SAFETY DATA SHEET

Version #: 03
Issue date: 20-September-2017
Revision date: 09-May-2023
Supersedes date: 07-February-2023

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

1.1. Product identifier

Trade name or designation of the mixture Diesel fuel (with biodiesel content-B6); Diesel fuel (with biodiesel content-B6-(CP))

Registration number -

UFI: Y500-C029-G00E-DEXP

Synonyms Motor Diesel

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

Identified uses Use as a fuel.
A complete list of registered uses for this product can be found in the table of content of the exposure scenario for communication, available as an annex to the eSDS.

Uses advised against Use in accordance with supplier's recommendations.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name LUKOIL Neftohim Burgas AD

Address Burgas 8104, Bulgaria

Telephone +359 5511 5654

Fax +359 5511 5555

e-mail SDS@neftochim.bg

Contact person REACH@neftochim.bg

1.4. Emergency telephone number

+1-760-476-3961 (available 24 hours a day)

Access code 333368

3E Emergency Services +1-760-476-3961 (Access code: 333368): Emergency and incident response number is provided by 3E, available 24 hours a day, 7 days a week.

General in EU 112 (Available 24 hours a day.)

National Toxicological Information Centre +359 2 9154233 (Available 24 hours a day.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended

Physical hazards		
Flammable liquids	Category 3	H226 - Flammable liquid and vapour.
Health hazards		
Acute toxicity, inhalation	Category 4	H332 - Harmful if inhaled.
Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Carcinogenicity	Category 2	H351 - Suspected of causing cancer.
Specific target organ toxicity - repeated exposure	Category 2 (bone marrow, liver, thymus)	H373 - May cause damage to organs (bone marrow, liver, thymus) through prolonged or repeated exposure.
Aspiration hazard	Category 1	H304 - May be fatal if swallowed and enters airways.
Environmental hazards		
Hazardous to the aquatic environment, long-term aquatic hazard	Category 2	H411 - Toxic to aquatic life with long lasting effects.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Fuels, diesel

Hazard pictograms

Signal word Danger

Hazard statements

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H373	May cause damage to organs (bone marrow, liver, thymus) through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician.
P331	Do NOT induce vomiting.

Storage

P403 + P235	Store in a well-ventilated place. Keep cool.

Disposal Not assigned.

Supplemental information on the label None.

2.3. Other hazards Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.
This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.
The mixture does not contain any substances included in the list established in accordance with REACH Article 59(1) for having endocrine disrupting properties at a concentration equal to or greater than 0.1% by weight.
The mixture does not contain any substances having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0.1% by weight.

SECTION 3: Composition/information on ingredients

Mixture

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Fuels, diesel	≤ 93	68334-30-5 269-822-7	01-2119484664-27-0090	649-224-00-6	
Classification: Flam. Liq. 3;H226, Acute Tox. 4;H332;(ATE: 11 mg/l), Skin Irrit. 2;H315, Carc. 2;H351, STOT RE 2;H373, Asp. Tox. 1;H304, Aquatic Chronic 2;H411					
Fatty acids, C16-18 and C18-Unsatd., me esters	≤ 7	67762-38-3 267-015-4	01-2119471664-32-XXXX	-	
Classification: -					

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
The full text for all H-statements is displayed in section 16.
Hydrogen sulphide (H2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

SECTION 4: First aid measures

General information Get medical attention if any discomfort develops.

4.1. Description of first aid measures

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. Get medical attention if discomfort develops or persists.

If there is any suspicion of inhalation of H2S:
Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures.
Remove casualty to fresh air as quickly as possible.
Immediately begin artificial respiration if breathing has ceased.
Provision of oxygen may help.
Obtain medical advice for further treatment.

Skin contact

Remove contaminated clothing. Wash with soap and water. In case of rashes, wounds or other skin disorders: Seek medical attention and bring along these instructions.

Eye contact

Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. Get medical attention if irritation develops or persists.

Ingestion

Immediately rinse mouth and drink plenty of water or milk. Keep person under observation. Do not induce vomiting. If vomiting occurs, keep head low. Transport immediately to hospital and take these instructions.

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

Irritation of eyes and mucous membranes. Skin irritation. Defatting of the skin. Dermatitis. Ingestion may cause irritation and malaise.

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

Treat symptomatically. The effects might be delayed.

SECTION 5: Firefighting measures

General fire hazards

The product is combustible, and heating may generate vapours which may form explosive vapour/air mixtures. Material will float and can be re-ignited on surface of water.

5.1. Extinguishing media

Suitable extinguishing media

Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Thermal decomposition may produce smoke, oxides of carbon and lower molecular weight organic compounds whose composition have not been characterised. Sulfur Oxides (SOx). Nitrogen Oxides (NOx).

5.3. Advice for firefighters

Special protective equipment for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire fighting procedures

Move containers from fire area if you can do it without risk. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Stay upwind. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid contact with skin. Wear suitable protective clothing, gloves and eye/face protection. For personal protection, see Section 8 of the SDS. In case of spills, beware of slippery floors and surfaces.

For emergency responders

Use personal protection as recommended in section 8 of the SDS.

6.2. Environmental precautions

Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not contaminate water. Contact local authorities in case of spillage to drain/aquatic environment.

6.3. Methods and material for containment and cleaning up

Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Large Spills: Remove with vacuum trucks or pump to storage/salvage vessels. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Wash area with soap and water. Ensure that waste and contaminated materials are collected and removed from the work area as soon as possible in a suitably labelled container.

Small Spills: Absorb spillage with non-combustible, absorbent material.

6.4. Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Before entering storage tanks and commencing any operation in a confined area check the atmosphere for oxygen content and flammability. (Subject to applicability) If sulphur compounds are suspected to be present in the product, check the atmosphere for H2S content. Access to work area should be restricted to people handling the product only. Should be handled in closed systems, if possible. Avoid contact with eyes, skin, and clothing. Avoid inhalation of vapours. Wear appropriate personal protective equipment. Take precautionary measures against static discharges. Ground container and transfer equipment to eliminate static electric sparks. Vapours are heavier than air and may travel along the floor and in the bottom of containers. Immediately change contaminated clothes. Do not eat, drink or smoke when using the product. Be aware of potential for surfaces to become slippery. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Follow rules for flammable liquids. Keep away from heat, sparks and open flame. Keep in a cool, well-ventilated place. Keep away from food, drink and animal feeding stuffs. Store away from incompatible materials.

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

ANNEX 1, PART 2 Named dangerous substances
- 34. Petroleum products and alternative fuels (Lower-tier requirements = 2 500 tonnes; Upper-tier requirements = 25 000 tonnes)

7.3. Specific end use(s)

Observe industrial sector guidance on best practices.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

No exposure limits noted for ingredient(s).

Biological limit values

No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no effect levels (DNELs)

General population

Components	Value	Assessment factor	Notes
Fatty acids, C16-18 and C18-Unsatd., me esters (CAS 67762-38-3)			
Long-term, Systemic, Dermal	5 mg/kg bw/day	200	Repeated dose toxicity
Long-term, Systemic, Inhalation	23 mg/m3	50	Repeated dose toxicity
Long-term, Systemic, Oral	5 mg/kg bw/day	200	Repeated dose toxicity
Fuels, diesel (CAS 68334-30-5)			
Long-term, Systemic, Dermal	1,25 mg/kg	40	Repeated dose toxicity
Long-term, Systemic, Inhalation	20,22 mg/m3	12,5	developmental toxicity / teratogenicity
Long-term, Systemic, Oral	1,25 mg/kg	40	Repeated dose toxicity
Short-term, Systemic, Dermal	5,55 mg/kg	10	
Short-term, Systemic, Inhalation	2572,8 mg/m3	12,5	Acute toxicity

Workers

Components	Value	Assessment factor	Notes
Fatty acids, C16-18 and C18-Unsatd., me esters (CAS 67762-38-3)			
Long-term, Systemic, Dermal	10 mg/kg bw/day	100	Repeated dose toxicity
Long-term, Systemic, Inhalation	6,96 mg/m3	75	Repeated dose toxicity
Fuels, diesel (CAS 68334-30-5)			
Long-term, Systemic, Dermal	2,91 mg/kg	24	Repeated dose toxicity
Long-term, Systemic, Inhalation	68,34 mg/m3	7,5	developmental toxicity / teratogenicity
Short-term, Systemic, Dermal	11,11 mg/kg	5	Repeated dose toxicity
Short-term, Systemic, Inhalation	4288 mg/m3	7,5	Acute toxicity

Predicted no effect concentrations (PNECs)

Components	Value	Assessment factor	Notes
Fatty acids, C16-18 and C18-Unsatd., me esters (CAS 67762-38-3)			
Freshwater	2,504 mg/l	1000	
Marine water	0,25 mg/l	10000	
STP	520 mg/l	10	
Fuels, diesel (CAS 68334-30-5)			
Freshwater	21 µg/l	1000	

8.2. Exposure controls

Appropriate engineering controls	Provide adequate ventilation and minimise the risk of inhalation of vapours and oil mist. Use explosion-proof equipment. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

General information	Use personal protective equipment as required. Keep working clothes separately. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.
Eye/face protection	Wear goggles/face shield. Eye protection should meet standard EN 166.
Skin protection	
- Hand protection	Wear suitable gloves tested to EN374. Nitrile gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.
- Other	Protection suit must be worn. Anti-static and flame-retardant protective clothing is recommended.
Respiratory protection	In case of inadequate ventilation or risk of inhalation of oil mist, suitable respiratory equipment with combination filter (type A2/P2) can be used. In case of inadequate ventilation or risk of inhalation of oil mist, suitable respiratory equipment with particulate filter and organic vapour cartridges can be used. Wear air-supplied mask in confined areas. Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	When using, do not eat, drink or smoke. Wash hands after handling. Launder contaminated clothing before reuse. Private clothes and working clothes should be kept separately. Handle in accordance with good industrial hygiene and safety practices. Observe any medical surveillance requirements.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Form	Liquid.
Colour	Dark amber.
Odour	Characteristic.
Melting point/freezing point	> -40 - < 6 °C (> -40 - < 42,8 °F)
Boiling point or initial boiling point and boiling range	> 141 - < 462 °C (> 285,8 - < 863,6 °F)
Flammability	Flammable liquid and vapour.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)	Not determined.
Explosive limit – upper (%)	Not determined.
Flash point	> 56 °C (> 132,8 °F)
Auto-ignition temperature	≥225°C
Decomposition temperature	Not determined.
pH	Not applicable.
Kinematic viscosity	4,15 mm2/s (40 °C (104 °F))

Solubility

Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water) (log value)	Not applicable.
Vapour pressure	Not determined.

Density and/or relative density

Density	> 0,8 - < 0,91 g/cm³
Vapour density	Not determined.
Particle characteristics	Not applicable, material is a liquid.

9.2. Other information

9.2.1. Information with regard to physical hazard classes	No relevant additional information available.
9.2.2. Other safety characteristics	No relevant additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability Stable at normal conditions.

10.3. Possibility of hazardous reactions Hazardous polymerisation does not occur. Hazardous reactions do not occur.

10.4. Conditions to avoid Heat, sparks, flames, elevated temperatures. Contact with incompatible materials.

10.5. Incompatible materials Strong acids. Strong oxidising agents.

10.6. Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of co-ordination. Continued inhalation may result in unconsciousness.

Skin contact Causes skin irritation. Repeated exposure may cause skin dryness or cracking. May be absorbed through the skin.

Eye contact May cause eye irritation on direct contact.

Ingestion Ingestion may cause irritation and malaise.

Symptoms Irritation of eyes and mucous membranes. Skin irritation. Defatting of the skin. Dermatitis. Ingestion may cause irritation and malaise.

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

Acute toxicity Harmful if swallowed - may enter lungs if swallowed or vomited. Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of co-ordination. Continued inhalation may result in unconsciousness. May irritate and cause stomach pain, vomiting, diarrhoea and nausea.

Product	Species	Test Results
Fuels, diesel (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg
Inhalation		
LC50	Rat	> 4100 mg/m3, 4 Hours
Oral		
LD50	Rat	> 2000 mg/kg

Components	Species	Test Results
Fuels, diesel (CAS 68334-30-5)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg
Inhalation		
LC50	Rat	> 4300 mg/m3, 4 Hours
Oral		
LD50	Rat	> 5000 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation May cause eye irritation on direct contact.

Respiratory sensitisation Based on available data, the classification criteria are not met.

Skin sensitisation Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Suspect cancer hazard.

Reproductive toxicity Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure May cause damage to the following organs through prolonged or repeated exposure: Liver

Aspiration hazard Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Mixture versus substance information Not available.

11.2. Information on other hazards

Endocrine disrupting properties This mixture does not contain any substances having endocrine disrupting properties with respect to human health as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.

Other information Components of the product may be absorbed into the body through the skin.

SECTION 12: Ecological information

12.1. Toxicity Toxic to aquatic life with long lasting effects.

Product		Species	Test Results
Fuels, diesel (CAS Mixture)			
Aquatic			
Algae	EL50	Freshwater algae	22 mg/l, 72 Hours
Crustacea	EL50	Daphnia	68 mg/l, 48 Hours
Fish	LL50	Freshwater fish	21 mg/l, 96 Hours

Components		Species	Test Results
Fuels, diesel (CAS 68334-30-5)			
Aquatic			
Algae	EL50	Freshwater algae	22 mg/l, 72 Hours
Crustacea	EL50	Daphnia	68 mg/l, 48 Hours
Fish	LL50	Freshwater fish	21 mg/l, 96 Hours

12.2. Persistence and degradability The product is readily biodegradable.

12.3. Bioaccumulative potential Evaluation of representative hydrocarbons indicates that no structure meets the very bioaccumulative (vB) criterion but some meet the bioaccumalitive (B) criterion. Potential to bioaccumulate is low.

Partition coefficient n-octanol/water (log Kow) Not applicable.

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil Based on the calculation model the product has a potential of being absorbed in the soil.

Mobility in general The product is insoluble in water. It will spread on the water surface while some of the components will eventually sediment in water systems. The volatile components of the product will spread in the atmosphere.

12.5. Results of PBT and vPvB assessment This mixture does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

12.6. Endocrine disrupting properties This mixture does not contain any substances having endocrine disrupting properties with respect to the environment as assessed in accordance with the criteria set out in Regulations (EC) No 1907/2006, (EU) No 2017/2100 and (EU) 2018/605, at a concentration equal to or greater than 0.1% by weight.

12.7. Other adverse effects Oil spills are generally hazardous to the environment. The product contains volatile organic compounds which have a photochemical ozone creation potential.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Dispose in accordance with local regulations.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied.

EU waste code The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information Dispose in accordance with all applicable regulations. This material and/or its container must be disposed of as hazardous waste.

SECTION 14: Transport information

ADR

14.1. UN number UN1202

14.2. UN proper shipping name	DIESEL FUEL
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Hazard No. (ADR)	30
Tunnel restriction code	D/E
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN1202
14.2. UN proper shipping name	DIESEL FUEL
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN1202
14.2. UN proper shipping name	DIESEL FUEL
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number	UN1202
14.2. UN proper shipping name	DIESEL FUEL
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	Yes
ERG Code	3L
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

14.1. UN number	UN1202
14.2. UN proper shipping name	DIESEL FUEL
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

14.7. Maritime transport in bulk according to IMO instruments This product is considered to fall under the scope of Annex I to Marpol 73/78 and is subject to the requirements of that Annex if carried in bulk.

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Not listed.

Other regulations The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006 as amended.
Directive 2012/18/EU on major accident hazards involving dangerous substances: Part 2 (Named dangerous substances) - 34. Petroleum products and alternative fuels.

National regulations Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work. According to Directive 92/85/EEC as amended, pregnant women should not work with the product, if there is the least risk of exposure. Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment The chemical safety assessment has been carried out for the components of the mixture listed in section 3 of the SDS. Exposure scenarios relevant for these substances are annexed to this eSDS.

SECTION 16: Other information

List of abbreviations

PBT: Persistent, bioaccumulative and toxic.
vPvB: Very Persistent and very Bioaccumulative.
CEN: European Committee for Standardisation.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
MARPOL: International Convention for the Prevention of Pollution from Ships.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.

References	IARC Monographs. Overall Evaluation of Carcinogenicity CLP files – http://concawe.org/ CONCAWE compilation of selected physical-chemical properties of petroleum substances and sulfur, Brussels, November 2010
Information on evaluation method leading to the classification of mixture	The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.
Full text of any statements, which are not written out in full under sections 2 to 15	H226 Flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H332 Harmful if inhaled. H351 Suspected of causing cancer. H373 May cause damage to organs through prolonged or repeated exposure. H411 Toxic to aquatic life with long lasting effects.
This SDS contains revisions in the following section(s):	1, 2, 3, 7, 8, 9, 11, 12, 13, 14, 15, 16.
Training information	Follow training instructions when handling this material.
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available at the date of revision and exclusively refer to the product in its as-delivered condition. The information and recommendations are offered for the user's consideration and examination. The logo and the name "LUKOIL oil company" may include anyone or more of LUKOIL Neftohim Burgas AD or LUKOIL or any affiliates in which they directly or indirectly hold any interest.

Annex to the extended Safety Data Sheet (eSDS)

Table of contents

1 - Exposure Scenario Worker

1. Formulation & (re)packing of substances and mixtures

List of use descriptors

Sector(s) of Use	SU10: Formulation [mixing] of preparations and/or re-packaging
Name of contributing environmental scenario and corresponding ERC	ERC2: Formulation into mixture
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14: Tabletting, compression, extrusion, pelettisation, granulation PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Formulation into mixture

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	0,1
Regional use tonnage (tonnes/year):	3 e7
Fraction of regional tonnage used locally	0,001
Annual site tonnage	30000 tonnes/year
Maximum daily site tonnage	100000 kg/day

Frequency and duration of use

Batch process	Not applicable.
Continuous process	300 days/year

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other factors	Estimated substance removal from wastewater via domestic sewage treatment (%): 94.9

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
initial release prior to RMM	300	0,01	0,0001	0,0002	

Risk management measures (RMM)

Technical conditions and measures at process level (source) 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

Air	Treat air emission to provide a typical removal efficiency of (%): 0
Soil	Not applicable.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 96.7. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 35.1
Sediment	Not applicable.

Remarks	Not applicable.
Organisational measures to prevent/limit release from site	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	20000 m³/day
Sludge treatment technique	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Remarks	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal 1,0e5 kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	Not applicable.
Treatment effectiveness	96,7
Remarks	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Remarks	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Process sampling: No other specific measures identified. General exposures (closed systems): Handle substance within a closed system.
Technical conditions and measures to control dispersion from source towards the worker	Batch processes at elevated temperatures: Provide extract ventilation to points where emissions occur. Drum/batch transfers: Use drum pumps or carefully pour from container. Bulk transfers: Handle substance within a closed system. Mixing operations (open systems): Provide extract ventilation to points where emissions occur. Laboratory activities: No other specific measures identified. Storage: Store substance within a closed system.

Organizational measures to prevent/limit releases, dispersion and exposure	General measures applicable to all activities: Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Equipment cleaning and maintenance: Drain down system prior to equipment break-in or maintenance.
Conditions and measures related to personal protection, hygiene and health evaluations	General measures (skin irritants): Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. General exposures (open systems): Wear suitable gloves tested to EN374. Drum/batch transfers: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Bulk transfers: Wear suitable gloves tested to EN374. Production of preparations or articles by tabletting, compression, extrusion, pelettisation: Wear suitable gloves tested to EN374. Drum and small package filling: Wear suitable gloves tested to EN374. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Mixing operations (open systems): Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

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).

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 dermal irritant 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.

2 - Exposure Scenario Worker

1. Use as an intermediate

List of use descriptors

Sector(s) of Use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Name of contributing environmental scenario and corresponding ERC	ERC6a: Use of intermediate
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Use of intermediate

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	0,1
Regional use tonnage	1000000 tonnes/year
Fraction of regional tonnage used locally	0,015
Annual site tonnage	15000 tonnes/year
Maximum daily site tonnage	50000 kg/day

Frequency and duration of use

Continuous process	300 days/year

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other factors	Estimated substance removal from wastewater via domestic sewage treatment (%): 94.9

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
initial release prior to RMM	300	0,001	0,001	0,0003	

Risk management measures (RMM)

Technical conditions and measures at process level (source) 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

Air	Treat air emission to provide a typical removal efficiency of (%): 80
Soil	Not applicable.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 94.4. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 0.
Sediment	Not applicable.
Organisational measures to prevent/limit release from site	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	2000 m³/day
Sludge treatment technique	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Remarks	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal 5,0e4 kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	This substance is consumed during use and no waste of the substance is generated.
Disposal methods	Not applicable.
Treatment effectiveness	95,6

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	This substance is consumed during use and no waste of the substance is generated.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Operation is carried out at elevated temperature (> 20°C above ambient temperature)

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Process sampling: No other specific measures identified. General exposures (closed systems): Handle substance within a closed system. Bulk closed loading and unloading: Handle substance within a closed system.
Technical conditions and measures to control dispersion from source towards the worker	Laboratory activities: No other specific measures identified. Bulk product storage: Store substance within a closed system.
Organizational measures to prevent/limit releases, dispersion and exposure	General measures applicable to all activities: Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Equipment cleaning and maintenance: Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. General exposures (open systems): Wear suitable gloves tested to EN374. Bulk closed loading and unloading: Wear suitable gloves tested to EN374. Bulk open loading and unloading: Wear suitable gloves tested to EN374. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

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).

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 dermal irritant 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.

3 - Exposure Scenario Worker

1. Distribution of substance

List of use descriptors

Sector(s) of Use	Distribution of substance
Name of contributing environmental scenario and corresponding ERC	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC5: Use at industrial site leading to inclusion into/onto article ERC6a: Use of intermediate ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) ERC7: Use of functional fluid at industrial site
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent

2.1.1. Contributing scenario controlling environmental exposure for Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	0,1
Regional use tonnage (tonnes/year):	3,1 e7
Fraction of regional tonnage used locally	0,002
Annual site tonnage	61000 tonnes/year
Maximum daily site tonnage	200000 kg/day

Frequency and duration of use

Continuous process	300 days/year

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
initial release prior to RMM	300	0,001	0,001	0,00001	

Risk management measures (RMM)

Technical conditions and measures at process level (source) 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

Air	Treat air emission to provide a typical removal efficiency of (%): 90
Soil	Not applicable.

Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 74.3. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 0
Sediment	Not applicable.
Organisational measures to prevent/limit release from site	Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	2000 m³/day
Sludge treatment technique	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Remarks	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal 6,8e5 kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	Not applicable.
Treatment effectiveness	94,9
Remarks	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Process sampling: No other specific measures identified. General exposures (closed systems): Handle substance within a closed system. Bulk closed loading and unloading: Handle substance within a closed system.
Technical conditions and measures to control dispersion from source towards the worker	Laboratory activities: No other specific measures identified. Storage: Handle substance within a closed system.

Organizational measures to prevent/limit releases, dispersion and exposure	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Equipment cleaning and maintenance: Drain down system prior to equipment break-in or maintenance.
Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. General exposures (open systems): Wear suitable gloves tested to EN374. Bulk closed loading and unloading: Wear suitable gloves tested to EN374. Bulk open loading and unloading: Wear suitable gloves tested to EN374. Drum and small package filling: Wear suitable gloves tested to EN374. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

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).

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 dermal irritant 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 - Exposure Scenario Worker

1. Use as a fuel, Industrial

List of use descriptors

Sector(s) of Use	SU3: Industrial uses
Name of contributing environmental scenario and corresponding ERC	ERC7: Use of functional fluid at industrial site
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC16: Use of fuels

2.1.1. Contributing scenario controlling environmental exposure for Use of functional fluid at industrial site

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	tonnes/year
Regional use tonnage	
Fraction of regional tonnage used locally	
Annual site tonnage	tonnes/year
Maximum daily site tonnage	kg/day

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Emission days (days/year): 100

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
Release fraction to air from process (initial release prior to RMM):	100				
Release fraction to wastewater from process (initial release prior to RMM)	100				
Release fraction to soil from process (initial release prior to RMM):	100				

Risk management measures (RMM)

Technical conditions and measures at process level (source) 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

Air	Treat air emission to provide a typical removal efficiency of (%): 95
Soil	Not applicable.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 71.5. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 0
Sediment	Not applicable.
Remarks	Not applicable.
Organisational measures to prevent/limit release from site	Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	2000 m³/day
Sludge treatment technique	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Remarks	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	This substance is consumed during use and no waste of the substance is generated.
Remarks	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Not available.

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Use as a fuel (closed systems): No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	Storage: Store substance within a closed system.
Organizational measures to prevent/limit releases, dispersion and exposure	Not available.

Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Bulk transfers: Wear suitable gloves tested to EN374. Drum/batch transfers: Wear suitable gloves tested to EN374. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

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).

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 dermal irritant 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.

5 - Exposure Scenario Worker

1. Use as a fuel, Professional

List of use descriptors

Sector(s) of Use	SU22: Professional uses
Name of contributing environmental scenario and corresponding ERC	ERC9a: Widespread use of functional fluid (indoor) ERC9b: Widespread use of functional fluid (outdoor)
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC16: Use of fuels

2.1.1. Contributing scenario controlling environmental exposure for Widespread use of functional fluid (indoor)

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	
Regional use tonnage	tonnes/year
Fraction of regional tonnage used locally	
Annual site tonnage	tonnes/year
Maximum daily site tonnage	kg/day

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Emission days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
initial release prior to RMM	365				

Risk management measures (RMM)

Technical conditions and measures at process level (source) 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

Air	Not applicable.
Soil	Not available.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 0. If discharging to municipal sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 0
Sediment	Not applicable.
Remarks	Not applicable.
Organisational measures to prevent/limit release from site	Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion). No wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	2000 m³/day
Sludge treatment technique	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Remarks	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	Not applicable.
Treatment effectiveness	Not available.
Remarks	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	This substance is consumed during use and no waste of the substance is generated.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Use as a fuel (closed systems): Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Technical conditions and measures to control dispersion from source towards the worker	Drum/batch transfers: Use drum pumps or carefully pour from container. Storage: Store substance within a closed system.
Organizational measures to prevent/limit releases, dispersion and exposure	General measures applicable to all activities: Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions. Equipment cleaning and maintenance: Drain down system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluations	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. wash off any skin contamination immediately. provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Bulk transfers: Wear suitable gloves tested to EN374. Drum/batch transfers: Wear suitable gloves tested to EN374. Refuelling: Wear suitable gloves tested to EN374. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

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).

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 dermal irritant 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.

6 - Exposure Scenario Consumer

1. Use as a fuel

List of use descriptors

Sector(s) of Use Not available.

Name of contributing environmental scenario and corresponding ERC ERC9a: Widespread use of functional fluid (indoor)
ERC9b: Widespread use of functional fluid (outdoor)

List of names of contributing consumer scenarios and corresponding PROCs Fuels

2.1.1. Contributing scenario controlling environmental exposure for Widespread use of functional fluid (indoor)

Product characteristics

Physical state Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region

Regional use tonnage tonnes/year

Fraction of regional tonnage used locally

Annual site tonnage tonnes/year

Maximum daily site tonnage kg/day

Frequency and duration of use

Batch process Not applicable.

Continuous process Emission days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
initial release prior to RMM	365				

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release Not available.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type No wastewater treatment required.

Discharge rate 2000 m³/day

Sludge treatment technique Not available.

Remarks Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.

Disposal methods Not applicable.

Treatment effectiveness Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	This substance is consumed during use and no waste of the substance is generated.

2.2.1. Contributing exposure scenario controlling consumer exposure for Fuels

Product characteristics

Physical form of the product	Liquid.
vapour pressure	Liquid, vapour pressure > 10 kPa at Standard Temperature and Pressure

Amounts used

Covers skin contact area up to	420 cm²

Frequency and duration of use

	Duration	Frequency of use	Remarks
Covers exposure up to	2	0,143 times per day	(Duration unit = hours per event)

Human factors not influenced by risk management

Other given operational conditions affecting consumer exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
Assumes a good basic standard of occupational hygiene is implemented				

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Conditions and measures related to information and behavioral advice to consumers

Not available.

Conditions and measures related to personal protection, hygiene and health evaluations	Not available.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated.

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

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.

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.

7 - Exposure Scenario Worker

1. Use in Oil and Gas field drilling and production operations

List of use descriptors

Sector(s) of Use	SU3: Industrial uses
Name of contributing environmental scenario and corresponding ERC	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

2.1.1. Contributing scenario controlling environmental exposure for Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	1
Regional use tonnage	20000 tonnes/year

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Not applicable.

Environment factors not influenced by risk management

Local freshwater dilution factor:	Not available.
Local marine water dilution factor:	Not available.

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
Not applicable.					

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Discharge to aquatic environment is restricted (see section 4.2).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not applicable.
Water	Not applicable.
Sediment	Not applicable.
Remarks	Not applicable.
Organisational measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	Not available.
Sludge treatment technique	Not available.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	Not applicable.
Treatment effectiveness	Not available.
Remarks	Cuttings and process water are disposed according to local and/or national regulations.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Remarks	Cuttings and process water are disposed according to local and/or national regulations.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	General exposures (closed systems): Handle substance within a closed system.
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers: Transfer via enclosed lines. Drilling mud (re-)formulation: No other specific measures identified. Operation of solids filtering equipment, Elevated temperature: Provide the operation with a properly sited receiving hood. Cuttings treatment and disposal: Provide extract ventilation to points where emissions occur. Sample collection: No other specific measures identified. Storage: Store substance within a closed system.
Organizational measures to prevent/limit releases, dispersion and exposure	General measures applicable to all activities: Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Conditions and measures related to personal protection, hygiene and health evaluations	General measures (skin irritants): Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Filling of equipment from drums or containers: Wear suitable gloves tested to EN374. Drill floor operations: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Cleaning of solids filtering equipment: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. General exposures (open systems): Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Pouring from small containers: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

Environment

Offshore drilling: Discharge to aquatic environment is restricted by law and industry prohibits release. OSPAR Commission 2009. Discharges, Spills, and Emissions from Offshore Oil and Gas Installations in 2007, including the assessment of data reported in 2006 and 2007.
Onshore drilling: Environmental releases are minimized during onshore drilling operations; waste recycling and disposal is managed according to national and/or local regulations. International Finance Corporation 2007. Environmental, Health, and Safety Guidelines: onshore oil and gas development. Mining Waste Directive (2006/21/EC), European Waste Directive (2008/98/EC) and national transpositions, e.g. Novelle des Kreislaufwirtschaftsgesetzes (KrWG) in Germany.

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 dermal irritant 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.

8 - Exposure Scenario Worker

1. Functional Fluids, Industrial.

List of use descriptors

Sector(s) of Use	SU3: Industrial uses
Name of contributing environmental scenario and corresponding ERC	ERC7: Use of functional fluid at industrial site
List of names of contributing worker scenarios and corresponding PROCs	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Chemical production where opportunity for exposure arises PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2.1.1. Contributing scenario controlling environmental exposure for Use of functional fluid at industrial site

Product characteristics

Physical state	Liquid. Substance is complex UVCB. Predominantly hydrophobic

Amounts used

Fraction of EU tonnage used in region	0,1
Regional use tonnage	13,1 tonnes/year
Fraction of regional tonnage used locally	0,76
Annual site tonnage	10 tonnes/year
Maximum daily site tonnage	500 kg/day

Frequency and duration of use

Batch process	Not applicable.
Continuous process	Emission days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days	Emission factors			
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
initial release prior to RMM	20	0,005	0,001	0,00003	

Risk management measures (RMM)

Technical conditions and measures at process level (source) 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

Air	Treat air emission to provide a typical removal efficiency of (%): 0
Soil	Not applicable.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): 61.5. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): 0
Sediment	Not applicable.
Remarks	Not applicable.
Organisational measures to prevent/limit release from site	Risk from environmental exposure is driven by freshwater. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to municipal sewage treatment plant, no onsite wastewater treatment required.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Onsite Sewage Treatment Plant
Discharge rate	2000 m³/day
Sludge treatment technique	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Remarks	Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal 3,8e3 kg/d

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Disposal methods	Not applicable.
Treatment effectiveness	Not available.
Remarks	Not applicable.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Treatment effectiveness	94,9
Remarks	Not applicable.

2.2.1. Contributing scenario controlling worker exposure for Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

Physical form of the product	Liquid With potential for aerosol generation
vapour pressure	Liquid, vapour pressure < 0,5 kPa at Standard Temperature and Pressure

Amounts used

Covers percentage substance in the product up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Assumes a good basic standard of occupational hygiene is implemented.

Other relevant operational conditions

Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Filling of articles/equipment (closed systems): Transfer via enclosed lines. Equipment operation (closed systems): No other specific measures identified.
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers: No other specific measures identified. Equipment operations (open systems): Restrict area of openings and provide extract ventilation to emission points when substance handed at elevated temperatures. Storage: Store substance within a closed system.
Organizational measures to prevent/limit releases, dispersion and exposure	General measures applicable to all activities: Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Conditions and measures related to personal protection, hygiene and health evaluations	General measures (skin irritants): Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Drum/batch transfers: Wear suitable gloves tested to EN374. Re-work and re-manufacture of articles: Wear suitable gloves tested to EN374. Filling of equipment from drums or containers: Wear suitable gloves tested to EN374. Equipment cleaning and maintenance: Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure Estimation

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Health

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

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

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).

Health

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 dermal irritant 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.