# INDUSTRIJA NAFTE, d.d.

## SAFETY DATA SHEET

According to the Regulation No. 1907/2006

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Product FUEL OILS Date: 2018/6/20

Edition: 4

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

1.1. Product identifier

- Trade name: FUEL OIL EXPORT, FO EXPORT

FUEL OIL EXPORT LS, FO EXPORT LS

FUEL OIL MEDIUM, FO M-I

- Chemical name: Fuel oil, no. 6
- Index no.: 649-030-00-1
- EC no.: 271-384-7
- CAS no.: 68553-00-4

- Registration No.: 01-2119489962-20-0004 - Product code: 1000062, 1000397, 1000287

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

- Relevant identified uses: Industrial: Manufacture of substance, Use of substance as

intermediate, Distribution of substance, Formulation & (re) packing of substance and mixtures, Use as a fuel, Uses in

coatings

Professional: Use as a fuel

- Uses advised against: Professional: Uses in coatings, Use as a fuel, Use in road and

construction applications

1.3. Details of the supplier of the safety data sheet

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

Address: Av. Većeslava 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 e-mail: sds@ina.hr

- Responsible person: SD & HSE

Mirela Mavrinac, B.Sc. Tel. 00-385-1-6450-803

Hrvoje Raukar, B.Sc.

1.4. Emergency Telephone Number

- Emergency Service Telephone Number: 112

 National Protection and Rescue Directorate
 00-385-1-3650-011

 Nehajska 5, 10000 Zagreb
 00-385-1-3650-084

 e-mail: info@duzs.hr
 00-385-1-3650-082

 00-385-1-3650-083

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

#### 2. HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance or mixture



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

Acute Tox. 4; H332

Repr. 2; H361d Carc. 1B; H350

STOT RE 2; H373

Aquatic Acute 1; H400 Aquatic Chronic 1; H410

Full text of H-phrases: see section 16.

#### 2.2. Label elements

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

Hazard pictograms:







GHS07 GHS08

GHS09

#### Signal word:

### **Danger**

Hazard statements (H):	H332	Harmful if inhaled.				
	H350	May cause cancer (inhalation).				
	H361d	Suspected of damaging fertility or the unborn child.				
	H373	May cause damage to organs through prolonged or repeated exposure.				
	H400	Very toxic to aquatic life.				
	H410	Very toxic to aquatic life with long lasting effects.				
	EUH066	Repeated exposure may cause skin dryness or cracking.				
Precautionary statements (P):	P201	Obtain special instructions before use.				
	P260	Avoid breathing dust/fume/gas/mist/ vapours/spray.				
	P273	Avoid release to the environment.				
	P280	Wear protective gloves/protective clothing/eye protection/face protection.				
	P308+ P313	IF exposed or concerned: Get medical advice/attention.				
	P501	Dispose of contents/container to accordance with national regulation.				

#### 2.3. Other hazards

Hydrogen sulphide may be present in the product.

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



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3. COMPOSITION / INFORMATION ON INGREDIENTS						
-Substance:	Х			Mixture	:	
- Components	contributing	g to produc	t hazardousness			
Substance name	Substance identification			[%]		assification according to lation (EC) No 1272/2008
Custanes name	CAS no.	EC no.	Registration no. (REACH)	[70]	rtoge	(CLP/GHS)
Fuel oil, No.6.	68553-00-4	271-384-7	01-2119489962- 20-0004	100	Acute Tox. 4; H332 Repr.2; H361d Carc.1B; H350 STOT Rep. Exp. 2; H373 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	

#### 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

- general information: Repeated exposure may cause skin dryness or cracking. In case of

direct contact with skin and eyes there is a possibility of scalding, due to the fact that product is stored and handled at increased temperatures. If product is stored and handled at increased temperatures, there is a potential danger of creation of hydrogen sulphide. In that case, excessive exposure can cause irritation of

respiratory tract, dizziness, nausea, fainting and death.

- after inhalation: Afflicted person shall be brought to fresh air.

In case of headache, dizziness, nausea 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. If the person is breathing with difficulty or not at all, administer CPR (heart massage and artificial respiration) and immediately seek

medical assistance.

- after skin contact: Take the soaked clothing and footwear off, rinse thoroughly the places

of contact with water and soap for 10-15 minutes. In case of swelling,

redness or itchiness, seek medical assistance.

- after eye contact: Remove contact lenses 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 invoke 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.

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



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- after inhalation: Prolonged fumes inhalation can cause feeling of drunkenness,

headache, nausea, fainting.

- after skin contact: Skin redness.

- after eye contact: Can cause redness.

- after ingestion: Risk of pulmonary oedema.

4.3 Indication of any immediate medical attention and special treatment needed

Treat according to symptoms. Administering oxygen only by trained medical personnel.

#### 5. FIREFIGHTING MEASURES

#### 5.1 Extinguishing media

- SUITABLE: Air foam, CO<sub>2</sub> powder, water mist.

- UNSUITABLE: Water jet.

- Firefighting measures for special

hazards:

Remove all ignition sources, call for firemen. Pay special attention to finding out whether there is a risk of explosive-air mixture formation at temperatures above

the flash point.

- Special firefighting measures: Use 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/fire-fighting may use

water spray (dispersed water).

- Special fire fighter protective

equipment:

Wear protective clothing for firefighters (intervention suit) in accordance with HRN EN 469 and a self-contained open-circuit compressed air breathing apparatus in

accordance with HRN EN 137.

5.2 Special hazards arising from the

substance or mixture:

Vapours, being heavier than air, remain close to the ground and in recesses from where they can spread

farther from the place of accident and cause explosion

and fire.

**5.3 Advice for firefighters:** No data.

#### 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

Ventilate thoroughly the premises at risk. Display a visible sign prohibiting entrance, use of open flame and sparking devices. Do not smoke. Stand upwind from the spill site. Use means of personal protection mentioned

under section 8.

**6.2 Environmental precautions:** Mark out the contaminated area with signs and prevent

leaks and spills into watercourses, canals, drainage systems and soil by digging a protective ditch, setting up partitions made of bags of dry sand, soil or clay. Ensure good ventilation. In case of major spills notify the

communication unit by dialling 112.

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6.3 Methods for cleaning-up and recovery:

Pump the product from the damaged tank into an empty tank – container with the pump designed for use in potentially explosive atmosphere. Absorb the remainders with absorbents (sawdust, sand, mineral adsorbents and other inert materials). Store the waste material and contaminated surface layer of soil that was removed in closed containers in well-ventilated premises. Hand over for disposal to legal entities for hazardous waste disposal, authorised by the Ministry in charge of environmental protection.

- Additional warnings: In case of major spills notify Port Authorities and

Emergency Service by dialling 112.

**6.4 Reference to other sections:** See sections 8 and 13.

#### 7. HANDLING AND STORAGE

#### 7.1 Precautions for safe handling

7.1.1 Safe handling advice: Check the level of hydrogen sulphide (H<sub>2</sub>S) before entering the

confined space in which the product is stored. The vapours are heavier than air, product build-up near the floor of the storage space is possible. Handle the product in well-ventilated areas. Keep away from sources of heat and ignition. Never check the level in the tank near open flames, sparks or smoke. Adhere to occupational health and safety and fire protection measures.

7.1.2 Advice on general occupational hygiene:

Do not smoke. Avoid inhalation of vapours, as well as contact with skin and eyes. Apply personal safety equipment from section 8.

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

- SUITABLE: Properly constructed and equipped tanks.

- TO BE AVOIDED: Everything else.

- Packaging materials

- RECOMMENDED: Prescribed for the purpose.

- NOT SUITABLE: No data. **7.3 Specific end use(s):** No data.

#### 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	
Hydrogen sulphide	5/10	7/14	No data.

#### - Monitoring procedures:

#### 8.2. Exposure controls

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- Summary of risk management measures: No data.

#### 8.2.1 Occupational exposure controls

- Description of operating procedure and technological control:

Provide a good ventilation / air outlet in the work area.

#### 8.2.2 Personal protective equipment

- respiratory tract protection: Safety mask for the whole face (HRN EN 136/AC:2006) with

> combined filter (A2P3 type) and threaded connector according to HRN EN 14387 and HRN EN 143-1 (boiling point >65 °C). During the fire, obligatory use of self-sustaining breathing apparatus with

compressed-air open circuit (HRN EN 137).

- hand protection: Safety gloves made of a resistant, impermeable material, such as

nitrile rubber or viton (HRN EN 374-1, 374-2, and 374-3).

Safety goggles with side guards or vizier (HRN EN 166) for lower - eye protection:

concentrations, and safety mask for higher concentrations.

- skin and body protection: Safety clothing and footwear, nitrile rubber apron, chemical safety

suit.

- Special hygienic and

Maintain the regular hygiene standards prescribed for working with hazardous substances. Take-off the contaminated clothes safety precautions:

footwear. Regularly check and maintain equipment/accessories and devices by washing with running water. Smoking prohibited during handling this product, as well as eating and drinking. After each interruption of work, obligatory

hand washing.

#### 8.2.3 Environmental exposure controls

- Summary of risk management measures: No data.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

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

- state: Viscous liquid to solid at 20°C and 101,325 kPa

- colour: Brown-black to black

- odour: Characteristic, like asphalt

- odour threshold: No data.

- pH value (indicate conc. and temp.): Not applicable.

°C - Melting point/freezing point: Not applicable.

°C - boiling point/boiling range: > 150 °C - flash point: ≥ 60 - Evaporation rate: No data.

No data. - flammability (solid, gas): No data.

vol. % - explosive limits: kPa - vapour pressure: No data.

- vapour density at 15°C: kg/m<sup>3</sup> Not applicable.



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- relative density: Not applicable.

- density at 15°C: kg/m<sup>3</sup> 960-1050

solubility (indicate solvent): g/L Not applicable.
 Solubility in water: g/L Not applicable.
 partition coefficient n-octanol / water logPow Not applicable.

- auto ignition temperature:- disintegration temperature:°CCNo data.

- viscosity (kinematic) at 100 °C: mm<sup>2</sup>/s 6-45 (75-150 FUEL OIL EXPORT)

- oxidizing properties: Not applicable.

- conductivity: pS/m No data.

#### 9.2 Other information

No data.

#### 10. STABILITY AND REACTIVITY

**10.1 Reactivity:** Stable under recommended conditions of storage

and use.

**10.2 Chemical stability:** Stable under recommended conditions of storage

and use.

**10.3 Possibility of hazardous reactions:** No data.

**10.4 Conditions to avoid:** Contact with air, increased temperature.

**10.5 Incompatible materials:** Strong oxidants.

10.6 Hazardous decomposition products: Incomplete combustion produces a mixture of

solid and liquid particles and gases, including H<sub>2</sub>S, sulphur oxides, nitrogen oxides and carbon

oxides.

#### 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on toxicological effects:

- Acute toxicity

- oral (LD<sub>50</sub>): > 5000 mg/kg- inhalation (LC<sub>50</sub>): 4,1 mg/l

- dermal (LD<sub>50</sub>): > 2000 mg/kg

- Irritation/Corrosion

- skin: Repeated exposure may cause skin dryness or cracking

(EUH066).

- eyes: Irritating effect possibly accompanied by redness.

- respiratory tract: Harmful if inhaled.

- Sensitisation

skin: No data.respiratory tract: No data.

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- Aspiration hazard: No data.

- Other classic effects: (e.g. No data. unconsciousness, particularly toxic

metabolites, etc.):

- Permanent effects due to acute or

chronic exposure:

No data.

- Special effects

- mutagenicity: No data.

- carcinogenicity: May cause cancer. (H350)

- fertility decrease: No data.

- harmful effect on unborn child: Suspected of damaging the unborn child. (H361d)

toxicity to reproduction: No data.
other (e.g. endocrine disruptors): No data.
STOT (SE): No data.

- STOT (RE): May cause damage to organs through prolonged or

repeated exposure. (H373)

- Prohibitions and restrictions: No data.- Other: No data.

#### 12. ECOLOGICAL INFORMATION

12.1. Toxicity

- to aquatic organisms: EL50 48h (Daphnia magna)= 0.22 mg/l; LL50 96h

(Pimephales promelas)= 79 mg/l

to ground organisms: No data.to plants and land animals: No data.

12.2. Persistence and degradability

biodegradation: No data.
 other degradation processes: No data.
 degradation in wastewater: No data.

12.3. Bioaccumulative potential

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

**12.4. Mobility in soil Method:** No data.

- Known or predicted distribution in No data.

environmental compartments:

- surface tension: No data.- absorption/desorption: No data.

- other physical and chemical properties: See section 9.

12.5. Results of PBT and vPvB assessment

- data from chemical safety report: No data.



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**12.6. Other adverse effects:** No data.

13. DISPOSAL CONSIDERATIONS

**13.1 Waste treatment methods:** There is no classic waste from this product except in

case of unintentional release. For such cases see

section 6.

- Waste codes: 13 07 01\*

- Waste from residues: not applicable- Contaminated packaging: not applicable

- Relevant provisions: Act on Sustainable Waste Management, Regulation

on waste catalogue, Ordinance on waste

management.

14. TRANSPORT INFORMATION

14.1 UN number: 3082

**14.2 UN proper shipping name:** ENVIRONMENTALLY HAZARDOUS

SUBSTANCES, LIQUIDS, N.O.I.

14.3 Transport hazard class(es)

ADR/RID/ADN/ICAO/IATA: 9

IMDG: 9

14.4 Packing group

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

14.5 Environmental hazards

ADR, RID, ADN, ICAO/IATA: Yes

IMDG: Yes, maritime pollutant

14.6 Special precautions for user

ADR RID

Transport category: 3 Transport category: 3

Vehicle for tank carriage: AT Tank code: LGBV

Tank code: LGBV Label: 9

Tunnel restriction code: (-) Classification code: M6
Label: 9 Hazard identification: 90

Classification code: M6 Special provisions: 274, 335, 601.

Hazard identification: 90

Special provisions: 274, 335, 375, 601,

CV13.

ADN IMDG

Label: 9 Subsidiary risk: Yes, maritime pollutant

Additional requirements/Remarks: 22, 27 Group of the cargo: Category A

\*see 3.2.3.3

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Dangers: 9+ (N1, N2, CMR, F or S) Special provisions: 274, 335.

Equipment required: \*; PP EmS: F-A, S-F

Classification code: M6 Segregation group: Category A

Carriage permitted: Yes

Type of tank vessel: \*; N /\*; 3

Anti-explosion protection required: no Maximum degree of filling in %: \*; 97

**ICAO** 

Label: 9 + identifier "Environmental hazard"

Cargo IMP code: RMD

Passenger and cargo aircraft: LQ-30 kg G

(PI Y964); 450 I (PI 964)

Cargo aircraft only: 450 I (PI 964)

ERG code: 9L

14.7 Transport in bulk condition according to MARPOL Convention, Annex II and IBC Codex

Trade name:

Pollution category (according to MARPOL, Annex II):

Vessel type (according to IBC Code):

Special and operative requirements (according to IBC Code):

Not applicable.

Not applicable.

Not applicable.

#### 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 and Regulation (EC) No

1272/2008 of the European Parliament and the Council; Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of

Chemicals (REACH)

- Applicable national regulations: Chemicals Act; Ordinance on limits for exposure to

hazardous substances at work and on biological limit

values

- Authorization information: -

- Restriction information: -

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

#### **16. OTHER INFORMATION**

#### **Revision indicators**

Section: Subject of change:

Completely new edition of SDS "Fuel Oils", with changes in all sections.



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Full text of H- phrases, EUH- and P-phrases

H332 Harmful if inhaled.

H350 May cause cancer by inhalation.

H361fd Suspected of damaging fertility. Suspected of damaging the unborn child. H373 May cause damage to organs through prolonged or repeated exposure

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

EUH066 Repeated exposure may cause skin dryness or cracking.

P201 Obtain special instructions before use.

P260 Avoid breathing dust/fume/gas/mist/ vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P501 Dispose of contents/container in accordance with national regulations.

### 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

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)

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STOT (RE) Specific Target Organ Toxicity (Repeated Exposure)

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. Hazard classification and labelling of petroleum substances in the EEA, Concawe 2017.

APPENDIX: EXPOSURE SCENARIOS ACCORDING TO CHEMICAL SAFETY REPORT



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## APPENDIX: EXPOSURE SCENARIOS FOR FUEL OILS ACCORDING TO CHEMICAL SAFETY REPORT Identified Use Description and Exposure Scenario Number Key

IU	Category	Identified Use Name	Sector	ES Number	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Article Category (AC)	Environmental Release Category (ERC)	Specific Environmental Release Category (SpERC)
1	Substance Components	01 – Manufacture of Substance	Industrial	ES 9.1.1	3, 8, 9	NA	1, 2, 3, 8a, 8b, 15	NA	1	ESVOC SpERC 1.1.v1
2	Heavy Fuel Oil Components	01b – Use of Substance as Intermediate	Industrial	ES 9.2.1	3, 8, 9	NA	1, 2, 3, 8a, 8b, 15	NA	6a	ESVOC SpERC 6.1a.v1
3	Substance Components	01a – Distribution of Substance	Industrial	ES 9.3.1	3	NA	1, 2, 3, 8a, 8b, 15	NA	4, 5, 6a, 6b, 6c, 6d, 7	ESVOC SpERC 1.1b.v1
4	Heavy Fuel Oil Components	02 – Formulation & (Re)packing of Substances and Mixtures	Industrial	ES 9.4.1	3, 10	NA	1, 2, 3, 8a, 8b, 15	NA	2	ESVOC SpERC 2.2.v1
5	Heavy Fuel Oil Components	03a – Uses in Coatings: Industrial	Industrial	ES 9.5.1	3	NA	1, 2, 3, 8a, 8b, 15	NA	4	ESVOC SpERC 4.3a.v1
7	Substance Components	12a – Use as a Fuel: Industrial	Industrial	ES 9.7.1	3	NA	1, 2, 3, 8a, 8b, 16	NA	7	ESVOC SpERC 7.12a.v1
8	Heavy Fuel Oil Components	12b – Use as a Fuel: Professional	Professional	ES 9.8.1	22	NA	1, 2, 3, 8a, 8b, 16	NA	9a, 9b	ESVOC SpERC 9.12b.v1



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## 1. Manufacture of Substance - Industrial

1. Manutacture of		industriai		
Section 1 Exposure Scenario	Title Substance			
Title				
Manufacture of Substance				
Use Descriptor				
Sector(s) of Use		3, 8, 9		
Process Categories		1, 2, 3, 8a, 8b, 15		
-		Further information on the mapping and allocation of		
		PROC codes is contained in Table 9.1		
Environmental Release Catego		1		
Specific Environmental Release	e Category	ESVOC SpERC 1.1.v1		
Processes, tasks, activities c	overed			
Manufacture of the substance of	or use as a process	chemical or extraction agent within closed or		
		during recycling/ recovery, material transfers,		
		maintenance and loading (including marine		
vessel/barge, road/rail car and l	bulk container).			
Assessment Method				
See Section 3.				
Section 2 Operational condit	ions and risk man	agement measures		
Section 2.1 Control of worke	r exposure			
Product characteristics				
Physical form of product		ssure <0.5 kPa at STP. OC3.		
Concentration of substance in		e substance in the product up to 100 % (unless stated		
product	differently) G13			
Amount used	Not applicable			
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2		
use/exposure				
Human factors not influenced	Not applicable			
by risk				
management	0	d and at almost all a series and the series ( . 00% all and a series at		
Other Operational Conditions		ed out at elevated temperature (> 20°C above ambient		
affecting		7. Assumes a good basic standard of occupational		
exposure Contributing Scenarios	hygiene is implem	nagement Measures and Operating Conditions		
Contributing Scenarios	Specific Kisk Mai	nagement measures and Operating Conditions		
General measures	Consider technica	l advances and process upgrades (including		
(carcinogens) G18		e elimination of releases. Minimise exposure using		
		closed systems, dedicated facilities and suitable		
		aust ventilation. Drain down systems and clear transfer		
		king containment. Clean / flush equipment, where		
	possible, prior to maintenance.			
	Where there is potential for exposure: Restrict access to authorised			
		specific activity training to operators to minimise		
		uitable gloves and coveralls to prevent skin		
	ar respiratory protection when its use is identified for			
		g scenarios; clear up spills immediately and dispose of		
		sure safe systems of work or equivalent arrangements		
		nage risks. Regularly inspect, test and maintain all		
		Consider the need for risk based health surveillance.		
CS15 General exposures	G20	within a closed system E47. Wear chemically resistant		
(closed systems).		EN374) in combination with 'basic' employee training		
(oloood byotollio).	PPE16.	2.107 17 11 00 mbination with basic employee trailing		
	i - L 10.			



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Treat air emission to provide a typical removal efficiency of (%) 90	Risk from environmental expos Onsite wastewater treatment re	equired [TCR13]. Prevent discharge of undiss				
			lan			
Treat onsite wastewater (prior to receiving water discharge) to provide 85.9						



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the required removal efficiency ≥ (%)					
If discharging to domestic sewage treatment plant, provide the required	0.0				
onsite wastewater removal efficiency of ≥ (%)					
Organisation measures to prevent/limit release from site	-				
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be inc	inerated, contained or				
reclaimed [OMS3].					
Conditions and measures related to municipal sewage treatment plant					
Estimated substance removal from wastewater via domestic sewage	88.8				
treatment (%)					
Total efficiency of removal from wastewater after onsite and offsite	88.8				
(domestic treatment plant) RMMs (%)					
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	2.3e6				
wastewater treatment removal (kg/d)					
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	10000				

#### Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated to treat [ETW4].

#### Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated to recover [ERW2]

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file in IUCLID Section 13.

#### **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 carcinogenic effects. G33. 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 (<a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a>) [DSU4]. Scaled assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file in IUCLID Section 13 – "Site-Specific Production" worksheet [DSU6]. For refinery sites where scaling revealed a condition of unsafe use (i.e., RCRs > 1), a site-specific chemical safety assessment was required [DSU8]. Consequently a Tier 2 assessment was performed in an attempt to refine conservative exposure assumptions and improve risk estimates. The Tier 2 analysis demonstrates that no refineries have RCRs>1 (see Appendix 4 and PETRORISK file in IUCLID section 13 – "Tier 2 Site Specific Production worksheet").



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## 2. Use of Substance as Intermediate - Industrial

0	T'(  - O. d (				
Section 1 Exposure Scenarion Title	1 Itle Substance				
Use as Substance as Intermedi	oto				
	ale				
Use Descriptor					
Sector(s) of Use		3, 8, 9			
Process Categories		1, 2, 3, 8a, 8b, 15			
		Further information on the mapping and allocation of			
<u> </u>		PROC codes is contained in Table 9.1			
Environmental Release Catego		6a			
Specific Environmental Release	<u> </u>	ESVOC SpERC 6.1a.v1			
Processes, tasks, activities c					
		or contained systems. Includes incidental exposures			
		ge, sampling, associated laboratory			
	ding (including mari	ne vessel/barge, road/rail car and bulk container).			
Assessment Method					
See Section 3.					
Section 2 Operational condit	ions and risk man	agement measures			
Section 2.1 Control of worke	rexposure				
Product characteristics	<u> </u>				
Physical form of product		ssure <0.5 kPa at STP. OC3.			
Concentration of substance in		e substance in the product up to 100 % (unless stated			
product	differently) G13				
Amount used	Not applicable				
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2			
use/exposure					
Human factors not influenced	Not applicable				
by risk management					
Other Operational Conditions	Operation is carrie	d out at elevated temperature (> 20°C above ambient			
affecting exposure		7. Assumes a good basic standard of occupational			
3 1 1 1 1	hygiene is impleme				
Contributing Scenarios		nagement Measures and Operating Conditions			
_					
General measures	Consider technical	advances and process upgrades (including			
(carcinogens) G18		e elimination of releases. Minimise exposure using			
,	measures such as closed systems, dedicated facilities and suitable				
		aust ventilation. Drain down systems and clear transfer			
	lines prior to break	ing containment. Clean / flush equipment, where			
	possible, prior to m	naintenance.			
	Where there is pot	ential for exposure: Restrict access to authorised			
		pecific activity training to operators to minimise			
		uitable gloves and coveralls to prevent skin			
		ar respiratory protection when its use is identified for			
		g scenarios; clear up spills immediately and dispose of			
		sure safe systems of work or equivalent arrangements			
		nage risks. Regularly inspect, test and maintain all			
		Consider the need for risk based health surveillance.			
0045.0	G20				
CS15 General exposures	Handle substance within a closed system E47. Wear chemically resistant				
(closed systems).	gloves (tested to EN374) in combination with 'basic' employee training				
	PPE16.				



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Product	FUEL OILS	Date: 2018
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CS15 General exposures	Handle substance within a closed system E	47 Sample via a closed loop
closed systems). + CS2	or other system to avoid exposure E8. Avoid	
Process sampling. +OC9	involving exposure for more than 15 minutes	s OC26. Wear chemically
Outdoor	resistant gloves (tested to EN374) in combir	
	training PPE16.	
CS85 Bulk product storage.	Store substance within a closed system E84	
	involving exposure for more than 4 hours O	
	resistant gloves (tested to EN374) in combin	nation with 'basic' employee
	training PPE16.	
CS36 Laboratory activities	Handle within a fume cupboard or implemen	
0051014	to minimise exposure E12. Wear suitable glo	
CS510 Marine vessel/barge	Avoid carrying out activities involving expos	
(un)loading	OC28. Transfer via enclosed lines E52. Clea	
	coupling E39. Retain drain downs in sealed	
	for subsequent recycle ENVT4. Wear chemi to EN374) in combination with 'basic' emplo	
CS511 Road tanker/Railcar	Avoid carrying out activities involving expos	
loading	OC27, or: G9 Ensure material transfers are	
-cading	ventilation E66. Wear chemically resistant g	
	combination with 'basic' employee training F	
CS39 Equipment cleaning and	Drain down and flush system prior to equipm	nent break-in or maintenance
maintenance	E55. Wear chemically resistant gloves (teste	
	with specific activity training PPE17. Retain	
	pending disposal or for subsequent recycle	
	basis for the allocation of the identified C	OCs and RMMs is
contained in Appendices 2 to		
Section 2.2 Control of enviro	nmental exposure	
Product characteristics		
Substance is complex UVCB [P	rC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		
Fraction of EU tonnage used in	region	0.1
Regional use tonnage (tonnes/y	•	1.3e5
Fraction of Regional tonnage us		1.2e-1
Annual site tonnage (tonnes/yea		1.5e4
Maximum daily site tonnage (kg		5.0e4
Frequency and duration of us	• • •	3.064
Continuous release [FD2].		300
Emission days (days/year)  Environmental factors not inf	luenced by risk management	300
	idenced by risk management	140
Local freshwater dilution factor		10
Local marine water dilution factor		100
Other given operational cond	itions affecting environmental exposure	
Release fraction to air from prod	cess (initial release prior to RMM)	1.0e-5
•	from process (initial release prior to RMM)	1.0e-5
	. ,	
•	ocess (initial release prior to RMM)	0.001
Technical conditions and mea	asures at process level (source) to preven	t release
	sites thus conservative process release estir	
	nd measures to reduce or limit discharge	s, air emissions and
releases to soil	una la duivan ha fuanhanatan an Parant ITODA	1. If all a plan and a set of the
	ure is driven by freshwater sediment [TCR1b	
	ite wastewater treatment required [TCR9]. Pr	revent discharge
	recover from onsite wastewater [TRC14].	len
reat air emission to provide a t	rypical removal efficiency of (%)	80



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Product	FUEL OILS	Date:	2018/6/20
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Treat onsite wastewater (prior to receiving water discharge) to provide	54.0
the required removal efficiency ≥ (%)	
If discharging to domestic sewage treatment plant, provide the required	0
onsite wastewater removal efficiency of $\geq$ (%)	
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in-	cinerated, contained or
reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	t
Estimated substance removal from wastewater via domestic sewage	88.8
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	88.8
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	1.9e5
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m³/d)	2000
Conditions and measures related to external treatment of waste for di	enneal

#### 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 to treat [ETW5].

#### Conditions and measures related to external recovery of waste

This substance is consumed during use and no waste of the substance is generated to recover [ERW3].

## Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file in IUCLID Section 13

#### **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 carcinogenic effects. G33. 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)



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## 3. Distribution of Substance - Industrial

Section 1 Exposure Scenario	Title Substance	
Title	Title Substance	
Distribution of Substance		
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 8a, 8b, 15
		Further information on the mapping and allocation of
F :		PROC codes is contained in Table 9.1
Environmental Release Catego		4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release		ESVOC SpERC 1.1b.v1
Processes, tasks, activities c		
		ad car and IBC loading) of substance within closed or
		during its sampling, storage, unloading,
maintenance and associated la	boratory activities.	
Assessment Method		
See Section 3.		
Section 2 Operational condit	ions and risk mana	agement measures
Section 2.1 Control of worke	r exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)		ssure <0.5 kPa at STP. OC3.
Concentration of substance in		e substance in the product up to 100 % (unless stated
product	differently) G13	
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2
use/exposure		
Other Operational Conditions		ot more than 20°C above ambient temperatures, unless
affecting exposure		G15. Assumes a good basic standard of occupational
	hygiene is impleme	
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions
General measures	Consider technical	advances and process upgrades (including
(carcinogens) G18		elimination of releases. Minimise exposure using
(carcinogens) & 10		closed systems, dedicated facilities and suitable
		aust ventilation. Drain down systems and clear transfer
		ing containment. Clean / flush equipment, where
	possible, prior to m	
		ential for exposure: Restrict access to authorised
		pecific activity training to operators to minimise
		uitable gloves and coveralls to prevent skin
		ar respiratory protection when its use is identified for
		scenarios; clear up spills immediately and dispose of
		ure safe systems of work or equivalent arrangements
		nage risks. Regularly inspect, test and maintain all
		Consider the need for risk based health surveillance.
	G20	
CS2 Process sampling. + OC9		ed loop or other system to avoid exposure E8. Avoid
Outdoor		es involving exposure for more than 15 minutes OC26.
		esistant gloves (tested to EN374) in combination with
	'basic' employee tr	
CS15 General exposures	Handle substance	within a closed system E47. Avoid carrying out
(closed systems).	activities involving	exposure for more than 4 hours OC28. Sample via a



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Product	FUEL UILS	Date. 2016/
		Edition:
	laland lane and the second	
	closed loop or other system to avoid expresistant gloves (tested to EN374) in contraining PPE16.	nbination with 'basic' employee
CS85 Bulk product storage.	Store substance within a closed system I involving exposure for more than 4 hours resistant gloves (tested to EN374) in contraining PPE16.	OC28. Wear chemically
CS137 Product sampling	Sample via a closed loop or other system carrying out activities involving exposure Wear chemically resistant gloves (tested 'basic' employee training PPE16.	for more than 15 minutes OC26.
CS36 Laboratory activities	Handle within a fume cupboard or implento minimise exposure E12. Wear suitable	gloves tested to EN374 PPE15.
CS510_Marine vessel/barge (un)loading	Avoid carrying out activities involving exp OC28. Transfer via enclosed lines E52. ( coupling E39. Retain drain downs in seal for subsequent recycle ENVT4. Wear che to EN374) in combination with 'basic' em	Clear transfer lines prior to de- led storage pending disposal or emically resistant gloves (tested
CS511 Road tanker/Railcar loading	Ensure material transfers are under conta E66. Wear chemically resistant gloves (to with 'basic' employee training PPE16.	ainment or extract ventilation
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equests. Wear chemically resistant gloves (to with specific activity training PPE17. Retaining disposal or for subsequent recycles.)	ested to EN374) in combination ain drain downs in sealed storage
contained in Appendices 2 to	basis for the allocation of the identifie 3	
Section 2.2 Control of environ	nmental exposure	
Product characteristics		
<u>'</u>	rC3]. Predominantly hydrophobic [PrC4a	J.
Amounts used		
Fraction of EU tonnage used in		0.1
Regional use tonnage (tonnes/y		1.1e7
Fraction of Regional tonnage us	<u> </u>	2.0e-3
Annual site tonnage (tonnes/yea	•	2.3e4
Maximum daily site tonnage (kg	• • • • • • • • • • • • • • • • • • • •	7.7e4
Frequency and duration of us	se	
Continuous release [FD2]. Emission days (days/year)		300
Environmental factors not inf	luenced by risk management	300
Local freshwater dilution factor		10
Local marine water dilution factor	or	100
	itions affecting environmental exposur	
·	cess (initial release prior to RMM)	1.0e-4
Release fraction to wastewater RMM)	from process (initial release prior to	1.0e-7
-	cess (initial release prior to RMM)	0.00001
	asures at process level (source) to prev	
	sites thus conservative process release e	
Technical onsite conditions a	nd measures to reduce or limit dischar	ges, air emissions and
releases to soil		
releases to soil	ure is driven by humans via indirect expos	

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Product	FUEL OILS		Date:	2018/6/20
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Treat onsite wastewater (price	or to receiving water discharge) to provide	0		
the required removal efficien	cy ≥ (%)			
If discharging to domestic se	wage treatment plant, provide the required	0		

Organisation measures to prevent/limit release from site

onsite wastewater removal efficiency of ≥ (%)

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

Estimated substance removal from wastewater via domestic sewage	88.8
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	88.8
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	3.8e5
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000

#### Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable regulations [ETW3].

#### Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file in IUCLID Section 13

#### **Section 3 Exposure Estimation**

#### 3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### 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 carcinogenic effects. G33. 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 (<a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a>) [DSU4].



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## 4. Formulation & (Re)packing of Substance - Industrial

Section 1 Exposure Scenario	Title Substance	
Title		
Formulation & (Re)packing of S	ubstances and Mixt	ures
Use Descriptor		
Sector(s) of Use		3, 10
Process Categories		1, 2, 3, 8a, 8b, 15
, and the second		Further information on the mapping and allocation of
		PROC codes is contained in Table 9.1
Environmental Release Catego		2
Specific Environmental Release	e Category	ESVOC SpERC 2.2.v1
Processes, tasks, activities co		
Formulation of the substance a	nd its mixtures in ba	tch or continuous operations within closed or contained
		age, materials transfers, mixing,
maintenance, sampling and ass	sociated laboratory a	activities.
Assessment Method		
See Section 3.		
Section 2 Operational condit		agement measures
Section 2.1 Control of worker	r exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)		ssure <0.5 kPa at STP. OC3.
Concentration of substance in		e substance in the product up to 100 % (unless stated
product	differently) G13	
Frequency and duration of use/exposure	, ,	sures up to 8 hours (unless stated differently) G2
Other Operational Conditions		ot more than 20°C above ambient temperatures, unless
affecting exposure	stated differently. (hygiene is impleme	G15. Assumes a good basic standard of occupational ented G1
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions
General measures	Consider technical	advances and process upgrades (including
(carcinogens) G18		elimination of releases. Minimise exposure using
		closed systems, dedicated facilities and suitable
		aust ventilation. Drain down systems and clear transfer
		ing containment. Clean / flush equipment, where
	possible, prior to m	
		ential for exposure: Restrict access to authorised
		pecific activity training to operators to minimise uitable gloves and coveralls to prevent skin
		ar respiratory protection when its use is identified for
		g scenarios; clear up spills immediately and dispose of
		ure safe systems of work or equivalent arrangements
		nage risks. Regularly inspect, test and maintain all
		Consider the need for risk based health surveillance.
	G20	
CS15 General exposures		within a closed system E47. Sample via a closed loop
(closed systems). + CS2		avoid exposure É8. Avoid carrying out activities
Process sampling.	involving exposure	for more than 15 minutes OC26. Wear chemically
		sted to EN374) in combination with 'basic' employee
	training PPE16.	
CS15 General exposures	Handle substance	within a closed system E47. Sample via a closed loop



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(closed systems).  CS85 Bulk product storage.	or other system to avoid exposure E8. Avoid involving exposure for more than 4 hours O	Edition:
		d carrying out activities
		a carrying out activities
CS85 Bulk product storage.	resistant gloves (tested to EN374) in combin training PPE16.	C28. Wear chemically nation with 'basic' employee
	Store substance within a closed system E84 involving exposure for more than 4 hours Or resistant gloves (tested to EN374) in combination PPE16.	C28. Wear chemically nation with 'basic' employee
CS137 Product sampling	Sample via a closed loop or other system to carrying out activities involving exposure for Wear chemically resistant gloves (tested to 'basic' employee training PPE16.	r more than 15 minutes OC26. EN374) in combination with
CS36 Laboratory activities	Handle within a fume cupboard or implement to minimise exposure E12. Wear suitable gl	
CS510 Marine vessel/barge (un)loading	Transfer via enclosed lines E52 Avoid carry exposure for more than 4 hours OC28Clear coupling E39. Retain drain downs in sealed for subsequent recycle ENVT4. Wear chem to EN374) in combination with 'basic' emplo	ing out activities involving ar transfer lines prior to de- storage pending disposal or ically resistant gloves (tested
CS511 Road tanker/Railcar loading	Ensure material transfers are under contain E66. Wear chemically resistant gloves (testwith 'basic' employee training PPE16.	ment or extract ventilation ed to EN374) in combination
CS8 Drum/batch transfers	Ensure material transfers are under contain E66. Provide a general ventilation (not less hour) E11, or G9; Ensure operation is under carrying out activities involving exposure for Wear chemically resistant gloves (tested to 'basic' employee training PPE16.	than 3 to 5 air changes per rtaken outdoors. E69. Avoid more than 1 hour OC27.
CS39 Equipment cleaning and maintenance	Drain down and flush system prior to equipr E55. Wear chemically resistant gloves (test with specific activity training PPE17. Retain pending disposal or for subsequent recycle	ed to EN374) in combination drain downs in sealed storage
Additional information on the in Appendices 2 to 3	ne basis for the allocation of the identified (	OCs and RMMs is contained
Section 2.2 Control of envir	onmental exposure	
Product characteristics		
Substance is complex UVCB	PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used		
Fraction of EU tonnage used i	n region	0.1
Regional use tonnage (tonnes	s/year)	1.1e7
Fraction of Regional tonnage	used locally	2.6e-3
Annual site tonnage (tonnes/y	ear)	3.0e4
Maximum daily site tonnage (I	kg/day)	1.0e5
Frequency and duration of u	use	•
Continuous release [FD2].		
Emission days (days/year)		300
Environmental factors not in	nfluenced by risk management	
		10
Local freshwater dilution facto		100
Local freshwater dilution facto Local marine water dilution fac		
Local freshwater dilution facto Local marine water dilution fac	ditions affecting environmental exposure	1100
Local freshwater dilution facto Local marine water dilution facto Other given operational con Release fraction to air from pr	ditions affecting environmental exposure ocess (after typical onsite RMMs, consistent	2.2e-3
Local freshwater dilution facto Local marine water dilution facto Other given operational con Release fraction to air from pr with EU Solvent Emissions Di	ditions affecting environmental exposure ocess (after typical onsite RMMs, consistent	

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Technical conditions and measures at process level (source) to preve	ent release
Common practices vary across sites thus conservative process release es	
Technical onsite conditions and measures to reduce or limit discharg releases to soil	
Risk from environmental exposure is driven by humans via indirect exposu If discharging to domestic sewage treatment plant, no onsite wastewater tr	eatment required [TCR9].
Prevent discharge of undissolved substance to or recover from onsite was	tewater [TRC14].
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency ≥ (%)	54.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	0
Organisation measures to prevent/limit release from site	•
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in reclaimed [OMS3].	ncinerated, contained or
Conditions and measures related to municipal sewage treatment plar	nt
Estimated substance removal from wastewater via domestic sewage treatment (%)	88.8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88.8
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	1.1e5
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000
Conditions and measures related to external treatment of waste for di	isposal
External treatment and disposal of waste should comply with applicable re-	gulations [ETW3].
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable req	
Additional information on the basis for the allocation of the indentifie	d OCs and RMMs is
contained in PETRORISK file in IUCLID Section 13	
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures u G21.	nless otherwise indicated.
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 carcinogenic effects. G33. 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].



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## 5. Uses of Substance in Coatings - Industrial

Section 1 Exposure Scenario	Title Substance	
Title		
Uses in Coatings		
Use Descriptor		
Sector(s) of Use		3
Process Categories		1, 2, 3, 8a, 8b, 15 Further information on the mapping and allocation of PROC codes is contained in Table 9.1
Environmental Release Catego	ries	4
Specific Environmental Release		ESVOC SpERC 4.3a.v1
Processes, tasks, activities c	0 ,	'
incidental exposures during use	e (including material activities and film fo	, etc) within closed or contained systems including s receipt, storage, preparation and transfer from rmation) and equipment cleaning, maintenance
See Section 3.	ione and vistant	
Section 2 Operational condit	ions and risk mana	agement measures
Section 2.1 Control of worke	r ovnocuro	
Product characteristics	exposure	
Physical form of product	Liquid	
Vapour pressure (kPa)		ssure <0.5 kPa at STP. OC3.
Concentration of substance in		e substance in the product up to 100 % (unless stated
product	differently) G13	substance in the product up to 100 % (unless stated
Frequency and duration of		sures up to 8 hours (unless stated differently) G2
use/exposure	Covoro dany expec	sards up to a rioure (arriado diatad arriararria)
Other Operational Conditions affecting exposure		ot more than 20°C above ambient temperatures, unless G15. Assumes a good basic standard of occupational ented G1
Contributing Scenarios		nagement Measures and Operating Conditions
General measures (carcinogens) G18	automation) for the measures such as general / local exhalines prior to break possible, prior to m Where there is potpersons; provide s exposures; wear sucontamination; we certain contributing wastes safely. Ensare in place to mar	advances and process upgrades (including e elimination of releases. Minimise exposure using closed systems, dedicated facilities and suitable aust ventilation. Drain down systems and clear transfer ing containment. Clean / flush equipment, where naintenance.  ential for exposure: Restrict access to authorised pecific activity training to operators to minimise uitable gloves and coveralls to prevent skin ar respiratory protection when its use is identified for g scenarios; clear up spills immediately and dispose of sure safe systems of work or equivalent arrangements mage risks. Regularly inspect, test and maintain all Consider the need for risk based health surveillance.
CS99 Film formation - force drying, stoving and other technologies.	chemically resistar employee training	
CS15 General exposures (closed systems).		within a closed system E47. Provide extract ventilation hissions occur E54. Provide a good standard of



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	controlled ventilation (10 to 15 air changes p	er hour) F40 Wear	_
	chemically resistant gloves (tested to EN374		
	employee training PPE16.	,	
CS3 Material transfers	Provide a good standard of controlled ventila		
	per hour) E40. Wear chemically resistant glo		
	combination with 'basic' employee training P		
CS36 Laboratory activities.	transfers are under containment or extract volume Handle within a fume cupboard or implement		_
2330 Laboratory activities.	to minimise exposure E12. Wear suitable glo		
CS39 Equipment cleaning and	Drain down and flush system prior to equipm		
maintenance	E55. Wear chemically resistant gloves (teste		
	with specific activity training PPE17. Retain	drain downs in sealed storag	е
	pending disposal or for subsequent recycle		
CS67 Storage.	Store substance within a closed system E84		
	gloves (tested to EN374) in combination with	h 'basic' employee training	
Additional information on the	PPE16.  e basis for the allocation of the identified C	Ce and PMMe is	_
contained in Appendices 2 to		CS and Rivins is	
Section 2.2 Control of enviro			
Product characteristics			
	PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used	100]. Tredominantly hydrophobic [1104a].		
	wagian	10.4	
raction of EU tonnage used in		0.1	
Regional use tonnage (tonnes/y		1.0e2	
Fraction of Regional tonnage us		1	
Annual site tonnage (tonnes/ye	•	1.0e2	
Maximum daily site tonnage (kg		5.0e3	
Frequency and duration of us	Se		
Continuous release [FD2].		20	
Emission days (days/year)	luenced by risk management	20	
	idenced by risk management	140	
Local freshwater dilution factor  Local marine water dilution fact	0.5	100	-
	itions affecting environmental exposure	100	-
Juner given operational cond	itions affecting environmental exposure		
Release fraction to air from pro	cess (initial release prior to RMM)	0.98	_
· ·	cess (initial release prior to RMM)	0.98	
· ·	cess (initial release prior to RMM) from process (initial release prior to RMM)	0.98 2.0e-5	
Release fraction to wastewater	from process (initial release prior to RMM)	2.0e-5	
Release fraction to wastewater	from process (initial release prior to RMM)  ocess (initial release prior to RMM)	2.0e-5 0	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and me	from process (initial release prior to RMM)  cess (initial release prior to RMM)  asures at process level (source) to prevent	2.0e-5 0 t release	
Release fraction to wastewater Release fraction to soil from pro Fechnical conditions and mea Common practices vary across	from process (initial release prior to RMM)  coess (initial release prior to RMM)  asures at process level (source) to prevent  sites thus conservative process release esting	2.0e-5 0 t release nates used [TCS1].	
Release fraction to wastewater Release fraction to soil from pro Fechnical conditions and mea Common practices vary across Fechnical onsite conditions a	from process (initial release prior to RMM)  cess (initial release prior to RMM)  asures at process level (source) to prevent	2.0e-5 0 t release nates used [TCS1].	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and mea Common practices vary across Technical onsite conditions a releases to soil	from process (initial release prior to RMM)  ocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release estinant measures to reduce or limit discharges	2.0e-5  0 t release nates used [TCS1]. s, air emissions and	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and med Common practices vary across Technical onsite conditions areleases to soil Risk from environmental expos	from process (initial release prior to RMM)  coess (initial release prior to RMM)  asures at process level (source) to prevent  sites thus conservative process release esting	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j].	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and med Common practices vary across Technical onsite conditions areleases to soil Risk from environmental expos No wastewater treatment requirem onsite wastewater [TRC14	from process (initial release prior to RMM)  cocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release esting and measures to reduce or limit discharges ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved [1].	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and med Common practices vary across Technical onsite conditions areleases to soil Risk from environmental expos No wastewater treatment requirifrom onsite wastewater [TRC14] Treat air emission to provide a	from process (initial release prior to RMM)  cocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release estimated measures to reduce or limit discharges ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved [1].	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and mer Common practices vary across Technical onsite conditions ar Teleases to soil Risk from environmental expos No wastewater treatment require from onsite wastewater [TRC14] Treat air emission to provide a formation of the condition of the	from process (initial release prior to RMM)  cocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release estin and measures to reduce or limit discharges  ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved [1].  typical removal efficiency of (%) o receiving water discharge) to provide	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and mer Common practices vary across Technical onsite conditions areleases to soil Risk from environmental expos No wastewater treatment require from onsite wastewater [TRC14 Treat air emission to provide a freat onsite wastewater (prior to the required removal efficiency	from process (initial release prior to RMM)  pocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release esting and measures to reduce or limit discharges ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved [I].  typical removal efficiency of (%)  o receiving water discharge) to provide  ≥ (%)	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and mea Common practices vary across Technical onsite conditions a releases to soil Risk from environmental expos No wastewater treatment require from onsite wastewater [TRC14 Treat air emission to provide a to Treat onsite wastewater (prior to the required removal efficiency If discharging to domestic sewal	from process (initial release prior to RMM)  cocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release estinuted measures to reduce or limit discharges ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved by the process release estinuted in the process release estinuted measures to reduce or limit discharges ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved by the provide receiving water discharge) to provide the required in the process (initial release prior to RMM)	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover	
Release fraction to wastewater Release fraction to soil from pro Technical conditions and med Common practices vary across Technical onsite conditions at releases to soil Risk from environmental expos No wastewater treatment required from onsite wastewater [TRC14] Treat air emission to provide a form the required removal efficiency of the discharging to domestic sewal onsite wastewater removal efficiency	from process (initial release prior to RMM)  cocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release estin and measures to reduce or limit discharges  ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved  [I].  typical removal efficiency of (%) or receiving water discharge) to provide ≥ (%)  uge treatment plant, provide the required siency of ≥ (%)	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover	
Release fraction to wastewater Release fraction to soil from pro Fechnical conditions and met Common practices vary across Fechnical onsite conditions at releases to soil Risk from environmental expos No wastewater treatment requirerom onsite wastewater [TRC14] Treat air emission to provide a to Treat onsite wastewater (prior to the required removal efficiency of discharging to domestic sewal consite wastewater removal efficiency of granisation measures to pro	from process (initial release prior to RMM)  coess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release esting and measures to reduce or limit discharges  ure is driven by humans via indirect exposure and [TCR6]. Prevent discharge of undissolved by pical removal efficiency of (%) or receiving water discharge) to provide  > (%) uge treatment plant, provide the required siency of > (%)  event/limit release from site	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover  90 0	
Release fraction to wastewater Release fraction to soil from pro Fechnical conditions and met Common practices vary across Fechnical onsite conditions at releases to soil Risk from environmental expos No wastewater treatment requirem onsite wastewater [TRC14] Freat air emission to provide a fireat onsite wastewater (prior to the required removal efficiency of discharging to domestic sewaters and the sewater of the provide of the provide wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency of granisation measures to pro Freat onsite wastewater removal efficiency	from process (initial release prior to RMM)  cocess (initial release prior to RMM)  asures at process level (source) to prevent sites thus conservative process release estin and measures to reduce or limit discharges  ure is driven by humans via indirect exposure red [TCR6]. Prevent discharge of undissolved  [I].  typical removal efficiency of (%) or receiving water discharge) to provide ≥ (%)  uge treatment plant, provide the required siency of ≥ (%)	2.0e-5  0 t release nates used [TCS1]. s, air emissions and  [TCR1j]. substance to or recover  90 0	



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Estimated substance removal from wastewater via domestic sewage	88.8
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	88.8
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	1.1e5
wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000

#### Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable regulations [ETW3].

#### Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file in IUCLID Section 13

#### 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 carcinogenic effects. G33. 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 (<a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a>) [DSU4].



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## 6. Use of Substance as a Fuel - Industrial

Section 1 Exposure Scenario	Title Substance		
Title			
Use as a Fuel			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 8a, 8b, 16	
Ĭ		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Catego		7	
Specific Environmental Release	e Category	ESVOC SpERC 7.12a.v1	
Processes, tasks, activities c			
		tive components) within closed or contained systems,	
		ociated with its transfer, use, equipment	
maintenance and handling of w	aste.		
Assessment Method			
See Section 3.			
Section 2 Operational condit	ions and risk mana	agement measures	
Section 2.1 Control of worke	r exposure		
Product characteristics			
Physical form of product	Liquid	A F Line at CTD OCC	
Vapour pressure (kPa)		ssure < 0.5 kPa at STP. OC3.	
Concentration of substance in product	differently) G13	e substance in the product up to 100 % (unless stated	
Frequency and duration of		sures up to 8 hours (unless stated differently) G2	
use/exposure	Covers daily expos	sures up to o riours (unless stated differently) 62	
Other Operational Conditions	Assumes use at no	ot more than 20°C above ambient temperatures, unless	
affecting exposure		G15. Assumes a good basic standard of occupational	
3 1 1 1 1	hygiene is impleme		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Consider technical	advances and process upgrades (including	
(carcinogens) G18		elimination of releases. Minimise exposure using	
(caromegene) • 10		closed systems, dedicated facilities and suitable	
		aust ventilation. Drain down systems and clear transfer	
	lines prior to break	ing containment. Clean / flush equipment, where	
	possible, prior to m		
	Where there is potential for exposure: Restrict access to authorised		
	persons; provide s	pecific activity training to operators to minimise	
	exposures; wear suitable gloves and coveralls to prevent skin		
		ar respiratory protection when its use is identified for	
	certain contributing scenarios; clear up spills immediately and dispose of		
	wastes safely. Ensure safe systems of work or equivalent arrangements		
	are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.		
	G20		
CS15 General exposures		within a closed system E47. Sample via a closed loop	
(closed systems).		avoid exposure E8. Avoid carrying out activities	
ľ í í		for more than 4 hours OC28. Wear chemically	
	resistant gloves (tested to EN374) in combination with 'basic' employee		
	training PPE16.		
CS15 General exposures Handle substance within a closed system E47. Sample via a closed loop			



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alacad systems) + CS127	or other system to avoid expecure E9. Avoid	A corruing out activities	
closed systems). + CS137 Product sampling.	or other system to avoid exposure E8. Avoid involving exposure for more than 1 hour OC of controlled ventilation (10 to 15 air change chemically resistant gloves (tested to EN374 employee training PPE16.	27. Provide a good sta s per hour) E40. Wear 4) in combination with '	indard basic'
CS502 Bulk closed unloading + OC9 Outdoor	Transfer via enclosed lines E52. Avoid carry exposure for more than 4 hours OC28. Weat (tested to EN374) in combination with 'basic	r chemically resistant (	gloves
CS8 Drum/batch transfers	(tested to EN374) in combination with 'basic' employee training PPE16.  Ensure material transfers are under containment or extract ventilation  E66., or (G9): Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11.  Avoid carrying out activities involving exposure for more than 1 hour  OC27. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16.		
CS 117 Operation of solids illering equipment	Provide a good standard of general ventilatichanges per hour) E11. Avoid carrying out a for more than 4 hours OC28. Wear chemica EN374) in combination with 'basic' employe	activities involving expo Ily resistant gloves (tes	sure
CS85 Bulk product storage.	Store substance within a closed system E8 general ventilation (not less than 3 to 5 air carrying out activities involving exposure for Wear chemically resistant gloves (tested to 'basic' employee training PPE16.	4. Provide a good stan changes per hour) E11 more than 4 hours OC	. Avoid
GEST_12I Use as a fuel. CS	Wear chemically resistant gloves (tested to	EN374) in combination	with
CS39 Equipment cleaning and maintenance	'basic' employee training PPE16.  Drain down and flush system prior to equipment break-in or maintenance E55. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17. Retain drain downs in sealed storage		
Additional information on the in Appendices 2 to 3 Section 2.2 Control of enviro	pending disposal or for subsequent recycle basis for the allocation of the identified (		ntained
Product characteristics	illileritai exposure		
	PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used	103j. Predominantly hydrophobic [P104aj.		
		To 4	
Fraction of EU tonnage used in		0.1	
Regional use tonnage (tonnes/		1.1e7	
raction of Regional tonnage us		1.4e-1	
Annual site tonnage (tonnes/ye		1.5e6	
Maximum daily site tonnage (kg	• • •	5.0e6	
Frequency and duration of us	Se		
Continuous release [FD2].			
Emission days (days/year)		300	
Environmental factors not inf	luenced by risk management		
ocal freshwater dilution factor		10	
Local marine water dilution factor		100	
Other given operational cond	itions affecting environmental exposure		
Release fraction to air from pro	cess (initial release prior to RMM)	7.0e-4	
	from process (initial release prior to RMM)	4.4e-7	
	ocess (initial release prior to RMM)	0	
Technical conditions and me	asures at process level (source) to preven	t release	
	sites thus conservative process release estir		



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es, air emissions and
b].
ge of undissolved substance to
95
87.7
0
cinerated, contained or
t
88.8
88.8
5.2e6
2000
sposal
1]. Combustion emissions

## Conditions and measures related to external recovery of waste

This substance is consumed during use and no waste of the substance is generated to recover [ERW3].

## Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file in IUCLID Section 13

#### Section 3 Exposure Estimation

#### 3.1. Health

#### 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 carcinogenic effects. G33. 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 (<a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a>) [DSU4].



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### 7. Use of Substance as a Fuel - Professional

Section 1 Exposure Scenario	Title Substance		
Title			
Use as a Fuel			
Use Descriptor			
Sector(s) of Use		22	
Process Categories		1, 2, 3, 8a, 8b, 16	
l and a second		Further information on the mapping and allocation of	
	PROC codes is contained in Table 9.1		
Environmental Release Catego	ries	9a, 9b	
Specific Environmental Release	Category	ESVOC SpERC 9.12b.v1	
Processes, tasks, activities co	overed		
Covers the use as a fuel (or fue	l additives and addi	tive components) within closed or contained systems,	
including incidental exposures	during activities asso	ociated with its transfer, use, equipment	
maintenance and handling of w	aste.		
Assessment Method			
See Section 3.			
Section 2 Operational condit	ions and risk mana	agement measures	
Section 2.1 Control of worker	exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)		ssure <0.5 kPa at STP. OC3.	
Concentration of substance in		e substance in the product up to 100 % (unless stated	
product	differently) G13		
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2	
use/exposure	Λ · · · · · · · · · · ·		
Other Operational Conditions		ot more than 20°C above ambient temperatures, unless	
affecting exposure	hygiene is impleme	G15. Assumes a good basic standard of occupational	
Contributing Scenarios		nagement Measures and Operating Conditions	
		agement measures and operating conditions	
General measures		advances and process upgrades (including	
(carcinogens) G18		elimination of releases. Minimise exposure using	
		closed systems, dedicated facilities and suitable aust ventilation. Drain down systems and clear transfer	
		ing containment. Clean / flush equipment, where	
	possible, prior to m		
		ential for exposure: Restrict access to authorised	
		pecific activity training to operators to minimise	
	exposures; wear suitable gloves 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. Ensure safe systems of work or equivalent arrangements		
	are in place to manage risks. Regularly inspect, test and maintain all		
	control measures. Consider the need for risk based health surveillance.		
2015	G20		
CS15 General exposures		within a closed system E47. Sample via a closed loop	
(closed systems). + CS137		avoid exposure E8. Avoid carrying out activities	
Product sampling.		for more than 1 hour OC27. Provide a good standard	
	of controlled ventilation (10 to 15 air changes per hour) E40. Wear		
	chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17.		
	Lastivity training 1		



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CS15 General exposures	Handle substance within a closed system E47. Sa	ample via a alege	dloon
(closed systems).	or other system to avoid exposure E8. Avoid carr		и ююр
,,.	involving exposure for more than 1 hour OC27. P		ndard
	of controlled ventilation (10 to 15 air changes per		
	chemically resistant gloves (tested to EN374) in c	combination with 'b	oasic'
	employee training PPE16.	//	
CS502 Bulk closed unloading	Provide a good standard of controlled ventilation	(10 to 15 air chan	ges
	per hour) E40. Wear chemically resistant gloves (combination with 'basic' employee training PPE16		
	activities involving exposure for more than 1 hour		
	material transfers are under containment or extra		
CS8 Drum/batch transfers	Provide a good standard of controlled ventilation		
	per hour) E40. Wear chemically resistant gloves (	(tested to EN374)	in
	combination with 'basic' employee training PPE16		
	Avoid carrying out activities involving exposure for		
	OC27., or G9: Ensure material transfers are und	er containment or	extract
CS507 Refuelling	ventilation E66.  Ensure material transfers are under containment	or extract ventilati	ion
55507 Reidelling	E66. Wear chemically resistant gloves (tested to		
	with 'basic' employee training PPE16. Avoid carry		lation
	involving exposure for more than 1 hour OC27.	,	
GEST_12I Use as a fuel. CS	Wear chemically resistant gloves (tested to EN37	4) in combination	with
107 (closed system)	'basic' employee training PPE16.		
	Provide a good standard of general ventilation (ne		
maintenance	changes per hour) E11. Wear chemically resistan		
	EN374) in combination with specific activity training system prior to equipment break-in or maintenance.		
	system prior to equipment break-in or maintenant	JE EOO. NELAIH ULA	aii i
	downs in sealed storage pending disposal or for s		
	downs in sealed storage pending disposal or for s ENVT4. Clear spills immediately C&H13.		
Additional information on the	downs in sealed storage pending disposal or for s ENVT4. Clear spills immediately C&H13. basis for the allocation of the identified OCs a	subsequent recycl	е
in Appendices 2 to 3	ENVT4. Clear spills immediately C&H13.  basis for the allocation of the identified OCs a	subsequent recycl	е
in Appendices 2 to 3	ENVT4. Clear spills immediately C&H13.  basis for the allocation of the identified OCs a	subsequent recycl	е
in Appendices 2 to 3 Section 2.2 Control of environ Product characteristics	ENVT4. Clear spills immediately C&H13.  basis for the allocation of the identified OCs and an armental exposure	subsequent recycl	е
in Appendices 2 to 3 Section 2.2 Control of environ Product characteristics	ENVT4. Clear spills immediately C&H13.  basis for the allocation of the identified OCs a	subsequent recycl	е
in Appendices 2 to 3 Section 2.2 Control of environ Product characteristics	ENVT4. Clear spills immediately C&H13.  basis for the allocation of the identified OCs and an armental exposure	subsequent recycl	е
in Appendices 2 to 3 Section 2.2 Control of environ Product characteristics Substance is complex UVCB [P	ENVT4. Clear spills immediately C&H13.  e basis for the allocation of the identified OCs a  nmental exposure  PrC3]. Predominantly hydrophobic [PrC4a].	subsequent recycl	е
in Appendices 2 to 3 Section 2.2 Control of environ Product characteristics Substance is complex UVCB [P Amounts used Fraction of EU tonnage used in	ENVT4. Clear spills immediately C&H13.  The basis for the allocation of the identified OCs at the allocation of the identified OCs at the identified OCs a	subsequent recycl	е
in Appendices 2 to 3 Section 2.2 Control of environ Product characteristics Substance is complex UVCB [P Amounts used Fraction of EU tonnage used in Regional use tonnage (tonnes/y	ENVT4. Clear spills immediately C&H13.  Passis for the allocation of the identified OCs and an	and RMMs is con	е
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Risk from environmental exposure is driven by humans via indirect exposur	re ITCR1il			
No wastewater treatment required [TCR6].				
	N/A			
Treat air emission to provide a typical removal efficiency of (%)				
Treat onsite wastewater (prior to receiving water discharge) to provide	0			
the required removal efficiency $\geq$ (%)				
If discharging to domestic sewage treatment plant, provide the required	0			
onsite wastewater removal efficiency of $\geq$ (%)	<u> </u>			
Organisation measures to prevent/limit release from site				
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be in	cinerated, contained or			
reclaimed [OMS3].				
Conditions and measures related to municipal sewage treatment plan	t			
Estimated substance removal from wastewater via domestic sewage	88.8			
treatment (%)				
Total efficiency of removal from wastewater after onsite and offsite	88.8			
(domestic treatment plant) RMMs (%)				
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	2.3e3			
wastewater treatment removal (kg/d)				
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000			
Conditions and measures related to external treatment of waste for disposal				

Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].

### Conditions and measures related to external recovery of waste

This substance is consumed during use and no waste of the substance is generated to recover [ERW3].

Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file in IUCLID Section 13.

#### Section 3 Exposure Estimation

#### 3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### 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 carcinogenic effects. G33. 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].