

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**
**1.1. Product identifier**

Product form	: Substance
Trade name	: benzene
IUPAC name	: benzene
EC Index-No.	: 601-020-00-8
EC-No.	: 200-753-7
CAS-No.	: 71-43-2
REACH registration No	: 01-2119447106-44
Product code	: P064
Formula	: C <sub>6</sub> H <sub>6</sub>
Product group	: Trade product

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

Use of the substance/mixture : Use as an intermediate

Title	Use descriptors
IW-0 Use as an intermediate	SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC6a

Full text of use descriptors: see section 16

**1.2.2. Uses advised against**

No additional information available

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

 Supplier (Only Representative):  
 Braskem Netherland BV  
 Weena 238-240, 9th Floor, Tower C  
 NL - 3012 NJ – Rotterdam  
 T+31 10 798 5002  
 productsafety@braskem.com

**1.4. Emergency telephone number**

Emergency number : +1 703-741-5970 (international – 24 h)

**SECTION 2: Hazards identification**
**2.1. Classification of the substance or mixture**
**Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Flammable liquids, Category 2	H225
Skin corrosion/irritation, Category 2	H315
Serious eye damage/eye irritation, Category 2	H319
Germ cell mutagenicity, Category 1B	H340
Carcinogenicity, Category 1A	H350
Specific target organ toxicity – Repeated exposure, Category 1	H372
Aspiration hazard, Category 1	H304
Hazardous to the aquatic environment – Chronic Hazard, Category 3	H412

Full text of H- and EUH-statements: see section 16

**Adverse physicochemical, human health and environmental effects**

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 (haematopoietic system) (in contact with skin, if inhaled, If swallowed). Harmful to aquatic life with long lasting effects.

**2.2. Label elements**
**Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

Hazard pictograms (CLP) :



# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Signal word (CLP)	: Danger
Hazard statements (CLP)	: 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 (haematopoietic system) through prolonged or repeated exposure (if inhaled, if swallowed). H412 - Harmful to aquatic life with long lasting effects.
Precautionary statements (CLP)	: P201 - Obtain special instructions before use. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P235 - Keep cool. P260 - Do not breathe vapours, mist, spray. P280 - Wear eye protection, face shield, protective clothing, protective gloves, face protection. P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

### 2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII  
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%
Benzene	CAS-No.: 71-43-2 EC-No.: 200-753-7 EC Index-No.: 601-020-00-8 REACH-no: 01-2119447106-44	100

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: Remove casualty to fresh air and keep warm and at rest. In case of irregular breathing or respiratory arrest provide artificial respiration. In case of breathing difficulties administer oxygen. Immediately get medical attention.
First-aid measures after skin contact	: Rinse immediately with plenty of water (for at least 15 minutes). Immediately get medical attention. Discard contaminated clothing.
First-aid measures after eye contact	: Rinse immediately and plentifully with water, also under the eyelids, for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately get medical attention.
First-aid measures after ingestion	: Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Immediately get medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects	: May cause cancer. May cause genetic defects.
Symptoms/effects after inhalation	: Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness.
Symptoms/effects after skin contact	: Causes skin irritation. Prolonged/repetitive skin contact may cause skin defatting or dermatitis. Repeated exposure may cause skin dryness or cracking. Redness.
Symptoms/effects after eye contact	: Irritating to eyes.
Symptoms/effects after ingestion	: May cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Chronic symptoms : Chronic inhalation may result in chronic solvent encephalopathy or "chronic painter's syndrome" a central nervous system disorder that can follow many years of heavy exposure to solvents.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO<sub>2</sub>), dry chemical powder, foam. Water fog.  
Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Highly flammable liquid and vapour. This material can accumulate static charge by flow or agitation and can be ignited by static discharge. Vapours may cause fire/explosion if source of ignition is present. Heavier than air, vapours may travel long distances along ground, ignite and flash back to source. Will float and can be reignited on water surface. Under fire conditions closed containers may rupture or explode. On combustion forms: Carbon monoxide. Carbon dioxide. Formaldehyde. ketone.  
Explosion hazard : Vapours can form explosive mixtures with air.

### 5.3. Advice for firefighters

Firefighting instructions : Do not approach fire except upwind and only with proper skin and respiratory protection (supplied air only). Cool closed containers exposed to fire with water spray.  
Protective equipment for firefighters : Extra personal protection: complete protective clothing including self-contained breathing apparatus. In case of fire: Wear self-contained breathing apparatus. Refer to chapter 8.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate unnecessary personnel.

#### 6.1.1. For non-emergency personnel

Protective equipment : Wear suitable protective clothing, gloves and eye/face protection. Refer to chapter 8.  
Emergency procedures : Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

Protective equipment : Wear suitable protective clothing, gloves and eye/face protection. Refer to chapter 8.  
Emergency procedures : Eliminate leaks immediately. Eliminate all ignition sources if safe to do so. Ventilate affected area. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

### 6.2. Environmental precautions

Avoid discharge to the environment. Do not flush down sewers. Do not allow to enter into surface water or drains. Do not allow run-off from fire fighting to enter drains or water courses. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

### 6.3. Methods and material for containment and cleaning up

For containment : Stop leak if safe to do so. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Ventilate affected area.  
Methods for cleaning up : Prevent spread over a wide area (e.g. by containment or oil barriers). Take up liquid spill into dry absorbent material e.g.: dry sand/earth/vermiculite. Collect spills and put it into appropriated container. Keep the recovered product for subsequent recycling.  
Other information : Bioremediation of contaminated water bodies using granulated activated charcoal has been demonstrated to be the best method of removal from contaminated water bodies . Recovery and remediation of polluted soil and water can be accomplished through the Fenton reaction.

### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of residues refer to section 13 : "Disposal considerations".

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Spilled product must never be returned to the original container for recycling. Use grounded electrical/mechanical equipment. Ground/bond container and receiving equipment. Avoid producing mist or vapours by heating of opened receptacle/container.  
Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Always wash hands and face immediately after handling this product, and once again before leaving the workplace.

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

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

Technical measures	: Ground/bond container and receiving equipment.
Storage conditions	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep in original containers closed. Keep stored the least quantity possible. Store at room temperature. Store in dry, cool, well-ventilated area.
Incompatible materials	: Oxidizing agents. Strong acid. Halogenated compounds.
Packaging materials	: stainless steel. Carbon steel. PVC.

### 7.3. Specific end use(s)

See Section 1.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 National occupational exposure and biological limit values

benzene (71-43-2)	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Local name	Benzene (Num:C1)
IOEL TWA	3.25 mg/m <sup>3</sup>
Remark	skin. SCOEL Recommendations (Ongoing)
Regulatory reference	DIRECTIVE (EU) 2019/130 (amending Directive 2004/37/EC)
<b>EU - Binding Occupational Exposure Limit (BOEL)</b>	
Local name	Benzene
BOEL TWA	3.25 mg/m <sup>3</sup> (Limit value until 5 April 2024) 1.65 mg/m <sup>3</sup> (Limit value from 5 April 2024 until 5 April 2026) 0.66 mg/m <sup>3</sup> (Limit value from 5 April 2026)
BOEL TWA [ppm]	1 ppm (Limit value until 5 April 2024) 0.5 ppm (Limit value from 5 April 2024 until 5 April 2026) 0.2 ppm (Limit value from 5 April 2026)
Notes	Skin (Substantial contribution to the total body burden via dermal exposure possible)
Regulatory reference	DIRECTIVE (EU) 2022/431 (amending Directive 2004/37/EC)
<b>EU - Biological Limit Value (BLV)</b>	
Local name	Benzene
BLV	28 µg/l Parameter: benzene - Medium: blood - Sampling time: immediately end of shift 46 µg/g creatinine Parameter: phenylmercapturic - Medium: urine - Sampling time: end of exposure/shift
Regulatory reference	SCOEL List of recommended health-based BLVs and BGVs
<b>Austria - Occupational Exposure Limits</b>	
Local name	Benzol
MAK (OEL TWA)	3.2 mg/m <sup>3</sup>
MAK (OEL TWA) [ppm]	1 ppm
MAK (OEL STEL)	12.8 mg/m <sup>3</sup> (4x 15(Miw) min)
MAK (OEL STEL) [ppm]	4 ppm (4x 15(Miw) min)
TRK (OEL TWA)	3.2 mg/m <sup>3</sup>
TRK (OEL TWA) [ppm]	1 ppm
TRK (OEL STEL)	12.8 mg/m <sup>3</sup> (4x 15(Miw) min)
TRK (OEL STEL) [ppm]	4 ppm (4x 15(Miw) min)
Remark	H. Krebszeugend: III A1

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
Regulatory reference	BGBI. II Nr. 156/2021
<b>Austria - Biological limit values</b>	
Local name	Benzol
BLV	10 g/dl Parameter: Hämoglobin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Frauen 12 g/dl Parameter: Hämoglobin - Untersuchungsmaterial: Blut - Mitarbeiter/innen: Männer 1.6 mg/l Parameter: t,t-Muconsäure - Untersuchungsmaterial: Harn
Remark	Eignung: Blut: MCV: 79-97 fl; Erythrozyten: 3,2 Millionen/ $\mu$ l für Frauen, 3,8 Millionen/ $\mu$ l für Männer; Leukozyten: unterer Grenzwert: 4.000/ $\mu$ l (davon 2.000 Granulozyten) bzw. 3.700/ $\mu$ l bei nicht pathologischem Differentialblutbild, oberer Grenzwert: 13.000/ $\mu$ l; Thrombozyten: 150.000 bzw. 130.000/ $\mu$ l bei nicht pathologischem Differentialblutbild Eignung mit vorzeitiger Folgeuntersuchung: Bei Unterschreiten bzw. Überschreiten der Grenzwerte im Blut (ausgenommen Differentialblutbild) oder im Harn sowie bei atypischen Morphologien im Blut. Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Arbeiten in Kokereien: drei Monate, für die Blutuntersuchung sechs Monate; bei Eignung mit vorzeitiger Folgeuntersuchung: drei Monate; bei Arbeiten in Kokereien: sechs Wochen
Regulatory reference	Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)
<b>Belgium - Occupational Exposure Limits</b>	
Local name	Benzène # Benzeen
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	C: la mention "C" signifie que l'agent en question relève du champ d'application du titre 2 relatif aux agents cancérigènes, mutagènes et reprotoïques du livre VI du code de bien-être au travail, D: la mention "D" signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # C: de vermelding "C" betekent dat het betrokken agens valt onder het toepassingsgebied van titel 2 betreffende kankerverwekkende, mutagene en reprotoxische agentia van boek VI van de codex over het welzijn op het werk, D: de vermelding "D" betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.
Regulatory reference	Koninklijk besluit/Arrêté royal 11/05/2021
<b>Bulgaria - Occupational Exposure Limits</b>	
Local name	Бензен
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Кожа (Възможен е значителен принос за общото натрупване в тялото чрез кожна експозиция)
Regulatory reference	Наредба № 10 от 26.09.2003 г. за защита на работещите от рискове, свързани с експозиция на канцерогени и мутагени при работа (изм. и доп. ДВ. бр.5 от 17 Януари 2020 г.)
<b>Bulgaria - Biological limit values</b>	
Local name	Бензен

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
BLV	2 mg/l Биомаркер за експозиция/биомаркер за ефект: Trans, trans - муконова киселина - Биологична среда: урина - Време на пробовземане: В края на експозицията или в края на работната смяна - Специфични ефекти: Кожа – възможна е значителна резорбция чрез кожата 0.045 mg/g creatinine Биомаркер за експозиция/биомаркер за ефект: S-фенилмеркаптурова киселина - Биологична среда: урина - Време на пробовземане: В края на експозицията или в края на работната смяна - Специфични ефекти: Няма
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 47 от 2021 г., в сила от 04.06.2021 г.)
<b>Croatia - Occupational Exposure Limits</b>	
Local name	Benzen
GVI (OEL TWA) [1]	3.25 mg/m <sup>3</sup>
GVI (OEL TWA) [2]	1 ppm
Remark	Direktiva: 2017/2398. Napomena: Koža (razvrstana kao tvar koja nadražuje kožu (H315)), Karc 1A, Muta 1B
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 1/2021)
<b>Croatia - Biological limit values</b>	
Local name	Benzen
BLV	0.36 µmol/l Karakteristični pokazatelj: benzen - Biološki uzorak: krv - Vrijeme uzorkovanja: odmah na kraju radne smjene 28 µg/l Karakteristični pokazatelj: benzen - Biološki uzorak: krv - Vrijeme uzorkovanja: odmah na kraju radne smjene 21.7 µmol/mol creatinine Karakteristični pokazatelj: S-fenilmerkaptorna kiselina - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene 46 µg/g creatinine Karakteristični pokazatelj: S-fenilmerkaptorna kiselina - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 91/2018)
<b>Cyprus - Occupational Exposure Limits</b>	
Local name	Βενζόλιο
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	δέρμα. Καρκινογόνοι και Μεταλλαξιογόνοι Παράγοντες
Regulatory reference	Κανονισμοί του 2020 (Κ.Δ.Π. 282/2020)
<b>Czech Republic - Occupational Exposure Limits</b>	
Local name	Benzen
PEL (OEL TWA)	3 mg/m <sup>3</sup>
PEL (OEL TWA) [ppm]	0.9 ppm
NPK-P (OEL C)	10 mg/m <sup>3</sup>
NPK-P (OEL C) [ppm]	3.1 ppm
Remark	B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi, D - při expozici se významně uplatňuje pronikání faktoru kůží, I - dráždí sliznice (oči, dýchací cesty), respektive kůži, K - karcinogen kategorie 1A a 1B (s větou H350, H350i), M - mutagen v zárodečných buňkách kategorie 1A a 1B (s větou H340), P - u látky nelze vyloučit závažné pozdní účinky (s větou H372, H373).

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
<b>Czech Republic - Biological limit values</b>	
Local name	Benzen
BLV	0.05 mg/g creatinine Ukazatel: S-Fenylmerkapturová kyselina - Biologicky vzorek: moči - Doba odběru: konec směny 0.024 µmol/mmol Creatinine Ukazatel: S-Fenylmerkapturová kyselina - Biologicky vzorek: moči - Doba odběru: konec směny 1.5 mg/g creatinine Ukazatel: t,t-Mukonová kyselina - Biologicky vzorek: moči - Doba odběru: konec směny 1.2 µmol/mmol Creatinine Ukazatel: t,t-Mukonová kyselina - Biologicky vzorek: moči - Doba odběru: konec směny
Regulatory reference	Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)
<b>Denmark - Occupational Exposure Limits</b>	
Local name	Benzen
OEL TWA [1]	1.6 mg/m <sup>3</sup>
OEL TWA [2]	0.5 ppm
Remark	E (betyder, at stoffet har en EF-grænseværdi); H (betyder, at stoffet kan optages gennem huden); K (betyder, at stoffet anses for at kunne være kræftfremkaldende)
Regulatory reference	BEK nr 2203 af 29. november 2021
<b>Estonia - Occupational Exposure Limits</b>	
Local name	Benseen
OEL TWA	1.5 mg/m <sup>3</sup>
OEL TWA [ppm]	0.5 ppm
OEL STEL	9 mg/m <sup>3</sup>
OEL STEL [ppm]	3 ppm
Remark	A (Naha kaudu kergesti imenduv aine), C (Kantserogeenne aine)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
<b>Finland - Occupational Exposure Limits</b>	
Local name	Bentseeni
HTP (OEL TWA) [1]	3.25 mg/m <sup>3</sup> (Työssä tapahtuvan altistumisen sitovat raja-arvot)
HTP (OEL TWA) [2]	1 ppm (Työssä tapahtuvan altistumisen sitovat raja-arvot)
Remark	lho
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
<b>France - Occupational Exposure Limits</b>	
Local name	Benzène
VME (OEL TWA)	3.25 mg/m <sup>3</sup>
VME (OEL TWA) [ppm]	1 ppm
Remark	Valeurs réglementaires contraignantes; substance classée cancérigène de catégorie 1a et mutagène de catégorie 1b; risque de pénétration percutanée
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
<b>Germany - Occupational Exposure Limits (TRGS 910)</b>	
Local name	Benzol
Acceptable concentration (Volume conc.)	0.06 ppm
Acceptable concentration (Weight conc.)	0.2 mg/m <sup>3</sup>
Notes	b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000
Tolerance concentration (Volume conc.)	0.6 ppm
Tolerance concentration (Weight conc.)	1.9 mg/m <sup>3</sup>
Tolerance concentration excess factor	8
Remark	H - Hautresorptiv
Equivalence value for acceptable concentration	0.8 µg/l (3) 3 µg/g creatinine (3)
Equivalence value for tolerance concentration	5 µg/l 25 µg/g creatinine 500 µg/g creatinine
Parameter	Benzol S-Phenylmerkaptursäure Trans, trans-Muconsäure
This battery has passed the UN Manual of Tests and Criteria part III subsection 38.3 requirements.	U - Urin
Testing time	b - Expositionsende bzw. Schichtende
Regulatory reference	TRGS 910
<b>Gibraltar - Occupational Exposure Limits</b>	
Local name	Benzene
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Skin
Regulatory reference	Factories (Control of Carcinogens and mutagens at Work) Regulations 2003 (LN. 2020/47)
<b>Greece - Occupational Exposure Limits</b>	
Local name	Βενζόλιο
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Δέρμα (Είναι πιθανή η σημαντική αύξηση της συνολικής επιβάρυνσης του λόγω δερματικής έκθεσης)
Regulatory reference	Π.Δ. 26/2020 - Σχετικά με την προστασία των εργαζομένων από τους κινδύνους που συνδέονται με την έκθεση σε καρκινογόνους ή μεταλλαξιγόνους παράγοντες κατά την εργασία
<b>Hungary - Occupational Exposure Limits</b>	
Local name	BENZOL
AK (OEL TWA)	3.25 mg/m <sup>3</sup>



# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
Remark	k(1A) (rákkeltő), b (Bőrön át is felszívódik), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), BEM (biológiai expozíciós mutató); EU6 (2019/130 EU irányelvben közölt érték); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
<b>Hungary - Biological Exposure Indices</b>	
Local name	Benzol
BEI	0.04 mg/g creatinine Biológiai expozíciós (hatás) mutató: S-fenilmerkaptursav - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén) 0.22 µmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: S-fenilmerkaptursav - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Benzene
OEL TWA [1]	3.25 mg/m <sup>3</sup>
OEL TWA [2]	1 ppm
Remark	BOELV (Binding Occupational Exposure Limit Values), Sk (Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body), Carc.1A (Substances known to have carcinogenic potential for humans), Muta.1B (Substances which should be regarded as if they induce heritable mutations in the germ cells of humans)
Regulatory reference	Chemical Agents Code of Practice 2021
<b>Ireland - Biological limit values</b>	
Local name	Benzene
BLV	25 µg/g creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: End of shift - Notations: B (Background) 50 µg/g creatinine Parameter: t,t-Muconic acid - Medium: urine - Sampling time: End of shift - Notations: B (Background)
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)
<b>Italy - Occupational Exposure Limits</b>	
Local name	Benzene
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Cute
OEL chemical category	skin - potential for cutaneous absorption
Regulatory reference	Allegato XLIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
<b>Latvia - Occupational Exposure Limits</b>	
Local name	Benzols
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Āda. Carc. 1A; Muta. 1B
Regulatory reference	Ministru kabineta 2008. gada 29. septembra noteikumi Nr. 803 (Grozījumi Ministru kabineta 2020. gada 7. janvārī noteikumiem Nr. 10).

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
<b>Latvia - Biological Exposure Indices</b>	
Local name	Benzolam
BEI	46 µg/g creatinine Urīnā maiņas vai ekspozīcijas beigās nosaka fenilmerkaptūrskābi 28 µg/l Asinīs nekavējoties maiņas beigās benzolu
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2021. gada 18. februārī noteikumiem Nr. 110)
<b>Lithuania - Occupational Exposure Limits</b>	
Local name	Benzenas (benzolas)
IPRV (OEL TWA)	3.25 mg/m <sup>3</sup>
IPRV (OEL TWA) [ppm]	1 ppm
TPRV (OEL STEL)	19 mg/m <sup>3</sup>
TPRV (OEL STEL) [ppm]	6 ppm
Remark	K (kancerogeninis poveikis); M (mutageninis poveikis); O (medžiaga į organizmą gali prasiskverbti pro nepažeistą odą)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
<b>Luxembourg - Occupational Exposure Limits</b>	
Local name	Benzène
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Peau
Regulatory reference	Mémorial A N° 223 de 2021 concernant la protection des salariés contre les risques liés à l'exposition à des agents cancérogènes ou mutagènes au travail
<b>Malta - Occupational Exposure Limits</b>	
Local name	Benzene # Benžen
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	Skin # Ġilda
Regulatory reference	S.L.424.22 - Exposure to carcinogens or mutagens at work (L.N.51 of 2021)
<b>Netherlands - Occupational Exposure Limits</b>	
Local name	Benzeen
TGG-8u (OEL TWA)	0.7 mg/m <sup>3</sup>
Remark	Kankerverwekkende stof. H (Huidopname) Stoffen die relatief gemakkelijk door de huid kunnen worden opgenomen, hetgeen een substantiële bijdrage kan betekenen aan de totale inwendige blootstelling, hebben in de lijst een H-aanduiding. Bij deze stoffen moeten naast maatregelen tegen inademing ook adequate maatregelen ter voorkoming van huidcontact worden genomen.
Regulatory reference	Arbeidsomstandighedenregeling 2022
<b>Poland - Occupational Exposure Limits</b>	
Local name	Benzen
NDS (OEL TWA)	1.6 mg/m <sup>3</sup>
Remark	Skóra (Oznakowanie substancji notacją „skóra” oznacza, że wchłanianie substancji przez skórę może być tak samo istotne jak przy narażeniu drogą oddechową).

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
Regulatory reference	Dz. U. 2018 poz. 1286
<b>Portugal - Occupational Exposure Limits</b>	
Local name	Benzeno
OEL TWA	3.25 mg/m <sup>3</sup> (indicative limit value)
OEL TWA [ppm]	0.5 ppm
OEL STEL [ppm]	2.5 ppm
Remark	P (Toxicidade percutânea); A1 (Agente carcinogénico confirmado no Homem); IBE (Índice biológico de exposição)
Regulatory reference	Norma Portuguesa NP 1796:2014
<b>Portugal - Biological Exposure Indices</b>	
Local name	Benzeno
BEI	25 µg/g creatinine Parâmetro: Ácido s-fenilmercaptúrico - Meio: urina - Momento da amostragem: Fim do turno - Notação: Vb (Valor basal) 500 µg/g creatinine Parâmetro: Ácido t,t-mucónico - Meio: urina - Momento da amostragem: Fim do turno - Notação: Vb (Valor basal)
Regulatory reference	Norma Portuguesa NP 1796:2014
<b>Romania - Occupational Exposure Limits</b>	
Local name	Benzen
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	P - posibilitatea unei penetrări cutanate importante (Pentru benzen, la notația "Piele": este posibil ca la inhalarea reglementată să se adauge o absorbție cutanată); C1A - poate provoca apariția cancerului; M1B - poate provoca anomalii genetice
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 53/2021)
<b>Romania - Biological limit values</b>	
Local name	Benzen
BLV	25 µg/g creatinine Indicador biologic: Acid s-fenil mercapturic - Material biologic: urină - Momentul recoltării: sfârșit de schimb 50 mg/l Indicador biologic: Fenoli totali - Material biologic: urină - Momentul recoltării: sfârșit de schimb 500 µg/g creatinine Indicador biologic: Acid t,t muconic - Material biologic: urină - Momentul recoltării: sfârșit de schimb
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 584/2018)
<b>Slovakia - Occupational Exposure Limits</b>	
Local name	Benzén
NPHV (OEL TWA) [1]	3.25 mg/m <sup>3</sup> (TSH)
NPHV (OEL TWA) [2]	1 ppm (TSH)
Remark	Kategória karcinogénov 1A – Dokázaný karcinogén pre ľudí; Kategória mutagénov 1B – Mutagén cicavčích zárodočných buniek; K – prienik cez kožu: Niektoré látky môžu prenikat' ľahko cez kožu a spôsobovať smrteľné otravy často bez varovných príznakov (napríklad anilín, nitrobenzén, nitroglykol, fenoly a podobne).
Regulatory reference	Nariadenie vlády č. 356/2006 Z. z. (235/2020 Z. z.)
<b>Slovenia - Occupational Exposure Limits</b>	
Local name	benzen

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
OEL TWA	3.25 mg/m <sup>3</sup>
OEL TWA [ppm]	1 ppm
Remark	EU, K (Lastnost lažjega prehajanja snovi v organizem skozi kožo), BAT (Biološka mejna vrednost), EKA (Zveza med koncentracijo rakotvornih snovi v zraku na delovnem mestu in količino snovi in/ali njenih metabolitov v organizmu)
Regulatory reference	Uradni list RS, št. 79/2019 z dne 24.12.2019
<b>Slovenia - Biological limit values</b>	
Local name	benzen
BLV	5 µg/l Parameter: benzen - Biološki vzorec: urin - Čas vzorčenja: ob koncu delovne izmene 0.025 mg/g creatinine Parameter: S-fenilmerkaptionska kislina - Biološki vzorec: urin - Čas vzorčenja: ob koncu delovne izmene 500 µg/g creatinine Parameter: trans, trans-mukonska kislina - Biološki vzorec: urin - Čas vzorčenja: ob koncu delovne izmene
Remark	BAT vrednosti za rakotvorne ali mutagene snovi
Regulatory reference	Uradni list RS, št. 79/2019 z dne 24.12.2019
<b>Spain - Occupational Exposure Limits</b>	
Local name	Benceno
VLA-ED (OEL TWA) [1]	3.25 mg/m <sup>3</sup>
VLA-ED (OEL TWA) [2]	1 ppm
Remark	C1A (Carcinógeno para el hombre), M1B (Sustancias de las que se considera que inducen mutaciones hereditarias en las células germinales humanas), vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante), VLB® (Agente químico que tiene Valor Límite Biológico), v (Real Decreto 1124/2000, de 16 de junio (BOE nº 145 de 17 de junio de 2000), por el que se modifica el Real Decreto 665/1997, de 12 de mayo, sobre la protección de los trabajadores contra los riesgos relacionados con la exposición a agentes cancerígenos durante el trabajo), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el "Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos" (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
<b>Spain - Biological limit values</b>	
Local name	Benceno
BLV	0.045 mg/g creatinine Parámetro: Ácido S-Fenilmercaptúrico - Medio: Orina - Momento de muestreo: Final de la jornada laboral 2 mg/l Parámetro: Ácido t,t-Mucónico - Medio: Orina - Momento de muestreo: Final de la jornada laboral
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
<b>Sweden - Occupational Exposure Limits</b>	
Local name	Bensen
NGV (OEL TWA)	1.5 mg/m <sup>3</sup>

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>benzene (71-43-2)</b>	
NGV (OEL TWA) [ppm]	0.5 ppm
KTV (OEL STEL)	9 mg/m <sup>3</sup>
KTV (OEL STEL) [ppm]	3 ppm
Remark	C (Ämnet är cancerframkallande. Risk för cancer finns även vid annan exponering än via inandning. För vissa cancerframkallande ämnen som inte har gränsvärden gäller förbud eller tillståndskrav enligt föreskrifterna om kemiska arbetsmiljörisiker); H (Ämnet kan lätt upptas genom huden. Det föreskrivna gränsvärdet bedöms ge tillräckligt skydd endast under förutsättning att huden är skyddad mot exponering för ämnet ifråga)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
<b>Norway - Occupational Exposure Limits</b>	
Local name	Benzen
Grenseverdi (OEL TWA) [1]	3 mg/m <sup>3</sup>
Grenseverdi (OEL TWA) [2]	1 ppm
Remark	G: EU har fastsatt en bindende grenseverdi og/eller anmerkning for stoffet; H: Kjemikalier som kan tas opp gjennom huden; K: Kjemikalier som skal betraktes som kreftfremkallende.
Regulatory reference	FOR-2021-06-28-2248
<b>USA - ACGIH - Occupational Exposure Limits</b>	
Local name	Benzene
ACGIH OEL TWA [ppm]	0.5 ppm
ACGIH OEL STEL [ppm]	2.5 ppm
Remark (ACGIH)	Leukemia
Regulatory reference	ACGIH 2022
<b>USA - ACGIH - Biological Exposure Indices</b>	
Local name	BENZENE
BEI	25 µg/g creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: End of shift - Notations: B 500 µg/g creatinine Parameter: t,t-Muconic acid - Medium: urine - Sampling time: End of shift - Notations: B
Regulatory reference	ACGIH 2022

### 8.1.2. Recommended monitoring procedures

No additional information available

### 8.1.3. Air contaminants formed

No additional information available

### 8.1.4. DNEL and PNEC

<b>benzene (71-43-2)</b>	
<b>DNEL/DMEL (Workers)</b>	
Long-term - systemic effects, dermal	high hazard (no threshold derived)
Long-term - systemic effects, inhalation	0.8 mg/m <sup>3</sup>
<b>DNEL/DMEL (General population)</b>	
Long-term - systemic effects, inhalation	0.14 mg/m <sup>3</sup>

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

benzene (71-43-2)	
<b>PNEC (Water)</b>	
PNEC aqua (freshwater)	80 µg/L
PNEC aqua (marine water)	8 µg/L
PNEC aqua (intermittent, freshwater)	53 µg/L
PNEC aqua (intermittent, marine water)	5.3 µg/L
<b>PNEC (Sediment)</b>	
PNEC sediment (freshwater)	1.36 mg/kg dwt
PNEC sediment (marine water)	0.136 mg/kg dwt
<b>PNEC (Soil)</b>	
PNEC soil	0.225 mg/kg dwt
<b>PNEC (Oral)</b>	
PNEC oral (secondary poisoning)	Not applicable
<b>PNEC (STP)</b>	
PNEC sewage treatment plant	39 mg/l

### 8.1.5. Control banding

No additional information available

## 8.2. Exposure controls

### 8.2.1. Appropriate engineering controls

#### Appropriate engineering controls:

Local exhaust and general room ventilation are both essential to prevent accumulation of flammable vapour. Use explosion-proof equipment.

### 8.2.2. Personal protection equipment

#### 8.2.2.1. Eye and face protection

##### Eye protection:

Chemical goggles or face shield with safety glasses

#### 8.2.2.2. Skin protection

##### Skin and body protection:

Wear suitable protective clothing or Rubber apron

##### Hand protection:

Impermeable protective gloves. Do not reuse gloves. It is recommended that the glove supplier be consulted to ensure the protective gloves are resistant to chemicals in this product

Hand protection					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Disposable gloves, E.g. KCL Type: 890 or equivalent.	Viton	< 480 minutes.	0.7	Not known	EN 374

### 8.2.2.3. Respiratory protection

#### Respiratory protection:

Approved organic vapour respirator. An approved organic vapour respirator/supplied air or self-contained breathing apparatus must be used when vapour concentration exceeds applicable exposure limits. Consult a national health and safety authority for further guidance

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Respiratory protection			
Device	Filter type	Condition	Standard
Full face mask, with cartridge/filter	A	Concentrations exceed max allowed workplace atmospheric concentrations.	EN 14387

### 8.2.2.4. Thermal hazards

No additional information available

### 8.2.3. Environmental exposure controls

#### Environmental exposure controls:

Avoid release to the environment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Clear to light yellow.
Molecular mass	: 78.11 g/mol
Odour	: characteristic. aromatic hydrocarbons.
Odour threshold	: Not available
Melting point	: 5.51 °C
Freezing point	: 5.51 °C
Boiling point	: 80.1 °C
Flammability	: Flammable
Explosive limits	: 1.3 – 8 vol %
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: -11 °C (Closed cup)
Auto-ignition temperature	: 498 °C
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: Not available
Solubility	: soluble in most organic solvents. Water: sparingly soluble.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Partition coefficient n-octanol/water (Log Pow)	: 1.18 – 1.9 (also reported 2.13 – 2.15)
Vapour pressure	: 77 mm Hg at 20 °C
Vapour pressure at 50°C	: Not available
Critical pressure	: 4894 kPa (48.3 atm)
Density	: 0.88
Relative density	: Not available
Relative vapour density at 20°C	: 2.77
Particle characteristics	: Not applicable

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

Explosion limits	: 1.3 – 8 vol %
Critical temperature	: 288.9 °C

#### 9.2.2. Other safety characteristics

Relative evaporation rate (butylacetate=1)	: 2.8
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reacts violently with (some) halogens.

### 10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

### 10.3. Possibility of hazardous reactions

None known under normal conditions of use.

### 10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid static electricity discharges.

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

### 10.5. Incompatible materials

Oxidizing agents. Strong acids. Halogenated compounds.

### 10.6. Hazardous decomposition products

Carbon dioxide (CO<sub>2</sub>). Carbon monoxide. Formaldehyde. ketone.

## SECTION 11: Toxicological information

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

Acute toxicity (oral) : Not classified (Based on available data, the classification criteria are not met)  
Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)  
Acute toxicity (inhalation) : Not classified (Based on available data, the classification criteria are not met)

benzene (71-43-2)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	> 8260 mg/kg
LC50 Inhalation - Rat	43.767 mg/l air Animal: rat, Animal sex: female, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), 95% CL: 41690 - 45939

Skin corrosion/irritation : Causes skin irritation.  
Additional information : Prolonged/repetitive skin contact may cause skin defatting or dermatitis.  
Serious eye damage/irritation : Causes serious eye irritation.  
Additional information : May cause irritation to the respiratory tract and to other mucous membranes  
Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)  
Germ cell mutagenicity : May cause genetic defects.  
Carcinogenicity : May cause cancer.

benzene (71-43-2)	
IARC group	1 - Carcinogenic to humans

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)  
STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)  
STOT-repeated exposure : Causes damage to organs (haematopoietic system) through prolonged or repeated exposure (if inhaled, If swallowed).

benzene (71-43-2)	
NOAEL (oral, rat, 90 days)	100 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
NOAEC (inhalation, rat, vapour, 90 days)	0.096 mg/l air Animal: rat, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study), Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Aspiration hazard : May be fatal if swallowed and enters airways.

### 11.2. Information on other hazards

#### 11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : None known

#### 11.2.2. Other information

Other information : Likely routes of exposure: ingestion, inhalation, skin and eye

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
Hazardous to the aquatic environment, short-term (acute) : Not classified (Based on available data, the classification criteria are not met)  
Hazardous to the aquatic environment, long-term (chronic) : Harmful to aquatic life with long lasting effects.

benzene (71-43-2)	
EC50 72h - Algae [1]	32 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)



# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

benzene (71-43-2)	
EC50 72h - Algae [2]	100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

### 12.2. Persistence and degradability

Persistence and degradability : Product is biodegradable

### 12.3. Bioaccumulative potential

Bioaccumulative potential : Low bioaccumulation potential

benzene (71-43-2)	
Partition coefficient n-octanol/water (Log Pow)	1.18 – 1.9 (also reported 2.13 – 2.15)

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

benzene (71-43-2)	
Results of PBT assessment	This substance does not meet the criteria for classification as PBT or vPvB.

### 12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : None known

### 12.7. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations






### 13.1. Waste treatment methods

Regional legislation (waste) : Dispose of contents/container to comply with applicable local, national and international regulations. Consult the appropriate authorities about waste disposal.

Product/Packaging disposal recommendations : Dispose of this material and its container at hazardous or special waste collection point.

## SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number or ID number</b>				
UN 1114	UN 1114	UN 1114	UN 1114	UN 1114
<b>14.2. UN proper shipping name</b>				
BENZENE	BENZENE	Benzene	BENZENE	BENZENE
<b>Transport document description</b>				
UN 1114 BENZENE, 3, II, (D/E)	UN 1114 BENZENE, 3, II (-11°C c.c.)	UN 1114 Benzene, 3, II	UN 1114 BENZENE, 3, II	UN 1114 BENZENE, 3, II
<b>14.3. Transport hazard class(es)</b>				
3	3	3	3	3
				
<b>14.4. Packing group</b>				
II	II	II	II	II
<b>14.5. Environmental hazards</b>				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				

# benzene

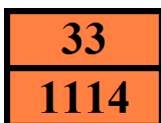
## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

### 14.6. Special precautions for user

#### Overland transport

Classification code (ADR)	: F1
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E2
Packing instructions (ADR)	: P001, IBC02, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T4
Portable tank and bulk container special provisions (ADR)	: TP1
Tank code (ADR)	: LGBF
Vehicle for tank carriage	: FL
Transport category (ADR)	: 2
Special provisions for carriage - Operation (ADR)	: S2, S20
Hazard identification number (Kemler No.)	: 33
Orange plates	:



Tunnel restriction code (ADR) : D/E

#### Transport by sea

Limited quantities (IMDG)	: 1 L
Excepted quantities (IMDG)	: E2
Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02
Tank instructions (IMDG)	: T4
Tank special provisions (IMDG)	: TP1
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-D
Stowage category (IMDG)	: B
Stowage and handling (IMDG)	: SW2
Flash point (IMDG)	: -11°C c.c.
Properties and observations (IMDG)	: Colourless liquid with a characteristic odour. Flashpoint: -11°C c.c. Explosive limits: 1.4% to 8% Freezing point 5°C, flashes below its freezing point. Immiscible with water. Narcotic. Exposure to this substance may produce serious chronic effects of a toxic nature.

#### Air transport

PCA Excepted quantities (IATA)	: E2
PCA Limited quantities (IATA)	: Y341
PCA limited quantity max net quantity (IATA)	: 1L
PCA packing instructions (IATA)	: 353
PCA max net quantity (IATA)	: 5L
CAO packing instructions (IATA)	: 364
CAO max net quantity (IATA)	: 60L
ERG code (IATA)	: 3H

#### Inland waterway transport

Classification code (ADN)	: F1
Limited quantities (ADN)	: 1 L
Excepted quantities (ADN)	: E2
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 1

#### Rail transport

Classification code (RID)	: F1
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E2
Packing instructions (RID)	: P001, IBC02, R001
Mixed packing provisions (RID)	: MP19

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Portable tank and bulk container instructions (RID) : T4  
Portable tank and bulk container special provisions (RID) : TP1  
Tank codes for RID tanks (RID) : LGBF  
Transport category (RID) : 2  
Colis express (express parcels) (RID) : CE7  
Hazard identification number (RID) : 33

### 14.7. Maritime transport in bulk according to IMO instruments

Not applicable

## SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

##### REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

##### REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

##### REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

##### PIC Regulation (Prior Informed Consent)

Listed on the PIC list (Regulation EU 649/2012): Benzene

##### POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

##### Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

##### Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

##### Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

#### 15.1.2. National regulations

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active  
Listed on the Canadian DSL (Domestic Substances List)  
Listed on IARC (International Agency for Research on Cancer)  
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)  
Listed on the Canadian IDL (Ingredient Disclosure List)  
Listed as carcinogen on NTP (National Toxicology Program)  
Subject to reporting requirements of United States SARA Section 313  
Listed on EPA Hazardous Air Pollutant (HAPS)  
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory  
Listed on KECL/KECI (Korean Existing Chemicals Inventory)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Japanese Pollutant Release and Transfer Register Law (PRTR Law)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on the Japanese ISHL (Industrial Safety and Health Law)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)  
Listed on the TCSI (Taiwan Chemical Substance Inventory)  
Listed on the NCI (Vietnam - National Chemical Inventory)

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

### France

Occupational diseases	
Code	Description
RG 4	Hematopathies caused by benzene and all products containing it
RG 4 BIS	Gastrointestinal disorders caused by benzene, toluene, xylenes and all products containing them
RG 84	Conditions caused by liquid organic solvents for professional use: saturated or unsaturated aliphatic or cyclic liquid hydrocarbons and mixtures thereof; liquid halogenated hydrocarbons; nitrated derivatives of aliphatic hydrocarbons; alcohols; glycols, glycol ethers; ketones; aldehydes; aliphatic and cyclic ethers, including tetrahydrofuran; esters; dimethylformamide and dimethylacetamine; acetonitrile and propionitrile; pyridine; dimethylsulfone and dimethylsulfoxide

### Germany

- Water hazard class (WGK) : WGK 3, Highly hazardous to water (Classification according to VwVwS, Annex 1 or 2; ID No. 29).
- Chemicals Prohibition Ordinance (ChemVerbotsV) : This product is subject to ChemVerbotsV Annex 2 Entry 1. The following requirements must be observed: authorization requirement (according to § 6 paragraph 1 sentence 1), basic requirements for carrying out the delivery (according to § 8 paragraph 1, 3 and 4), identification and documentation (according to § 9 paragraph 1 to 3) and exclusion of the shipping route (according to § 10).
- Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

### Netherlands

- SZW-lijst van kankerverwekkende stoffen : Benzene is listed
- SZW-lijst van mutagene stoffen : Benzene is listed
- SZW-lijst van reprotoxische stoffen – Borstvoeding : The substance is not listed
- SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : The substance is not listed
- SZW-lijst van reprotoxische stoffen – Ontwikkeling : The substance is not listed

### Denmark

- Classification remarks : Emergency management guidelines for the storage of flammable liquids must be followed
- Danish National Regulations : Young people under 18 years are not allowed to use the product  
Pregnant/breastfeeding women working with the product must not be in direct contact with it

### 15.2. Chemical safety assessment

CSA is not needed for intermediates used under strictly conditions.

## SECTION 16: Other information

Indication of changes			
Section	Changed item	Change	Comments
2	Hazards identification	Modified	
8	Exposure controls / Personal protection equipment	Modified	
11.2.	Information on other hazards	Added	

### Abbreviations and acronyms:

ACGIH	ACGIH (American Conference of Government Industrial Hygienists)
IARC	IARC (International Agency for Research on Cancer)
ADR	Overland transport (ADR)
PVC	PVC (Polyvinyl chloride).
SDS	SDS - Safety Data Sheet
TWA	TWA- Time Weighted Average
STEL	Short-Term Exposure Limit
PEL	PEL- Permissible Exposure Level
OSHA	OSHA - Occupational Safety and Health Administration

# benzene

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:	
DNEL	Derived-No Effect Level
PNEC	Predicted No-Effect Concentration
Full text of H- and EUH-statements:	
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic 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
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.
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
Full text of use descriptors	
ERC6a	Use of intermediate
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC15	Use as laboratory reagent
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

Braskem - SDS\_EU (modified 221026)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. It warns that the handling of any chemical substance requires the previous knowledge of its hazards for the user. It is up to the user of the product company providing this SDS to and promote the training of its employees about possible risks come upon of the product. The information contained herein is not absolute, but only general information on the use of the chemical and indication of safety and security measures.