

# SAFETY DATA SHEET

According to EC No 1907/2006 as amended as at the date of this SDS

## Hydrowax

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	21.02.2025	800010067459	Print Date 28.02.2025

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

#### 1.1 Product identifier

Trade name	:	Hydrowax
Product code	:	X2609
Registration number EU	:	01-2119489964-16-0015
Other means of identification	:	MARPOL annex I category: Unfinished distillates, hydraulic oils, and lubricating oils

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

Use of the Sub- stance/Mixture	:	Refinery intermediate or fuel blending component. Please refer to section 16 and/or the annexes for the registered uses under REACH.
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Uses advised against	:	
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This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

#### 1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier	:	<b>Shell Chemicals Europe B.V.</b> PO Box 2334 3000 CH Rotterdam Netherlands
Telephone	:	+31 (0)10 441 5137 / +31 (0)10 441 5191
Telefax	:	+31 (0)20 716 8316 / +31 (0)20 713 9230
Contact for Safety Data Sheet	:	sccmsds@shell.com

#### 1.4 Emergency telephone number

+44 (0) 1235 239 670  
National Poison Information Centre (NVIC): Tel. nr. +31(0)88 755 8000 (24 hrs a day and 7 days a week).  
Only for the purpose of informing medical personnel.

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### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

Carcinogenicity, Category 1B	H350: May cause cancer.
Acute toxicity, Category 4, Inhalation	H332: Harmful if inhaled.

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Reproductive toxicity, Category 2	H361: Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - repeated exposure, Category 2, Blood , Liver , thymus	H373: May cause damage to organs through prolonged or repeated exposure.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.
Supplemental Hazard Statements	EUH066: Repeated exposure may cause skin dryness or cracking.

## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:  
Not classified as a physical hazard according to CLP criteria.

#### HEALTH HAZARDS:

H350 May cause cancer.  
H332 Harmful if inhaled.  
H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.

Blood

Liver

thymus

#### ENVIRONMENTAL HAZARDS:

H400 Very toxic to aquatic life.  
H410 Very toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements : EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary statements : **Prevention:**

P201 Obtain special instructions before use.  
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
P273 Avoid release to the environment.

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

### Response:

P331 Do NOT induce vomiting.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

### Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

## 2.3 Other hazards

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

May ignite on surfaces at temperatures above auto-ignition temperature.

This material is a static accumulator.

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

Not classified as flammable but will burn.

Flammable vapours may be present even at temperatures below the flash point.

Therefore it should be treated as a potentially flammable liquid.

Contact with hot material can cause thermal burns which may result in permanent skin damage.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Chemical nature : A complex combination of hydrocarbons produced as the residual fraction from distillation of the products of a hydrocracking process. It consists of hydrocarbons having carbon numbers predominantly greater than C20 and boiling above approximately 350 °C (662 °F).

### Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
residues (petroleum), hydrocracked	64741-75-9 265-076-1	100

Residues and their blends with distillates can be used as heavy fuel oils and need to be heated for use.

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### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

- |                            |   |  |
|----------------------------|---|--|
| Protection of first-aiders | : | When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.  |
| If inhaled                 | : | Call emergency number for your location / facility.<br>Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to the nearest medical facility.   |
| In case of skin contact    | : | Cold product -<br>Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.<br>If persistent irritation occurs, obtain medical attention.<br><br>Hot product -<br>If contact with hot product, immediately cool the burn area by flushing with large amounts of water for at least 15 minutes.<br>Do not attempt to remove anything from the burn area.<br>Do not apply burn creams or ointments.<br>Cover the burn area loosely with a sterile dressing, if available.<br>Transport to the nearest medical facility for additional treatment.<br>All burns should receive medical attention.          |
| In case of eye contact     | : | Cold product -<br>Flush eye with copious quantities of water.<br>Remove contact lenses, if present and easy to do. Continue rinsing.<br>If persistent irritation occurs, obtain medical attention.<br><br>Hot product -<br>If contact with hot product, immediately cool the burn area by flushing with large amounts of water.<br>Do not attempt to remove anything from the burn area.<br>Do not apply burn creams or ointments.<br>Remove contact lenses, if present and easy to do. Continue rinsing.<br>Cover the burn area loosely with a sterile dressing, if available.<br>Transport to the nearest medical facility for additional treatment. |

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ment.

All burns should receive medical attention.

If swallowed : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

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

Symptoms : Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.  
Hot product - Contact with the skin can cause severe burns, redness, swelling, blisters and/or tissue damage.  
Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance.  
Hot product - Contact with the eye can cause severe burns, redness, swelling, blurred vision, and may result in permanent loss of vision.  
Ingestion may result in nausea, vomiting and/or diarrhoea.  
Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye colour), fatigue, bleeding or easy bruising and sometimes pain and swelling in the upper right abdomen.

Skin irritation signs and symptoms may include a burning sensation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.

Damage to blood-forming organs may be evidenced by: a) fatigue and anaemia (RBC), b) decreased resistance to infection, and/or excessive bruising and bleeding (platelet effect).

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

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!  
Call a doctor or poison control center for guidance.  
Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire.  
Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

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### 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Hazardous combustion products may include:  
A complex mixture of airborne solid and liquid particulates and gases (smoke).  
Oxides of nitrogen  
Oxides of sulphur.  
Unidentified organic and inorganic compounds.  
Flammable vapours may be present even at temperatures below the flash point.  
The vapour is heavier than air, spreads along the ground and distant ignition is possible.  
Will float and can be reignited on surface water.  
Carbon monoxide may be evolved if incomplete combustion occurs.

### 5.3 Advice for firefighters

Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

Specific extinguishing methods : Use water spray to cool unopened containers.

Further information : Keep adjacent containers cool by spraying with water.  
If possible remove containers from the danger zone.  
If the fire cannot be extinguished the only course of action is to evacuate immediately.  
Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : 6.1.1 For non emergency personnel:  
Do not breathe fumes, vapour.  
Do not operate electrical equipment.  
6.1.2 For emergency responders:  
May ignite on surfaces at temperatures above auto-ignition temperature.  
Shut off leaks, if possible without personal risks.  
Remove all possible sources of ignition in the surrounding area.  
Use appropriate containment to prevent uncontrolled release.  
Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.  
Attempt to disperse vapour or to direct its flow to a safe location for example using fog sprays.

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Take precautionary measures against static discharges.

### 6.2 Environmental precautions

Environmental precautions : Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Take precautionary measures against static discharges. For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

### 6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., Notify authorities if any exposure to the general public or the environment occurs or is likely to occur., For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet., Local authorities should be advised if significant spillages cannot be contained., Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Technical measures : Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Prevent spillages. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. Ensure that all local regulations regarding handling and storage facilities are followed.

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- Maintenance and Fuelling Activities - Avoid inhalation of vapours and contact with skin.
- Advice on safe handling : Ensure that all local regulations regarding handling and storage facilities are followed.  
Avoid prolonged or repeated contact with skin.  
When using do not eat or drink.  
Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.  
Earth all equipment.  
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.  
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.  
Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.  
If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.  
Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges.  
These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements.  
These activities may lead to static discharge e.g. spark formation.  
Restrict line velocity during pumping in order to avoid generation of electrostatic discharge ( $\leq 1$  m/s until fill pipe submerged to twice its diameter, then  $\leq 7$  m/s). Avoid splash filling.  
Do NOT use compressed air for filling, discharging, or handling operations.
- Product Transfer : This material has the potential to be a static accumulator.  
Proper grounding and bonding procedures should be used during all bulk transfer operations.
- Avoid splash filling Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling ( for large storage tanks) before opening hatches or manholes. Keep containers closed when not in use. Refer to guidance under Handling section.
- Hygiene measures : Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.



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

- Further information on storage stability : Drum and small container storage:  
Drums should be stacked to a maximum of 3 high.  
Use properly labeled and closable containers.  
Prevent ingress of water.  
Tank storage:  
Tanks must be specifically designed for use with this product.  
Bulk storage tanks should be diked (bunded).  
Locate tanks away from heat and other sources of ignition.  
Tanks should be fitted with heating coils.  
Ensure heating coils are always covered with product (minimum 15 cm).  
Electrostatic charges will be generated during pumping.  
Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk.  
The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.  
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.  
Store at ambient temperature.
- Packaging material : Suitable material: For containers, or container linings use mild steel, stainless steel., Aluminium may also be used for applications where it does not present an unnecessary fire hazard., Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product., For container linings, use amine-adduct cured epoxy paint., For seals and gaskets use: graphite, PTFE, Viton A, Viton B.  
Unsuitable material: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene., However, some may be suitable for glove materials.
- Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

### 7.3 Specific end use(s)

- Specific use(s) : Please refer to section 16 and/or the annexes for the registered uses under REACH.
- See additional references that provide safe handling practices for liquids that are determined to be static accumulators:  
American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or  
National Fire Protection Agency 77 (Recommended Practices

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on Static Electricity).  
IEC/TS 60079-32-1: Electrostatic hazards, guidance  
Consult the technical guidelines for the use of this substance/mixture.

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

None established.

##### Biological occupational exposure limits

No biological limit allocated.

##### Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
residues (petroleum), hydrocracked	Workers	Inhalation	Acute systemic effects	4700 mg/m <sup>3</sup> /15 mins (aerosol)
residues (petroleum), hydrocracked	Workers	Dermal	Long-term systemic effects	0,065 mg/kg 8h
residues (petroleum), hydrocracked	Workers	Inhalation	Long-term systemic effects	0,12 mg/m <sup>3</sup> /8h (aerosol)
residues (petroleum), hydrocracked	Consumers	Oral	Long-term systemic effects	0,015 mg/kg 24h

##### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Remarks:	Substance is a hydrocarbon with a complex, unknown or variable composition. Conventional methods of deriving PNECs are not appropriate and it is not possible to identify a single representative PNEC for such substances.	

#### 8.2 Exposure controls

##### Engineering measures

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.  
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

Use sealed systems as far as possible.

Firewater monitors and deluge systems are recommended.

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Local exhaust ventilation is recommended.

Eye washes and showers for emergency use.

##### General Information

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to

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breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Do not ingest. If swallowed, then seek immediate medical assistance.

### Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Eye protection : Wear goggles for use against liquids and gas.  
If a local risk assessment deems it so then chemical splash goggles may not be required and safety glasses may provide adequate eye protection.

Approved to EU Standard EN166.

Hand protection

Remarks : Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When handling heated product wear heat resistant gloves. When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.

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|--------------------------|--|
|                          | Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.  |
| Skin and body protection | : Wear chemical resistant gloves/gauntlets and boots. Where risk of splashing, also wear an apron.<br><br>Wear antistatic and flame-retardant clothing, if a local risk assessment deems it so.  |
| Respiratory protection   | : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. All respiratory protection equipment and use must be in accordance with local regulations.<br><br>Select a filter suitable for combined particulate/organic gases and vapours [Type A/Type P boiling point > 65°C (149°F)] meeting EN14387 and EN143. |
| Thermal hazards          | : When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.   |

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |                             |  |
|-----------------------------|--|
| Physical state              | : Waxy solid at room temperature.;Liquid at high temperatures. |
| Colour                      | : Pale yellow  |
| Odour                       | : characteristic   |
| Odour Threshold             | : Data not available   |
| Freezing point              | : Not applicable   |
| Pour point                  | Typical 35 °C<br>Method: ASTM D5950                            |
| Boiling point/boiling range | : 190 - 600 °CMethod: Unspecified                              |

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### Flammability

Flammability (solid, gas) : Not applicable

### Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit /  
Upper flammability limit : Typical 5 %(V)

Lower explosion limit /  
Lower flammability limit : Typical 0,5 %(V)

Flash point :  $\geq 110\text{ }^{\circ}\text{C}$   
Method: Unspecified

Auto-ignition temperature :  $> 250\text{ }^{\circ}\text{C}$

pH : Not applicable

### Viscosity

Viscosity, dynamic : Data not available

Viscosity, kinematic : Method: Unspecified  
Not applicable

Method: Unspecified  
Not applicable

8 - 10 mm<sup>2</sup>/s (40,0 °C)  
Method: Unspecified

### Solubility(ies)

Water solubility : negligible

Solubility in other solvents : Data not available

Partition coefficient: n-  
octanol/water : log Pow:  $> 6$   
(based on information on similar products)

Vapour pressure :  $\leq 0,4\text{ kPa}$  (38,0 °C)  
Method: Unspecified

Data not available (50,0 °C)  
Method: Unspecified

Relative density : Data not available

Density : 830 - 860 kg/m<sup>3</sup> (15,0 °C)  
Method: Unspecified

Relative vapour density :  $> 5$

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Particle characteristics	
Particle size	: Data not available

### 9.2 Other information

Explosive properties	: Classification Code: Not classified.
Oxidizing properties	: Not applicable
Evaporation rate	: Data not available
Conductivity	: Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10,000 pS/m., Whether a liquid is nonconductive or semiconductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Oxidises on contact with air.

### 10.2 Chemical stability

Stable under normal conditions of use.

### 10.3 Possibility of hazardous reactions

Hazardous reactions	: No hazardous reaction is expected when handled and stored according to provisions
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### 10.4 Conditions to avoid

Conditions to avoid	: Avoid heat, sparks, open flames and other ignition sources.
	In certain circumstances product can ignite due to static electricity.

### 10.5 Incompatible materials

Materials to avoid	: Strong oxidising agents.
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### 10.6 Hazardous decomposition products

Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

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### SECTION 11: Toxicological information

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

Information on likely routes of exposure : Skin and eye contact are the primary routes of exposure although exposure may occur through inhalation or following accidental ingestion.

##### Acute toxicity

###### Product:

Acute oral toxicity : LD50 Oral (Rat): > 5.000 mg/kg  
Remarks: Low toxicity

Acute inhalation toxicity : LC 50 (Rat): >1 - <=5 mg/l  
Exposure time: 4 h  
Remarks: Harmful if inhaled.

Acute dermal toxicity : LD 50 (Rabbit): > 2.000 mg/kg  
Remarks: Low toxicity

##### Skin corrosion/irritation

###### Product:

Remarks : Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.  
Contact with hot material can cause thermal burns which may result in permanent skin damage.  
Slightly irritating to skin.  
Based on available data, the classification criteria are not met.

##### Serious eye damage/eye irritation

###### Product:

Remarks : Hot product may cause severe eye burns and/or blindness.

##### Respiratory or skin sensitisation

###### Product:

Remarks : Not a sensitiser.  
Based on available data, the classification criteria are not met.

##### Germ cell mutagenicity

###### Product:

Genotoxicity in vivo : Remarks: Positive in in-vitro, but negative in in-vivo mutagenicity assays.

Germ cell mutagenicity- As- : This product does not meet the criteria for classification in

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assessment      categories 1A/1B.

### Carcinogenicity

#### Product:

Remarks : Causes cancer in laboratory animals.

Remarks : Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies.  
Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

Carcinogenicity - Assessment : Category 1B

Material	GHS/CLP Carcinogenicity Classification
residues (petroleum), hydrocracked	Carcinogenicity Category 1B

### Reproductive toxicity

#### Product:

Effects on fertility :  
Remarks: Causes foetotoxicity at doses which are maternally toxic.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

### STOT - single exposure

#### Product:

Remarks : Inhalation of vapours or mists may cause irritation to the respiratory system.

### STOT - repeated exposure

#### Product:

Remarks : Causes damage to organs through prolonged or repeated exposure.

Target Organs : Blood, Liver, thymus

### Aspiration toxicity

#### Product:

Not an aspiration hazard., Based on available data, the classification criteria are not met.



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### 11.2 Information on other hazards

#### Endocrine disrupting properties

##### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### Further information

##### Product:

Remarks : Classifications by other authorities under varying regulatory frameworks may exist.

## SECTION 12: Ecological information

### 12.1 Toxicity

#### Product:

Toxicity to fish	:	Remarks: Harmful LL/EL/IL50 >10 <= 100 mg/l
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: Toxic LL/EL/IL50 > 1 <= 10 mg/l
Toxicity to algae/aquatic plants	:	Remarks: Very toxic. LL/EL/IL50 < 1 mg/l
Toxicity to fish (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.01 - <=0.1 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l
Toxicity to microorganisms	:	Remarks: LL/EL/IL50 > 100 mg/l Practically non toxic: Based on available data, the classification criteria are not met.

#### Components:

##### **residues (petroleum), hydrocracked:**

M-Factor (Acute aquatic toxicity) : 1

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### 12.2 Persistence and degradability

#### Product:

Biodegradability : Remarks: The volatile constituents will oxidize rapidly by photo-chemical reactions in air.  
Major constituents are inherently biodegradable.  
Not Persistent per IMO criteria.  
International Oil Pollution Compensation (IOPC) Fund definition:  
"A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340°C (645°F) and (b) at least 95% of which, by volume, distills at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

### 12.3 Bioaccumulative potential

#### Product:

Bioaccumulation : Remarks: Contains constituents with the potential to bioaccumulate.  
  
Remarks: Log Pow = 2 - 20

### 12.4 Mobility in soil

#### Product:

Mobility : Remarks: Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day., Large volumes may penetrate soil and could contaminate groundwater., Contains volatile components., Floats on water.  
  
Remarks: Floats on water.

### 12.5 Results of PBT and vPvB assessment

#### Product:

Assessment : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB..

### 12.6 Endocrine disrupting properties

#### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

#### Product:

Additional ecological infor- : Films formed on water may affect oxygen transfer and damage or-

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mation

ganisms.

Mineral oil does not cause chronic toxicity to aquatic organisms at concentrations less than 1 mg/l.

### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

- |                        |  |
|------------------------|--|
| Product                | : Recover or recycle if possible.<br>It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.<br>Do not dispose into the environment, in drains or in water courses.<br>Do not dispose of tank water bottoms by allowing them to drain into the ground.<br>Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.<br>MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships. |
| Contaminated packaging | : Send to drum recoverer or metal reclaimer.<br>Drain container thoroughly.<br>After draining, vent in a safe place away from sparks and fire.<br>Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums.<br>Do not pollute the soil, water or environment with the waste container.<br>Comply with any local recovery or waste disposal regulations.  |
| Local legislation      |  |
| Remarks                | : EU Waste Disposal Code (EWC):<br>13 07 01* fuel oil and diesel.<br>The number given to waste is associated with the appropriate usage. The user must decide if their particular use results in another waste code being assigned.<br><br>Disposal should be in accordance with applicable regional, national, and local laws and regulations.<br>Local regulations may be more stringent than regional or national requirements and must be complied with.   |

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### SECTION 14: Transport information

#### 14.1 UN number or ID number

ADN	: 3082
ADR	: 3082
RID	: 3082
IMDG	: 3082
IATA	: 3082

#### 14.2 UN proper shipping name

ADN	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Heavy heating oil)
ADR	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
RID	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel oil, residual, Heavy fuel oil)
IMDG	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel oil, residual, Heavy fuel oil)
IATA	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuel oil, residual, Heavy fuel oil)

#### 14.3 Transport hazard class(es)

ADN	: 9
ADR	: 9
RID	: 9
IMDG	: 9
IATA	: 9

#### 14.4 Packing group

ADN	
Packing group	: III
Classification Code	: M6
Labels	: 9 (N1, CMR, F)
CDNI Inland Water Waste Agreement	: NST 3270 Heavy fuel oil
ADR	
Packing group	: III
Classification Code	: M6
Hazard Identification Number	: 90
Labels	: 9
RID	

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Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

### IMDG

Packing group	:	III
Labels	:	9

### IATA

Packing group	:	III
Labels	:	9

## 14.5 Environmental hazards

### ADN

Environmentally hazardous	:	yes
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### ADR

Environmentally hazardous	:	yes
---------------------------	---	-----

### RID

Environmentally hazardous	:	yes
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### IMDG

Marine pollutant	:	yes
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## 14.6 Special precautions for user

Remarks	:	Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
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## 14.7 Maritime transport in bulk according to IMO instruments

MARPOL Annex 1 rules apply for bulk shipments by sea.

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## SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Not applicable
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Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	E1	ENVIRONMENTAL HAZARDS
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Volatile organic compounds	:	Volatile organic compounds (VOC) content: 0 %
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### Other regulations:

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The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Product is subject to Major accident risk decision 2015 (BRZO+) based on Seveso III directive (2012/18/EU).

Product meets one or more criteria set for the Dutch list of 'substances of concern' (zeer zorgwekkende stoffen (ZZS)).

### The components of this product are reported in the following inventories:

EINECS : All components listed.

TSCA : All components listed.

## 15.2 Chemical safety assessment

A Chemical Safety Assessment was performed for this substance.

## SECTION 16: Other information

### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet;

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SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

### Further information

Other information : This product is intended for use in closed systems only.

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

A vertical bar (|) in the left margin indicates an amendment from the previous version.

### Classification of the mixture:

Carc. 1B	H350
Acute Tox. 4	H332
Repr. 2	H361
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410
	EUH066

### Classification procedure:

Expert judgement and weight of evidence determination.
Expert judgement and weight of evidence determination.
Expert judgement and weight of evidence determination.
Expert judgement and weight of evidence determination.
Expert judgement and weight of evidence determination.
Expert judgement and weight of evidence determination.
Expert judgement and weight of evidence determination.

### Identified Uses according to the Use Descriptor System

#### Uses - Worker

Title : Manufacture of substance  
- Industrial

#### Uses - Worker

Title : Use as an intermediate  
- Industrial

#### Uses - Worker

Title : Distribution of substance  
- Industrial

#### Uses - Worker

Title : Formulation & (re)packing of substances and mixtures  
- Industrial

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### Uses - Worker

Title : Use as a fuel  
- Industrial

### Uses - Worker

Title : Use as a fuel  
- Professional

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NL / EN



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### Exposure Scenario - Worker

<b>300000000022</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Manufacture of substance- Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU3, SU8, SU9 <b>Process Categories:</b> PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 <b>Environmental Release Categories:</b> ERC1, ERC4, ESVOC SpERC 1.1.v1
<b>Scope of process</b>	Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2		OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1		Control of Worker Exposure	
Product Characteristics			
Physical form of product		Liquid, vapour pressure < 0.5 kPa at STP	
Concentration of the Substance in Mixture/Article		Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use			
Covers daily exposures up to 8 hours (unless stated differently).			
Other Operational Conditions affecting Exposure			
Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.			
Contributing Scenarios		Risk Management Measures	
General measures (carcinogens).		Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.	

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General exposures (closed systems)	Handle substance within a closed system. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Process samplingOutdoor	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 15 minutes. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Wear suitable gloves tested to EN374.
Marine vessel/barge (un)loading.	Avoid carrying out activities involving exposure for more than 4 hours Transfer via enclosed lines. Clear transfer lines prior to de-coupling. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Road tanker/rail car loading.	Ensure material transfers are under containment or extract ventilation. , or: Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Bulk product storage	Store substance within a closed system. Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1,1E+07
Fraction of Regional tonnage used locally:	5,2E-02

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Annual site tonnage (tonnes/year):	6,0E+05
Maximum daily site tonnage (kg/day):	2,0E+06
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1,0E-04
Release fraction to wastewater from process (initial release prior to RMM):	3,0E-06
Release fraction to soil from process (initial release prior to RMM):	1,0E-04
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process re-release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	85,9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0,0
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	88,8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88,8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	2,3E+06
Assumed domestic sewage treatment plant flow (m3/d)	10.000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
During manufacturing no waste of the substance is generated.	
<b>Conditions and measures related to external recovery of waste</b>	
During manufacturing no waste of the substance is generated.	

### SECTION 3

### EXPOSURE ESTIMATION

#### Section 3.1 - Health

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

### Section 3.2 -Environment

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

### SECTION 4

### GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.  
Risk Management Measures are based on qualitative risk characterisation.

#### Section 4.2 -Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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>).

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### Exposure Scenario - Worker

<b>300000000023</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Use as an intermediate- Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU3, SU8, SU9 <b>Process Categories:</b> PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 <b>Environmental Release Categories:</b> ERC6a, ESVOC SpERC 6.1a.v1
<b>Scope of process</b>	Use of substance as an intermediate within closed or contained systems (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2		OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1		Control of Worker Exposure	
Product Characteristics			
Physical form of product		Liquid, vapour pressure < 0.5 kPa at STP	
Concentration of the Substance in Mixture/Article		Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use			
Covers daily exposures up to 8 hours (unless stated differently).			
Other Operational Conditions affecting Exposure			
Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.			
Contributing Scenarios		Risk Management Measures	
General measures (carcinogens).		Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.	

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General exposures (closed systems)	Handle substance within a closed system. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
General exposures (closed systems)Process samplingOutdoor	Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 15 minutes. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Wear suitable gloves tested to EN374.
Marine vessel/barge (un)loading.	Transfer via enclosed lines. Clear transfer lines prior to de-coupling. Avoid carrying out activities involving exposure for more than 4 hours Retain drain downs in sealed storage pending disposal or for subsequent recycle. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Road tanker/rail car loading.	Ensure material transfers are under containment or extract ventilation. , or: Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Bulk product storage	Store substance within a closed system. Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1,3E+05

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Fraction of Regional tonnage used locally:	1,2E-01
Annual site tonnage (tonnes/year):	1,5E+04
Maximum daily site tonnage (kg/day):	5,0E+04
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1,0E-05
Release fraction to wastewater from process (initial release prior to RMM):	1,0E-05
Release fraction to soil from process (initial release prior to RMM):	1,0E-03
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process re-release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	54,0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	88,8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88,8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1,9E+05
Assumed domestic sewage treatment plant flow (m3/d)	2.000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
This substance is consumed during use and no waste of substance is generated.	
<b>Conditions and measures related to external recovery of waste</b>	
This substance is consumed during use and no waste of substance is generated.	

### SECTION 3

### EXPOSURE ESTIMATION

#### Section 3.1 - Health

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

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indicated.

### Section 3.2 -Environment

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

### SECTION 4

### GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.  
Risk Management Measures are based on qualitative risk characterisation.

#### Section 4.2 -Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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>).



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### Exposure Scenario - Worker

<b>300000000024</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Distribution of substance- Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU3 <b>Process Categories:</b> PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 <b>Environmental Release Categories:</b> ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SpERC 1.1b.v1
<b>Scope of process</b>	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.		
Contributing Scenarios	Risk Management Measures	
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.	

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General exposures (closed systems)	Handle substance within a closed system. Avoid carrying out activities involving exposure for more than 4 hours Sample via a closed loop or other system to avoid exposure Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Process samplingOutdoor	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 15 minutes. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Wear suitable gloves tested to EN374.
Marine vessel/barge (un)loading.	Transfer via enclosed lines. Clear transfer lines prior to de-coupling. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Road tanker/rail car loading.	Ensure material transfers are under containment or extract ventilation. , or: Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Bulk product storage	Store substance within a closed system. Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Product sampling.	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 15 minutes. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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	nation with 'basic' employee training.
<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1,1E+07
Fraction of Regional tonnage used locally:	2,0E-03
Annual site tonnage (tonnes/year):	2,3E+04
Maximum daily site tonnage (kg/day):	7,7E+04
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	1,0E-04
Release fraction to wastewater from process (initial release prior to RMM):	1,0E-07
Release fraction to soil from process (initial release prior to RMM):	1,0E-05
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process re-lease estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).	
No wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	88,8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88,8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	3,8E+05
Assumed domestic sewage treatment plant flow (m3/d)	2.000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or regional	

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regulations.

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

External recovery and recycling of waste should comply with applicable local and/or regional regulations.

## SECTION 3

### EXPOSURE ESTIMATION

#### Section 3.1 - Health

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

#### Section 3.2 -Environment

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

## SECTION 4

### GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.  
Risk Management Measures are based on qualitative risk characterisation.

#### Section 4.2 -Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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>).

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### Exposure Scenario - Worker

<b>300000000025</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Formulation & (re)packing of substances and mixtures- Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU3, SU10 <b>Process Categories:</b> PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 <b>Environmental Release Categories:</b> ERC2, ESVOC SpERC 2.2.v1
<b>Scope of process</b>	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.		
Contributing Scenarios	Risk Management Measures	
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.	

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

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	nation with specific activity training.
Bulk product storage	Store substance within a closed system. Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Product sampling.	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 15 minutes. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1,1E+07
Fraction of Regional tonnage used locally:	2,6E-03
Annual site tonnage (tonnes/year):	3,0E+04
Maximum daily site tonnage (kg/day):	1,0E+05
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	2,2E-03
Release fraction to wastewater from process (initial release prior to RMM):	5,0E-06
Release fraction to soil from process (initial release prior to RMM):	1,0E-04
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	54,0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0

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<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	88,8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88,8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1,1E+05
Assumed domestic sewage treatment plant flow (m3/d)	2.000
<b>Conditions and Measures related to external treatment of waste for disposal</b>	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
<b>Conditions and measures related to external recovery of waste</b>	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
<b>Section 3.1 - Health</b>	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

<b>Section 3.2 -Environment</b>	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	

<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
<b>Section 4.1 - Health</b>	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.	

<b>Section 4.2 -Environment</b>	
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.	



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Further details on scaling and control technologies are provided in SpERC factsheet ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).
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### Exposure Scenario - Worker

<b>300000000026</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Use as a fuel- Industrial
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU3 <b>Process Categories:</b> PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 <b>Environmental Release Categories:</b> ERC7, ESVOC SpERC 7.12a.v1
<b>Scope of process</b>	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

SECTION 2		OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1		Control of Worker Exposure	
Product Characteristics			
Physical form of product		Liquid, vapour pressure < 0.5 kPa at STP	
Concentration of the Substance in Mixture/Article		Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use			
Covers daily exposures up to 8 hours (unless stated differently).			
Other Operational Conditions affecting Exposure			
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.			
Contributing Scenarios		Risk Management Measures	
General measures (carcinogens).		Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.	
General exposures (closed		Handle substance within a closed system.	

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systems)	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
General exposures (closed systems)Product sampling.	Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 1 hour. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Bulk closed unloading.Outdoor	Transfer via enclosed lines. Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Drum/batch transfers	Ensure material transfers are under containment or extract ventilation. , or: Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Operation of solids filtering equipment	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Use as a fuel(closed systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Bulk product storage	Store substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than

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	4 hours Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1,1E+07
Fraction of Regional tonnage used locally:	1,4E-01
Annual site tonnage (tonnes/year):	1,5E+06
Maximum daily site tonnage (kg/day):	5,0E+06
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	300
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from process (initial release prior to RMM):	7,0E-04
Release fraction to wastewater from process (initial release prior to RMM):	4,4E-07
Release fraction to soil from process (initial release prior to RMM):	0
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by freshwater sediment.	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	87,7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	88,8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88,8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	5,2E+06
Assumed domestic sewage treatment plant flow (m3/d)	2.000

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## Hydrowax

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<b>Conditions and Measures related to external treatment of waste for disposal</b>
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Combustion emissions limited by required exhaust emission controls. Waste combustion emissions considered in regional exposure assessment.
---

<b>Conditions and measures related to external recovery of waste</b>
--

This substance is consumed during use and no waste of substance is generated.
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<b>SECTION 3</b>	<b>EXPOSURE ESTIMATION</b>
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<b>Section 3.1 - Health</b>
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The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
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<b>Section 3.2 -Environment</b>
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The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
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<b>SECTION 4</b>	<b>GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO</b>
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<b>Section 4.1 - Health</b>
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Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Risk Management Measures are based on qualitative risk characterisation.
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<b>Section 4.2 -Environment</b>
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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.
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Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
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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 ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).
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### Exposure Scenario - Worker

<b>300000000027</b>	
<b>SECTION 1</b>	<b>EXPOSURE SCENARIO TITLE</b>
<b>Title</b>	Use as a fuel- Professional
<b>Use Descriptor</b>	<b>Sector of Use:</b> SU22 <b>Process Categories:</b> PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 <b>Environmental Release Categories:</b> ERC9a, ERC9b, ESVOC SpERC 9.12b.v1
<b>Scope of process</b>	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

SECTION 2		OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1		Control of Worker Exposure	
Product Characteristics			
Physical form of product		Liquid, vapour pressure < 0.5 kPa at STP	
Concentration of the Substance in Mixture/Article		Covers use of substance/product up to 100% (unless stated differently).,	
Frequency and Duration of Use			
Covers daily exposures up to 8 hours (unless stated differently).			
Other Operational Conditions affecting Exposure			
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.			
Contributing Scenarios		Risk Management Measures	
General measures (carcinogens).		Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance. Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.	
General exposures (closed		Handle substance within a closed system.	

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systems)	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 1 hour. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
General exposures (closed systems)Product sampling.	Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 1 hour. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Bulk closed unloading.	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Ensure material transfers are under containment or extract ventilation. , or: Avoid carrying out activities involving exposure for more than 1 hour.
Drum/batch transfers	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Ensure material transfers are under containment or extract ventilation. , or: Avoid carrying out activities involving exposure for more than 1 hour.
Refueling.	Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 1 hour. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Use as a fuel(closed systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment cleaning and maintenance	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Drain down system prior to equipment opening or maintenance. Retain drain downs in sealed storage pending disposal or for

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	subsequent recycle. Clear spills immediately. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
<b>Section 2.2</b>	<b>Control of Environmental Exposure</b>
Substance is complex UVCB.	
Predominantly hydrophobic.	
<b>Amounts Used</b>	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	3,3E+05
Fraction of Regional tonnage used locally:	5,0E-04
Annual site tonnage (tonnes/year):	1,7E+02
Maximum daily site tonnage (kg/day):	4,6E+02
<b>Frequency and Duration of Use</b>	
Continuous release.	
Emission Days (days/year):	365
<b>Environmental factors not influenced by risk management</b>	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
<b>Other Operational Conditions affecting Environmental Exposure</b>	
Release fraction to air from wide dispersive use (regional only):	1,0E-04
Release fraction to wastewater from wide dispersive use:	1,0E-05
Release fraction to soil from wide dispersive use (regional only):	1,0E-05
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Common practices vary across sites thus conservative process release estimates used.	
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>	
Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).	
No wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
<b>Organisational measures to prevent/limit release from site</b>	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
<b>Conditions and Measures related to municipal sewage treatment plant</b>	
Estimated substance removal from wastewater via domestic sewage treatment (%)	88,8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	88,8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	2,3E+03
Assumed domestic sewage treatment plant flow (m3/d)	2.000



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

Combustion emissions limited by required exhaust emission controls.  
Waste combustion emissions considered in regional exposure assessment.

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

This substance is consumed during use and no waste of substance is generated.

## SECTION 3

### EXPOSURE ESTIMATION

#### Section 3.1 - Health

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

#### Section 3.2 -Environment

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

## SECTION 4

### GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.  
Risk Management Measures are based on qualitative risk characterisation.

#### Section 4.2 -Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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>).