

# SAFETY DATA SHEET



BENZENE

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

**Product name** : BENZENE

**EC number** : 200-753-7

#### REACH Registration number

##### Registration number

01-2119447106-44-0011

01-2119447106-44-0012

**CAS number** : 71-43-2

**Product description** : Aromatic Hydrocarbon

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

**Intended Use** : Chemical feedstock

#### Identified uses

Manufacture of substance

Use as an intermediate

#### Uses advised against

Not applicable.

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

**Supplier** : ExxonMobil Petroleum & Chemical BV  
POLDERDIJKWEG  
Antwerpen B-2030 Belgium

**Supplier General Contact** : + 32 2 239 3111  
**e-mail address of person responsible for this SDS** : SDS-CC@exxonmobil.com

**SDS Internet Address** : www.sds.exxonmobil.com

#### National contact

ExxonMobil Chemical Ltd.  
MAILPOINT 14  
MARSH LANE  
FAWLEY, SOUTHAMPTON  
SO45 1TX HAMPSHIRE  
Great Britain  
+44 (0)23-8089-3822

### 1.4 Emergency telephone number

**National advisory body/** : (UK) 111

#### Poison Centre

**24 Hour Emergency** : +44 20 3807 3798 / +1-703-527-3887 (CHEMTREC)

#### Telephone

BENZENE

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Product definition** : Mono-constituent substance**Classification according to UK CLP/GHS**

Flam. Liq. 2, H225

Skin Irrit. 2, H315

Eye Irrit. 2, H319

Muta. 1B, H340

Carc. 1A, H350

STOT RE 1, H372 (blood)

Asp. Tox. 1, H304

Aquatic Chronic 3, H412

The product is classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

**2.2 Label elements****Hazard pictograms** :**Signal word** : Danger

**Hazard statements** :

- H225 - Highly flammable liquid and vapour.
- H304 - May be fatal if swallowed and enters airways.
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H340 - May cause genetic defects.
- H350 - May cause cancer.
- H372 - Causes damage to organs through prolonged or repeated exposure. (blood)
- H412 - Harmful to aquatic life with long lasting effects.

**Precautionary statements****Prevention** :

- P201 - Obtain special instructions before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 - Keep container tightly closed.
- P240 - Ground and bond container and receiving equipment.
- P241 - Use explosion-proof electrical, ventilating or lighting equipment.
- P242 - Use non-sparking tools.
- P243 - Take action to prevent static discharges.
- P260 - Do not breathe vapour.
- P264 - Wash thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P273 - Avoid release to the environment.
- P280 - Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection.

**Response** :

- P301 + P331, P310 - IF SWALLOWED: Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
- P302 + P352 - IF ON SKIN: Wash with plenty of water.
- P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308 + P313 - IF exposed or concerned: Get medical advice or attention.
- P332 + P313 - If skin irritation occurs: Get medical advice/attention.
- P337 + P313 - If eye irritation persists: Get medical advice/attention.
- P362 + P364 - Take off contaminated clothing and wash it before reuse.
- P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

BENZENE

## SECTION 2: Hazards identification

- Storage** : P403 + P235 - Store in a well-ventilated place. Keep cool.  
P405 - Store locked up.
- Disposal** : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazardous ingredients** : benzene
- Supplemental label elements** : Not applicable.
- Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : None.
- Special packaging requirements**
  - Containers to be fitted with child-resistant fastenings** : Not applicable.
  - Tactile warning of danger** : Not applicable.

### 2.3 Other hazards

- Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII** :

<b>PBT</b>	<b>P</b>	<b>B</b>	<b>T</b>	<b>vPvB</b>	<b>vP</b>	<b>vB</b>
No	N/A	No	Yes	No	N/A	No
- Other hazards which do not result in classification** : None known.
- Nota** : This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances : Mono-constituent substance

Product/ingredient name	Identifiers	%	Classification	Type
benzene	REACH #: 01-2119447106-44 EC: 200-753-7 CAS: 71-43-2	100	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 (blood) Asp. Tox. 1, H304 Aquatic Chronic 3, H412  <b>See Section 16 for the full text of the H statements declared above.</b>	[1]

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

#### Type

[1] Constituent

Occupational exposure limits, if available, are listed in Section 8.

BENZENE

**SECTION 4: First aid measures****4.1 Description of first aid measures**

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 10 minutes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Get medical attention.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

**4.2 Most important symptoms and effects, both acute and delayed****Over-exposure signs/symptoms**

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : Adverse symptoms may include the following:  
nausea or vomiting

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

- Notes to physician** : If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. This material, or a component, may be associated with cardiac sensitization following very high exposures (well above occupational exposure limits) or with concurrent exposure to high stress levels or heart-stimulating substances like epinephrine. Administration of such substances should be avoided.
- Specific treatments** : No specific treatment.

**See toxicological information (Section 11)**

BENZENE

**SECTION 5: Firefighting measures****5.1 Extinguishing media**

**Suitable extinguishing media** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.

**Unsuitable extinguishing media** : Do not use water jet.

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

**Specific hazards arising from the chemical** : Highly flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous combustion products** : Incomplete combustion products, Oxides of carbon, Smoke, Fume

**5.3 Advice for firefighters**

**Special protective actions for fire-fighters** : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Assure an extended cooling down period to prevent re-ignition. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

**SECTION 6: Accidental release measures****NOTIFICATION PROCEDURES**

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

**6.1 Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Put on appropriate personal protective equipment. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

**For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**6.2 Environmental precautions**

: Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

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

**Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

BENZENE

## SECTION 6: Accidental release measures

- Large spill** : Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. Seek the advice of a specialist before using dispersants. Warn other shipping. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

- 6.4 Reference to other sections** : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Static Accumulator** : This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.
- Loading/Unloading Temperature** : Ambient
- Transport Temperature** : Ambient
- Transport Pressure** : Ambient

BENZENE

## SECTION 7: Handling and storage

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

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

#### Seveso Directive - Reporting thresholds

##### Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
P5c	5000 tonne	50000 tonne

**Storage Temperature** : Ambient

**Storage Pressure** : Ambient

**Suitable Containers/  
Packing** : Tank Trucks, Tankers, Barges, Tank Cars

**Suitable Materials and  
Coatings** : Stainless Steel, Epoxy Phenolic, Fluorinated Silicone Rubber, polypropylene, Carbon Steel

**Unsuitable Materials and  
Coatings** : PVC, Compatibility with epoxy/resin compositions will vary, rubber, polyethylene

### 7.3 Specific end use(s)

**Recommendations** : Not available.

**Industrial sector specific  
solutions** : Not available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Product/ingredient name	Exposure limit values
benzene	<p><b>EH40/2005 WELs (United Kingdom (UK), 1/2020)</b> Absorbed through skin.                      TWA 8 hours: 1 ppm.                      TWA 8 hours: 3.25 mg/m<sup>3</sup>.</p> <p><b>EU OEL (Europe, 10/2019)</b> Absorbed through skin.                      TWA 8 hours: 0.5 ppm.                      TWA 8 hours: 1.65 mg/m<sup>3</sup>.</p> <p><b>ACGIH TLV (United States, 1/2024)</b> Absorbed through skin.                      TWA 8 hours: 0.02 ppm.</p> <p><b>ExxonMobil (COMPANY)</b> Absorbed through skin.                      STEL 15 minutes: 1 ppm.                      TWA 8 hours: 0.2 ppm.</p>

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

**Recommended monitoring procedures** : Reference should be made to monitoring standards, such as the following: British Standard BS EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) British Standard BS EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) British Standard BS EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

#### DNELs/DMELs

BENZENE

## SECTION 8: Exposure controls/personal protection

No DNELs/DMELs available.

### PNECs

No PNECs available

### 8.2 Exposure controls

#### **Appropriate engineering controls**

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

#### **Environmental exposure controls**

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

#### **Hygiene measures**

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### **Eye/face protection**

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

### Skin protection

#### **Hand protection**

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): Viton, minimum 0.71 mm thickness or comparable protective barrier material  
CEN standards EN 420 and EN 374 provide general requirements and lists of glove types.

#### **Body protection**

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

#### **Other skin protection**

: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

#### **Respiratory protection**

: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: organic vapour filter (Type A)

European Committee for Standardization (CEN) standards EN 136, 140 and 405 provide respirator masks and EN 149 and 143 provide filter recommendations.

#### **Environmental exposure controls**

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

BENZENE

## Section 9. Physical and chemical properties and safety characteristics

**Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.**

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	: Liquid. [Clear]
<b>Colour</b>	: Colourless
<b>Odour</b>	: Aromatic
<b>Odour threshold</b>	: Not available.
<b>pH</b>	: Not applicable.
<b>Melting point/freezing point</b>	: 5°C (41°F) [Technical literature]
<b>Boiling point or initial boiling point and boiling range</b>	: 80°C (176°F) [Technical literature]
<b>Flash point</b>	: Closed cup: -11°C (12.2°F) [ASTM D-56]
<b>Evaporation rate</b>	: Not available.
<b>Flammability</b>	: Flammable liquids - Category 2
<b>Lower and upper explosive (flammable) limits</b>	: Lower: 1.2% [Technical literature] Upper: 7.8%
<b>Vapour pressure</b>	: 75.01 mm Hg [20 °C] [Technical literature]
<b>Relative vapour density</b>	: 2.7 [Air = 1] [Technical literature]
<b>Relative density</b>	: 0.8765 [In-house method]
<b>Density</b>	: 0.877 g/cm <sup>3</sup> [20°C (68°F)] [In-house method]
<b>Solubility in water</b>	: Moderate
<b>Partition coefficient: n-octanol/ water</b>	: 2.13 [Technical literature] Calculated value
<b>Auto-ignition temperature</b>	: 498°C (928.4°F) [Technical literature]
<b>Decomposition temperature</b>	: Not available.
<b>Viscosity</b>	: <0.8 cSt [40 °C] [In-house method]
<b>Molecular weight</b>	: 78
<b>Particle characteristics</b>	
<b>Median particle size</b>	: Not applicable.
<b>Pour point</b>	: 5°C [Technical literature]
<b>Hygroscopic</b>	: No

## SECTION 10: Stability and reactivity

- 10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability** : The product is stable.
- 10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- 10.4 Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.
- 10.5 Incompatible materials** : Reactive or incompatible with the following materials: oxidising materials,

BENZENE

## SECTION 10: Stability and reactivity

**10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Test	Species	Result	Duration
benzene	LC50 Inhalation Vapour	Rat	43767 mg/m <sup>3</sup>	4 hours
	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-

#### Conclusion/Summary

**Inhalation** : Minimally Toxic. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 403

**Dermal** : Minimally Toxic. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 402

**Oral** : Minimally Toxic. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 401

#### Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
benzene	2500	N/A	N/A	N/A	N/A

#### Irritation/Corrosion

##### Conclusion/Summary

**Skin** : Irritating to the skin. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 404

**Eyes** : Irritating and will injure eye tissue. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 405

**Respiratory** : Negligible hazard at ambient/normal handling temperatures. No end point data for material. Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.

#### Respiratory or skin sensitization

##### Conclusion/Summary

**Skin** : Not expected to be a skin sensitizer. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 406

**Respiratory** : Not expected to be a respiratory sensitizer. No end point data for material.

#### Mutagenicity

**Conclusion/Summary** : May cause genetic defects. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 471 473 474

#### Carcinogenicity

**Conclusion/Summary** : May cause cancer. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 453

#### Reproductive toxicity

**Conclusion/Summary** : Not expected to be a reproductive toxicant. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 414 415

#### Specific target organ toxicity (single exposure)

Not available.

**Conclusion/Summary** : Not expected to cause organ damage from a single exposure. No end point data for material.

#### Specific target organ toxicity (repeated exposure)

BENZENE

## SECTION 11: Toxicological information

benzene Category 1 blood

**Conclusion/Summary** : May cause damage to organs through prolonged or repeated exposure. Data available. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 408 412 413

### Aspiration hazard

benzene Category 1

**Conclusion/Summary** : May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material. Data available.

**Information on likely routes of exposure** : Not available.

### Other information

**Product** : BENZENE: Caused cancer (acute myeloid leukemia and myelodysplastic syndrome), damage to the blood-producing system, and serious blood disorders in human studies. Caused genetic effects and effects on the immune system in laboratory animal and some human studies. Caused toxicity to the fetus and cancer in laboratory animal studies. If exposure is overwhelming, death due to respiratory collapse can occur almost immediately or may be delayed several hours to several days. Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Exposure to this material, or one of its components, in situations where there is the potential for high levels, such as in confined spaces or with abuse, may result in abnormal heart rhythm (arrhythmia). High-level exposure to hydrocarbons (above occupational exposure limits) may initiate arrhythmia in a worker that is undergoing stress or is taking a heart-stimulating substance such as epinephrine, a nasal decongestant, or an asthma or cardiovascular drug. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

## Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
-	Acute EC50 10 mg/l data for the material	daphnia - <i>Daphnia magna</i>	48 hours
-	Acute ErC50 29 mg/l data for the material	Algae - <i>Pseudokirchneriella subcapitata</i>	72 hours
-	Acute LC50 5.3 mg/l data for the material	Fish - <i>Oncorhynchus mykiss</i>	96 hours
-	Chronic LOEC 5.3 mg/l data for the material	Fish - <i>Morone saxatilis</i>	28 days
-	Chronic LOEC 9 mg/l data for the material	daphnia - <i>Ceriodaphnia dubia</i>	7 days
-	Chronic NOEC 3.1 mg/l data for the material	Fish - <i>Morone saxatilis</i>	28 days
-	Chronic NOEC 3 mg/l data for the material	daphnia - <i>Ceriodaphnia dubia</i>	7 days

### Conclusion/Summary

**Acute toxicity** : Toxic to aquatic life.

**Chronic toxicity** : Harmful to aquatic life with long lasting effects.

### 12.2 Persistence and degradability

BENZENE

## Section 12. Ecological information

Product/ingredient name	Test	Result	Dose	Inoculum
-	Ready Biodegradability	96 % - 28 days	data for the material	water

- Photolysis** : 13.4 day(s)
- Biodegradability** : Material -- Expected to be readily biodegradable.
- Hydrolysis** : Material -- Transformation due to hydrolysis not expected to be significant.
- Photolysis** : Material -- Transformation due to photolysis not expected to be significant.
- Atmospheric Oxidation** : Material -- Expected to degrade at a moderate rate in air

### 12.3 Bioaccumulative potential

**Bioconcentration factor (BCF)** : <10 Media:Octanol-Water

**Conclusion/Summary** : Material -- Potential to bioaccumulate is low.

### 12.4 Mobility in soil

**Mobility** : Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

### 12.5 Results of PBT and vPvB assessment

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
benzene	No	N/A	No	Yes	No	N/A	No

### 12.6 Other adverse effects

**Other adverse effects** : No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

#### Product

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

**Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.

#### Packaging

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

BENZENE

### SECTION 13: Disposal considerations

**Special precautions** : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

### SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1114	UN1114	UN1114	UN1114
14.2 UN proper shipping name	BENZENE	BENZENE	BENZENE	Benzene
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	No.	Yes.	No.	No.

**Additional information**

**ADR/RID** : **Hazard identification number** 33  
**Limited quantity** 1 L  
**Tunnel code** (D/E)

**ADN** : The product is only regulated as an environmentally hazardous substance when transported in tank vessels.  
 CMR, N2

**IMDG** : **Emergency schedules** F-E, S-D  
 Flash point -11 °C C.C.

**IATA** : **Quantity limitation** Passenger and Cargo Aircraft: 5 L. Packaging instructions: 353. Cargo Aircraft Only: 60 L. Packaging instructions: 364. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y341.

**14.6 Special precautions for user** : **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**14.7 Transport in bulk according to IMO instruments**

**Proper shipping name** : BENZENE AND MIXTURES HAVING 10% BENZENE OR MORE

**Remarks** : **Liquid bulk cargoes:**  
 Ship type: 3  
 Pollution category: Y

BENZENE

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****UK (GB)/REACH****Annex XIV - List of substances subject to authorisation****Annex XIV**

None of the components are listed.

**Substances of very high concern**

None of the components are listed.

**Ozone depleting substances**

Not listed.

**Prior Informed Consent (PIC)**

Not listed.

**Persistent Organic Pollutants**

Not listed.

**Annex XVII - Restrictions** : None.  
**on the manufacture,  
 placing on the market  
 and use of certain  
 dangerous substances,  
 mixtures and articles**

**Seveso Directive**

This product is controlled under the Seveso Directive.

**Danger criteria****Category**

P5c

**National regulations**

Product/ingredient name	List name	Name on list	Classification	Notes
benzene	EH40/2005 WELs ACGIH TLV	-	Carc A1	-

**EU regulations**

**Industrial emissions** : Not listed  
**(integrated pollution  
 prevention and control) -  
 Air**

**Industrial emissions** : Not listed  
**(integrated pollution  
 prevention and control) -  
 Water**

**Inventory list**

- Australia inventory (AIIC)** : All components are listed or exempted.  
**Canada inventory (DSL-NDSL)** : All components are listed or exempted.  
**China inventory (IECSC)** : All components are listed or exempted.  
**Japan inventory (CSCL)** : All components are listed or exempted.  
**Japan inventory (Industrial Safety and Health Act)** : All components are listed or exempted.  
**New Zealand Inventory of Chemicals (NZIoC)** : All components are listed or exempted.  
**Philippines inventory (PICCS)** : All components are listed or exempted.  
**Korea inventory (KECI)** : All components are listed or exempted.

BENZENE

## SECTION 15: Regulatory information

- Taiwan Chemical Substances Inventory (TCSI)** : All components are listed or exempted.
- United States inventory (TSCA 8b)** : All components are active or exempted.

**15.2 Chemical safety assessment** : This product contains substances for which Chemical Safety Assessments are still required.

## SECTION 16: Other information

✔ Indicates information that has changed from previously issued version.

**Abbreviations and acronyms** :

- ATE = Acute Toxicity Estimate
- GB CLP = UK CLP (EC No 1272/2008) on the Classification, Labelling and Packaging of Substances and Mixtures as amended by (EU Exit) Regulations 2019 No. 720 and amendments
- DMEL = Derived Minimal Effect Level
- DNEL = Derived No Effect Level
- EUH statement = GB CLP-specific Hazard statement
- N/A = Not available
- PBT = Persistent, Bioaccumulative and Toxic
- PNEC = Predicted No Effect Concentration
- RRN = REACH Registration Number
- SGG = Segregation Group
- vPvB = Very Persistent and Very Bioaccumulative

### Procedure used to derive the classification

Classification	Justification
Flam. Liq. 2, H225	On basis of test data
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method
Muta. 1B, H340	Calculation method
Carc. 1A, H350	Calculation method
STOT RE 1, H372 (blood)	Calculation method
Asp. Tox. 1, H304	Calculation method
Aquatic Chronic 3, H412	Calculation method

### Full text of abbreviated H statements

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

### Full text of classifications

Aquatic Chronic 3	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
Asp. Tox. 1	ASPIRATION HAZARD - Category 1
Carc. 1A	CARCINOGENICITY - Category 1A
Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Flam. Liq. 2	FLAMMABLE LIQUIDS - Category 2
Muta. 1B	GERM CELL MUTAGENICITY - Category 1B
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
STOT RE 1	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 1

**Date of issue/ Date of revision** : 2 August 2024

**Date of previous issue** : 4 January 2024

**Version** : 1.01

**Product code** : 1148010\_13699501

### Notice to reader

**Date of issue/Date of revision** : 2 August 2024      **Date of previous issue** : 4 January 2024      **Version** : 1.01      15/17

BENZENE

## SECTION 16: Other information

"The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, ""ExxonMobil"" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest."

BENZENE