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

1.1. Product identifier

Product form : Substance
Trade name/designation : FUEL OIL
Chemical name : Fuel oil, no. -6
EC Index : 649-330-00-2
EC-No. : 271-384-7
CAS-No. : 68553-00-4
REACH registration No : 01-2119489962-20-0010

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

1.2.1. Relevant identified uses

Main use category : Industrial use,Professional use
Use of the substance/mixture : Fuels
see attached exposure scenario.

Title	Use descriptors
Use as an intermediate (ES Ref.: 02)	SU8, SU9, PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC6a, ESVOC SPERC 6.1a.v1
Distribution (ES Ref.: 03)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1
Use as a fuel (ES Ref.: 07)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16, ERC7, ESVOC SPERC 7.12a.v1
Use as a fuel (ES Ref.: 08)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16, ERC9a, ERC9b, ESVOC SPERC 9.12b.v1
Formulation & (re)packing of substances and mixtures (ES Ref.: 04)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC2, ESVOC SPERC 2.2.v1

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No data available

1.3. Details of the supplier of the safety data sheet

Supplier
NIS a.d. Novi Sad
Narodnog Fronta 12
21000 Novi Sad - Serbia
T + 381 (0) 21 481 1111
Dragana.Cvetkov@nis.eu (REACH)

Only Representative
REACH Law Ltd.
Vänrikinkuja 3 JK 21
02600 Espoo - Finland
T +358(0) 9 412 3055 - F +358 (0) 9 412 3049
sds@reachlaw.fi

Manufacturer
NIS a.d. Novi Sad
Narodnog Fronta 12
21000 Novi Sad - Serbia
T + 381 (0) 21 481 1111
Dragana.Cvetkov@nis.eu (REACH)

1.4. Emergency telephone number

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

Country	Official advisory body	Address	Emergency number
Ireland	National Poisons Information Centre Beaumont Hospital	Beaumont Hospital Beaumont Road 9 Dublin	+353 1 809 21 66 (public, 8am - 10pm, 7/7) +353 01 809 2566 (Professionals, 24/7)
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre, Wolfson Unit	Claremont Place Newcastle-upon-Tyne NE1 4LP Newcastle	0844 892 0111 (UK only, 24/7, healthcare professionals only)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Acute Tox. 4 (Inhalation)	H332
Carc. 1B	H350
Repr. 2	H361
STOT RE 2	H373
Asp. Tox. 1	H304
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H statements : see section 16

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS08 GHS07 GHS09

Signal word : Danger

Hazard statements (CLP) :
H304 - May be fatal if swallowed and enters airways.
H332 - Harmful if inhaled.
H350 - May cause cancer.
H361 - Suspected of damaging fertility or the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements (CLP) :
P201 - Obtain special instructions before use.
P260 - Do not breathe vapour.
P281 - Use personal protective equipment as required.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor
P331 - Do NOT induce vomiting.
P501 - Dispose of contents/container to .

Listed in Annex VI : EC Index-No. : 649-330-00-2

2.3. Other hazards

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

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

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance name : FUEL OIL N°6
CAS-No. : 68553-00-4
EC-No. : 271-384-7
EC Index : 649-330-00-2

Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Fuel oil, no. -6	(CAS-No.) 68553-00-4 (EC-No.) 271-384-7 (EC Index) 649-030-00-1	100	Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 2, H361d STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

Additional advice : First aider: Pay attention to self-protection. See also section 8. Never give anything by mouth to an unconscious person. Show this safety data sheet to the doctor in attendance. Treat symptomatically. In case of doubt or persistent symptoms, consult always a physician.

Inhalation : Keep at rest. Provide fresh air. In case of shortness of breath, give oxygen. Give oxygen or artificial respiration if necessary. In case of doubt or persistent symptoms, consult always a physician.

Skin contact : Take off immediately all contaminated clothing. Wash off with soap and water. Wash off immediately with plenty of water for at least 15 minutes. If a person feels unwell or symptoms of skin irritation appear, consult a physician.

Eyes contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical advice/attention.

Ingestion : Do NOT induce vomiting. Rinse mouth. Rinse mouth immediately and drink plenty of water. Get medical advice/attention.

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

Inhalation : Danger of serious damage to health by prolonged exposure. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Skin contact : Harmful: danger of serious damage to health by prolonged exposure in contact with skin. Repeated exposure may cause skin dryness or cracking.

Eyes contact : Contact with eyes may cause irritation.

Ingestion : May be harmful if swallowed. Gastrointestinal disturbance. The following symptoms may occur:

Chronic symptoms : May cause cancer. Suspected of damaging the unborn child. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure.

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

No data available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray, Alcohol resistant foam, Carbon dioxide, Dry extinguishing powder. Use water spray or fog for cooling exposed containers.

Unsuitable extinguishing media : Strong water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Combustible liquids. On heating there is a risk of a build-up of pressure in hermetically sealed containers or tanks. Heating may cause an explosion. Vapours may form explosive mixture with air. Burning produces noxious and toxic fumes. Hazardous decomposition products Carbon oxides, Sulphur oxides. Do not allow run-off from fire-fighting to enter drains or water courses.

5.3. Advice for firefighters

Firefighting instructions : Special protective equipment for firefighters. . In case of fire: Wear self-contained breathing apparatus. Use water spray or fog for cooling exposed containers. Evacuate personnel to a safe area. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

For non-emergency personnel : Evacuate personnel to a safe area. Stay upwind/keep distance from source. Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Avoid contact with skin and eyes. Do not breathe vapour/aerosol. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed.

6.1.2. For emergency responders

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

6.2. Environmental precautions

Do not allow to enter into surface water or drains.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so. Dam up. Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite or powdered limestone. Collect in closed and suitable containers for disposal. Recover large spills by pumping (use an explosion proof or hand pump). Dispose of as special waste in compliance with local and national regulations. Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Avoid contact with skin, eyes and clothing. Do not breathe vapour/aerosol. Ensure equipment is adequately earthed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take any precaution to avoid mixing with combustibles... See also section 10. Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time). Do not allow to enter into surface water or drains.

Hygiene measures : Keep good industrial hygiene. Wash hands and face before breaks and immediately after handling of the product. When using do not eat, drink or smoke. Separate working clothes from town clothes. Take off contaminated clothing. Keep away from food, drink and animal feedingstuffs.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Keep container tightly closed in a cool, well-ventilated place. Do not store near or with any of the incompatible materials listed in section 10. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Packaging materials : Keep only in the original container.

7.3. Specific end use(s)

see attached exposure scenario.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

FUEL OIL (68553-00-4)	
DNEL/DMEL (workers)	
Acute - systemic effects, inhalation	4700 mg/m³
Long-term - systemic effects, dermal	0,065 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0,12 mg/m³
DNEL/DMEL (general population)	
Long-term - systemic effects,oral	0,015 mg/kg bodyweight/day
PNEC (Oral)	
PNEC oral (secondary poisoning)	66,7 kg/kg

8.2. Exposure controls

Engineering measure(s) : Use product only in closed system. Use only in area provided with appropriate exhaust ventilation. Provide adequate ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Organisational measures to prevent /limit releases, dispersion and exposure. See also section 7.

Personal protective equipment : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hand protection : The selection of specific gloves for a specific application and time of use in a working area, should also take into account other factors on the working space, such as (but not limited to): other chemicals that are possibly used, physical requirements (protection against cutting/drilling, skill, thermal protection), and the instructions/specification of the supplier of gloves. Wear chemically resistant gloves (tested to EN374) . NBR (Nitrile rubber)

Eye protection : Safety glasses (EN 166)

Body protection : Wear suitable coveralls to prevent exposure to the skin

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment. Filter type: (A - EN 141). Half-face mask (DIN EN 140) (EN 140). full face mask (DIN EN 136) (EN 136). Self-contained open-circuit compressed air breathing apparatus (EN 137)

Thermal hazard protection : Use dedicated equipment.

Environmental exposure controls : Do not allow to enter into surface water or drains. Comply with applicable Community environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Colour : Black.

Odour	:	Characteristic.
Odour threshold	:	No data available No data available
pH	:	Not applicable
Relative evaporation rate (butylacetate=1)	:	No data available
Melting / freezing point	:	No data available
Freezing point	:	No data available
Initial boiling point and boiling range	:	200- 650 °C
Flash point	:	> 80 °C
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Not applicable,liquid
Vapour pressure	:	< 0,7 kPa (20°C)
Vapour density	:	> 5 (Air=1)
Relative density	:	0,940 - 0,990 g/cm³ (15°C)
Solubility	:	Water: Partially soluble
Partition coefficient n-octanol/water	:	No data available
Kinematic viscosity	:	22,47 mm²/s @ 100°C - 199,94 mm²/s @ 50°C
Dynamic viscosity	:	No data available
Explosive properties	:	Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.
Oxidising properties	:	Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.
Explosive limits	:	LEL:0,6-UEL:6,5 vol %

9.2. Other information

VOC content : No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Combustible. Reference to other sections: 10.5.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

None under normal processing.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. See also section 7. Handling and storage.

10.5. Incompatible materials

Incompatible with strong acids and oxidizing agents. Bases . See also section 7. Handling and storage.

10.6. Hazardous decomposition products

Hydrogen sulfide (H2S). Reference to other sections: 5.2.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation: Harmful if inhaled.

FUEL OIL (68553-00-4)	
LD50/oral/rat	> 2000 mg/kg
LD50/dermal/rabbit	> 2000 mg/kg
LC50/inhalation/4h/rat	4100 - 4500 mg/m³

Fuel oil, no. -6 (68553-00-4)	
LD50/oral/rat	5300 mg/kg
LD50/dermal/rabbit	> 4874 mg/kg

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met.)
pH: Not applicable

Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met.)
pH: Not applicable

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met.)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met.)

Carcinogenicity : May cause cancer.

Reproductive toxicity : Suspected of damaging fertility or the unborn child.
NOAEL = 125 - 2000 mg/kg BW/d

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

STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.
NOAEL = > 1 mg/kg BW/d

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

FUEL OIL (68553-00-4)	
Kinematic viscosity	22,47 mm²/s @ 100°C - 199,94 mm²/s @ 50°C

Other information : Symptoms related to the physical, chemical and toxicological characteristics.
Reference to other sections: 4.2.

SECTION 12: Ecological information

12.1. Toxicity

Environmental properties : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

FUEL OIL (68553-00-4)	
Acute aquatic toxicity, Invertebrates	EL50 = 2 mg/l
Acute (short-term) algae toxicity, ErL50 = 0,75 mg/l	
Acute (short-term) fish toxicity, LL50	79 mg/l
Chronic (long-term) fish toxicity, NOEL	0.1 mg/l
Long term effects, Invertebrates, NOEL	0,75 mg/l
Bird reproduction toxicity, NOAEL	20000 mg/l

Fuel oil, no. -6 (68553-00-4)	
LC50 fish 1	48 mg/l (96h)

12.2. Persistence and degradability

FUEL OIL (68553-00-4)	
Persistence and degradability	Not applicable. Substance is complex UVCB.

12.3. Bioaccumulative potential

FUEL OIL (68553-00-4)	
Partition coefficient n-octanol/water	No data available
Bioaccumulative potential	Not applicable. Substance is complex UVCB.

12.4. Mobility in soil

FUEL OIL (68553-00-4)	
Ecology - soil	No data available.

12.5. Results of PBT and vPvB assessment

FUEL OIL (68553-00-4)
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

Additional information : No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Handle with care. Safe handling: see section 7. Handling and storage. Refer to manufacturer/supplier for information on recovery/recycling. Collect and dispose of waste product at an authorised disposal facility. Dispose of contaminated materials in accordance with current regulations.

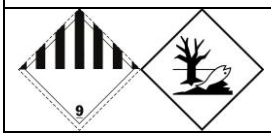
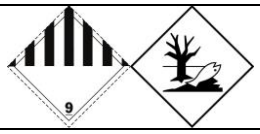
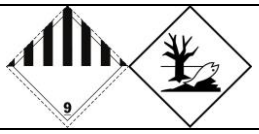
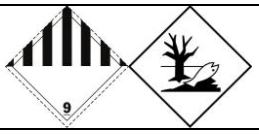
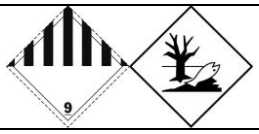
Additional information : Never use pressure to empty container. Do not burn, or use a cutting torch on the empty drum. Do not puncture or incinerate. Delivery to an approved waste disposal company. Dispose of contaminated materials in accordance with current regulations.

Further ecological information : Do not allow to enter into surface water or drains.

European waste catalogue (2001/573/EC, 75/442/EEC, 91/689/EEC) : The following Waste Codes are only suggestions:
13 07 01* - fuel oil and diesel
15 01 10* - packaging containing residues of or contaminated by dangerous substances
Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
3082	3082	3082	3082	3082
14.2. UN proper shipping name				
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ())	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ())	Environmentally hazardous substance, liquid, n.o.s. (Fuel Oil ())	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ())	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ())
Transport document description				
UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ()), 9, III, (E)	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ()), 9, III, MARINE POLLUTANT	UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Fuel Oil ()), 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ()), 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel Oil ()), 9, III
14.3. Transport hazard class(es)				
9	9	9	9	9
				

ADR	IMDG	IATA	ADN	RID
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
ADN : N1				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : M6
Special provisions : 274, 335, 601, 375
Limited quantities (ADR) : 5l
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P001, IBC03, LP01, R001
Special packing provisions (ADR) : PP1
Mixed packing provisions (ADR) : MP19
Portable tank and bulk container instructions (ADR) : T4
Portable tank and bulk container special provisions (ADR) : TP1, TP29
Tank code (ADR) : LGBV
Vehicle for tank carriage : AT
Transport category (ADR) : 3
Special provisions for carriage - Packages (ADR) : V12
Special provisions for carriage - Loading, unloading and handling (ADR) : CV13
Hazard identification number (Kemler No.) : 90
Orange plates :

Tunnel restriction code : E
EAC code : •3Z

- Transport by sea

Special provisions (IMDG) : 274, 335, 969
Limited quantities (IMDG) : 5 L
Limited quantities (IMDG) : 5 L
Excepted quantities (IMDG) : E1
Packing instructions (IMDG) : P001, LP01
Special packing provisions (IMDG) : PP1
IBC packing instructions (IMDG) : IBC03
Tank instructions (IMDG) : T4
Tank special provisions (IMDG) : TP2, TP29
EmS-No. (Fire) : F-A
EmS-No. (Spillage) : S-F
Stowage category (IMDG) : A

- Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 964
PCA max net quantity (IATA)	: 450L
CAO packing instructions (IATA)	: 964
CAO max net quantity (IATA)	: 450L
Special provisions (IATA)	: A97, A158, A197
ERG code (IATA)	: 9L

- Inland waterway transport

Classification code (ADN)	: M6
Special provisions (ADN)	: 274, 335, 375, 601
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP
Number of blue cones/lights (ADN)	: 0

- Rail transport

Classification code (RID)	: M6
Special provisions (RID)	: 274, 335, 375, 601
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Special packing provisions (RID)	: PP1
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T4
Portable tank and bulk container special provisions (RID)	: TP1, TP29
Tank codes for RID tanks (RID)	: LGBV
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Special provisions for carriage - Loading, unloading and handling (RID)	: CW13, CW31
Colis express (express parcels) (RID)	: CE8
Hazard identification number (RID)	: 90

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

3(c) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1	FUEL OIL

28. Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.	Fuel oil, no. -6
3. Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008	FUEL OIL
3(b) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10	FUEL OIL

FUEL OIL is not on the REACH Candidate List

FUEL OIL is not on the REACH Annex XIV List

VOC content : No data available

15.1.2. National regulations

Germany

Reference to AwSV : Water hazard class (WGK) 3, severe hazard to water (Classification according to AwSV; ID No. 443)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

Waterbezwaarlijkheid : 3 - May cause cancer. (A)

SZW-lijst van kankerverwekkende stoffen : FUEL OIL N°6 is listed

SZW-lijst van mutagene stoffen : FUEL OIL N°6 is listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

Class for fire hazard : Class III-1

Store unit : 50 liter

Classification remarks : Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed

Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product

Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

For this substance a chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

1.2		Modified	
16		Modified	

		Modified	

Abbreviations and acronyms:

	DNEL = Derived No Effect Level
	DMEL = Derived Minimal Effect level
	PNEC = Predicted No Effect Concentration
	OEL-STEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
	TWA = time weighted average
	LC50 = Median lethal concentration
	LD50 = Median lethal dose
	LL50 = Median lethal level
	EC50 = Median Effective Concentration
	EL50 = Median effective level
	ErC50 = EC50 in terms of reduction of growth rate
	ErL50 = EL50 in terms of reduction of growth rate
	NOEL = no-observed-effect level
	NOEC = No observed effect concentration
	NOELR = No observed effect loading rate
	NOAEC = No observed adverse effect concentration
	NOAEL = No observed adverse effect level
	EWC = European waste catalogue
	NA = Not applicable
	N.O.S. = Not Otherwise Specified
	VOC = Volatile organic compounds
	mg/kg BW = mg/kg bodyweight
	QSAR = Quantitative structure-activity relationship (QSAR)
	ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC IATA = International Air Transport Association IMDG = International Maritime Dangerous Goods Code LEL = Lower Explosive Limit/Lower Explosion Limit UEL = Upper Explosion Limit/Upper Explosive Limit REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
	WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)
	ABM = Algemene beoordelingsmethodiek

Sources of key data used to compile the datasheet : ECHA (European Chemicals Agency). CSR. CONCAWE.

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

Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Aquatic Acute 1
Aquatic Chronic 1	Hazardous to the aquatic environment - chronic hazard category 1
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1B	Carcinogenicity, Category 1B
Repr. 2	Reproductive toxicity, Hazard Category 2
Repr. 2	Reproductive toxicity, Hazard Category 2
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
H304	May be fatal if swallowed and enters airways.
H332	Harmful if inhaled.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.

H361d	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.

Full text of use descriptors

ERC2	Formulation of preparations
ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b	Industrial use of reactive processing aids
ERC6c	Industrial use of monomers for manufacture of thermo-plastics
ERC6d	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7	Industrial use of substances in closed systems
ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive outdoor use of substances in closed systems
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation & packing of preparations and mixtures: Industrial (SU10)
ESVOC SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)
ESVOC SPERC 9.12b.v1	Use as a fuel: Professional (SU22)
PROC1	Use in closed process, no likelihood of exposure
PROC15	Use as laboratory reagent
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Annex to the safety data sheet

Annex : Identified uses						
Title	**Sector of use**	**Product category**	**Process category**	**Article category**	**Environmental release**	**SPERC**
Use as an intermediate	SU8, SU9		PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15		ERC6a	ESVOC SPERC 6.1a.v1
Distribution			PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15		ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7	ESVOC SPERC 1.1b.v1
Formulation & (re)packing of substances and mixtures			PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15		ERC2	ESVOC SPERC 2.2.v1
Use as a fuel			PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16		ERC7	ESVOC SPERC 7.12a.v1
Use as a fuel			PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16		ERC9a, ERC9b	ESVOC SPERC 9.12b.v1

1. Exposure scenario 02

Use as an intermediate

ES Ref.: 02	
ES Type: Worker	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 SU8, SU9 ERC6a ESVOC SPERC 6.1a.v1
Processes, tasks activities covered	Use as an intermediate within closed or contained systems (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container). Industrial use
Assessment method	see section 3 of this exposure scenario.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid, vapour pressure < 0,5 kPa at STP.
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).

Operational conditions

Amount used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature),Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Other risk management measures:

General measures (carcinogens)	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 persons; provide specific 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 scenario; clear up spills immediately and dispose of waste 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.	
General exposures (closed systems)	E47 - Handle substance within a closed system,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
General exposures (closed systems),CS2 - Process sampling,outdoor	E47 - Handle substance within a closed system,Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 15 minutes,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS85 - Bulk product storage	E84 - Store substance within a closed system,Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS36 - Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure,PPE15 - Wear suitable gloves tested to EN374.	

Marine vessel/barge	Avoid carrying out activities involving exposure for more than 4 hours,E52 - Transfer via enclosed lines,E39 - Clear transfer lines prior to de-coupling,Retain drain downs in sealed storage pending disposal or for subsequent recycle,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Road tanker/rail car	Avoid carrying out activities involving exposure for more than 1 hour,or,Ensure material transfers are under containment or extract ventilation,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS39 - Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance,PPE17 - Wear chemically resistant gloves (tested to EN374) in combination with specific activity training,Retain drain downs in sealed storage pending disposal or for subsequent recycle.	

2.2 Contributing scenario controlling environmental exposure (ERC6a, ESVOC SPERC 6.1a.v1)

ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ESVOC SPERC 6.1a.v1	Manufacture of substances: Industrial (SU8, SU9)

Product characteristics

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	1200
	Fraction of regional tonnage used locally:	1
	Annual site tonnage (tons/year):	1200
	Maximum daily site tonnage (kg/day)	12000
Frequency and duration of use	Continuous use/release.	
	Emission days (days/year):	100
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):	0,0001
	Release fraction to wastewater from process (initial release prior to RMM):	0,000026
	Release fraction to soil from process (initial release prior to RMM):	0,001

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
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,If discharging to domestic sewage treatment plant, no onsite wastewater treatment required,Prevent discharge of undissolved substance to or recover from onsite wastewater.	
	Treat air emission to provide a typical removal efficiency of (%):	80
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	49,5
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment (%):	91,6
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91,6

	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	74000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
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.	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - 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,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels,Available hazard data do not enable the derivation of a DNEL for carcinogenic effects,Available hazard data do not support the need for a DNEL to be established for other health effects,Risk Management Measures are based on qualitative risk characterisation.

4.2. Environment

Guidance - 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,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

1. Exposure scenario 03

Distribution

ES Ref.: 03 ES Type: Worker	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 ESVOC SPERC 1.1b.v1
Processes, tasks activities covered	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) Industrial use
Assessment method	see section 3 of this exposure scenario.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid, vapour pressure < 0,5 kPa at STP.
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).

Operational conditions

Amount used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Unless otherwise stated,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Other risk management measures:

General measures (carcinogens)	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 persons; provide specific 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 scenario; clear up spills immediately and dispose of waste 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.	
CS2 - Process sampling,outdoor	Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 15 minutes,PPE16 - Wear	

	chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
General exposures (closed systems)	E47 - Handle substance within a closed system,Avoid carrying out activities involving exposure for more than 4 hours,Sample via a closed loop or other system to avoid exposure,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS85 - Bulk product storage	E84 - Store substance within a closed system,Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Product sampling	Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 15 minutes,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS36 - Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure,PPE15 - Wear suitable gloves tested to EN374.	
Marine vessel/barge	Avoid carrying out activities involving exposure for more than 4 hours,E52 - Transfer via enclosed lines,E39 - Clear transfer lines prior to de-coupling,Retain drain downs in sealed storage pending disposal or for subsequent recycle,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Road tanker/rail car	Ensure material transfers are under containment or extract ventilation,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS39 - Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance,PPE17 - Wear chemically resistant gloves (tested to EN374) in combination with specific activity training,Retain drain downs in sealed storage pending disposal or for subsequent recycle.	

2.2 Contributing scenario controlling environmental exposure (ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1)

ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC5	Industrial use resulting in inclusion into or onto a matrix
ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b	Industrial use of reactive processing aids
ERC6c	Industrial use of monomers for manufacture of thermo-plastics
ERC6d	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7	Industrial use of substances in closed systems
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)

Product characteristics

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	470000
	Fraction of regional tonnage used locally:	0,002
	Annual site tonnage (tons/year):	940
	Maximum daily site tonnage (kg/day)	47000
Frequency and duration of use	Continuous use/release.	
	Emission days (days/year):	20
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):	0,001
	Release fraction to wastewater from process (initial release prior to RMM):	0,00000088
	Release fraction to soil from process (initial release prior to RMM):	0,00001

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Indirect exposure to humans via the environment:No wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	90
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment (%):	91,6
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91,6
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	350000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - 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,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels,Available hazard data do not enable the derivation of a DNEL for carcinogenic effects,Available hazard data do not support the need for a DNEL to be established for other health effects,Risk Management Measures are based on qualitative risk characterisation.

4.2. Environment

Guidance - 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,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet

	(http://cefic.org/en/reach-for-industries-libraries.html).

1. Exposure scenario 04

Formulation & (re)packing of substances and mixtures

ES Ref.: 04 ES Type: Worker	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 ERC2 ESVOC SPERC 2.2.v1
Processes, tasks activities covered	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities
Assessment method	see section 3 of this exposure scenario.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC15	Use as laboratory reagent

Product characteristics

Physical form	Liquid, vapour pressure < 0,5 kPa at STP.
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).

Operational conditions

Amount used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Unless otherwise stated,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Other risk management measures:

General measures (carcinogens)	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 persons; provide specific 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 scenario; clear up spills immediately and dispose of waste 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.	
General exposures (closed systems),CS2 - Process sampling	E47 - Handle substance within a closed system,Sample via a closed loop or other system to	

	avoid exposure,Avoid carrying out activities involving exposure for more than 15 minutes,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
General exposures (closed systems)	E47 - Handle substance within a closed system,Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS85 - Bulk product storage	E84 - Store substance within a closed system,Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Product sampling	Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 15 minutes,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS36 - Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure,PPE15 - Wear suitable gloves tested to EN374.	
Marine vessel/barge	E52 - Transfer via enclosed lines,Avoid carrying out activities involving exposure for more than 4 hours,E39 - Clear transfer lines prior to de-coupling,Retain drain downs in sealed storage pending disposal or for subsequent recycle,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Road tanker/rail car	Ensure material transfers are under containment or extract ventilation,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS8 - Drum/batch transfers	Ensure material transfers are under containment or extract ventilation,Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour),or,Ensure operation is undertaken outdoors,Avoid carrying out activities involving exposure for more than 1 hour,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS39 - Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance,PPE17 - Wear chemically resistant gloves (tested to EN374) in combination with specific activity training,Retain drain downs in sealed storage pending disposal or for subsequent recycle.	

2.2 Contributing scenario controlling environmental exposure (ERC2)

ERC2	Formulation of preparations

Product characteristics

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	470000
	Fraction of regional tonnage used locally:	0,064
	Annual site tonnage (tons/year):	30000
	Maximum daily site tonnage (kg/day)	100000
Frequency and duration of use	Continuous use/release.	
	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	Release fraction to air from process (after typical	0,005

environmental exposure	onsite RMMs consistent with EU Solvent Emissions Directive requirements):	
	Release fraction to wastewater from process (initial release prior to RMM):	0,00018
	Release fraction to soil from process (initial release prior to RMM):	0,0001

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Indirect exposure to humans via the environment:If discharging to domestic sewage treatment plant, no onsite wastewater treatment required,Prevent discharge of undissolved substance to or recover from onsite wastewater.	
	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 of ≥ (%):	90,8
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment (%):	91,6
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91,6
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	110000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - 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,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels,Available hazard data do not enable the derivation of a DNEL for carcinogenic effects,Available hazard data do not support the need for a DNEL to be established for other health effects,Risk Management Measures are based on qualitative risk characterisation.

4.2. Environment

Guidance - 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,Required

	removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

1. Exposure scenario 07

Use as a fuel

ES Ref.: 07 ES Type: Worker	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 ERC7 ESVOC SPERC 7.12a.v1
Processes, tasks activities covered	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste. Industrial use
Assessment method	see section 3 of this exposure scenario.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected

Product characteristics

Physical form	Liquid, vapour pressure < 0,5 kPa at STP.
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).

Operational conditions

Amount used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Unless otherwise stated,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Other risk management measures:

General measures (carcinogens)	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 persons; provide specific 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 scenario; clear up spills immediately and dispose of waste 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.	
General exposures (closed systems)	E47 - Handle substance within a closed	

	system,Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
General exposures (closed systems),Product sampling	E47 - Handle substance within a closed system,Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 1 hour,Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour),PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Bulk closed unloading,outdoor	E52 - Transfer via enclosed lines,Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS8 - Drum/batch transfers	Ensure material transfers are under containment or extract ventilation,or,Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour),Avoid carrying out activities involving exposure for more than 1 hour,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS117 - Operation of solids filtering equipment	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour),Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS85 - Bulk product storage	E84 - Store substance within a closed system,Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour),Avoid carrying out activities involving exposure for more than 4 hours,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Use as a fuel,CS107 - (closed systems)	PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS39 - Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance,PPE17 - Wear chemically resistant gloves (tested to EN374) in combination with specific activity training,Retain drain downs in sealed storage pending disposal or for subsequent recycle.	

2.2 Contributing scenario controlling environmental exposure (ERC7, ESVOC SPERC 7.12a.v1)

ERC7	Industrial use of substances in closed systems
ESVOC SPERC 7.12a.v1	Use as a fuel: Industrial (SU3)

Product characteristics

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	330000
	Fraction of regional tonnage used locally:	1
	Annual site tonnage (tons/year):	330000
	Maximum daily site tonnage (kg/day)	1100000
Frequency and duration of use	Continuous use/release.	
	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	Release fraction to air from process (initial release prior to RMM):	0,005

environmental exposure	Release fraction to wastewater from process (initial release prior to RMM):	0,000016
	Release fraction to soil from process (initial release prior to RMM):	0

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
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,If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	95
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	90,8
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment (%):	91,6
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91,6
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	1200000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls,Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - 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,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels,Available hazard data do not enable the derivation of a DNEL for carcinogenic effects,Available hazard data do not support the need for a DNEL to be established for other health effects,Risk Management Measures are based on qualitative risk characterisation.

4.2. Environment

Guidance - 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,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

1. Exposure scenario 08

Use as a fuel

ES Ref.: 08 ES Type: Worker	

Use descriptors	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 ERC9a, ERC9b ESVOC SPERC 9.12b.v1
Processes, tasks activities covered	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste. Professional use
Assessment method	see section 3 of this exposure scenario.

2. Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16)

PROC1	Use in closed process, no likelihood of exposure
PROC2	Use in closed, continuous process with occasional controlled exposure
PROC3	Use in closed batch process (synthesis or formulation)
PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC16	Using material as fuel sources, limited exposure to unburned product to be expected

Product characteristics

Physical form	Liquid, vapour pressure < 0,5 kPa at STP.
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).

Operational conditions

Amount used	Not applicable	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Not applicable	
Other given operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature,Unless otherwise stated,Assumes a good basic standard of occupational hygiene is implemented.	

Risk management measures

Other risk management measures:

General measures (carcinogens)	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 persons; provide specific 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 scenario; clear up spills immediately and dispose of waste 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.	
General exposures (closed systems),Product sampling	E47 - Handle substance within a closed	

	system,Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 1 hour,Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour),PPE17 - Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	
General exposures (closed systems)	E47 - Handle substance within a closed system,Sample via a closed loop or other system to avoid exposure,Avoid carrying out activities involving exposure for more than 1 hour,Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour),PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Bulk closed unloading	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour),PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training,Avoid carrying out activities involving exposure for more than 1 hour,or,Ensure material transfers are under containment or extract ventilation.	
CS8 - Drum/batch transfers	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour),PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training,Avoid carrying out activities involving exposure for more than 1 hour,or,Ensure material transfers are under containment or extract ventilation.	
refuelling	Ensure material transfers are under containment or extract ventilation,PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training,Avoid carrying out activities involving exposure for more than 1 hour.	
Use as a fuel,CS107 - (closed systems)	PPE16 - Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
CS39 - Equipment cleaning and maintenance	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour),PPE17 - Wear chemically resistant gloves (tested to EN374) in combination with specific activity training,Drain down and flush system prior to equipment opening or maintenance,Retain drain downs in sealed storage pending disposal or for subsequent recycle,Clear spills immediately	

2.2 Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVOC SPERC 9.12b.v1)

ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive outdoor use of substances in closed systems
ESVOC SPERC 9.12b.v1	Use as a fuel: Professional (SU22)

Product characteristics

Other product characteristics	Substance is complex UVCB, Predominantly hydrophobic

Operational conditions

Amount used	Fraction of EU tonnage used in region:	0,1
	Regional use tonnage (tons/year):	140000
	Fraction of regional tonnage used locally:	0,005
	Annual site tonnage (tons/year):	69
	Maximum daily site tonnage (kg/day)	190
Frequency and duration of use	Continuous use/release.	
	Emission days (days/year):	365
Environmental factors not influenced by risk management	Local freshwater dilution factor:	10
	Local marine water dilution factor:	100
Other given operational conditions affecting	Release fraction to air from wide dispersive use (regional only):	0,0001

environmental exposure	Release fraction to wastewater from wide dispersive use:	0.0000088
	Release fraction to soil from wide dispersive use (regional only):	0,00001

Risk management measures

Technical conditions and measures at process level to prevent release	Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Indirect exposure to humans via the environment:No wastewater treatment required.	
	Treat air emission to provide a typical removal efficiency of (%):	Not applicable
	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):	0
	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):	0
Organizational measures to prevent/limit release from the site	Do not apply industrial sludge to natural soils,Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment (%):	91,6
	Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91,6
	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):	7000
	Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	Combustion emissions limited by required exhaust emission controls,Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	This substance is consumed during use and no waste of the substance is generated.	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - 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,Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels,Available hazard data do not enable the derivation of a DNEL for carcinogenic effects,Available hazard data do not support the need for a DNEL to be established for other health effects,Risk Management Measures are based on qualitative risk characterisation.

4.2. Environment

Guidance - 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,Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination,Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination,Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).