SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

The table contains identifiers (names and identification numbers) of the product which is marketed under the following business name:

PETROLEUM BENZENE

<table>
<thead>
<tr>
<th>DATA SOURCE FOR IDENTIFICATION</th>
<th>IDENTIFIERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name on registration:</td>
<td>Benzene</td>
</tr>
<tr>
<td>registration no.:</td>
<td>01-2119447106-44-0029</td>
</tr>
<tr>
<td>Name in the list:</td>
<td>Benzene</td>
</tr>
<tr>
<td>index no.:</td>
<td>601-020-00-8</td>
</tr>
<tr>
<td>Name listed in the database:</td>
<td>benzene</td>
</tr>
<tr>
<td>International chemical name:</td>
<td>benzene</td>
</tr>
<tr>
<td>CAS: 71-43-2</td>
<td>EC: 200-753-7</td>
</tr>
</tbody>
</table>

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

2.1.1 Identified use

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.

2.1.2 Non-recommended use

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

- UNIPETROL RPA, s.r.o., Zaluží 1, 436 70 Litvínov, Czech Republic
  - : +420 476 161 111  fax: +420 476 619 553
  - unipetrolrpa@unipetrol.cz
  - www.unipetrolrpa.cz
  
  - Marketing C.E.O.:
    - : +420 476 164 281  fax: +420 476 163 691
    - jaroslava.svobodova@unipetrol.cz
  
  - Sales administrator:
    - : +420 476 165 001  fax: +420 476 163 691

- Person competent for SDS
  - reach.unirpa@unipetrol.cz

1.4 Emergency telephone number

- UNIPETROL RPA, s.r.o.  - :+420 476 163 111 (non-stop)
  - :+420 476 162 111 (non-stop)

- MINISTRY OF HEALTH CENTRE
  - Toxicological Information Center (TIC)
    - :+420 224 919 293 (non-stop)
  - Na bojišti 1, 128 08 Prague 2, Czech Republic
  - e-mail: tis@mbox.cesnet.cz
  - fax: +420 224 914 570
SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

The product is harmonically classified on the EU level as dangerous based on its entry, classification and labelling in part 3 of Annex VI of Regulation (EC) No 1272/2008 CLP.

2.1.1 CLP (Regulation (EC) No1272/2008 CLP):

- FLAMMABLE LIQUID (CATEGORY 2)
- CARCINOGENIC (CATEGORY 1A)
- MUTAGENIC (CATEGORY 1B)
- TOXIC FOR SPECIFIC TARGET ORGANS - REPEATED EXPOSURE (CATEGORY 1)
- ASPIRATION HAZARD (CATEGORY 1)
- SEVERE DANGER OF EYE DAMAGE / IRRITATION (CATEGORY 2)

2.1.2 DSD / DPD (directive) 67/548/EHS / directive 1999/45/ES):

- HIGHLY FLAMMABLE
- CARCINOGENIC CAT. 1
- MUTAGENIC CAT. 2
- TOXIC
- DANGEROUS TO HEALTH
- IRRITATING

Note: Full wording of H-, EUH- and R-phrases listed in Section 16

2.2 Label elements

<table>
<thead>
<tr>
<th>product identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>PETROLEUM BENZENE</td>
</tr>
<tr>
<td>BENZEN / BENZENE</td>
</tr>
<tr>
<td>index no.: 601-020-00-8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>hazard pictogram(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHS02</td>
</tr>
<tr>
<td>GHS08</td>
</tr>
<tr>
<td>GHS07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>signal word</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>hazard statements (H-, EUR-phrases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H225</td>
</tr>
<tr>
<td>H304</td>
</tr>
<tr>
<td>H315</td>
</tr>
<tr>
<td>H319</td>
</tr>
<tr>
<td>H340</td>
</tr>
<tr>
<td>H350</td>
</tr>
<tr>
<td>H372</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>precautionary statements (P-phrases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P202</td>
</tr>
<tr>
<td>P210</td>
</tr>
<tr>
<td>P243</td>
</tr>
<tr>
<td>P280</td>
</tr>
<tr>
<td>P303+P361+P353</td>
</tr>
<tr>
<td>P301+P310</td>
</tr>
<tr>
<td>P331</td>
</tr>
</tbody>
</table>
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.

---

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substances

<table>
<thead>
<tr>
<th>name of substance :</th>
<th>benzene</th>
</tr>
</thead>
<tbody>
<tr>
<td>concentration [% of weight] :</td>
<td>min. 99.9</td>
</tr>
<tr>
<td>index no. (index) :</td>
<td>601-020-00-8</td>
</tr>
<tr>
<td>CAS :</td>
<td>71-43-2</td>
</tr>
<tr>
<td>ES :</td>
<td>200-753-7</td>
</tr>
</tbody>
</table>

**CONTAMINANTS**

the product does not contain any impurities, stabilizing additives or other substances which would affect its classification

---

### SECTION 4: FIRST AID MEASURES

#### 4.1 Description of first aid measures

4.1.1 General instructions

Ensure the operation of vital functions. In case of danger of loss of consciousness, move the patient into the stabilized position. Never give anything orally to unconscious individuals. If possible with respect to your own safety, transport the patient out of the dangerous area and remove all contaminated clothing and shoes.

Ensure specialized medical help.

4.1.2 In case of inhalation

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

4.1.3 In case of 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 In case of eye contact
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 In case if swallowed
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 lung swelling (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 (CO2) 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 fire fighters
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 Environment 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.

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 sections
For recommended personal protective equipment see Subsection 8.2 („Limiting exposure“).
For recommended waste disposal see Section 13 („Disposal considerations“).

SECTION 7: HANDLING AND STORAGE

7.1 Safe handling instructions
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 reparation 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:
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

<table>
<thead>
<tr>
<th>Czech Republic (government Regulation No361/2007 Coll.)</th>
<th>PEL [mg.m(^{-3})]</th>
<th>NPK-P [mg.m(^{-3})]</th>
</tr>
</thead>
<tbody>
<tr>
<td>name: benzene</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>index no.: 601-020-00-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS: 71-43-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ES: 200-753-7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PEL**: permissible exposure limit of the chemical substance in the air  
**NPK-P**: maximum permissible concentration of the chemical substance in the air

<table>
<thead>
<tr>
<th>European Union (Directive) 2000/39/ES</th>
<th>8-hour limit [mg.m(^{-3})]</th>
<th>short time limit [mg.m(^{-3})]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>3,25</td>
<td>not determined</td>
</tr>
<tr>
<td>Italy</td>
<td>3,25</td>
<td>not determined</td>
</tr>
<tr>
<td>Slovakia</td>
<td>not determined</td>
<td>not determined</td>
</tr>
<tr>
<td>Poland</td>
<td>1,6</td>
<td>not determined</td>
</tr>
</tbody>
</table>

8-hour limit: measured or calculated in relation to the reference period of eight hours as a time-weighted average  
short time limit: limit value that should not be exceeded during exposure corresponding to 15 minutes

Recommended procedure for monitoring concentrations in the work environment: 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 controls

Technical protective measures to prevent 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). Protective measures against exposure must be ensured by strictly keeping the substance under control by using process and control technologies, which reduce emissions and subsequent exposure with the goal of preventing the substance from entering the air and water systems as well as the soil, and of preventing possible human exposure. The areas where the substance is stored and manipulated must be equipped with impermeable floors and retaining tanks in case of emergency leaks.

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 MEASURES (PPM):

- **protection of airways**: protective mask with filter A (brown, against organic gases) for leaks, isolation breathing device for removing the consequences of extraordinary events
- **protection of eye / face**: protective glasses
- **protection of skin - hands** protective gloves

<table>
<thead>
<tr>
<th>protective activity</th>
<th>glove material</th>
<th>layer width</th>
<th>time of penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>general work activity (possibility of contamination)</td>
<td>nitril</td>
<td>0,4 mm</td>
<td>10 minutes</td>
</tr>
<tr>
<td>cleaning after leaks / emergencies</td>
<td>Viton</td>
<td>0,7 mm</td>
<td>480 minutes</td>
</tr>
</tbody>
</table>
• protection of other body parts: antistatic non-flammable protective clothing, antistatic shoes
• heat danger: not relevant for the identified manner of use

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>UNIT</th>
<th>VALUE</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>appearance</td>
<td></td>
<td>colorless liquid</td>
<td></td>
</tr>
<tr>
<td>odour</td>
<td></td>
<td>aromatic</td>
<td></td>
</tr>
<tr>
<td>odour threshold</td>
<td>[ppm]</td>
<td>4.68</td>
<td>HSDB</td>
</tr>
<tr>
<td>pH value</td>
<td></td>
<td>not relevant</td>
<td></td>
</tr>
<tr>
<td>melting / freezing point</td>
<td>[°C]</td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>initial boiling point / boiling range</td>
<td>[°C]</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>flash point</td>
<td>[°C]</td>
<td>-11</td>
<td></td>
</tr>
<tr>
<td>evaporation rate</td>
<td>ether=1</td>
<td>2.8</td>
<td>HSDB</td>
</tr>
<tr>
<td>flash flammability</td>
<td></td>
<td>determining flammability not relevant for liquids</td>
<td></td>
</tr>
<tr>
<td>upper explosion limit</td>
<td>[%vol]</td>
<td>7.8</td>
<td>HSDB</td>
</tr>
<tr>
<td>lower explosion limit</td>
<td>[%vol]</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>vapour pressure</td>
<td>[hPa]</td>
<td>10</td>
<td>at 20°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100</td>
<td>at 79.7°C</td>
</tr>
<tr>
<td>vapour density</td>
<td>air=1</td>
<td>2.8</td>
<td>HSDB</td>
</tr>
<tr>
<td>relative density</td>
<td>[g.cm⁻³]</td>
<td>0.8765</td>
<td>at 15.6°C</td>
</tr>
<tr>
<td>solubility in water</td>
<td>[g.l⁻¹]</td>
<td>1.88</td>
<td>at 23.5°C</td>
</tr>
<tr>
<td>partition coefficient: n-octanol/water</td>
<td>[log Kow]</td>
<td>2.13</td>
<td></td>
</tr>
<tr>
<td>auto-ignition temperature</td>
<td>[°C]</td>
<td>498</td>
<td></td>
</tr>
<tr>
<td>decomposition temperature</td>
<td></td>
<td>does not decomposition down at usual temperatures of use</td>
<td></td>
</tr>
<tr>
<td>kinematic viscosity</td>
<td>[mm².s⁻¹]</td>
<td>≤ 20.5</td>
<td>at 40°C</td>
</tr>
<tr>
<td>dynamic viscosity</td>
<td>[mPa.s]</td>
<td>0.604</td>
<td>at 25°C</td>
</tr>
<tr>
<td>explosive properties</td>
<td></td>
<td>substance is not explosive</td>
<td></td>
</tr>
<tr>
<td>oxidising properties</td>
<td></td>
<td>substance has not oxidising properties</td>
<td></td>
</tr>
</tbody>
</table>

9.2 Other information
Not required.
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: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Substance

<table>
<thead>
<tr>
<th>HAZARD CLASS</th>
<th>EFFECT ON HEALTH</th>
<th>JUSTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>acute toxicity effect on human health for inhalation, ingestion or skin penetration are evident only from the following concentrations:</td>
<td>data from registration documentation</td>
</tr>
<tr>
<td></td>
<td>Acute toxicity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 oral: &gt; 2000 mg.kg⁻¹</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LD50 skin: &gt; 5000 mg.kg⁻¹</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC₅₀ inhalation: &gt; 20 mg.l⁻¹/4hod</td>
<td></td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>skin irritant</td>
<td>harmonized classification in compliance with Annex VI of Regulation (EC) No 1272/2008 CLP</td>
</tr>
<tr>
<td></td>
<td>irritant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unjustified</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unjustified</td>
<td></td>
</tr>
<tr>
<td></td>
<td>irritant</td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/ irritation</td>
<td>eye irritant</td>
<td>harmonized classification in compliance with Annex VI of Regulation (EC) No 1272/2008 CLP</td>
</tr>
<tr>
<td></td>
<td>irritant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unjustified</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unjustified</td>
<td></td>
</tr>
<tr>
<td></td>
<td>irritant</td>
<td></td>
</tr>
<tr>
<td>HAZARD CLASS</td>
<td>EFFECT ON HEALTH</td>
<td>JUSTIFICATION</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>based on available data the substance does not cause allergic reaction and therefore it does not need to be classified as sensitizing non-sensitizing non-sensitizing</td>
<td>data from registration documentation: data available for humans and animals in vivo study</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>causes heritable genetic changes</td>
<td>harmonized classification in compliance with Annex VI of Regulation (EC) No 1272/2008 CLP data from registration documentation: in vitro study in vivo study</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>causes cancer</td>
<td>harmonized classification in compliance with Annex VI of Regulation (EC) No 1272/2008 CLP</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>based on available information there is no need to classify the substance for adverse effects on fertility or fetus development</td>
<td>currently there are no available data proving that the substance has the given property</td>
</tr>
<tr>
<td>Specific target organ toxicity – single exposure</td>
<td>based on available information there is no need to classify the substance for its capability to damage human organs during a single exposure</td>
<td>currently there are no available data proving that the substance has the given property</td>
</tr>
<tr>
<td>Specific target organ toxicity – repeated exposure</td>
<td>damages human organs during repeated exposure damages bone marrow and erodes red and white blood cells</td>
<td>harmonized classification in compliance with Annex VI of Regulation (EC) No 1272/2008 CLP data from registration documentation: sub acute and sub chronic toxicity</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>might damage lungs or cause death in case of consumption and inhalation into airways</td>
<td>harmonized classification in compliance with Annex VI of Regulation (EC) No 1272/2008 CLP hydrocarbon with kinematic viscosity ≤ 20,5 mm².s⁻¹ at 40°C</td>
</tr>
</tbody>
</table>

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 Symptoms and effects (acute, delayed and chronic after short-time and long-time 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 lung swelling (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.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

**AQUATIC TOXICITY:**
- Short term toxicity testing on invertebrates: EC50, 48 hours: 10 mg.l⁻¹ (*Daphnia*)
- Long term toxicity testing on invertebrates: NOEC, 7 days: 3 mg.l⁻¹ (*Daphnia*)
- Growth inhibition study aquatic plants: EC50, 72 hours: 100 mg.l⁻¹
- Short term toxicity testing on fish: LC50, 96 hours: 5.3 mg.l⁻¹
- Long term toxicity testing on fish: NOEC, 32 days: 0.8 mg.l⁻¹
- Activated sludge respiration inhibition testing: IC50, 24 hours, nitrification: 13 mg.l⁻¹

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 Other adverse effects
The product is considered hazardous harmful substance in the sense of Annex I to Water Act No 254/2001Coll.

12.7 Other information
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.
SECTION 13: DISPOSAL CONSIDERATION

13.1 Waste treatment methods

No waste is produced from designated use and when stored and handled under strictly controlled conditions. If waste is produced during an emergency event or accident, valid European Union and national or local legislature and regulations must be adhered to.

13.1.1 Recommended waste classification according to Decree No 381/2001 Coll. (Waste catalogue)

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 methods of waste disposal

Hand the waste for disposal to authorized professionals.

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 Considerations for limiting exposure when handling wastes

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.

SECTION 14: TRANSPORT INFORMATION

Information on transport classification are in accordance with the following UN Model Regulations:
- European Agreement concerning the International Carriage of Dangerous Goods (ADR),
- International Carriage of Dangerous Goods by Rail (RID).

14.1 UN 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: the product is not hazardous for the environment in accordance with criteria stated in the UN Model Regulations

14.6 Special precautions for user: none

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: the product is not intended to be carried in bulk in accordance with the International Maritime Organization (IMO) documents

14.8 Other information

Hazard identification number: 33
Classification code: F1
Safety sign: 3
SECTION 15: REGULATORY INFORMATION

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

15.1.1 European Union
REGISTRATION (TITLE II OF REACH REGULATION)
The product has been registered as transported isolated intermediate product produced and used under strictly controlled conditions.
AUTHORIZATION (TITLE VII OF REACH REGULATION)
Isolated intermediate products are not subject to authorization obligation in accordance with Article 2(8).
RESTRICTION (TITLE VIII OF REACH REGULATION)
Restrictions are met by determining authorized used.
The product has been classified in accordance with the abovementioned regulation. Obligations related to packing and labeling the package of hazardous chemical substance do not apply to the product with regards to the fact that it is not packed upon entering the market.
Regulation (EC) No 689/2008 of the European Parliament and of the Council concerning the export and import of dangerous chemicals, as amended
The product is subject to special provision for export and import.
Implemented into Act No 185/2001 Coll. on waste.
Implemented into Act No 59/2006 Coll. on the prevention of serious accidents

15.1.2 The Czech Republic
Act No 350/2011 Coll. on chemical substances and mixtures, as amended
Act No 258/2000 Coll. on protection of public health, as amended
Act No 254/2001 Coll., on waters, as amended
Act No 86/2002 Coll., on the protection of the air, as amended
Act No 185/2001 Coll., on waste, as amended
Decree No 381/2001 Coll., in which the Waste Catalogue is stated, as amended
Government Regulation No 361/2007 Coll., determining conditions for occupational health protection, as amended
Act No 59/2006 Coll., on the prevention of serious accidents, as amended
Decree No 256/2006 Coll., on details of the serious accident prevention system, as amended

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 made at revision
26.10.2005: Editing information in chapters 2, 3.1, 3.2, 11.1, 12.5, 15.1, 15.2, 16
01.12.2006: Editing information in chapters 1, 2, 8, 13 a 16
01.03.2007. Editing information in chapters 1a 16
01.12.2009: Editing information in chapters 1, 2.1, 8.1, 15, 16 and „Proclamation”
01.12.2010: Editing information in chapters 1 (registration no., use under strictly controlled conditions), 2 (classification and labeling according to CLP), 4 and 16
01.01.2012: Section 15.1.2 – updating legislation
01.06.2012: Section 1.1 - identifiers, Section 1.3 – update contact and Section 16 - abbreviations

Abbreviations used in the text
CAS number
Registration number assigned to the substance by the Chemical Abstracts Service of the American Chemical Society.

EC number
Official number of the chemical substance in the European Union:
EINECS (European Inventory of Existing Commercial Substances), or
ELINCS (European List of Notified Chemical Substances), or
NLP (No longer polymer list).

REACH (Regulation)

CLP (Regulation)
EU Regulation No 1272/2008 on the Classification, Labeling and Packaging of chemical substances and mixtures, which implements the United Nations` Globally Harmonized System into EU legislature.

DSD

DPD

SDS
Safety Data Sheet.

ECHA
European Chemicals Agency.

UVCB substances
Substances of Unknown or Variable composition, Complex reaction products or Biological materials.

ČSN EN (ISO)
European norm accepted into the Czech technical norms system.

OSN or UN
The United Nations.

IBC
The Intermediate Bulk Container.

MARPOL 73/78

HSDB
Hazardous Substances Data Bank.

Sources of data used for setting up the safety sheet
Company records of Unipetrol RPA, s.r.o. on the classification of dangerous properties of products
Annexes I, IV, VI and VII to EC Regulation No 1272/2008 CLP, as amended
Principles for provision of first aid following exposure to chemical substances (doc. MUDr. Daniela Pelcová at al.)
Registration documentation for the substance in accordance with EC Regulation No 1907/2006 REACH
Decision of ECHA No SUB-D-2114118349-48-01/F on registration in accordance with EC Regulation 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 wording of R-phrases, H-phrases and EUH-phrases listed in SECTIONS 2 and/or 3
R 45  May cause cancer
R 46  May cause heritable genetic damage
R 11  Highly flammable
R 36/38  Irritating to eyes and skin
R 48/23/24/25  Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
R 65  Harmful: May cause lung damage if swallowed
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 372  Causes damage to organs through prolonged or repeated exposure.

Training guidelines
Those who manipulate with the product must be demonstrably informed of its dangerous properties, principles of protecting the environment and health from its harmful effects and principles of first aid (Act No 258/2000, as amended).

Access to information
According to article 35 of EC Regulation No 1907/2006 Reach, each employer must allow access to information listed in the safety sheet to all workers who use this product or are exposed to its effects during their work, 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.

Elements of the original labeling of dangerous substance in accordance with DSD Directive 67/548/EHS

**WARNING !!!** Only used informally, to ensure continuity between the former and new labeling of dangerous substances. **THE ELEMENTS LISTED BELOW CAN NO LONGER BE USED TO LABEL THIS PRODUCT !!!** The new labeling must be in accordance with Subsection 2.2.

<table>
<thead>
<tr>
<th>graphic symbol of danger</th>
<th>written symbol of danger</th>
<th>R-phrases</th>
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- highly flammable
- toxic

Avoid exposure - obtain special instructions before use
In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
Inspection and verification of safety sheet contents
Inspection and verification of the accordance of this document with the requirements of EC Regulation No 1907/2006 REACH and EC Directive No 1272/2008 CLP were performed by an independent specialist – Ing. Oldřich Petira, CSc., an authorized specialist in the fields of chemistry and environmental protection with an emphasis on industrial toxicology and chemical safety of the environment.

Proclamation: Material This Material Safety Data Sheet has been elaborated in accordance with the Regulation (EC) No 1907/2006 REACH. It contains information necessary to ensure safety and protection of health at work and of the environment. This information does not substitute quality specification and should not be construed as any guarantee of suitability for particular applications. The data contained are based on the present state of knowledge and current national legislation. The user is responsible for ensuring the compliance with the relevant regional legislation.

According to the authorization form on behalf of UNIPETROL RPA, s.r.o. elaborated by:
Health, Safety, Environment & Quality (HSE&Q) Department, UNIPETROL SERVICES, s.r.o.
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.