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

1.1. Product identifier

- Trade name: **BENZENE CONCENTRATE**
- Chemical name: Hydrocarbons, C≥ 5, C5-6-rich
- Index no.: 649-401-00-8
- EC no.: 270-690-8
- CAS no.: 68476-50-6
- Registration no.: 01-2119489866-14-0007
- UFI: Not applicable.
- Form: -
- Product code: 1000767

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

- Relevant identified uses: **Industrial:** Manufacture of Substance, Use as intermediate
- Uses advised against: The uses that are in the list above are relevant. Other uses are not recommended unless an assessment that proves that the related risks are controlled has been conducted before starting that use.

1.3. Details of the supplier of the safety data sheet

- Manufacturer/supplier: **INA-Industrija nafte, d.d.**

Address: Av. V. Holjevca 10
pp 555, 10002 Zagreb, HRVATSKA

Phone: 00-385-1-6450-842 / 00-385-1-6451-075 (24 h)

Fax: 00-385-1-6452-050

SD & HSE **Phone:** 00-385-1-6450-803

- email address of a competent person responsible for the safety data sheet: sds@ina.hr

1.4. Emergency Telephone Number

- Emergency Service Telephone Number: **112**

Ministry of the Interior	00-385-1-6192-929
Directorate for civil protection	00-385-1-4551-792
Operative centre for civil protection	00-385-1-4814-911

e-mail: occz@civilna-zastita.hr

- Medical Information Telephone Number: **00-385-1-23-48-342**

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP):

Flam. Liq. 2; H225

Skin Irrit. 2; H315

Asp. Tox. 1; H304

Repr. 2; H361f

Muta. 1B; H340

Carc. 1B; H350

STOT 3; H336

Aquatic Chronic 2; H411

Full text of H-phrases: see section 16.

2.2. Label elements

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

Hazard pictograms:

GHS02 GHS07 GHS08 GHS09

Signal word: **Danger**

Hazard statements (H):	H225	Highly flammable liquid and vapour.
	H304	May be fatal if swallowed and enters airways.
	H315	Causes skin irritation.
	H336	May cause drowsiness or dizziness.
	H340	May cause genetic defects.
	H350	May cause cancer.
	H361f	Suspected of damaging fertility.
	H411	Toxic to aquatic life with long lasting effects.
Precautionary statements (P):	P201	Obtain special instructions before use.
	P210	Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
	P301+ P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
	P331	Do NOT induce vomiting.
	P403+ P233	Store in a well-ventilated place. Keep container tightly closed.

P501	Dispose of contents/container to accordance with national regulation.

2.3. Other hazards

Note P.

OIN5 – The classification as a Repr. 2; H361d (Suspected of damaging the unborn child) needs not to apply if it can be shown that the substance contains less than 3 % w/w toluene (EINECS No 203-625-9).

The product does not meet the criteria for PBT or vPvB classification in Annex XIII of REACH.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

-Substance:			Mixture:	X	

- Components contributing to product hazardousness:

Substance name	Substance identification			[%]	Classification according to Regulation (EC) No 1272/2008 (CLP)
	CAS no.	EC no.	Registration no. (REACH)		
Hydrocarbons, C≥ 5, C5-6-rich	68476-50-6	270-690-8	01-2119489866-14-0007	100	Flam. Liquid 2; H225 Skin Irrit. 2; H315 Asp. Tox. 1; H304 Repr. 2; H361f Muta. 1B; H340 Carc.1B; H350 STOT Single Exp.3; H336 Aquatic Chronic 2; H411

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

- general information:	In case of ingestion, always assume aspiration into the lungs has occurred, accompanied by the pulmonary oedema hazard. Show the label on the packaging or the SDS.
- after inhalation:	Remove the person from dangerous area to fresh air. In case of dizziness, nausea, headache and permanent complaints immediately seek medical attention. In case of fainting transport in lateral position to hospital, paying attention to the free passing of the air thorough the respiratory tract. In case of difficulty in breathing or respiratory arrest, open airways, initiate resuscitation (heart massage and artificial respiration) and immediately seek medical attention.
- after skin contact:	Take off the contaminated clothes and footwear. Thoroughly rinse the afflicted skin surface with water and soap for 10 - 15 minutes. In case of irritation, swelling or redness, immediately seek medical advice.

- after eye contact:	Remove contact lenses (if present) and flush the eyes with running water for at least 15 minutes. In case of irritation, blurred vision and swelling immediately seek medical attention.
- after ingestion:	DO NOT induce vomiting! Do not give anything by mouth! Always assume aspiration into the lungs has occurred. If vomiting occurs, keep the head below the level of hips in order to prevent penetration into the lungs. Immediately seek medical attention.
- personal protective equipment for first aid responder:	No data available.

4.2 Most important symptoms and effects, both acute and delayed

- after inhalation:	Longer inhalation of fumes can cause a sense of intoxication, headache, nausea, vomiting.
- after skin contact:	Redness, dermatitis.
- after eye contact:	May cause redness.
- after ingestion:	May cause nausea or headache. May cause lung damage if swallowed. Danger of pulmonary oedema due to aspiration in the lungs.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Only qualified medical personnel should administer oxygen.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

- SUITABLE:	Fire retardant foam with compressed air, CO_2 powder, water mist. Foam and water mist, and dry powder, CO_2, sand and earth may be used for small fires only. When using dry powder and CO_2 (for initial fires, minor fires and indoor fires) attention is to be paid to the hazard of possible repeated flaring up of the fire after extinguishing.
- UNSUITABLE:	Water jet (danger of fire spread).

5.2 Special hazards arising from the substance or mixture:

- Hazardous combustion products:	Combustion of hydrocarbons can produce smoke containing CO, CO_2.
- Hydrocarbon vapours:	Very flammable substance. Danger from explosion. Vapours, being heavier than air, stay close to the ground and in recesses. Release in sewage system increases danger from explosion.

5.3 Advice for firefighters

- Firefighting measures for special hazards:	Remove all sources of ignition, evacuate to safety distance and, if required, notify the firefighting department and the police. Special care should be taken of the fact that there is a permanent danger of creation of explosive mixture with the air at room temperature.

- Special firefighting methods:	Utilization of water mist and water spray for cooling the surfaces exposed to heat and for protection of persons. Only those who are trained in fire protection may use water spray (sprayed water).
- Special protective equipment for firefighters:	Self-sustained open-circuit compressed-air breathing apparatus (HRN EN 137). Avoid skin contact and wear protective clothing for firefighters (intervention suit) in accordance with HRN EN 469.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel	
- Protective equipment:	Use personal protective equipment listed in Section 8 and remove unprotected persons from the affected area immediately.
- Accident prevention procedures:	Rooms at risk must be thoroughly vented. Exhibit a sign of prohibited entry and work with open flame and sparking devices on a visible location. Measure the concentration of benzene vapours in the air, according to regulations. Take measures against static electricity occurrence. Provide electrical conductivity by connecting and grounding of all equipment. Control area by flammable gases detector. Do not use electric equipment. Do not inhale vapours, evaporation. Do not smoke.
- Procedure in case of accident:	Stand upwind from the spill site. Prevent product spread, if possible, in a safety manner. Define the risk area and prevent discharging and spilling into watercourses, canals, drainage systems and soil by digging out a protective ditch, fencing it with bags filled with dry sand, earth, or clay. Provide good ventilation of the area. In case of major leaks, call 112.
6.1.2. For emergency responders:	Insulate the discharge area. Use personal protective equipment listed in Section 8 and remove unprotected persons from the affected area immediately.
6.2 Environmental precautions:	Prevent discharging and spilling of the product, if possible, in a safely manner. Insulate the discharge area. Define the risk area and prevent discharging and spilling into watercourses, canals, drainage systems and soil by digging out a protective ditch, fencing it with bags filled with dry sand, earth, or clay.

6.3 Methods and material for containment and cleaning up

6.3.1. For bunding, covering and capping:	Dig a protective ditch around the discharge area, fence it off with bags filled with dry sand, earth, or clay.

6.3.2. For cleaning up:	Use safety-type pump for reloading from the damaged tank into an empty tank / tank truck / tank car. Remove remainder from the ground using adsorption agents (sawdust, mineral adsorbents, and other inert materials). Place the waste material and removed contaminated surface soil level into well-closed tanks to be stored in well-vented rooms until disposal to be done by legal entities for disposal of hazardous waste, authorized by the Ministry in charge of environmental protection. In case of spill in working area, the fluid must be removed, and the surface washed with soapy water and then rinsed with clean water.
6.3.3. Other information:	Prevent release into the soil, waterways and air! Both liquid and fumes are highly flammable! In order to protect the local sea area and port infrastructure against pollution, vessels shall be surrounded by a safety barrier. In case of major spills, notify the Port Authority at the number 112.
6.4 Reference to other sections:	See sections 8 and 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Safe handling advice:	Keep away from heat sources and eliminate immediately all ignition sources. Handle in well-ventilated areas and keep away from food and beverages. Never check the level in the tank near open flames, sparks or smoke. Never perform welding procedures in empty tanks without assessing the risks and taking precautionary measures. Do not use open flames near the tank area. Take specific care of the connections to prevent discharge into the sea or river. Re-loading i.e., unloading/loading shall be performed at the sites designed for the purpose, ensuring the air ventilation/outlet. Use the equipment and devices in good working order. Do not use sparking tools. Work room/area and storage area shall be provided with impermeable floor, resistant to solvents. Floors in rooms endangered by explosive atmosphere shall have transitional resistance of <1 MΩ within the system for bypassing the static electricity. Equipment shall be grounded, and appropriate protective measures shall be taken against static electricity: grounding, air ionization, use of antistatic material, maintaining air humidity above 65%, bypassing the static electricity through electric influence. Observe occupational safety and fire protection measures.

7.1.2 Advice on general occupational hygiene: It is forbidden to smoke, eat, drink or store food in a room where this product is handled. Keep personal clothes separate from work clothes and workplace. Obligatory wearing of the prescribed personal protective equipment defined in section 8. Extremely dirty, soaked or torn clothes must be immediately changed. Avoid contact with skin and eyes.

7.2 Conditions for safe storage, including any incompatibilities

- SUITABLE: Store in tightly closed containers, properly built and equipped in a well-ventilated room and at appropriate temperature. Take preventive measures against electrostatic charge. Make sure that receiving tank farms are below self-supporting tanks. Tank or containers in ships should be placed in cold and adequately ventilated area.

- TO BE AVOIDED: All other.

- Packaging materials

- RECOMMENDED: Fireproof.

- NOT SUITABLE: Any other.

7.3 Specific end use(s): No data available.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Hazardous substance (CAS No.)	Occupational exposure limit values/short term values (OEL/STEL)		Biological limit values
	ppm	mg/m³	
benzene (71-43-2)	1/-	3,25/-	28 µg /L (0,36 µmol/L) – blood immediately at the end of work shift 46 µg/g creatinine* (21,7 µmol/mol creatinine*) – urine at the end of work shift
n-hexane (110-54-3)	20/-	72/-	150 µg/L (1,74 µmol/L) – blood during exposure 1,66 µmol/L (40 ppm) – in extremely exhaled air during exposure

			2-hexanol: 0,22 mmol/mol creatinine* (0,20 mg/g creatinine*) – urine at the end of work shift 2,5-hexandion: 5,25 mmol/mol creatinine* (5,30 mg/g creatinine*) – urine at the end of work shift interference of simultaneous exposure to methyl methyl-ketone

- Monitoring procedures:

8.2. Exposure controls

- Summary of risk management measures: Measurement of benzene vapours concentration in the air, according to the regulations. Suitable measures include use closed systems as much as possible. Ex-proof ventilation shall be provided to keep airborne concentrations below the explosion limit. Take the necessary measures to prevent the creation of static electricity. Local exhaust ventilation is recommended. Provide eyewash stations and emergency showers.

8.2.1 Occupational exposure controls

- Description of operating procedure and technological control:

Ensure good ventilation/ air removal in the work area. Provide a decontamination sprayer for the eyes and face. Adopt personal hygiene measures: wash the hands after contact with the fuel, especially before eating, drinking and/or smoking. Regularly maintain and wash the clothing and equipment after use to remove dirt. Properly dispose of the contaminated clothing and equipment. Maintain cleanliness in accordance with good practice. Educate the employees on the hazards and control measures. Test and maintain the equipment used when handling the fuel: for example, personal protective equipment, ventilation system. Do not swallow. If swallowed, seek medical attention.

8.2.2 Personal protective equipment

- respiratory protection:	At concentrations above 5 ppm, in case that concentration of hazardous substances is higher that allowed, concentration of hazardous substances is unknown, concentration of hazardous substances is below allowed limit it is mandatory to use a protective half mask or full face mask (HRN EN 136) with a combined filter for organic gases/vapours (filter type A-P, boiling point>65 °C), a threaded connection complying with the HRN EN 14387 and HRN EN 143-1 standards (boiling point> 65 °C). During fire it is mandatory to use self-contained open circuit compressed air breathing apparatus (HRN EN 137).
- hand protection:	Wear gloves resistant to organic solvents: PVA (polyvinyl alcohol) Neoprene or Viton (HRN EN 420:2004, HRN EN 374-1:2016/Type A). Do NOT use rubber gloves!

- eye/face protection:	Protective goggles or a visor (HRN EN 166) at lower concentrations, protective mask at higher concentrations.
- skin and body protection:	When working with larger quantities, protective antistatic clothing (HRN EN 1149) resistant to chemicals, Class 3, and chemical-resistant gloves made of viton, neoprene or PVA (HRN EN 374-1) are mandatory. Since there is a possibility of ignition, it is preferable that the clothing be fireproof. When working with small quantities in the laboratory, laboratory clothing and gloves (HRN EN 374-1) are sufficient.
- Special hygienic and safety precautions:	Regularly maintain the prescribed hygiene standards for working with hazardous substances. Remove contaminated clothing and footwear. Do not smoke, eat, and drink when handling the product. Wash hands before breaks and at the end of work.

8.2.3 Environmental exposure controls

- Summary of risk management measures: No data available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

- physical state:	liquid	
- colour:	colourless	
- odour:	characteristic of benzene	
- odour threshold:	No data available.	
- pH value (indicate conc. and temp.):		Not applicable.
- melting point/freezing point:	°C	Not applicable.
- boiling point/boiling range:	°C	55 – 110
- flash point:	°C	-11 (from literature)
- evaporation rate:		No data available.
- flammability (solid, gas):		No data available.
- explosive limits:	vol. %	1.2 – 8.0 (from literature)
- vapour pressure:	kPa	28
- vapour density at 15°C:	kg/m^3	No data available.
- relative density:		No data available.
- density at 15°C:	kg/m^3	740 – 820
- solubility (indicate solvent):	g/L	Not applicable.
- solubility in water:	g/L	Not applicable.
- partition coefficient n-octanol / water	logPow	2.65 (from literature)
- auto ignition temperature:	°C	280 - 470 (from literature)

- decomposition temperature:	°C	No data available.
- kinematic viscosity at 100 °C:	mm^2/s	0.75 (from literature)
- oxidizing properties:		Not applicable.
- conductivity:	pS/m	No data available.

9.2. Other information: No data available.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity: Stable under prescribed conditions of storage and use.

10.2 Chemical stability: Stable under prescribed conditions of storage and use.

10.3 Possibility of hazardous reactions: No data available.

10.4 Conditions to avoid: Sources of heat, flame, spark.

10.5 Incompatible materials: Halogens, strong acids (such as e.g., nitrate and sulphur) and strong oxidants.

10.6 Hazardous decomposition products: Carbon oxides – thermal decomposition products.

SECTION 11. TOXICOLOGICAL INFORMATION

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

- Acute toxicity

- oral (LD_{50}):	> 5000 mg/kg $_{body\ weight}$ (rat)
- inhalation (LC_{50}):	> 5610 mg/m^3 air (analytically) (rat)
- dermal (LD_{50}):	> 2000 mg/kg $_{body\ weight}$ (rabbit)

- Corrosion/Irritation

- skin: Causes skin irritation (H315).

- Serious damage/irritation

- eyes: No data available.

- Sensitisation

- skin:	No data available.
- respiratory tract:	No data available.
- Germ cell mutagenicity:	May cause genetic defects (H340).
- Carcinogenicity:	May cause cancer (H350).
- Reproductive toxicity:	Suspected of damaging fertility (H361f).
- STOT (SE):	May cause drowsiness or dizziness (H336).
- STOT (RE):	No data available.
- Aspiration hazard:	May be fatal if swallowed and enters airways (H304).
- Information on likely routes of exposure:	No data available.

- Symptoms related to the physical, chemical and toxicological characteristics:	Prolonged inhalation of vapours causes nausea, vomiting, dizziness, pressure drop, damage to the central nervous system. Exposure to higher concentrations than OEL can cause cancer, leukaemia and death.
- Delayed and immediate effects as well as chronic effects from short and long-term exposure:	No data available.

11.2. Information on other hazards

- Endocrine disrupting properties:	No data available.
- Other information:	No data available.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity

- to aquatic organisms:	EL_{50}=4,5 mg/l (Daphnia magna), EL_{50}=3,1 mg/l (algae), LL_{50}=8,2 mg/l (fish)
- to ground organisms:	No data available.
- to plants and land animals:	No data available.

12.2. Persistence and degradability

- biodegradation:	In aerobic conditions it is subject to biodegradation, while in anaerobic conditions it probably isn't bio-degradable.
- other degradation processes:	No data available.
- degradation in wastewater:	Forms surface film that quickly evaporates, but if large quantities are spilled, may have harmful effect on aquatic organisms due to lack of oxygen.

12.3. Bioaccumulative potential

- bio-concentration factor (BCF):	No data available.

12.4. Mobility in soil

Method: No data available.

- Known or predicted distribution in environmental compartments:	No data available.
- surface tension:	No data available.
- absorption/desorption:	No data available.
- other physical and chemical properties:	See section 9.

12.5. Results of PBT and vPvB assessment

- data from chemical safety report:	Product does not fulfil PBT and vPvB criteria for classification defined by Annex XIII of REACH Regulation.

12.6. Endocrine disrupting properties:

No data available.

12.7. Other adverse effects: No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods: Waste shall be handed over to the person authorised for waste collection, disposal or recovery. If possible, the waste shall be recovered.

- Waste codes: 16 06 05*

- Waste from residues: There is no classic waste from this product, except in case of unintentional release. For such cases see Section 6.

- Contaminated packaging: Not applicable.

- Relevant provisions: Act on waste management, Ordinance on waste management.

SECTION 14. TRANSPORT INFORMATION

14.1 UN number or ID number: 1268

14.2 UN proper shipping name: PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S

14.3 Transport hazard class(es)

ADR/RID/ADN/ICAO/IATA: 3

IMDG: 3

14.4 Packing group

ADR/RID/ADN/IMDG/ICAO/IATA: II

14.5 Environmental hazards

ADR, RID, ADN, ICAO/IATA: Yes

IMDG: Maritime pollutant

14.6 Special precautions for user

ADR

Transport category: 2

Vehicle for tank carriage: FL

Tank code: LGBF

Tunnel restriction code: (D/E)

Label: 3

Classification code: F1

Hazard identification: 33

Special provisions: 640D, 664

RID

Transport category: 2

Tank code: LGBF

Label: 3

Classification code: F1

Hazard identification: 33

Special provisions: 640D

ADN

Label: 3

Additional requirements/Remarks: 14, 27, 29

IMDG

Subsidiary risk: maritime pollutant

Group of the cargo: B

Dangers: 3+(N1, N2, N3, CMR, F, S)

Equipment required: PP, EX, A.

Classification code: F1

Carriage permitted: T

Type of tank vessel: N/2

Anti-explosion protection required: yes

Maximum degree of filling in %: 97

Special provisions: 363

EmS: F-E, S-E

Segregation group: B

ICAO

Label: 3

Cargo IMP code: RFL

Passenger and cargo aircraft: LQ 1L (PI Y341); 5L (PI 353)

Cargo aircraft only: 60L (PI 364)

ERG code: 3H

14.7 Maritime transport in bulk according to IMO instruments

Trade name:	Benzene concentrate (Benzene and mixtures having 10% benzene or more)
Pollution category (according to MARPOL, Annex II):	Y
Vessel type (according to IBC Code):	Vessel type 3
Special and operative requirements (according to IBC Code):	-

15. REGULATORY INFORMATION

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

- Applicable EU regulations: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1272/2008 European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (CLP), Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 (REACH)

- Applicable national regulations: Chemicals Act; Ordinance on workers protection to dangerous chemicals exposure during work, exposure limit values and biological limit values; Act on Waste Management, Ordinance on waste management.

- Authorization information: -

- Restriction information: -

15.2 Chemical Safety Assessment

- Chemical Safety Assessment carried out (CSA):	YES	X	NO

16. OTHER INFORMATION

Revision indicators

Section:	Subject of change:
	Alignment with Commission Regulation (EU) 2020/878.

Full text of H- phrases

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361f	Suspected of damaging fertility.
H411	Toxic to aquatic life with long lasting effects.

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS number	Chemical Abstract Service number
CLP	Classification, Labelling and Packaging of substances and mixtures
CSA	Chemical Safety Assessment
CSR	Chemical Safety Report
EC number	European Community number for identification of chemical substances commercially available in the EU
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code transport
LC50	Lethal concentration for 50% of tested organisms
LD50	Lethal concentration for 50% of tested organisms (medium lethal concentration)
OIN	Oil industry notes
PBT	Persistent, bioaccumulative and toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
STOT (SE)	Specific Target Organ Toxicity (Single Exposure)

STOT (RE)	Specific Target Organ Toxicity (Repeated Exposure)
UFI	Unique formula identifier (according to section 5. Part A of Annex VIII of Regulation (EU) no. 1272/2008)
UVCB	Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials
vPvB	Very persistent and very bioaccumulative

Statement:

This SDS is in compliance with the EU Regulation No. 1907/2006 and No. 1272/2008 of the European Parliament and the Council. It contains important user health and safety and environmental protection information. The information provided herein is not a substitute for any specification of quality and should not be deemed as a guarantee of the adequacy and applicability of this product for any purpose whatsoever. All information provided herein is based on our current knowledge and compliant with applicable legal regulations. The user is responsible for adherence to relevant legal regulations.

Data source:

1. www.hzt.hr
2. http://echa.europa.eu/hr
3. Handbook – Identified Uses of Petroleum Substances 2021 Dossier Update, Concawe, September 2021
4. Hazard Classification and Labelling of Petroleum Substances in the EEA - 2020, Concawe
5. First Aid Reference Guide – 2021 update

APPENDIX: EXPOSURE SCENARIOS ACCORDING TO CHEMICAL SAFETY REPORT

APPENDIX: Exposure Scenario

Table: Identified Use Description and Exposure Scenario Number Key

ES	Identified use name	Sector	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Specific Environmental Release Category (SpERC)
01	**Manufacture of Substances** (classified as H340, H350 and/or H361;(containing equal to or greater than 20% to 79% benzene))	Industrial	NA	NA	1, 2, 3, 8a, 8b, 15	1	ESVOC SpERC 1.1.v1
01b	**Use of substance as intermediate** (classified as H340, H350 and / or H361; (containing equal to or greater than 20% to 79% benzene))	Industrial	8, 9	NA	1, 2, 3, 8a, 8b, 15	6a	ESVOC SpERC 6.1a.v1

1. MANUFACURE OF SUBSTANCE – INDUSTRIAL

Section 1	
Title	
01 - Manufacture of substance (classified as H340, H350 and/or H361; (containing equal to or greater than 20% to 79% benzene))	
Use Descriptor	
Sector(s) of Use	
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	1
Specific Environmental Release Category	SpERC1.1V1
Processes, tasks, activities covered	
Manufacture of the substance. Includes material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid
Vapour pressure	Liquid, vapour pressure > 10 kPa at STP OC5.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13.
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2.
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	**Specific Risk Management Measures and Operating Conditions**
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk-based health surveillance. G20.

CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system to avoid exposure. E8. Ensure operation is undertaken outdoors. E69. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16. Avoid carrying out activities involving exposure for more than 1 hour. OC27.
CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16. Ensure operation is undertaken outdoors. E69. Avoid carrying out activities involving exposure for more than 1 hour. OC27. Handle substance within closed systems. E47.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12. Avoid carrying out activities involving exposure for more than 1 hour. OC27.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16. Avoid carrying out activities involving exposure for more than 1 hour. OC27. or, Wear a respirator conforming to EN140 with Type A filter or better. PPE22.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 4 hours. OC28. Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). E40.
CS67 Storage.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Store substance within a closed system. E84. Avoid carrying out activities involving exposure for more than 1 hour. OC27.
Section 2 Operational conditions and risk management measures	
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB. [PrC3] Predominantly hydrophobic. [PrC4a]	
Amounts used	
Fraction of EU tonnage used in region	0,1
Regional use tonnage (tonnes/year)	4,2E+04
Fraction of Regional tonnage used locally	1,0E+00
Annual site tonnage (tonnes/year)	4,2E+04
Maximum daily site tonnage (kg/day)	1,4E+05
Frequency and duration of use	
Continuous release. [FD2]	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10

Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	5,0E-02
Release fraction to wastewater from process (initial release prior to RMM)	3,0E-03
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used. [TCS1]	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. [TCR1b]	
Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14]	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9]	
Treat air emission to provide a typical removal efficiency of (%)	9,0E+01
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%)	94,5
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%)	0,0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. [OMS2] Sludge should be incinerated, contained or reclaimed. [OMS3]	
Conditions and measures related to municipal sewage treatment plant	
Not applicable as there is no release to wastewater. [STP1]	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95,9
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95,9
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1,9E+05
Assumed domestic sewage treatment plant flow (m3/d)	1,0E+04
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated. [ETW4]	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated. [ERW2]	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the PETRORISK model. [EE2]	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1] Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2] Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. [DSU3] Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). [DSU4]

Maximum Risk Characterisation Ratio for Air Emissions RCRair	7,4E-02
Maximum Risk Characterisation Ratio for Wastewater Emissions RCRwater	7,5E-01

2. USE A SUBSTANCE AS INTERMEDIATE – INDUSTRIAL

Section 1	
Title	
01b - Use of substance as intermediate (classified as H340, H350 and/or H361; (containing equal to or greater than 20% to 79% benzene))	
Use Descriptor	
Sector(s) of Use	8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	6a
Specific Environmental Release Category	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of substance as an intermediate. Includes material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid
Vapour pressure	Liquid, vapour pressure > 10 kPa at STP OC5.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13.
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2.
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). OC7. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	**Specific Risk Management Measures and Operating Conditions**
General Measures (skin irritants). G19.	Avoid all skin contact with product. Clean up contamination / spills as soon as they occur. Wear gloves (tested to EN374) if hand contamination likely. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. E3.
General Measures (carcinogens). G18.	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general / local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean / flush equipment, where possible, prior to maintenance. Where there is potential for exposure: Restrict access to authorised staff; provide specific activity training to operators to minimise exposures; wear suitable gloves (tested to EN374) and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Regularly inspect, test and maintain all control measures. Consider the need for risk-based health surveillance. G20.
CS15 General exposures (closed systems). + CS56 With sample collection.	Handle substance within closed systems. E47. Sample via a closed loop or other system to avoid exposure. E8. Ensure operation is undertaken outdoors. E69. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16. Avoid carrying out activities involving exposure for more than 1 hour. OC27.

CS15 General exposures (closed systems).	Provide extract ventilation to points where emissions occur. E54. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16. Ensure operation is undertaken outdoors. E69. Avoid carrying out activities involving exposure for more than 1 hour. OC27. Handle substance within closed systems. E47.
CS36 Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. E12. Avoid carrying out activities involving exposure for more than 1 hour. OC27.
CS14 Bulk transfers	Ensure material transfers are under containment or extract ventilation. E66. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16. Avoid carrying out activities involving exposure for more than 1 hour. OC27. or, wear a respirator conforming to EN140 with Type A filter or better. PPE22.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. E55. Retain drain downs in sealed storage pending disposal or for subsequent recycle. ENVT4. Clear spills immediately. C&H13. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18. Avoid carrying out activities involving exposure for more than 4 hours. OC28. Wear a respirator conforming to EN140 with Type A filter or better. PPE22. Ensure operation is undertaken outdoors. E69. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). E40.
CS67 Storage.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17. Store substance within a closed system. E84. Avoid carrying out activities involving exposure for more than 1 hour. OC27.

Section 2 Operational conditions and risk management measures	
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB. [PrC3] Predominantly hydrophobic. [PrC4a]	
Amounts used	
Fraction of EU tonnage used in region	0,1
Regional use tonnage (tonnes/year)	4,0E+04
Fraction of Regional tonnage used locally	3,7E-01
Annual site tonnage (tonnes/year)	1,5E+04
Maximum daily site tonnage (kg/day)	5,0E+04
Frequency and duration of use	
Continuous release. [FD2]	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	2,5E-02
Release fraction to wastewater from process (initial release prior to RMM)	3,0E-03
Release fraction to soil from process (initial release prior to RMM)	0.001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used. [TCS1]	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater sediment. [TCR1b]	

Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14]	
If discharging to domestic sewage treatment plant, additional onsite wastewater treatment required	
Treat air emission to provide a typical removal efficiency of (%)	8,0E+01
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%)	96,9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%)	25,6
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. [OMS2] Sludge should be incinerated, contained or reclaimed. [OMS3]	
Conditions and measures related to municipal sewage treatment plant	
Not applicable as there is no release to wastewater. [STP1]	
Estimated substance removal from wastewater via domestic sewage treatment (%)	95,9
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	96,9
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	5,0E+04
Assumed domestic sewage treatment plant flow (m3/d)	2,0E+03
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated. [ETW5]	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated. [ERW3]	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the PETRORISK model. [EE2]	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.	
4.2. Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1] Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2] Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. [DSU3] Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). [DSU4]	
Maximum Risk Characterisation Ratio for Air Emissions RCRair	9,0E-02
Maximum Risk Characterisation Ratio for Wastewater Emissions RCRwater	9,1E-01