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

1.1. Product identifier

Product form : Substance
Trade name/designation : Benzene
EC Index : 601-020-00-8
EC-No. : 200-753-7
CAS-No. : 71-43-2
REACH registration No. : 01-2119447106-44-0096
Formula : C6H6
Product group : Trade product

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

1.2.1. Relevant identified uses

Main use category : Industrial uses
Use of the substance/mixture : transported isolated intermediate

Title	Use descriptors
Intermediate	SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC6a
Manufacture	SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC1

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
NIS a.d. Novi Sad
Narodnog Fronta 12
21000 Novi Sad
Serbia
T + 381 (0) 21 481 1111
REACHNIS@nis.rs

Only Representative
BENS Consulting d.o.o.
Špruha 19
1236 Trzin
Slovenija
T +386 41 979 800
info@bens-consulting.eu

1.4. Emergency telephone number

Emergency number : + 381 (0) 21 481 1111
Only available during office hours.

Country/Area	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	

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

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS07 GHS08

Signal word : 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 through prolonged or repeated exposure.
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.
P243 - Take action to prevent static discharges.
P260 - Do not breathe mist, vapours.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P301+P310+P331 - IF SWALLOWED: Immediately call a doctor, a POISON CENTER. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P308+P313 - IF exposed or concerned: Get medical advice/attention.
P403+P235 - Store in a well-ventilated place. Keep cool.
P501 - Dispose of contents and container to an approved waste disposal plant.

Extra phrases : Restricted to professional users.

Listed on CLP Annex VI : EC Index-No.: 601-020-00-8

2.3. Other hazards

Other hazards : Vapours can form explosive mixtures with air. Results of PBT and vPvB assessment : This substance does not meet the PBT/vPvB criteria of REACH, 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 name : Benzene
CAS-No. : 71-43-2
EC-No. : 200-753-7
EC Index : 601-020-00-8

Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Benzene	CAS-No.: 71-43-2 EC-No.: 200-753-7 EC Index: 601-020-00-8 REACH-no: 01-2119447106-44-0096	99,9 – 100	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 3, H412

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

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

Additional advice : First aider: Pay attention to self-protection!. Concerning personal protective equipment to use, see section 8. Never give anything by mouth to an unconscious person. In case of doubt or persistent symptoms, consult always a physician. Show this safety data sheet to the doctor in attendance.

Inhalation : Remove casualty to fresh air and keep warm and at rest. Give oxygen or artificial respiration if necessary. In case of doubt or persistent symptoms, consult always a physician.

Skin contact : Remove contaminated clothing and shoes. Gently wash with plenty of soap and water. In case of doubt or persistent symptoms, consult always a physician.

Eyes contact	:	Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. In case of doubt or persistent symptoms, consult always a physician.
Ingestion	:	Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Get immediate medical advice/attention.

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

Inhalation	:	Vapours may cause drowsiness and dizziness. May cause respiratory irritation. Toxic: danger of serious damage to health by prolonged exposure through inhalation.
Skin contact	:	Causes skin irritation. Toxic: danger of serious damage to health by prolonged exposure in contact with skin.
Eyes contact	:	Causes serious eye irritation.
Ingestion	:	May be fatal if swallowed and enters airways. Harmful: may cause lung damage if swallowed. Toxic: danger of serious damage to health by prolonged exposure if swallowed. Smallest quantities reaching the lungs through swallowing or subsequent vomiting may result in lung oedema or pneumonia. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache). May cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
Chronic symptoms	:	Causes damage to organs through prolonged or repeated exposure. May cause cancer. May cause genetic defects.

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_2), powder, alcohol-resistant foam, water spray.
Unsuitable extinguishing media	:	Strong water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards	:	Highly flammable liquid and vapour. Heating will cause a rise in pressure with a risk of bursting. Vapours may form explosive mixture with air. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours.
Hazardous decomposition products in case of fire	:	Carbon oxides (CO, CO_2).

5.3. Advice for firefighters

Firefighting instructions	:	Evacuate area. Use water spray or fog for cooling exposed containers. Contain the extinguishing fluids by bunding. Prevent fire fighting water from entering the environment.
Protection during firefighting	:	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus.
Other information	:	Do not allow run-off from fire-fighting to enter drains or water courses. Dispose of waste in accordance with environmental legislation.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

For non-emergency personnel : Evacuate unnecessary personnel. Keep upwind. Provide adequate ventilation. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Wear recommended personal protective equipment. Concerning personal protective equipment to use, see section 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed. Use explosion-proof equipment. Use only non-sparking tools. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours.

6.1.2. For emergency responders

For emergency responders : Ensure procedures and training for emergency decontamination and disposal are in place. Concerning personal protective equipment to use, see section 8.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Remove all sources of ignition. Use only non-sparking tools. Provide adequate ventilation. Stop leak if safe to do so. Dam up the liquid spill. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Recover large spills by pumping (use an explosion proof or hand pump). Place in a suitable container for disposal in accordance with the waste regulations (see Section 13). This material and its container must be disposed of in a safe way, and as per local legislation. Cover the spilled liquid product with foam to slow down evaporation. Caution : this product can cause the floor to be slippery.

6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8 . Concerning disposal elimination after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : This substance should be handled under strictly controlled conditions as specified in REACH regulation article 18(4). Site documentation to support safe handling arrangements in accordance with risk-based management system should be available at each manufacturing site. During the whole lifecycle all necessary measures should be undertaken to minimize emissions and any resulting exposure. Use product only in closed system. After use replace the closing cap immediately. Do not burn, or use a cutting torch on the empty drum. Do not pierce or burn, even after use. Provide adequate ventilation. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Take any precaution to avoid mixing with Incompatible materials, Refer to Section 10 on Incompatible Materials. Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time). Avoid release to the environment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use explosion-proof equipment. Use only non-sparking tools.

Hygiene measures : Keep good industrial hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feedingstuffs. Remove contaminated clothes. Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Storage of flammable liquids. Keep container tightly closed. Store in a dry, cool and well-ventilated place. Do not store near or with any of the incompatible materials listed in section 10. Bund storage facilities to prevent soil and water pollution in the event of spillage. Take precautionary measures against static discharge.

Incompatible materials : Strong acids. Oxidising agents. Halogens.

Heat and ignition sources : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight.

Special rules on packaging : Containers which are opened should be properly resealed and kept upright to prevent leakage. Do not pierce or burn, even after use. Keep in properly labelled containers.

Packaging materials : Keep only in the original container. Suitable material: Carbon steel, Stainless steel.

Germany

German storage class (LGK) : LGK 3 - Flammable liquids

Switzerland

Storage class (LK) : LK 3 - Flammable liquids

7.3. Specific end use(s)

transported isolated intermediate. This substance should be handled under strictly controlled conditions as specified in REACH regulation article 18(4). Site documentation to support safe handling arrangements in accordance with risk-based management system should be available at each manufacturing site. During the whole lifecycle all necessary measures should be undertaken to minimize emissions and any resulting exposure.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

Benzene (71-43-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
IOEL TWA	0,66 mg/m³ (limit value after 5 April 2026) 1,65 mg/m³ (limit value from 5 April 2024 until 5 April 2026) 3,25 mg/m³ (limit value until 5 April 2024)
	0,2 ppm (limit value after 5 April 2026) 0,5 ppm (limit value from 5 April 2024 until 5 April 2026) 1 ppm (limit value until 5 April 2024)
Remark	Present (Substantial contribution to the total body burden via dermal exposure possible)
Austria - Occupational Exposure Limits	
TRK (OEL TWA)	3,2 mg/m³
	1 ppm
OEL chemical category	Skin notation, Group A1 Carcinogen
Belgium - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	Skin, Carcinogen, Skin notation significant contribution to the total accumulation in the body through skin exposure is possible
Bulgaria - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
Bulgaria - Biological limit values	
BLV	2 mg/l Parameter: Trans, trans-Muconic acid - Medium: urine - Sampling time: at the end of exposure or end of work shift (possible significant absorption through the skin) 0,045 mg/g creatinine Parameter: S-Phenyl Mercapturic acid - Medium: urine - Sampling time: at the end of exposure or end of work shift (possible significant absorption through the skin)
Croatia - Occupational Exposure Limits	
GVI (OEL TWA)	3,25 mg/m³
	1 ppm

Benzene (71-43-2)	
OEL chemical category	Carcinogen Category 1A, Skin notation significant contribution to the total body load possible exposure through the skin, Mutagen Category 1B
Croatia - Biological limit values	
BLV	28 µg/l Parameter: Benzene - Medium: blood - Sampling time: right at the end of the work shift 46 µg/g creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: at the end of the work shift (calculated on the average Creatinine value of 1.2 g/L urine)
Cyprus - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	Skin-potential for cutaneous absorption
Czech Republic - Occupational Exposure Limits	
PEL (OEL TWA)	3 mg/m³
OEL chemical category	Potential for cutaneous absorption
Czech Republic - Biological limit values	
BLV	0,024 µmol/mmol Creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: end of shift 0,05 mg/g creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: end of shift 1,2 µmol/mmol Creatinine Parameter: trans,trans-Muconic acid - Medium: urine - Sampling time: end of shift 1,5 mg/g creatinine Parameter: trans,trans-Muconic acid - Medium: urine - Sampling time: end of shift
Denmark - Occupational Exposure Limits	
OEL TWA	1,6 mg/m³
	0,5 ppm
OEL STEL	3,2 mg/m³
	1 ppm
OEL chemical category	Potential for cutaneous absorption
Estonia - Occupational Exposure Limits	
OEL TWA	1,5 mg/m³
	0,5 ppm
OEL STEL	9 mg/m³
	3 ppm
OEL chemical category	Skin notation, Carcinogenic substance
Finland - Occupational Exposure Limits	
HTP (OEL TWA)	3,25 mg/m³
	1 ppm
OEL chemical category	Potential for cutaneous absorption

Benzene (71-43-2)	
France - Occupational Exposure Limits	
VME (OEL TWA)	3,25 mg/m³ (restrictive limit)
	1 ppm (restrictive limit)
OEL chemical category	Carcinogen category 1A, Mutagen category 1B, Risk of cutaneous absorption
France - Biological limit values	
BLV	Parameter: Muconic acid - Medium: urine - Sampling time: end of shift (per the Authority, the values for this substance must be decided and/or determined on a case by case basis. Guidance for the calculation of and interpretation of values is provided in the source)
Greece - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	skin - potential for cutaneous absorption
Hungary - Occupational Exposure Limits	
AK (OEL TWA)	3,25 mg/m³
OEL chemical category	Potential for cutaneous absorption, Carc. 1A - Known Carcinogen, Muta1B
Ireland - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL STEL	9,75 mg/m³ (calculated)
	3 ppm (calculated)
OEL chemical category	Carc1A, Potential for cutaneous absorption
Italy - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	skin - potential for cutaneous absorption
Latvia - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	skin - potential for cutaneous exposure
Latvia - Biological Exposure Indices	
BEI	46 µg/g creatinine Parameter: Phenol - Medium: urine - Sampling time: end of shift 28 µg/l Medium: blood - Sampling time: end of shift
Lithuania - Occupational Exposure Limits	
IPRV (OEL TWA)	3,25 mg/m³
	1 ppm

Benzene (71-43-2)	
TPRV (OEL STEL)	19 mg/m³
	6 ppm
OEL chemical category	Mutagen, Carcinogen, Skin notation
Netherlands - Occupational Exposure Limits	
TGG-8u (OEL TWA)	0,7 mg/m³
	0,2 ppm
MAC chemical category	Skin notation
Poland - Occupational Exposure Limits	
NDS (OEL TWA)	1,6 mg/m³
Portugal - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³ (indicative limit value)
	1 ppm (indicative limit value)
OEL STEL	2,5 ppm
OEL chemical category	A1 - Confirmed Human Carcinogen, skin - potential for cutaneous exposure
Romania - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	C1A, Skin notation it is possible that regulation regarding inhaling could be added to a dermal absorption
Romania - Biological limit values	
BLV	25 µg/g creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: end of shift 500 µg/g creatinine Parameter: trans,trans-Muconic acid - Medium: urine - Sampling time: end of shift 50 mg/l Parameter: total Phenols - Medium: urine - Sampling time: end of shift
Slovenia - Occupational Exposure Limits	
OEL TWA	3,25 mg/m³
	1 ppm
OEL chemical category	Category 1B, Category 1A, Potential for cutaneous absorption
Spain - Occupational Exposure Limits	
VLA-ED (OEL TWA)	3,25 mg/m³ (manufacturing, commercialization and use restrictions according to REACH)
	1 ppm (manufacturing, commercialization and use restrictions according to REACH)
OEL chemical category	C1A, M1B, skin - potential for cutaneous absorption

Benzene (71-43-2)	
Spain - Biological limit values	
BLV	0,045 mg/g creatinine Parameter: S-Phenyl mercapturic acid - Medium: urine - Sampling time: end of exposure or end of shift 2 mg/l Parameter: trans, trans-Muconic acid - Medium: urine - Sampling time: end of exposure or end of shift
Sweden - Occupational Exposure Limits	
NGV (OEL TWA)	1,5 mg/m³
	0,5 ppm
KGV (OEL STEL)	9 mg/m³
	3 ppm
OEL chemical category	Skin notation, Carcinogen
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA)	3,25 mg/m³
	1 ppm
WEL STEL (OEL STEL)	9,75 mg/m³ (calculated)
	3 ppm (calculated)
WEL chemical category	Potential for cutaneous absorption, Capable of causing cancer and/or heritable genetic damage
Norway - Occupational Exposure Limits	
Grenseverdi (OEL TWA)	0,66 mg/m³
	0,2 ppm
Korttidsverdi (OEL STEL)	1,98 mg/m³ (value calculated)
	0,6 ppm (value calculated)
OEL chemical category	Skin notation, Carcinogen, Potential mutagen
Switzerland - Occupational Exposure Limits	
MAK (OEL TWA)	0,7 mg/m³
	0,2 ppm
OEL chemical category	Skin notation, Category C1A carcinogen, Category 1B mutagen
Switzerland - BAT	
BAT	8 µg/g creatinine Parameter: S-Phenyl-mercapturic acid - Medium: urine - Sampling time: end of shift Parameter: S-Phenyl-mercapturic acid - Medium: urine - Sampling time: end of shift
USA - ACGIH - Occupational Exposure Limits	
ACGIH® TLV® TWA	0,5 ppm
ACGIH® TLV® STEL	2,5 ppm
ACGIH chemical category	Confirmed Human Carcinogen, Skin - potential significant contribution to overall exposure by the cutaneous route

Benzene (71-43-2)	
USA - ACGIH - Biological Exposure Indices	
BEI	25 µg/g creatinine Parameter: S-Phenylmercapturic acid - Medium: urine - Sampling time: end of shift (background) 500 µg/g creatinine Parameter: t,t-Muconic acid - Medium: urine - Sampling time: end of shift (background)

8.1.2. Recommended monitoring procedures

Monitoring methods	
Monitoring methods	Concentration measurement in air. Personal air monitoring. Personal air monitoring. Room air monitoring.

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

Benzene (71-43-2)	
DNEL/DMEL (workers)	
Long-term - systemic effects, inhalation	0,8 mg/m³
DNEL/DMEL (general population)	
Long-term - systemic effects, inhalation	0,14 mg/m³
PNEC (water)	
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
PNEC (sediment)	
PNEC sediment (freshwater)	1,36 mg/kg dwt
PNEC sediment (marine water)	0,136 mg/kg dwt
PNEC (soil)	
PNEC soil	0,225 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	39 mg/l

Additional information : Recommended monitoring procedures :. Personal air monitoring. Room air monitoring

8.1.5. Control banding

No additional information available

8.2. Exposure controls

Engineering measure(s)	:	This substance should be handled under strictly controlled conditions as specified in REACH regulation article 18(4). Site documentation to support safe handling arrangements in accordance with risk-based management system should be available at each manufacturing site. During the whole lifecycle all necessary measures should be undertaken to minimize emissions and any resulting exposure. Provide adequate ventilation. Organisational measures to prevent/limit releases, dispersion and exposure. See Section 7 for information on safe handling. Handle substance within a closed system. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Use explosion-proof machinery, apparatus, ventilation facilities, tools etc. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Personal protective equipment	:	The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Hand protection	:	Wear chemically resistant gloves (tested to EN374) . Suitable material: Polyvinylalcohol (PVA). Breakthrough time : >360 minutes. Thickness of the glove material: Not determined. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.
Eye protection	:	Use suitable eye protection (EN166): Safety glasses with side-shields. goggles
Body protection	:	Wear suitable protective clothing. Overalls, apron and boots recommended.
Respiratory protection	:	In case of insufficient ventilation, wear suitable respiratory equipment. Half-face mask (DIN EN 140). full face mask (DIN EN 136). Filter type: A (EN 14387). Self-contained open-circuit compressed air breathing apparatus (EN 137). The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used. (EN 137)
Thermal hazard protection	:	Not required for normal conditions of use. Use dedicated equipment.
Environmental exposure controls	:	Comply with applicable Community environmental protection legislation. 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.
Appearance	:	Liquid.
Molecular weight	:	78,12 g/mol
Odour	:	Characteristic. aromatic.
Odour threshold	:	No data available
Melting / freezing point	:	5,5 °C
Freezing point	:	Not available
Initial boiling point and boiling range	:	80,1 °C
Flammability	:	Highly flammable liquid and vapour.

Explosive properties	:	Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.
Oxidising properties	:	Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.
Lower explosion limit	:	1,3 vol %
Upper explosion limit	:	7,1 vol %
Flash point	:	-11 °C
Auto-ignition temperature	:	562 °C
Decomposition temperature	:	No data available
pH	:	Not applicable
Kinematic viscosity	:	No data available
Dynamic viscosity	:	No data available
Solubility	:	Water: 1 g/l
Partition coefficient n-octanol/water (Log Kow)	:	1,9
Vapour pressure	:	10 kPa (20°C)
Vapour pressure at 50°C	:	Not available
Density	:	Not available
Relative density	:	0,88 – 0,886 (20°C)
Vapour density	:	2,77
Particle characteristics	:	Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

VOC content	:	100 %
Additional information	:	Literary reference

SECTION 10: Stability and reactivity

10.1. Reactivity

Highly flammable liquid and vapour. Reference to other sections: 10.4 & 10.5.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4. Conditions to avoid

Avoid the build-up of electrostatic charge. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight. See Section 7 for information on safe handling.

10.5. Incompatible materials

Strong acids. Oxidising agents. Halogens. See Section 7 for information on safe handling.

10.6. Hazardous decomposition products

Thermal decomposition can lead to the escape of irritating gases and vapours. Hazardous decomposition products. Carbon oxides. Reference to other sections 5.2.

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	> 5000 mg/kg
LC50/inhalation/4h/rat	44,66 mg/l/4h
LC50 Inhalation - Rat (Vapours)	44,66 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.
pH: Not applicable

Benzene (71-43-2)	
pH	No data available

Serious eye damage/irritation : Causes serious eye irritation.
pH: Not applicable

Benzene (71-43-2)	
pH	No data available

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.

Additional information : LOAEL, Oral, Rat: 25 mg/kg bw/day

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

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

Additional information : NOAEC, May damage fertility, Inhalation: 960 mg/m³
NOAEC, Developmental toxicity, Inhalation, Rat: 32 mg/m³

STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)

STOT-repeated exposure : Causes damage to organs through prolonged or repeated exposure.

Benzene (71-43-2)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
NOAEC, Chronic, Inhalation, human, systemic	11.2 mg/m³

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

Benzene (71-43-2)	
Kinematic viscosity	No data available

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : 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

11.2.2. Other information

Other information : Symptoms related to the physical, chemical and toxicological characteristics,For further information see section 4

SECTION 12: Ecological information

12.1. Toxicity

Environmental properties : Harmful to aquatic life with long lasting effects.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Harmful to aquatic life with long lasting effects.

Benzene (71-43-2)	
LC50 - Fish [1]	10,7 – 14,7 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through] Source: EPA)
LC50 - Fish [2]	5,3 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through] Source: EPA)
EC50 - Crustacea [1]	8,76 – 15,6 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 - Crustacea [2]	10 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 72h - Algae [1]	29 mg/l (Species: Pseudokirchneriella subcapitata)
ErC50 algae	100 mg/l (72 h)
LOEC (chronic)	1,6 mg/l
NOEC (chronic)	3 mg/l Invertebrates.
NOEC chronic crustacea	3 mg/l
ErC10, BIOMASS, 72h, algae	10 mg/l
ErC10, Growth rate, 72h, algae	34 mg/l

Benzene (71-43-2)	
IC50, 24h, micro-organisms	13 mg/l

12.2. Persistence and degradability

Benzene (71-43-2)	
Persistence and degradability	Readily biodegradable.

Benzene (71-43-2)	
Persistence and degradability	Readily biodegradable.

12.3. Bioaccumulative potential

Benzene (71-43-2)	
Partition coefficient n-octanol/water (Log Kow)	1,9
Bioaccumulative potential	No additional information available.

Benzene (71-43-2)	
BCF - Fish [1]	3,5 – 4,4
Bioconcentration factor (BCF)	< 10
Partition coefficient n-octanol/water	2,13

12.4. Mobility in soil

Benzene (71-43-2)	
Mobility in soil	No data available
Ecology - soil	No data available.

Benzene (71-43-2)	
Surface tension	Justification for data waiving

12.5. Results of PBT and vPvB assessment

Benzene (71-43-2)	
Results of PBT assessment	This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : 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.

12.7. Other adverse effects

Other adverse effects : No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Avoid release to the environment. Dispose of empty containers and wastes safely. See Section 7 for information on safe handling. Refer to manufacturer/supplier for information on recovery/recycling. Recycling is preferred to disposal or incineration. If recycling is not possible, eliminate in accordance with local valid waste disposal regulations. Handle contaminated packages in the same way as the substance itself. Dispose of contaminated materials in accordance with current regulations. Packaging contaminated by the product : Do not pierce or burn, even after use. Never use pressure to empty container.

European waste catalogue (2001/573/EC, 75/442/EEC, 91/689/EEC) : This material and its container must be disposed of as hazardous waste
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities
The following Waste Codes are only suggestions:
15 01 10* - packaging containing residues of or contaminated by dangerous substances

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
1114	1114	1114	1114	1114
14.2. UN proper shipping name				
BENZENE	BENZENE	Benzene	BENZENE	BENZENE
Transport document description				
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
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
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
ADN : N3				

14.6. Special precautions for user

Special precautions for user : No data available

- Overland transport

Classification code (ADR) : F1

Limited quantities (ADR) : 1l

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	:	33 1114
Tunnel restriction code	:	D/E
EAC code	:	3WE
APP code	:	A(fl)

- 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
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

Code: IBC : No data available.

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)

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
5.	Benzene ; Benzene	Benzene
28.	Benzene ; Benzene	Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.
29.	Benzene ; Benzene	Substances which are classified as germ cell mutagen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 3 or Appendix 4, respectively.
3(a)	Benzene ; Benzene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
3(b)	Benzene ; Benzene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
3(c)	Benzene ; Benzene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1
40.	Benzene ; Benzene	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.
72.	Benzene ; Benzene	The substances listed in column 1 of the Table in Appendix 12

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) 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 (2024/590)

Not listed on the Ozone Depletion list (Regulation EU 2024/590)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

VOC Directive (2004/42)

VOC content :100 %

Explosives Precursors Regulation (EU 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 (EC 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)

Detergent Regulation (648/2004/EC): Labelling of contents

Labelling for contents according to regulation (EC) No. 648/2004 : Not applicable

15.1.2. National regulations

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

Installations classées			
No ICPE	Désignation de la rubrique	Code Régime	Rayon
4331.text	Liquides inflammables de catégorie 2 ou catégorie 3 à l'exclusion de la rubrique 4330. La quantité totale susceptible d'être présente dans les installations y compris dans les cavités souterraines étant :		
4331.1	1. Supérieure ou égale à 1000 t Quantité seuil bas au sens de l'article R. 511-10 : 5 000 t. Quantité seuil haut au sens de l'article R. 511-10 : 50 000 t.	A	2
4331.2	2. Supérieure ou égale à 100 t mais inférieure à 1000 t Quantité seuil bas au sens de l'article R. 511-10 : 5 000 t. Quantité seuil haut au sens de l'article R. 511-10 : 50 000 t.	E	
4331.3	3. Supérieure ou égale à 50 t mais inférieure à 100 t Quantité seuil bas au sens de l'article R. 511-10 : 5 000 t. Quantité seuil haut au sens de l'article R. 511-10 : 50 000 t.	DC	

Germany

Water hazard class (WGK) : WGK 3, Highly hazardous to water (Classification according to AwSV; 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).

Major Accidents Ordinance (12. BImSchV) : Listed in the 12. BImSchV (Annex I) under: 1.2.5.2
- Quantity threshold for operational area under § 1 para. 1
  - Sentence 1 :50000 kg
  - Sentence 2 :200000 kg

Netherlands

Waterbezwaarlijkheid : categorie Z(2) - afbreekbare stoffen met gevaarlijke eigenschappen voor mens en milieu (carcinogeniteit/ mutageniteit/ reprotoxiciteit/bioacumulerend vermogen of toxiciteit)

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 below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

For this substance a chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:
Safety datasheet sections which have been updated 1,2,3.

1.3	Details of the supplier of the safety data sheet	Modified	
2.2	Precautionary statements (CLP)	Update	
16	Other information	Added	

Abbreviations and acronyms:

	DNEL = Derived No Effect Level
	DMEL = Derived Minimal Effect level
	PNEC = Predicted No Effect Concentration
	OEL-STEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
	TWA = time weighted average
	LC50 = Median lethal concentration
	LD50 = Median lethal dose
	LL50 = Median lethal level
	EC50 = Median Effective Concentration
	EL50 = Median effective level
	ErC50 = EC50 in terms of reduction of growth rate
	ErL50 = EL50 in terms of reduction of growth rate
	NOEL = no-observed-effect level
	NOEC = No observed effect concentration
	NOELR = No observed effect loading rate
	NOAEC = No observed adverse effect concentration
	NOAEL = No observed adverse effect level
	EWC = European waste catalogue
	NA = Not applicable
	N.O.S. = Not Otherwise Specified
	VOC = Volatile organic compounds
	mg/kg BW = mg/kg bodyweight
	QSAR = Quantitative structure-activity relationship (QSAR)

	ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC IATA = International Air Transport Association IMDG = International Maritime Dangerous Goods Code LEL = Lower Explosive Limit/Lower Explosion Limit UEL = Upper Explosion Limit/Upper Explosive Limit REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
	WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)
	ABM = Algemene beoordelingsmethodiek
	BTT = Breakthrough time (maximum wearing time)
	NOEL: no-observed-effect level
	STOT = Specific Target Organ Toxicity

Sources of key data used to compile the datasheet : ECHA (European Chemicals Agency). CSR = Chemical Safety Report. Supplier information.

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.

Other information : Hazard classification and labeling of petroleum substances in the European Economic Area, Concawe – 2025 (http://www.concawe.eu).

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
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
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.
	Restricted to professional users

Full text of use descriptors

ERC1	Manufacture of the substance
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

According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

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