

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1 Product identifier**

- Trade name: **PETROLEUM BENZENE**
- Chemical name: Benzene
- Registration number REACH: 01-2119447106-44-0029
- UFI code: irrelevant for substances
- Index number: 601-020-00-8
- CAS number: 71-43-2
- EC number: 200-753-7

**1.2 Relevant identified uses of the substance or mixture and uses advised against****1.2.1 Identified uses**

Intermediate product for the production of chemical elements used during its whole life cycle under strictly controlled conditions defined in article 18(4) of Regulation (EC) No 1907/2006 REACH – see Section 16.

**1.2.2 Non-recommended uses**

Substance was registered as a transported isolated intermediate product used during its whole life cycle under strictly controlled conditions defined in article 18(4) of regulation (EC) no. 1907/2006 REACH – see Section 16, and as such no other form of manipulation is allowed.

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

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

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- Person professionally qualified to compile a SDS: [reach.unirpa@orlenunipetrol.cz](mailto:reach.unirpa@orlenunipetrol.cz)

**1.4 Emergency telephone number**

- 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](mailto:tis@vfn.cz)
- Transport Information & Accident System (TRINS) ☎: +420 476 163 111 (NON STOP)

*Note: Emergency telephone numbers for EU countries are listed in section 16.*

**SECTION 2: HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture**

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

FLAMMABLE LIQUID, CATEGORY 2


CARCINOGENIC, , CATEGORY 1A

MUTAGENIC, CATEGORY 1B

**Flam. Liq. 2, H 225**

**Carc. 1A, H 350**




**Muta. 1B, H 340**

	<h1>BENZENE</h1> <p><b>SAFETY DATA SHEET</b></p> <p>according to Regulation (EC) No. 1907/2006 (REACH), as amended</p>	<b>Valid Issue: 03/01/2021 – version 10</b>
		Revision: 02/01/2018 – version 9(0) replaces: 08/01/2011 – 8 <sup>th</sup> issue issued on: 07/13/2004

TOXIC FOR SPECIFIC TARGET ORGANS - REPEATED EXPOSURE, CATEGORY 1	<b>STOT RE 1, H 372</b>
ASPIRATION HAZARD, CATEGORY 1	<b>Asp. Tox. 1, H 304</b>
SEVERE DANGER OF EYE DAMAGE / IRRITATION, CATEGORY 2	<b>Eye Irrit. 2, H 319</b>
SKIN CORROSION / IRRITATION, CATEGORY 2	<b>Skin. Irrit. 2, H 315</b>
HAZARDOUS TO THE AQUATIC ENVIRONMENT, CATEGORY CHRONIC 3	<b>Aquatic Chronic 3, H 412</b>

Note: The full text of the H-sentence and / or EUH-sentences is stated in Section 16.

## 2.2 Label elements

<i>Product identifiers</i>	<b>PETROLEUM BENZENE</b> BENZENE Index number: 601-020-00-8	
<i>Warning hazard symbol</i>	  	
<i>Signal word</i>	DANGER	
<i>H-phrases (standard hazard phrases)</i>	H225 H304 H315 H319 H340 H350 H372 H412	Highly flammable liquid and vapour. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause genetic defects. May cause cancer. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.
<i>P-statements (precautionary statements)</i>	P202 P210  P243 P280 P303+P361+P353  P301+P310 P331 P273 P501	Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take action to prevent static discharges. Wear protective gloves/protective clothing/eye protection/face protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. DO NOT induce vomiting. Avoid release to the environment. Dispose of contents/container as hazardous waste.
<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

The liquid quickly evaporates, its vapours are highly flammable and form an explosive mixture with air. The vapours are heavier than air, and so they amass and spread near the ground, and in case of a random leak may initiate a fire or explosion even far from the source. The product is practically non-soluble in water, stays on

the surface and so may form an explosive mixture with air above the water surface. The danger of explosion and subsequent fire is thus also present in case of a leak into the sewage system.

The product is hazardous if inhaled. This means that in case of consumption and subsequent vomiting, there is a risk of aspiration (entering the lungs) and a risk of chemical pneumonia (lung swelling), which may lead to death. The product is additionally classified as carcinogenic and mutagenic. Chronic exposure can lead to damage to the bone marrow, blood production disorders and leukaemia. The disease can develop even years after the last exposure.

Produkt does not meet the criteria for PBT (P-persistent, B-bioaccumulative, T-toxic) or vPvB (vP-very persistent, vB-very bioaccumulative) substances. Product assessments for PBT / vPvB criteria see Subsection 12.4 ("Results of PBT and vPvB assessment").

The substance is not included in the candidate list pursuant to Article 59 (Paragraph 1) of the REACH Directive.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substances

Name of the substance:	BENZENE
Concentration [% hm.] :	min. 99.9
Index number (index):	601-020-00-8
CAS number:	71-43-2
EC number:	200-753-7

**IMPURITIES****NAME:****IDENTIFIER :**

*The product does not contain any impurities, stabilizing additives or other components, which would have an impact on its classification.*

*Note: The substance does not contain a nanoform.*

*Note: Specific concentration limits (SCL), M-factor (M-) and Acute toxicity estimate (ATE) were not determined for this substance (harmonized classification).*

#### 3.2 Mixtures

Not applicable, the product is a substance.

### SECTION 4: FIRST AID MEASURES

#### 4.1 Description of first aid measures

##### 4.1.1 General instructions

When providing first aid pay attention to self-protection.

Call emergency medical services (☎155 ČR, ☎120 EU) and follow their instructions until their arrival.

First aid must be always administered with the objective to preserve the basic bodily functions - should the victim become unconscious or should he/she stop breathing, start resuscitation immediately (chest compression and mouth-to-mouth resuscitation with the 30:2 ratio). When the victim is unconscious but is breathing NORMALLY, put him/her in the recovery position. The condition of the patient can change very quickly, so you need to watch him/her constantly and continuously monitor his/her consciousness status and breathing.

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

If possible, and with regard to its own safety, transport the disabled away from the dangerous area and take off the contaminated clothes and shoes.

##### 4.1.2 When inhaled

Transport the patient to fresh air, do not let them get cold and ensure specialized medical help.

**4.1.3 Skin contact**

Remove contaminated clothing and shoes. Thoroughly wash the affected areas with water (ideally tepid) and with soap, and keep rinsing for at least 15 minutes. Ensure specialized medical help.

**4.1.4 Contact with eyes**

Immediately start washing eyes while wide open under flowing tepid water, continue for at least 15 minutes. If the patient has contact lenses, remove them before washing eyes. Ensure specialized medical help.

**4.1.5 When ingested**

If the patient is not unconscious, wash their mouth with water, but **DO NOT INDUCE VOMITING!** If the patient is vomiting on their own, keep their head below their hips so that they do not inhale their vomit. Ensure specialized medical help as soon as possible.

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

Based on the exposure dosage, the substance can cause headache, nausea, sleepiness, dizziness, irritation of airways together with coughing or even problems breathing up to complete loss of breath, spasms and unconsciousness. In case of consumption may cause spontaneous vomiting with a risk of the substance entering the lungs (aspiration) and chemical pneumonia, which may lead to death. Direct contact with eyes or skin may lead to irritation. Prolonged exposure of the skin to the substance may lead to ungreasing and crackles.

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

Immediate medical help is necessary in case of consumption or if the substance enters the lungs.

**SECTION 5: FIREFIGHTING MEASURES****5.1 Extinguishing media**

Appropriate extinguishing media: low expansion foam, spray or water fog.

Inappropriate extinguishing media: direct water stream.

Extinguishing small fire: dry-powder or carbon dioxide (CO<sub>2</sub>) extinguisher, dry sand or extinguishing foam.

**5.2 Special hazards arising from the substance or mixture**

The vapours are heavier than air, and so they amass and spread near the ground, and in case of a random leak may initiate a fire or explosion even far from the source. This danger is imminent especially in places below the ground or in enclosed places. Toxic or irritating fuels containing monoxide, carbon dioxide or unburned hydrocarbon might be produced during burning.

**5.3 Advice for firefighters**

Minimize the penetration of extinguishing medium contaminated by the substance into the sewage, surface or underground waters or into the soil. There is a danger of explosion and subsequent fire in case of a leak into the sewage.

Use water spray to keep the containers cool in order to prevent an explosion caused by the heat.

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

Protective equipment for fire fighters: full protective gear and self-contained close-circuit breathing apparatus.

**SECTION 6: ACCIDENTAL RELEASE MEASURES****6.1 Personal precautions, protective equipment and emergency procedures**

Enclose the place and prevent the access to the area in danger. Remain on the windward side. There is a danger of fire in case of accidental release of this substance, therefore remove all possible ignition sources, do not smoke and do not manipulate with open fire. If possible, ensure a sufficient ventilation of enclosed spaces. Prevent contact with the substance and its vapours. Use proper personal protective equipment (as indicated in Subsection 8.2) when removing the effects of the emergency event/accident. Evacuate people from the whole area in danger for large accidents. There is a danger of vapours explosion in case of substance initiation in places below the ground or in enclosed places (including sewage).

**6.2 Environmental precautions**

Prevent further leaking and enclose the leaking place. Prevent leakage of the substance into the sewage, surface and underground waters by covering sewage inlets. Inform the relevant authorities if rivers, lakes or sewage systems have been contaminated during the leak. Do not allow the substance to enter into soil/subsoil.

**6.3 Methods and material for containment and cleaning up**

Safely drain the leaked substance. There is a danger of fire during a leak; therefore only explosion-proof luminaries and electrical equipment and non-sparking tools must be used. Absorb the remains into an appropriate non-flammable porous/absorbent material (e.g. sand, dirt, siliceous earth, vermiculite) and transport for disposal in sealed containers. Dispose in compliance with valid legal regulation for wastes (see Subsection 13). Use water spray to reduce vapours in the air.

For large leaks into water use floating barrage and collect the substance from surface using surface skimmers (separators) or cover the leaked substance with sorbent and remove saturated sorbent from the surface by scraping or draining. Consult a professional before using dispersing agents.

**6.4 Reference to other**

For recommended personal protective aids – see Subsection 8.2 (“Exposure controls”).

For recommended manner of removing waste – see Section 13 (“Disposal considerations”).

**SECTION 7: HANDLING AND STORAGE****7.1 Precautions for safe handling**

The product is produced and must be used during its whole life cycle under strictly controlled conditions defined in Regulation (EC) No 1907/2006 REACH. All these conditions must be kept in order to ensure safe handling and to prevent the exposure of people and the environment, with the exception of accidents and emergency events.

General safety and hygienic measures: Use only in sufficiently aired places that do not contain any ignition sources, take all necessary measures to prevent static energy discharges. Do not use compressed air for emptying, filling or any other handling. Please bear in mind that even empty containers can contain remains of flammable vapors; therefore do not perform activities such as welding, cutting or grinding near these containers.

Please keep the rules of personal hygiene. Take off contaminated pieces of clothing. Do not eat, drink or smoke during work! Wash your hands and exposed parts of body thoroughly with soap and water after work and before meal and possibly treat with suitable repair lotion. Do not wear contaminated clothing, shoes or protective equipment in the catering area.

**7.2 Conditions for safe storage, including any incompatibilities**

The product is produced and must be used during its whole life cycle under strictly controlled conditions defined in Regulation (EC) No 1907/2006 REACH. All these conditions must be kept in order to ensure safe storing and to prevent the exposure of people and the environment, with the exception of accidents and emergency events. Storage containers must be closed, properly labeled and grounded. Recommended material suitable for containers is soft or stainless steel. Do not store near incompatible materials, such as oxidizers. We recommend keeping the liquid under inert gas.

**7.3 Specific end use(s)**

The substance is registered as a transported isolated intermediate product produced and used under strictly controlled conditions defined in Article 18(4) of Regulation (EC) No 1907/2006 REACH (see Section 16), and therefore must be handled as such. Instructions including a proposal for mapping and documenting strictly controlled conditions on workplace are available at the following webpage: <http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/Strictly%20Controlled%20Intermediate.pdf>.

In case of accidental release the handling and storage place and methods of handling the substance must correspond to working with flammable substances with a potential to damaging waters and soils.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1 Control parameters****8.1.1 Occupational exposure limit values**

The following Permissible Exposure Limits (PELs) and Maximum Allowable Concentrations (NPK-P) of Chemicals in the Atmosphere of Workplaces within the Czech Republic are set by the Government Regulation No. 361/2007 Coll., determining conditions of occupational health protection, as amended:

Name	CAS number	PEL [mg.m <sup>-3</sup> ]	NPK-P [mg.m <sup>-3</sup> ]	Note
Benzene	71-43-2	3	10	

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

Note 2: Occupational exposure limit values for EU countries are listed in section 16.

**8.1.2 DNEL/DMEL values**

According to Article 2 (8) of Regulation (EC) No 1907/2006 REACH the isolated intermediates are not subject to the obligation to assess chemical safety and to prepare a chemical safety report within the meaning of Article 14 of this Regulation and therefore no DNEL / DMEL values have been set for this product by the manufacturer of the intermediates.

**8.1.3 PNEC values**

According to Article 2 (8) of Regulation (EC) No 1907/2006 REACH the isolated intermediates are not subject to the obligation to assess chemical safety and to prepare a chemical safety report within the meaning of Article 14 of this Regulation and therefore no PNEC values have been set for this product by the manufacturer of the intermediates.

**8.1.4 Recommended monitoring of the concentration in the workplace**

Gas chromatography (GC) with a flame ionizing detector (FID) or a mass spectrometer (MS) in accordance with technical norms ČSN EN 689 and ČSN EN 482.

**8.2 Exposure control****8.2.1 Technical protective measures for limiting the exposure of people and the environment**

The product is produced and must be used during its whole life cycle under strictly controlled conditions defined in Regulation (EC) No 1907/2006 REACH (see Section 16). Exposure control of unwanted exposure of humans and the environment shall be secured by keeping the substance under strict control using technical aids and procedural and control technologies, which reduce emissions and consequent exposure, with the objective to prevent releases of the substance vapors in the air, penetration of the substance to water and soil and possible exposure of people. Areas, where the substance is handled and stored, shall be furnished with impermeable floors and catchment basins for the cases of emergency leaks of the substance. It is necessary to secure general and local ventilation and an efficient exhaust system.

**8.2.2 Individual protective measures**

If an accident or extraordinary event causes increased exposure, employees must have access to personal protective measures (PPM) for the protection of airways, eyes, hands and skin, depending on the nature of the performed activities. Suitable protection for airways must also be available where it is not technically possible to ensure the adherence of exposition limits identified for the work environment or ensure that exposure via airways will not affect the health of people. During non-stop use of these measures during permanent work, it is necessary to include safety breaks if the nature of the PPM requires them. All PPM need to be kept in usable condition and damaged or contaminated ones need to be immediately replaced.

**RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE)**

(the specific type of protective equipment must be chosen according to the type of activity being carried out and the quantity and concentration of the dangerous substance / mixture at the workplace)

- *Respiratory protection:* Protective mask compliant with EN 140 with a filter that is suitable against organic gases, insulation breathing apparatus (use the mask in case of insufficient ventilation and / or local exhaustion and product leakage);
- *Eye/face protection:* Protective chemical goggles compliant with EN 166 or, in the case of an increased risk of burning, protective face shield;

- **Hand protection:** chemically resistant gloves tested according to EN 374, e.g. the following materials are suitable:

	<i>Glove material</i>	<i>Material thickness</i>	<i>Penetration time</i>
Regular work activities (staining risk)	nitrile	0.4 mm	10 minutes
Leak / accident liquidation	Viton	0.7 mm	480 minutes

- **Protection of other body parts:** Antistatic, inflammable protective clothes, antistatic shoes;
- **Thermal risk:** Not relevant for the given manner of the use.

### 8.2.3 Environmental exposure controls


Avoid product leakage to the environment with all available means. See section 6.2.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

The information is taken from the registration dossier of substance (RD) unless otherwise stated.

CHARACTERISTIC	UNIT	VALUE	SOURCE	NOTE
Physical state		Liquid	RD	at 20°C, 101,3 kPa
Colour		Colorless	RD	
Odour		Aromatic	RD	
Odour threshold	[ppm]	4.68	HSDB	RD does not specify
Melting point/freezing point	[°C]	5.49	RD	
Boiling point or Initial boiling point / boiling range	[°C]	80.09	RD	
Flammability (solid, gas, liquid)		Irrelevant		RD – DW/su
Upper flammability / explosive limits	[%]	7.8	RD	
Lower flammability / explosive limits	[%]	1.2	RD	
Flash point	[°C]	-11	RD	
Auto-ignition temperature	[°C]	498	RD	
Decomposition temperature	[°C]	does not decompose at normal usage temperatures		
pH		Irrelevant		RD does not specify
Kinematic viscosity	[mm <sup>2</sup> /s]	-	RD	RD does not specify
Solubility in water	[g.l <sup>-1</sup> ]	1.88	RD	at 23.5°C
Partition coefficient: n-octanol/water	[log Kow]	2.13	RD	
Vapour pressure	[kPa]	10	RD	at 20°C
Relative density		0.8765	RD	at 20°C
Relative vapour density	Air=1	2.8	HSDB search data	RD does not specify
Particle characteristics		Irrelevant		Not applicable - this is a liquid.

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		Revision: 02/01/2018 – version 9(0) replaces: 08/01/2011 – 8 <sup>th</sup> issue issued on: 07/13/2004

## 9.2 Other information

### 9.2.1 Information with regard to physical hazard classes

Flammable liquids and gases

### 9.2.2 Other safety characteristics

CHARACTERISTIC	UNIT	VALUE	SOURCE	NOTE
Evaporation rate	Ether=1	2.8	HSDB	RD does not specify
Dynamic viscosity	[mPa.s]	0.604	RD	at 25°C
Explosive properties		Substance is not explosive		RD - DW
Oxidising properties		None		RD- DW

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

No threat of dangerous reactions during the identified use as an intermediate product and during storage and manipulation under strictly controlled conditions.

### 10.2 Chemical stability

Chemically stable when used as identified intermediate product and when stored and handled in accordance with strictly controlled conditions at usual temperatures.

### 10.3 Possibility of hazardous reactions

No danger of chemical reaction when used as identified intermediate product and when stored and handled in accordance with strictly controlled conditions at usual temperatures.

### 10.4 Conditions to avoid

Ignition sources (including static energy), high temperature, sunshine.

### 10.5 Incompatible materials

Oxidizers.

### 10.6 Hazardous decomposition products

Carbon monoxide and carbon dioxide might be produced during heat decomposition at high temperatures.

## SECTION 11: TOXIKOLOGICAL INFORMATION

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

#### 11.1.1 Toxicological effects of the substance

HAZARD CLASS	DATA FROM REGISTRATION DOCUMENTATION		EVALUATION
	DESCRIPTION	RESULT	
Acute toxicity	Oral: Dermal: Inhalation:	LD <sub>50</sub> > 2 000 mg/kg LD <sub>50</sub> > 5 000 mg/kg LC <sub>50</sub> (4h) > 20 mg/l	Does not meet the classification criteria
Skin corrosion/irritation	OECD 404	Adverse effects were found	Meets the classification criteria
Serious eye damage/irritation		Adverse effects were found	Meets the classification criteria
Sensitisation	OECD 406	No adverse effects were found	Does not meet the classification criteria



HAZARD CLASS	DATA FROM REGISTRATION DOCUMENTATION		EVALUATION
	DESCRIPTION	RESULT	
Germ cell mutagenicity	OECD 471 OECD 474 OECD 475	Negative effects were noted (mutagenic activity)	Meets the classification criteria
Carcinogenicity	long-term animal testing and epidemiological studies	Adverse effects were found	Meets the classification criteria
Reproductive toxicity	fertility tests (NOAEC=32 mg/m3) developmental toxicity tests (NOAEC=960 mg/m3)	No adverse effects were found	Does not meet the classification criteria
STOT-single exposure		No toxic effects were noted in the acute toxicity tests	Does not meet the classification criteria
STOT-repeated exposure		the product has undesirable cardiovascular and haematological effects in repeated inhalation and oral exposure substance has the given characteristic	Meets the classification criteria
Aspiration hazard		The product is hydrocarbon with a kinematic viscosity $\leq 20.5 \text{ mm}^2 \cdot \text{s}^{-1}$ at 40°C	Meets the classification criteria

### 11.1.2 Information on likely routes of exposure

There is no danger of exposure for identified use as an intermediate product and when stored and handled in compliance with strictly controlled conditions. Inhalation and skin contact might be a significant way of exposure during emergency events and accidents.

### 11.1.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure

Depending on the exposure dose the substance can cause headache, nausea, drowsiness, dizziness, airways irritation together with cough or difficulties with breathing or even apnea, convulsions and unconsciousness. In case of consumption it may cause spontaneous vomiting with a risk of the substance entering the lungs (aspiration) and chemical pneumonia, which may lead to death. Direct contact with eyes or skin may lead to irritation. Prolonged exposure of the skin to the substance may lead to ungreasing and crackles. The substance can trigger heritable genetic changes and cause or help cause cancer.

### 11.1.4 Interactive effects

There are no interactions for identified use.

### 11.1.5 Toxicokinetics

Benzene can easily penetrate unprotected skin and enter into the body. For low doses it is quickly metabolized and eliminated in a form of metabolites in urine. For higher doses of exposure a large part of the absorbed dose of benzene is eliminated in exhaled breath.

### 11.1.6 Absence of specific data

In accordance with Article 18 (3) of Regulation (EC) No 1907/2006 REACH only information corresponding to Annex VII of this Regulation are stated for transported isolated intermediate products above 100 t/year. Tests included in Annex VIII to X do not need to be stated.

## 11.2 Information on other hazards

The substance is not included in the candidate list pursuant to Article 59 (Paragraph 1) of the REACH Directive (due to the characteristics that can compromise endocrine activities or due to any other reason).

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

Water environment	Fish	LC <sub>50</sub> (96h) = 5.3 mg/l	Oncorhynchus mykiss
		NOEC (32d) = 0.8 mg/l	Pimephales promelas
	Invertebrates	EC <sub>50</sub> (48h) = 10 mg/l	Daphnia magna
		NOEC (7d) = 3 mg/l	Ceriodaphnia dubia
	Algae	ErC <sub>50</sub> (72h) = 100 mg/l	Selenastrum capricornutum
		NOEC (72h) = 34 mg/l	Selenastrum capricornutum
Terrestrial environment	Soil organisms	NOEC (earthworms) = 0-63 mg/kg LOEC (earthworms) = 97-172 mg/kg LC <sub>25</sub> (arthropods) = 63-99 mg/kg	Eisenia andrei Eisenia andrei Onychiurus folsomi
		Plants	IC <sub>25</sub> = 73 mg/kg Agropyron dasystachyum
Microbiological activity (STP)	Activated sludge	IC <sub>50</sub> (24h) = 13 mg/l (inhibition test of activated sludge nitrification)	

Note: An explanation of the meaning of the LC<sub>50</sub>, EC<sub>50</sub> a ErC<sub>50</sub>, IC<sub>50</sub>, NOEC, LOEC abbreviations is in section 16.

### 12.2 Persistence and degradability

Product is easily biologically degradable.

### 12.3 Bioaccumulative potential

With regards to the fact that the value of the distribution coefficient n-octanol/water (log Kow) is lower than 3, no bioaccumulation of the product is expected.

### 12.4 Mobility in soil

With regards to low value of the distribution coefficient n-octane/water (low Kow < 3) no sorption of the product into sediment or soil is expected.

### 12.5 Results of PBT and vPvB assessment

Isolated intermediate products in accordance with Article 2 (8) of Regulation (EC) No 1907/2006 REACH are not subject to the obligation to test chemical safety and to process a report on chemical safety in the sense of Article 14 of this Regulation, which means that PBT (P-persistent, B-bioaccumulative, T-toxic) and vPvB (vP-very persistent, vB-very bioaccumulative) properties do not need to be tested. Due to easy biological decomposition and the level of expected bioaccumulation it is reasonable to assume that benzene does not meet the criteria for PBT or vPvB substances.

### 12.6 Endocrine disrupting properties

The substance is not included in the candidate list pursuant to Article 59 (Paragraph 1) of the REACH Directive due to the characteristics that can compromise endocrine activities.

### 12.7 Other adverse effects

Pursuant to Appendix 1 of the Water Act No. 254/2001 Coll., the product is considered a hazardous and harmful substance.

### 12.8 Other information

According to Article 18 (3) of Regulation (EC) no. 1907/2006 REACH the only information reported on transported isolated intermediates above 1000 t/year is to be in accordance with Annex VII of the Regulation. Tests specified in Annexes VIII to X do not have to be carried out.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

If product used as an intermediate and during storage and handling under strictly controlled conditions there is no waste. If the remainder of the product is to be disposed (eg unused or leaked product), the valid European Union and national legislature as well as locally valid regulations have to be complied with.

Recommended waste classification pursuant to Regulation No. 8/2021 Sb., on the Waste Catalogue and on Assessing Waste Characteristics:

**13.1.1 Catalogue number**

Catalogue number for products that have become waste:

07 01 04\* Other organic solvents, washing liquids and mother liquors.

16 03 05\* Organic waste containing dangerous substances.

Catalogue number for leaked product absorbed into an absorption agent (e.g. vapex):

15 02 02\* Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances.

Catalogue number for soil contaminated by leaked product:

17 05 03\* Soil and stones containing dangerous substances.

**13.1.2 Recommended waste removal method**

Deliver the unusable remainder of the product for disposal to a professionally qualified person with the appropriate authorization.

Recommended removal method: Energy utilization (burning)

Landfill and biodegradation in case of soil contaminated by leaked product.

**13.1.3 Recommended methods of contaminated containers disposal**

Not relevant. Product is not packed, it is transported through piping and railroad cisterns.

**13.1.4 Measures for limiting exposure when handling waste**

Do not flush leaked product during an emergency event or accident into sewage. Proceed in accordance with instructions provided in Section 6 („Accidental release measures“) and in Subsection 8.2 („Limiting exposure“) and adhere to all valid legal regulations for the protection of people, air and water.

*WARNING: The stated information is of a recommendation character. It is related to the delivered, still unused material. Pursuant to the Waste Act all responsibilities for managing the waste, including its assignment based on its type and category, are responsibilities of the waste originator.*

**SECTION 14: TRANSPORT INFORMATION**

The listed information applies to road transport (ADR) and rail (RID) transport of dangerous goods:

**14.1 UN number or ID number:** 1114

**14.2 UN proper shipping name:** BENZENE

**14.3 Transport hazard class(es):** 3

**14.4 Packing group:** II

**14.5 Environmental hazards:** based on the criteria of the UN sample regulations, the product is not harmful to the environment

**14.6 Special precautions for user:** none

**14.7 Maritime transport in bulk according to IMO instruments:** the product is not designated for bulk transport pursuant to the International Maritime Organization (IMO) documents

**14.8 Other information**

Hazard identification number: 33

Classification code: F1

Labels: 3

**SECTION 15: REGULATORY INFORMATION****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****15.1.1 European Union**

Regulation of the European Parliament and Council (EC) No. 1907/2006 (REACH), as amended

REGISTRATION (TITLE II OF THE REACH REGULATION)

*the product has been registered as transported isolated intermediate product produced and used under strictly controlled conditions*

AUTORISATION (TITLE VII OF THE REACH REGULATION)

*isolated intermediate products are not subject to authorization obligation in accordance with Article 2(8)*

RESTRICTION (TITLE VIII OF THE REACH REGULATION)

*restrictions are met by determining identified uses*

ANNEX VII OF THE REACH REGULATION

*According to Article 18 (3) of Regulation (EC) no. 1907/2006 REACH the only information reported on transported isolated intermediates above 1000 t/year is to be in accordance with Annex VII of the Regulation. Tests specified in Annexes VIII to X do not have to be carried out.*Regulation of the European Parliament and Council (EC) No. 1272/2008 (CLP), as amended*the product has been classified in compliance with the stated regulation, packaging and labeling obligations of dangerous chemicals only apply to the product if it is marketed in packaging subject to its labelling according to CLP regulation*Regulation of the European Parliament and Council (EC) No. 649/2012 on the export and import of dangerous chemicals, as amended*the product is subject to special import or export restrictions*

## 15.1.2 Czech Republic

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

*the product is not subject to the obligation of notification to the information system PCN (Poison centres notification)*

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

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

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

Act No. 541/2929 Coll., the Waste Act, as amended

Regulation No. 8/2021 Coll., on the Waste Catalogue and on Assessing Waste Characteristics, as amended

Governmental decree no. 361/2007 Coll., laying down occupational health and safety conditions

*product has exposure limit; the product is subject to the obligation to establish a controlled zone*


Act no. 224/2015 Coll., on prevention of serious accidents caused by selected dangerous chemical substances or mixtures

**15.2 Chemical safety assessment**

Isolated intermediate products in accordance with Article 2 (8) of Regulation (EC) No 1907/2006 REACH are not subject to the obligation to test chemical safety and to process a report on chemical safety in the sense of Article 14 of this Regulation, and therefore no chemical safety report has been drawn up for this product by the manufacturer.

**SECTION 16: OTHER INFORMATION****Changes adopted as a part of the revision process**

- 10/26/2005: Revision (2): Editing information in the sections 2, 3.1, 3.2, 11.1, 12.5, 15.1, 15.2, 16  
12/01/2006: Revision (3): Editing information in the sections 1, 2, 8, 13 and 16  
03/01/2007: Revision (4): Editing information in the sections 1 and 16  
06/01/2007: Revision (5): Complete revision of the document in relation to the Regulation (EC) No 1907/2006 of the European Parliament and of the Council  
12/01/2009: Revision (6): Editing information in the sections 1, 2.1, 8.1, 15, 16 and the „Declaration“  
12/01/2010: Revision (7): Editing information in the sections 1 (registration number), 2 (classification and labeling according to CLP), 14 and 16

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		Revision: 02/01/2018 – version 9(0) replaces: 08/01/2011 – 8 <sup>th</sup> issue issued on: 07/13/2004

- 08/01/2011: Revision (8): Complete revision of the document in relation to the updating of Annex II of Regulation (EC) No 1907/2006 REACH in accordance with Annex I of Commission Regulation (EU) No 453/2010
- 01/01/2012 / 8(1): Section 15.1.2 – updating legislation
- 01/06/2012 / 8(2): Section 1.1 - identifiers, Section 1.3 – update contact and Section 16 – abbreviations
- 05/31/2015 / 8(3): Section 1 (contact information), Section 2, Section 15.1 (update of legal regulations) and 16 (text deletion)
- 11/01/2016 / 8(4): Section 1 (contact information), Section 14 and 15 (editing in accordance with Regulation (EC) no. 830/2015), Section 15 (legislation update)
- 02/01/2018: Revision (9): Unification of SDS format after the ČeR merger into UNIPETROL RPA, including the editing of data in sections 1, 8, 9, 11, 12, 13 15 and 16, classification update
- 03/01/2021: Revision (10) – Overall modification of the document in relation to the update of Appendix II of Directive (EC) No. 1907/2006 REACH, by Directive of the Council (EC) No. 2020/878;  
 Data modification in Sections 13 and 15 - update of the legal regulations;  
 Data modification in Section 1 – change of the company name;

#### Acronyms and abbreviations used in the text

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	Registration number assigned to the substance by the Chemical Abstracts Service of the American Chemical Society
CLP	EU Directive No. 1272/2008 on Classification, Labeling and Packaging of chemical substances and mixtures, which is implemented into the European legislature by the means of GHS (United Nations' Globally harmonized System) for classifying and labeling chemical substances
CMR	Carcinogenic, mutagenic or toxic for reproduction
ČSN EN (ISO)	European standard incorporated into the Czech technical standards
CSR	Chemical Safety Report
DMEL	Derived minimal effect level - an exposure level that corresponds to a low and possibly theoretical risk, which should be considered as an acceptable risk (for thresholdless effects, i.e. there is no exposure level without effect)
DNEL	Derived no-effect level - level of exposure derived from toxicological data that does not produce any adverse effects on human health
DW	Data waiving
EC <sub>50</sub>	Effective concentration EC <sub>50</sub> is the concentration of substance that causes immobilization of 50% of individuals
ErC <sub>50</sub>	Effective concentration EC <sub>50</sub> is the concentration of substance that causes 50 % decrease of Algae growth
ECHA	European Chemicals Agency
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
HSDB	Hazardous Substances Data Bank
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
IC <sub>50</sub>	Inhibition concentration IC <sub>50</sub> that causes inhibition of 50% of individuals
ICAO	International Civil Aviation Organization
ICE	"Intervention in Chemical Transport Emergencies" system providing both professional and practical assistance in dealing with emergency situations related to the transport and storage of hazardous chemicals
IMDG	International Maritime Dangerous Goods

IMO	International Maritime Organisation
ISO	International Organization for Standardization
LC <sub>50</sub> /LD <sub>50</sub>	Lethal concentration/level is the concentration/level of substance that causes mortality of 50 % individuals
LOEC/LOEL	Lowest Observed Effect Concentration/Level
log Kow	Logarithm of distribution coefficient n-octanol/water
MARPOL	International convention on preventing boat pollution, as amended by the 1978 protocol
nf	Not feasible
NOAEC/NOAEL	No Observed Adverse Effect Concentration/No Observed Adverse Effect Level
NOEC/NOEL	No Observed Effect Concentration/No Observed Effect Level
NPK-P	The highest permitted concentration of the chemical substance in the air (the concentration of the substance that a worker may be exposed to for a maximum of 15 minutes but which must never be exceeded)
OECD	Organization for Economic Co-operation and Development
OOP	Recommended personal protective aids
OSN	United Nations
(Q)SAR	Quantitative Structure-Activity Relationship
PBT, vPvB	Persistent, bioaccumulative and toxic; high persistent and high bioaccumulative
PEL	Permitted exposure limit of the chemical substance in the air (the exposure value that an employee may be exposed to during the entire working shift (8 hours), without endangering his health during lifetime occupational exposure)
PNEC	Predicted No Effect Concentration
REACH	EU Directive No. 1907/2006 on Registration, Evaluation and Authorization of Chemicals
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
STP	Sewage treatment plant
su	Scientifically Unjustified
TRINS	Transport Information and Accident System of the Czech Republic, providing professional and practical assistance in dealing with emergency situations related to transport and storage of hazardous chemical substances, included in ICE
UACRON	Chemical database (The University of Akron).
UFI code	The unique formula identifier for products with hazardous mixtures.
UN number	The four-digit identification number of the substance or object identifying hazardous material in international transport
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials

### Data sources used for preparing the material safety sheet

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

Principles for providing first aid upon being exposed to chemical substances

Substance registration documentation pursuant to Regulation (EC) No. 1907/2006 REACH

Decision of the European Chemicals Agency (ECHA) No. SUB-D-2114118349-48-01/F on registration pursuant to Directive (EC) No. 1907/2006 REACH

Research data sources (European chemical Substances Information System ESIS, Hazardous Substances Data Bank HSDB, Sicherheitstechnische Kenndaten chemischer Stoffe SORBE, MedisAlarm, University of Akron Chemical UAKRON, Occupational safety and health guideline, National Institute for Occupational Safety and Health NIOSH, Cheminfo of Canadian Centre for Occupational Health and Safety CCOHS, Directive for air quality in Europe (ecologic center in Most), Gestis sanitary limits)

### Full text of H-/ EUH-sentences and abbreviations of hazard classes stated in Section 2 and/or 3

H 225	Highly flammable liquid and vapor.
H 304	May be fatal if swallowed and enters airways.
H 315	Causes skin irritation.

H 319	Causes serious eye irritation.
H 340	May cause genetic defects.
H 350	May cause cancer.
H 412	Harmful to aquatic life with long lasting effects.
Aquatic Chronic	Hazardous to the aquatic environment, category Chronic toxicity
Asp. Tox.	Aspiration hazard
Carc	Carcinogenicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquid
Muta	Germ cell mutagenicity
Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity — repeat exposure

### Training instructions

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

### Access to information

Pursuant to Article 35 of Directive (EC) No. 1907/2006 REACH, every employer is obliged to allow access to the information stated on the given material safety sheet to all workers who use this product or are exposed to its impacts while working, and also to representatives of these workers.

### Strictly controlled conditions

These are technological processes and working conditions which ensure that, during the whole service life of the intermediate product (i.e. from its production until its transformation to another substance), emissions into the environment and exposure of employees are minimized. For intermediate products isolated on the spot, these conditions are defined in article 18(4) of EC Regulation No 1907/2006 REACH:

- substance is strictly stored under controlled conditions by technical measures during its whole service life,
- process and control technologies are used for reducing emissions and exposure,
- only appropriately trained and entitled staff can manipulate the substance,
- activities such as cleaning and rinsing are performed before opening and entering the technological system during cleaning, maintenance or inspections,
- in case of an accident and when waste is created, process and control technologies are used to reduce emissions and exposure when cleaning the substance or during the cleaning and maintenance procedures,
- procedures for manipulating the substance are appropriately documented and strictly monitored by the operator.

### Occupational exposure limit values for EU countries (see point 8.1.1)



data for benzene (number CAS 71-43-2)

	8-hour limit [mg.m <sup>-3</sup> ]	Short-term limit [mg.m <sup>-3</sup> ]
European Union (Regulation No. 2000/39/EC as amended)	3.25	not specified
Italy	3.25	not specified
Germany (AGS)	1.9	15.2
Austria	3.2	12.8
Poland	1.6	not specified
Slovakia	not specified	not specified

*8-hour limit: Measured or calculated in relation to the 8-hour reference period as a timely weighted average*

*Short-term limit: Exposure limit value, which shall not be exceeded and which corresponds to a 15-minute period*

### Emergency telephone number for EU countries (see subsection 1.4)

National Centers (NON STOP)		TOXICOLOGY (first aid information)	ICE (information from SDS)	
Belgium		+32/70245245	Belintra	+32/35699232
Bulgaria		+359/29154378		




# BENZENE

## SAFETY DATA SHEET

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National Centers (NON STOP)		TOXICOLOGY (first aid information)	ICE (information from SDS)	
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		
Lithuania		+370/52362052		
Latvia		+371/67042473		
Luxembourg		+32/70245245 (viz Belgie)		
Hungary		+36/80201199	VERIK	+36/23552205
Malta		+356/21450000		
Germany		+49/3019240	TUIS	+49/6216043333
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
Great Britain		8448920111	Chemsafe	+44/123 5836002; 5753363

**Statement:** The material safety sheet has been prepared in compliance with Directive (EC) No. 1907/2006 REACH. It includes data that are necessary for securing occupational health and safety and the protection of the environment. These data have been provided in good faith, correspond to the current state of knowledge and experience and are in accordance with our valid legal regulations. The data provided does not replace the quality specification and can not be considered as a guarantee of the suitability and usability 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 influence different factors. The consumer is responsible for compliance with the appropriate, regionally valid legal regulations.





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### ANNEX OF MATERIAL SAFETY DATA SHEET

EXPOSURE SCENARIOS ACCORDING TO ARTICLE 31 OF REGULATION (EC) NO 1907/2006  
(REACH) OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

Exposure scenarios for isolated intermediate product used under strictly controlled conditions are not required.