SECTION 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1. Product Identifier

- Commercial name: Butane-butene mixture/Raffinate II
- Other names: Hydrocarbons C3–C4; Butane-butene fraction
- REACH Registration Number: not relevant for the mixture
- Index number: not relevant for the mixture
- CAS number: not relevant for the mixture
- EC code: not relevant for the mixture
- UFI code: 2C00-U08Y-N00K-FYTD (registered to PCN)

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

1.2.1. Identified uses

As a heating medium in industry, an intermediate for the production of chemicals.

1.2.2. Uses advised against

The mixture contains registered components for which no use has been considered yet which would be considered as not recommended.

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.cz

www.orlenunipetrolrpa.cz

1.3.2. Place of Business

	Litvínov Rafinery	**Kralupy Rafinery**
	Záluží 1 436 01 Litvínov	O. Wichterleho 809 278 01 Kralupy n/Vlt.
Tel.:	+420 476 163 567	+420 315 718 500
Fax:	+420 476 165 086	+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

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); H280	**Press. gas (Liq.), H280**
GERM CELL MUTAGENICITY, CATEGORY 1B; H340	**Muta. 1B, H340**
CARCINOGENICITY, CATEGORY 1B; H350	**Carc. 1B, H350**
TOXICITY FOR SPECIFIC TARGET ORGANS AFTER SINGLE EXPOSURE, CATEGORY 2; H371	**STOT SE 2, H371**

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

2.2. Label Elements

product identifiers		**RAFFINATE II** CONTAINS: HYDROCARBONS C3–C4, METHANOL
hazard warning symbol		
signal word		DANGER
H-statements (standard hazard statements)	H220 H280 H340 H350 H371	Extremely flammable gas. Contains gas under pressure: may explode if heated. May cause genetic defects. May cause cancer. May cause damage to organs.
P-precautions (precautions for safe handling)	P210 P282 P377 P381 P308+P313 P410+P403	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear cold insulating gloves and either face shield or eye protection. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources. IF exposed or concerned: Get medical advice/ attention. Protect from sunlight. Store in a well-ventilated place.
additional Information		For professional users only
		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 on whether a mixture meets the criteria for PBT or vPvB is given in Subsection 12.5.

The product 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 product may have a narcotic effect at higher concentrations, cause headaches, nausea, eye irritation and respiratory tract irritation. The product may accumulate static electricity.

The product is stored under pressure in pressure vessels. When discharged into space with atmospheric pressure, evaporation occurs with the simultaneous drop of temperature 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.
None of the components of the mixture (substance) is included in the Candidate List under Article 59 (1) of the REACH 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
The product is a mixture.

3.2. Mixtures

Under normal conditions, the product is a gaseous mixture of the three registered components listed below. The product is delivered to the customer in a pressure liquefied state in pressure tanks.

Name of the folder	**Index number** **Number CAS** **Number ES** **Registration No.**	**Contents (% wt.)**	**Classification** **Specific concentration limits**
Hydrocarbons C3–4	649-199-00-1 68476-40-4 270-681-9 01-2119486557-22-0008	≤ 99	Flam. Gas 1A, H220; Liq. Gas, H280; Muta. 1B, H340; Carc. 1B, H350 They are not set.
Methanol	603-001-00-X 67-56-1 200-659-6 01-2119433307-44	< 5 %	Flam. Liq. 2, H225; Acute tox. 3, H301+H311+H331; STOT SE 1, H370 (optic nerve, CNS) STOT SE 1, H370: C ≥ 10% STOT SE 2, H371: 3 % ≤ 10 %
Ethanol	603-002-00-5 64-17-5 200-578-6 01-2119457610-43	< 5 %	Flam. Liq. 2, H225; Eye irrit. 2, H319 Eye irit. 2, H319: C ≥ 50 %

NOTE: None of the components of the mixture contain nanoform

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.

Seek 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 dose and the immediate composition, the product may cause headaches, nausea, dizziness, visual impairment, difficulty breathing to pulmonary arrest, convulsions and unconsciousness. In case of ingestion of the liquid portion, spontaneous vomiting may occur with the risk of lung penetration (aspiration) and the occurrence of pulmonary oedema (chemical pneumonia), which may cause even 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 product 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 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 drain the leaked substance into closed containers before subsequent processing.

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)

Raffinate II is used as a heating medium mainly for heating purposes in industry. It may only be used for those purposes and in the equipment that is approved for its use.

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 (LPG)	68476-85-7	1,800	4,000	D, P
Ethanol	64-17-5	1,000	3,000	-
Methanol	67-56-1	250	1000	-

D – skin penetration is applied during exposure

P – serious late effects may not be ruled out for the substance

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

For the components of the mixture, the following regulatory values have been derived in the chemical safety reports for risk assessment purposes, which are specified in the safety data sheets of the respective components:

Population	Type of exposure	Type of effect	Units	Ethanol	Methanol	Hydrocarbons C3–4
Workers	Inhalation	Acute – local	mg/m^3	1900	260	-
		Acute – systemic	mg/m^3	-	260	2,21 *
		Chronic – local	mg/m^3	-	260	-
		Chronic – systemic	mg/m^3	950	260	-
	Dermal	Acute – systemic	mg/kg$_{bw}$/d	-	40	23.4
		Chronic – systemic	mg/kg$_{bw}$/d	343	40	-
Consumers	Inhalation	Acute – local	mg/m^3	950	50	0,066 *
		Acute – systemic	mg/m^3	-	50	-
		Chronic – local	mg/m^3	-	50	-
		Chronic – systemic	mg/m^3	114	50	-
	Dermal	Acute – systemic	mg/kg$_{bw}$/d	-	8	-
		Chronic – systemic	mg/kg$_{bw}$/d	206	8	-
		Acute – local	mg/kg$_{bw}$/d	-	8	-
		Chronic – systemic	mg/kg$_{bw}$/d	87	8	-

* DMEL value

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

8.1.3. PNEC values

For the components of the mixture, the following regulatory values have been derived in the chemical safety reports for risk assessment purposes, which are specified in the safety data sheets of the respective components:

Protected environment	Units	Ethanol	Methanol	Hydrocarbons C3–4
Freshwater	mg/l	0.96	154	-
Seawater	mg/l	0.79	-	-
Biological wastewater treatment plant	mg/l	580	100	-
Freshwater sediment	mg/kg$_{dw}$	3.6	570	-
Marine sediment	mg/kg$_{dw}$	-	-	-
Soil	mg/kg$_{dw}$	0.63	23	-

Note: The explanation of the meaning of the PNEC is provided in Section 16.

8.2. Exposure Limitations

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

Closed workplaces where unintentional release of the mixture into the working air could occur should be provided with sufficiently effective ventilation to keep the concentrations of the mixture components in the working environment below the limits applicable as NPK-P and PEL of the mixture components.

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:

	gloves material	*layer thickness*	*penetration time*
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.

SECTION 9. Physical and Chemical Properties

9.1. Information on Basic Physical and Chemical Properties

Information is taken from the registration dossier for a mixture of hydrocarbons C3–C4, the alcohol content is not significantly affected by the physico-chemical data:

attribute	unit	value	source/method	note
state of matter		gas	CSR	at 20°C
colour		colorless		

attribute	unit	value	source/method	note
odour		odorless to slightly alcoholic		
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	[$mm^2.s^{-1}$]	not relevant		CSR does not state
solubility in water	[$mg.l^{-1}$]	24,4 – 60,4	CSR	
relative density	voda=1	0,423-0,589	CSR	at 15°C
distributive coefficient: n-octanol/water	[log Koc]	1,09 – 2,8	CSR	
vapour pressure	[kPa]	není relevantní	CSR	it is not necessary to perform a vapor pressure study as this substance has a boiling point lower than 30 ° C
relative vapour density	vzduch=1	2,59	thermopedia	CSR does not state

attribute	unit	value	source/method	note
particle characteristics		-		not applicable - it is a gas

9.2. Additional Information

9.2.1. Information concerning physical hazard classes
Extremely flammable liquid

9.2.2. Other safety characteristics
Not available.

SECTION 10. Stability and Reactivity

10.1. Reactivity

The product does not show dangerous reactivity under normal conditions.

10.2. Chemical Stability

The product is chemically stable under normal conditions.

10.3. Possibility of Hazardous Chemical Reactions

The product is capable of easy ignition. Forms explosive mixtures with air. 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.

SECTION 11. Toxicological Information

11.1. Information on Toxicological Effects

11.1.1. Toxicological effects of the mixture

The toxicological effects of the mixture were not determined by testing. The classification of the mixture and the description of the potential toxicological effects of the mixture were derived from expert judgement based on knowledge of the composition of the mixture and the toxicological properties of the components.

11.1.1 Toxicological effects of registered components of the mixture and estimation of toxicological effects of the mixture

	ETHANOL	METHANOL	HYDROCARBONS C3–4	MIXTURE
Acute toxicity a Oral: b Dermal: c) Inhalation:	a) LD50(orl, rat) = 10,470 g/kg$_{bw}$ b) LD50 (derm) = > 2,000 mg/kg$_{bw}$	a) LD50 (orl, rat) = 1,187 – 2,769 g/kg$_{bw}$ b) LD50 (derm, rabbit) = 17,100 mg/kg$_{bw}$	a) and b) impracticable c) LC_{50} > 10,000 ppm	does not meet the criteria for classification

	ETHANOL	METHANOL	HYDROCARBONS C3–4	MIXTURE
	c) LC50 (4h,inh) = 124.7 mg/l	c) LC50 (inh, cat) = 43,700 mg/m^3/6h Note 1)		
Causticity / skin irritation	does not meet the criteria for classification	does not meet the criteria for classification	no adverse effects recorded	does not meet the criteria for classification
Serious eye damage/irritation	irritate eyes at concentrations higher than 50%	does not meet the criteria for classification	no adverse effects recorded	does not meet the criteria for classification
Sensitisation	does not meet the criteria for classification	does not meet the criteria for classification	does not meet the criteria for classification	does not meet the criteria for classification
Germ cell mutagenicity	does not meet the criteria for classification	does not meet the criteria for classification	positive test results; conclusion: product containing ≥0.1% of 1,3-butadiene may cause adverse genotoxic effects	meets the criteria for classification as mutagenic category 1B as a result of its potential 1,3-butadiene content
Carcinogenicity	does not meet the criteria for classification	does not meet the criteria for classification	positive test results; conclusion: product containing ≥0.1% of 1,3-butadiene can cause cancer	meets the criteria for classification as carcinogenic category 1B due to its potential 1,3-butadiene content
Toxicity for reproduction	does not meet the criteria for classification	does not meet the criteria for classification	does not meet the criteria for classification	does not meet the criteria for classification
STOT – one-time exposure	does not meet the criteria for classification	STOT SE 1, H370: C ≥ 10% STOT SE 2, H371: 3% ≤ 10%	1/ impracticable (Dw/nf) 2/ up to 10,000 ppm no toxic effects	meets the criteria for classification STOT SE 2, H371
STOT – repeated exposure	does not meet the criteria for classification	does not meet the criteria for classification	1/ NOAEL(rat)=148.6 mg/kg 2/ NOAEC(rat)=1,000ppm 3/ scientifically unjustified	does not meet the criteria for classification
inspiration hazard	does not meet the criteria for classification	does not meet the criteria for classification	does not meet the criteria for classification	does not meet the criteria for classification

Note 1) the acute toxicity classification of methanol is set in a harmonised manner in Annex VI to Regulation (EC) No. 1272/2008; the classification is not based on experimentally ascertained effects on animal models but on epidemiological findings of the effects on the human being

i. Information on likely exposure routes
Exposure may occur by inhalation as well as by penetration of the product components through skin.

ii. 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.
Butadiene contained in a mixture of hydrocarbons can cause hereditary genetic changes and cause or promote human cancer.
Methanol contained in the mixture may damage the optic nerve and cause vision loss.

iii. 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

		Ethanol	Methanol	Hydrocarbons C3–4
aqueous environment	fish	LL_{50} (96h) = 28,200 mg/l	LL_{50} (96h) = 15,400 mg/l	LC_{50} (96h) = 24.11 – 147.54 mg/l (QSAR)
	invertebrates	LL_{50} (48h) = 5,012 mg/l	LL_{50} (48h) = 18,000 mg/l	LC_{50} (968h) = 7.02 – 69.43 mg/l (QSAR)
	algae	IC_{50} (72h) = 275 mg/l	IC_{50} (72h) = 22,000 mg/l	EC_{50} (96h) = 7.71 – 16.5 mg/l (QSAR)
Microbiological activity (WWTP)	activated sludge		EC_{50} (3h) = 19,800 mg/l	

Note: The explanation of the meaning of the LC_{50}, EC_{50} and IL_{50} 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

With respect to the fact that the value of the distributive coefficient n-octanol/water (log Kow) for petroleum hydrocarbons and for both alcohols is less than 3, no significant bioaccumulation of the product is expected.

12.4. Mobility in Soil

Due to the low value of the distributive coefficient n-octanol/water (log Kow < 3) for petroleum hydrocarbons and for both alcohols, no significant sorption of the product on sediment or soil is expected.

12.5. Results of PBT and vPvB Assessment

The product does not contain components considered to be PBT/vPvB substances.

12.6. Endocrine disrupting properties

None of the components of the mixture is 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 in accordance with Decree No. 93/2016 Coll. (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.

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 A – 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 listed in Annex XIV to Regulation (EC) No. 1907/2006 REACH and, therefore, it is not subject to the obligation of authorisation*LIMITATION (CHAPTER VIII OF THE REACH REGULATION):

the product may not be placed on the market for sale to the public (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

Regulation (EU) 2017/542 of the European Parliament and of the Council - Annex VIII. (CLP) - harmonized information on responding to health threats.

The required information on the hazardous mixture was provided via the ECHA Submission Portal - Poison Centers (PCN).

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

15.1.2. Czech Republic

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

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

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 components of the mixture were registered. Information on the safe handling of the mixture 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)
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 Koc	Logarithm of the coefficient of organic soil and water distribution
log Kow	Logarythm 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
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

Applied Method of Mixture Classification

The mixture was classified by a calculation method based on information on its composition and the hazardous properties of the components

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
Safety data sheets for FCC butane, ethanol and methanol.

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.

ANNEX TO THE SAFETY DATA SHEET
EXPOSURE SCENARIOS IN ACCORDANCE WITH ARTICLE 31 OF REGULATION OF THE EUROPEAN PARLIAMENT AND THE COUNCIL NO. 1907/2006 (REACH)

It is a mixture. Based on Chapter 2.23.2 of the Guidance on the Creation of Safety Data Sheets, consolidated information from the exposure scenario resulting from the consolidation of the different exposure scenarios for the substances used in the mixture has been included in the main sections 1–16 of the safety data sheet.