 15. REGULATORY INFORMATION****15.1. Regulations Relating to the Safety, Health and Environment / Specific Legislation for the Substance or Mixture**

15.1.1. European Union

Regulation of the European Parliament and of the Council (EC) No. 1907/2006 (REACH), as amended
REGISTRATION (CHAPTER II OF THE REACH REGULATION):

the product has been fully registered as a substance

AUTHORISATION (CHAPTER VII OF THE REACH REGULATION)

the product is not on the list of substances in Annex XIV of Regulation (EC) No. 1907/2006 REACH and, therefore, it is not subject to the authorisation obligation

RESTRICTIONS (CHAPTER VIII OF THE REACH REGULATION):

the product shall not be placed on the market for sale to the public, with the exception of cosmetic products, medicines and fuels as further specified in Record No. 28 of Annex XVII to Regulation (EC) No. 1907/2006 REACH

Regulation (EC) No. 1272/2008 (CLP) of the European Parliament and the Council, as amended

the product has been classified in accordance with the stated regulation; the requirements connected with the packaging and labelling of dangerous chemicals only apply to the product if it is marketed in packagings liable to the duty of their identification in accordance with the CLP Regulation

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Regulation (EC) No. 649/2012 of the European Parliament and the Council, on the Export and Import of Hazardous Chemicals, as amended

the product is not subject to special export and import restrictions

Decision 2000/532 / EC on the list of wastes covered by Directive of the European Parliament and of the Council

15.1.2. Czech Republic

Act No. 350/2011 Coll. on Chemicals and Chemical Mixtures, as amended

the product is not subject to the obligation of CHLAP notification

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

the product is subject to the obligation to draw up Management Guidelines

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

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

Act No. 541/2020 Coll., on Waste, as amended

Government Regulation No. 361/2007 Coll., which stipulates conditions of health protection at work, as amended

Act No. 224/2015 Coll., on Prevention of Major Accidents Caused by Selected Hazardous Chemicals or Mixtures, as amended

15.2. Chemical Safety Assessment

Chemical safety assessment was carried out when the substance was registered. The substance meets the criteria for classification as dangerous in accordance with Regulation (EC) No 1272/2008 CLP in terms of physicochemical properties, but does not meet the criteria for classification as a dangerous substance to human health or the environment, is not carcinogenic, mutagenic or toxic to reproduction (CMR), nor is it persistent, bioaccumulative and toxic (PBT) or highly persistent and highly bioaccumulative (vPvB).

No exposure scenario was developed in the joint submission. Information on safe handling the substance is incorporated into the body of the safety data sheet.

SECTION 16. ADDITIONAL INFORMATION**Changes Made During the Revision**

Changes in this version of the safety data sheet are indicated by a black and red vertical line to the left of the text.

24.4.2023 In section 9, the term “ignition point” was replaced by the term “flash point”.

Acronyms and abbreviations used in the text

ADR	European agreement on international road transport of hazardous items
CAS	The registration number assigned to the substance by the service “Chemical Abstracts Service” of “American Chemical Society”
CLP	Regulation (EC) No. 1272/2008 on Classification, Labelling and Packaging of Chemicals and Mixtures implementing the Globally Harmonised System of Classification and Labelling of Chemicals of the United Nations – GHS (“United Nations’ Globally Harmonised System’) in the European legislation
CMR	Carcinogenic, mutagenic or toxic for reproduction
ČSN EN (ISO)	European Standard incorporated into Czech Technical Standards
CSR	Chemical Safety Report
DMEL	A degree of exposure corresponding to a low and possibly theoretical risk, which should be considered as an acceptable risk (for non-threshold effects, i.e. there is no exposure level without effect)

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DNEL	A degree of exposure derived from toxicological details at which no adverse effects on human health occur
DW	Data waiving
EC ₅₀	Effect concentration, which causes immobilisation of 50% of individuals
ErC ₅₀	Effect concentration, which causes a 50% decrease in the growth rate of algae
ECHA	European Chemicals Agency
EL ₅₀	Effective load speed required to immobilise 50%
ES	The official number of the chemical in the European Union: EINECS from the European Inventory of Existing Commercial Substances (EINECS) or ELINCS from the European List of Notified Chemical Substances or the NLP from the List of Substances still not considered polymers ("No longer polymer")
HSDB	Hazardous Substances Data Bank
IATA	International Air Transport Association
IBC	International Regulation for the construction and equipment of ship transferring in bulk hazardous chemicals ("Intermediate Bulk Container")
IC ₅₀	Inhibition concentration that causes inhibition in 50% of individuals
ICAO	International Civil Aviation Organization
ICE	Intervention in Chemical Transport Emergencies Programme
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organisation
ISO	International Organisation for Standardisation
LC ₅₀ /LD ₅₀	Lethal concentration/level, which causes death of 50% of individuals
LL ₅₀	The rate of introduction of the tested substance that results in 50% mortality
LOEC/LOEL	Lowest Observed Effect Concentration / Level
log K _{oc}	Logarithm of the coefficient of organic soil and water distribution
log K _{ow}	Logarithm of the distributive coefficient n-octanol/water
MARPOL	International Convention for the Prevention of Pollution from Ships
nf	Not feasible
NOAEC/NOAEL	The highest no observed adverse effect level
NOEC/NOEL	The highest no observed effect concentration/level
NPK-P	The maximum permissible concentration of the chemical in the air (the concentration of the substance that can be exposed to the worker for a maximum of 15 minutes but which must never be exceeded)
OECD	Organisation for Economic Co-operation and Development
PPE	Personal protective equipment
UN	United Nations
(Q)SAR	A theoretical mathematical model by which a quantitative structure-activity relationship can be derived on the basis of a relation between the structure and activity of the chemical

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PBT, vPvB	Persistent, bioaccumulative and toxic, highly persistent and highly bioaccumulative
PEL	The admissible exposure limit of the chemical in the air (the exposure value that an employee may be exposed to during the entire working shift (8 hours), without endangering his health even during lifetime occupational exposure)
PNEC	Estimated concentration at which no hazardous effects occur in the respective environmental component
REACH	Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulations for International Railway Transport of Hazardous Items
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
su	Scientifically unjustifiable
TIES	Transport Information and Emergency System
UACRON	Chemical Database (The University of Akron).
Number UN	The four-digit identification number of the substance or object taken from the UN Model Regulations
UVCB	Substances of Unknown or Variable composition, Complex Reaction Products or Biological Materials

Data Sources Used to Compile the Safety Data Sheet

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

Principles for providing first aid during exposure to chemicals (doc.MUDr.Daniela Pelclová et al.)

Registration documentation of the substance in accordance with Regulation (EC) No. 1907/2006 REACH

Decision of the European Agency for Chemicals ECHA No. SUB-D-2114160418-49-01/F on Registration in accordance with Regulation (EC) No. 1907/2006 REACH

Training Guidelines

Persons handling the product must be advised of the risks involved in handling and the health and environmental protection requirements (see the applicable provisions of the Labour Code).

Information Access

In accordance with Article 35 of Regulation (EC) No. 1907/2006 REACH, each employer must make the information from the safety data sheet available to all workers who use this product or who are exposed to its effects during their work, as well as to the workers' representatives.

Exposure Limit Values at the Workplace for EU Countries (see Section 8.1.1)

data for propane-butane (CAS number 68476-40-4)

Name	Country	8-hour limit [mg.m ⁻³]	short-term limit [mg.m ⁻³]
Propane-butane	European Union (Directive 2000/39/EC)	Limit Values for the Substance as Such Are Not Set	
	Hungary		
	Germany		
	Poland		

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8-hour limit: the measured or calculated value in relation to the eight-hour reference period as the time-weighted average
short-term limit: the limit value above which exposure should not occur and which corresponds to 15 minutes

Emergency Telephone Numbers for EU Countries (See Section 1.4)

National Centres (NON STOP)		TOXICOLOGY (first aid information)	ICE (SDS information)	
Belgium		+32/70245245	Belintra	+32/35699232
Bulgaria		+359/29154378		
Croatia		+385/12348342		
CR		+420/224-919293; 915402	TIES	+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		
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

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National Centres (NON STOP)		TOXICOLOGY (first aid information)	ICE (SDS information)	
Netherlands		+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
United Kingdom		8448920111	Chemsafe	+44/123 5836002; 5753363

Declaration: The Safety Data Sheet has been prepared in accordance with Regulation (EC) No. 1907/2006 REACH. It contains details necessary to secure safety and protection of health at work and protection of the environment. These details have been stated in good will, correspond to the current state of knowledge and experience and are in accordance with our valid statutory provisions. The stated information does not substitute the quality specification and cannot be considered as a warranty of suitability and applicability of this product for a specific application. It is the responsibility of the product user to assess the accuracy of the information in a particular application where the product's properties can be influenced by different factors. The customer is responsible for compliance with local laws in force.

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ANNEX TO THE SAFETY DATA SHEET

EXPOSURE SCENARIOS IN ACCORDANCE WITH ARTICLE 31 OF REGULATION OF THE EUROPEAN PARLIAMENT AND COUNCIL (EC) NO. 1907/2006 (REACH)

The chemical safety report (CSR) submitted by the lead registrant upon registration of the product shows that no exposure scenarios need to be developed and annexed to the safety data sheet for any identified uses of the product.

Grounds: Propane-butane does not meet the criteria for classification as a dangerous substance to human health or the environment, is not carcinogenic, mutagenic or toxic to reproduction (CMR), nor is it persistent, bioaccumulative and toxic (PBT) or highly persistent and highly bioaccumulative (vPvB). This means that there is no risk for which appropriate management measures should be identified and therefore no exposure assessment and exposure scenario development is required.