Safety Data Sheet

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

1.1 Product identifier
FUEL OIL RESIDUAL

Registration Name: Fuel Oil, Residual

Registration Number: 01-2119474894-22-0097

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified Uses: Distribution of substance, Formulation & (re)packing of substances and mixtures, Manufacture of substance, Use as a fuel

1.3 Details of the supplier of the safety data sheet
Chevron Products UK Limited
1 Westferry Circus
Canary Wharf
London E14 4HA
United Kingdom
email : eumsds@chevron.com

1.4 Emergency telephone number
Transportation Emergency Response
Europe: 0044/(0)18 65 407333
Health Emergency
Europe: 0044/(0)18 65 407333
Product Information
Product Information: stopsltlon@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
DSD/DPD CLASSIFICATION: Carc. Cat. 2; R45 | Repro. Cat. 3; R63 | Xn; R48/21 | Xn; R20 | R66 | N; R50/53 |

CLP CLASSIFICATION: Carcinogen: Category 1B. Target organ toxicant (repeated exposure): Category 2. Reproductive toxicant (developmental): Category 2. Acute inhalation toxicant: Category 4. Chronic aquatic toxicant: Category 1.

2.2 Label elements
Under the criteria of Regulation (EC) No 1272/2008 (CLP):

Signal Word: Danger
Health Hazards: May cause cancer (H350). Suspected of damaging fertility or the unborn child (H361). Harmful if inhaled (H332).May cause damage to organs (Blood/Blood Forming Organs, Liver) through prolonged or repeated exposure (H373).
Environmental Hazards: Very toxic to aquatic life with long lasting effects (H410).

PRECAUTIONARY STATEMENTS:
Prevention: Obtain special instructions before use (P201). Do not handle until all safety precautions have been read and understood (P202). Do not breathe dust/fume/gas/mist/vapours/spray (P260). Avoid breathing dust/fume/gas/mist/vapours/spray (P261). Use only outdoors or in a well-ventilated area (P271). Use personal protective equipment as required (P281). Avoid release to the environment (P273).
Response: IF INHALED: (P304) Remove victim to fresh air and keep at rest in a position comfortable for breathing (P340). IF exposed or concerned: (P308) Get medical advice/attention (P313). Call a POISON CENTER or doctor/physician if you feel unwell (P312). Get medical advice/attention if you feel unwell (P314). Collect spillage (P391).
Storage: Store locked up (P405).
Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations (P501).

SUPPLEMENTAL INFORMATION: Repeated exposure may cause skin dryness or cracking (EUH066).

2.3 Other hazards Do not attempt rescue without supplied-air respiratory protection. Heating may release highly toxic and flammable hydrogen sulfide (H2S).

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances
This material is a substance.

COMPONENTS	EC NUMBER	SYMBOL / RISK PHRASES	AMOUNT
Fuel oil, residual	270-675-6	Xn/R20, T/Carc. Cat. 2/R45, Xn/R48/21, Xn/Repro. Cat. 3/R63, R66, N/R50/53	100 %weight

The full text of all R-phrases is shown in Section 16.

COMPONENTS	CAS NUMBER	EC NUMBER	REGISTRATION NUMBER	CLP CLASSIFICATION	AMOUNT
Fuel Oil, Residual	68476-33-5	270-675-6	01-2119474894-22-0097	Acute Tox. 4/H332; Aquatic Acute 1/H400;	100 %weight

				Aquatic Chronic 1/H410; Carc. 1B/H350; Repr. 2/H361d; STOT RE 2/H373	

The full text of all CLP H-statements is shown in Section 16.

SECTION 4 FIRST AID MEASURES

4.1 Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

4.2 Most important symptoms and effects, both acute and delayed

IMMEDIATE SYMPTOMS AND HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering.
Ingestion: Not expected to be harmful if swallowed.
Inhalation: May be harmful if inhaled. Hydrogen sulfide has a strong rotten-egg odor. However, with continued exposure and at high levels, H2S may deaden a person's sense of smell. If the rotten egg odor is no longer noticeable, it may not necessarily mean that exposure has stopped. At low levels, hydrogen sulfide causes irritation of the eyes, nose, and throat. Moderate levels can cause headache, dizziness, nausea, and vomiting, as well as coughing and difficulty breathing. Higher levels can cause shock, convulsions, coma, and death. After a serious exposure, symptoms usually begin immediately.

DELAYED OR OTHER SYMPTOMS AND HEALTH EFFECTS: This material may cause harm to the unborn child based on animal data. Prolonged or repeated exposure to this material may cause cancer.

4.3 Indication of any immediate medical attention and special treatment needed

Not applicable.

SECTION 5 FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

5.2 Special hazards arising from the substance or mixture

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

5.3 Advice for firefighters

This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Eliminate all sources of ignition in vicinity of spilled material. Refer to Sections 5 and 8 for more information.

6.2 Environmental precautions
Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater.

6.3 Methods and material for containment and cleaning up
Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil and dispose of in a manner consistent with applicable requirements. Place other contaminated materials in disposable containers and dispose of in a manner consistent with applicable requirements. Report spills to local authorities as appropriate or required.

6.4 Reference to other sections
See sections 8 and 13.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling
Do not get in eyes, on skin, or on clothing. Do not breathe vapor or fumes. Wash thoroughly after handling.
Unusual Handling Hazards: Toxic quantities of hydrogen sulfide (H2S) may be present in storage tanks and bulk transport vessels which contain or have contained this material. Persons opening or entering these compartments should first determine if H2S is present. See Exposure Controls/Personal Protection -Section 8. Do not attempt rescue of a person over exposed to H2S without wearing approved supplied-air or self-contained breathing equipment. If there is a potential for exceeding one-half the occupational exposure standard, monitoring of hydrogen sulfide levels is required. Since the sense of smell cannot be relied upon to detect the presence of H2S, the concentration should be measured by the use of fixed or portable devices.

7.2 Conditions for safe storage, including any incompatibilities
General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

7.3 Specific end use(s): Distribution of substance, Formulation & (re)packing of substances and mixtures, Manufacture of substance, Use as a fuel

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and

other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

8.1 Control parameters
No applicable occupational exposure limits exist for this material or its components. Consult local authorities for appropriate values.

DERIVED NO EFFECT LEVEL (DNEL)/DERIVED MINIMAL EFFECT LEVEL (DMEL)

Worker

Substance Name	Type	Dermal	Inhalation
Fuel Oil, Residual	DNEL, Acute, Systemic	-	4700 mg aerosol/m3/ 15 min
Fuel Oil, Residual	DNEL, Long-term, Systemic	.065 mg/kg/8h	.12 mg aerosol/m3/8h

As this material is a UVCB (Unknown or Variable composition, Complex reaction product or Biological origin), derivation of a single, representative PNEC value for this substance using conventional methods is not possible.

8.2 Exposure controls
ENGINEERING CONTROLS:
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits. If user operations generate airborne material, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure.

PERSONAL PROTECTIVE EQUIPMENT
No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: Nitrile Rubber, Polyvinyl Alcohol (PVA) (Note: Avoid contact with water. PVA deteriorates in water.), Viton.
Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: If exposure to harmful levels of airborne material may occur when working with this material, wear an approved respirator that provides protection, such as: Supplied-Air Respirator. If material is heated and emits hydrogen sulfide, determine if airborne concentrations are below the occupational exposure limit for hydrogen sulfide. If not, wear an approved positive pressure air-supplying respirator. For more information on hydrogen sulfide, see Chevron MSDS No. 301.Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

ENVIRONMENTAL EXPOSURE CONTROLS:
See relevant Community environmental protection legislation or the Annex, as applicable.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

9.1 Information on basic physical and chemical properties
Appearance
Color: Black

Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Melting Point: Not Applicable
Initial Boiling Point: 160°C (320°F) - 600°C (1112°F)
Flashpoint: (Pensky-Martens Closed Cup) 62 °C (144 °F) (Min)
Flammability (solid, gas): No Data Available
Flammability (Explosive) Limits (% by volume in air):
Lower: No Data Available Upper: No Data Available
Vapor Pressure: <0.04 psi (Estimated)
Vapor Density (Air = 1): >1 (Estimated)
Solubility: Soluble in hydrocarbons; insoluble in water
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: 263 °C (505 °F)
Decomposition temperature: No Data Available
Viscosity: 10 mm2/s - 55 mm2/s @ 100°C (212°F)
Explosive Properties: No Data Available
Oxidising properties: No Data Available
9.2 Other Information: No Data Available

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity: This material is not expected to react.
10.2 Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
10.3 Possibility of hazardous reactions: Hazardous polymerization will not occur.
10.4 Conditions to Avoid: Not applicable
10.5 Incompatible materials to avoid: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
10.6 Hazardous decomposition products: Hydrogen Sulfide (Elevated temperatures), None known (None expected)

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.
Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

SECTION 12 ECOLOGICAL INFORMATION

12.1 Toxicity

This material is expected to be very toxic to aquatic organisms. The product has not been tested. The statement has been derived from products of a similar structure and composition.

12.2 Persistence and degradability

This material is not expected to be readily biodegradable. May cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from products of a similar structure and composition.

12.3 Bioaccumulative potential

Bioconcentration Factor: No Data Available
Octanol/Water Partition Coefficient: No data available

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This product is not, or does not contain, a substance that is a potential PBT or a vPvB.

12.6 Other adverse effects

No other adverse effects identified.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations. In accordance with European Waste Catalogue (E.W.C.) the codification is the following: 13 07 01

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult appropriate Dangerous Goods Regulations for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

ADR/RID

14.1 UN number: UN3082
14.2 UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
14.3 Transport hazard class(es): 9
14.4 Packing group: III
14.5 Environmental hazards: Yes
14.6 Special precautions for user: Road Tunnel Restriction Code: (E);

ICAO

14.1 UN number: UN3082

14.2 UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
14.3 Transport hazard class(es): 9
14.4 Packing group: III
14.5 Environmental hazards: Yes
14.6 Special precautions for user: Not applicable

IMO

14.1 UN number: UN3082
14.2 UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
14.3 Transport hazard class(es): 9
14.4 Packing group: III
14.5 Environmental hazards: MARINE POLLUTANT
14.6 Special precautions for user: Not applicable
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: Not applicable

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
REGULATORY LISTS SEARCHED:
01=EU. Directive 76/769/EEC: Restrictions on the marketing and use of certain dangerous substances.
02=EU Directive 90/394/EEC: Carcinogens at work.
03=EU Directive 92/85/EEC: Pregnant or breastfeeding workers.
04=EU Directive 96/82/EC (Seveso II): Article 9.
05=EU Directive 96/82/EC (Seveso II): Articles 6 and 7.
06=EU Directive 98/24/EC: Chemical agents at work.
07=EU Directive 2004/37/EC: On the protection of workers.
08=EU Regulation EC No. 689/2008: Annex 1, Part 1.
09=EU Regulation EC No. 689/2008: Annex 1, Part 2.
10=EU Regulation EC No. 689/2008: Annex 1, Part 3.
11=EU Regulation EC No. 850/2004: Prohibiting and restricting persistant organic pollutants (POPs).
12=EU REACH, Annex XVII: Restrictions on manufacture, placing on the market and use of certain dangerous substances, mixture & article.
13=EU REACH, Annex XIV: Candidate List of Substances of Very High Concern for Authorization (SVHC).

The following components of this material are found on the regulatory lists indicated.
Fuel oil, residual 01, 02, 03, 06

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), IECSC (China), PICCS (Philippines), TSCA (United States).

15.2 Chemical safety assessment
Yes

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: This is a new Material Safety Data Sheet.
Revision Date: JUNE 20, 2011

Full text of R-phrases:
R20; Harmful by inhalation.
R45; May cause cancer.

R50/53; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R63; Possible risk of harm to the unborn child.
R66; Repeated exposure may cause skin dryness or cracking.
R48/21; Harmful: danger of serious damage to health by prolonged exposure in contact with skin.

Full text of CLP H-statements:
H350; May cause cancer
H332; Harmful if inhaled
H400; Very toxic to aquatic life
H410; Very toxic to aquatic life with long lasting effects
H361d; Suspected of damaging the unborn child
H373; May cause damage to organs through prolonged or repeated exposure

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
CVX - Chevron	CAS - Chemical Abstract Service Number
NQ - Not Quantifiable	

Prepared according to the criteria of EU Regulation 1907/2006 by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Annex

Manufacture of substance - Industrial

Section 1	
Title	
Manufacture of substance	
Use Descriptor	
Sector(s) of Use	3, 8, 9
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
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).	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	

Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP. [OC3]
Vapour Pressure	See above
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently). [G2]
Human factors not influenced by risk management	Not Applicable
Other Operational Conditions affecting exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature). [OC7] Assumes a good basic standard of occupational hygiene is implemented . [G1]

Contributing Scenarios Specific Risk Management Measures and Operating Conditions

General Measures

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures.Consider the need for risk based health surveillance. [G20]

[CS15] General exposures (closed systems)

Handle substance within a closed system. [E47]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS36] Laboratory activities

Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. [E12]
Wear suitable gloves tested to EN374. [PPE15]

[CS39] Equipment cleaning and maintenance

Drain down and flush system prior to equipment break-in or maintenance . [E55]
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. . [PPE17]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]

[CS510] Marine vessel/barge (un)loading

Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Transfer via enclosed lines. [E52]
Clear transfer lines prior to de-coupling. [E39]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS511] Road tanker/rail car loading

Ensure material transfers are under containment or extract ventilation. [E66]

Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS85] Bulk product storage
Store substance within a closed system. [E84]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[OC9+CS2] Outdoor, Procress Sampling.
Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 15 minutes. [OC26]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

Section 2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. [PrC3] Predominantly hydrophobic. [PrC4a]

Amounts used

Fraction of EU tonnage used in region [A1]: 0.1
Regional use tonnage (tonnes/year) [A2]: 1.10E+07
Fraction of Regional tonnage used locally [A3]: 0.052
Annual site tonnage (tonnes/year) [A5]: 6.00E+05
Maximum daily site tonnage (kg/day) [A4]: 2.00E+06

Frequency and duration of use

Continuous release. [FD2]
Emission Days (days/year) [FD4]: 300

Environmental factors not influenced by risk management

Local freshwater dilution factor [EF1]: 10
Local marine water dilution factor [EF2]: 100

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM) [OOC4]: 0.0001
Release fraction to wastewater from process (initial release prior to RMM) [OOC5]: 3.00E-06
Release fraction to soil from process (initial release prior to RMM) [OOC6]: 0.0001

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used. [TCS1]

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

Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion). [TCR1j]
Onsite wastewater treatment required. [TCR13]
Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14]
Treat air emission to provide a typical removal efficiency of (%) [TCR7]: 90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) [TCR8]: 85.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%) [TCR10]: 0

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils. [OMS2]
Sludge should be incinerated, contained or reclaimed. [OMS3]

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%) [STP3]: 88.8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs

(%) [STP4]: 88.8 Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) [STP6]: 2.30E+06 Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 10000
Conditions and measures related to external treatment of waste for disposal
During manufacturing no waste of the substance is generated. [ETW4]
Conditions and measures related to external recovery of waste
During manufacturing no waste of the substance is generated. [ERW2]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model . [EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23] Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. [G33] Available hazard data do not support the need for a DNEL to be established for other health effects. [G36] Risk Management Measures are based on qualitative risk characterisation. [G37]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1] Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2] Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. [DSU3] Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). [DSU4] Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file ¿ ¿Site-Specific Production¿ worksheet. [DSU6] If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. [DSU8] Consequently a Tier 2 assessment was performed in an attempt to refine conservative exposure assumptions and improve risk estimates. The Tier 2 analysis demonstrates that no refineries have RCRs>1 (see Appendix 4 and PETRORISK file in IUCLID section 13 - 36Tier 2 Site Specific Production worksheet36).

Distribution of substance - Industrial

Section 1	
Title	
Distribution of substance	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	

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.
Assessment Method
See Section 3.
Section 2 Operational conditions and risk management measures

Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP. [OC3]
Vapour Pressure	See above
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently). [G2]
Human factors not influenced by risk management	Not Applicable
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. [G15] Assumes a good basic standard of occupational hygiene is implemented . [G1]

Contributing Scenarios Specific Risk Management Measures and Operating Conditions

General Measures

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures.Consider the need for risk based health surveillance. [G20]

[CS137] Product sampling

Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 15 minutes. [OC26]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS15] General exposures (closed systems)

Handle substance within a closed system. [E47]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Sample via a closed loop or other system to avoid exposure. [E8]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS36] Laboratory activities

Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. [E12]
Wear suitable gloves tested to EN374. [PPE15]

[CS39] Equipment cleaning and maintenance

Drain down and flush system prior to equipment break-in or maintenance . [E55]
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. . [PPE17]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]

[CS510] Marine vessel/barge (un)loading
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Transfer via enclosed lines. [E52]
Clear transfer lines prior to de-coupling. [E39]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS511] Road tanker/rail car loading
Ensure material transfers are under containment or extract ventilation. [E66]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS85] Bulk product storage
Store substance within a closed system. [E84]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[OC9+CS2] Outdoor, Procress Sampling.
Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 15 minutes. [OC26]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

Section 2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. [PrC3] Predominantly hydrophobic. [PrC4a]

Amounts used

Fraction of EU tonnage used in region [A1]: 0.1
Regional use tonnage (tonnes/year) [A2]: 1.10E+07
Fraction of Regional tonnage used locally [A3]: 0.002
Annual site tonnage (tonnes/year) [A5]: 23000
Maximum daily site tonnage (kg/day) [A4]: 77000

Frequency and duration of use

Continuous release. [FD2]
Emission Days (days/year) [FD4]: 300

Environmental factors not influenced by risk management

Local freshwater dilution factor [EF1]: 10
Local marine water dilution factor [EF2]: 100

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM) [OOC4]: 0.0001
Release fraction to wastewater from process (initial release prior to RMM) [OOC5]: 1.00E-07
Release fraction to soil from process (initial release prior to RMM) [OOC6]: 0.00001

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used. [TCS1]

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

Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).

[TCR1j] No wastewater treatment required. [TCR6] Treat air emission to provide a typical removal efficiency of (%) [TCR7]: 90 Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) [TCR8]: 0 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%) [TCR10]: 0
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. [OMS2]: 54 Sludge should be incinerated, contained or reclaimed. [OMS3]: 0
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment (%) [STP3]: 88.8 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) [STP4]: 88.8 Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) [STP6]: 3.80E+05 Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model . [EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23] Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. [G33] Available hazard data do not support the need for a DNEL to be established for other health effects. [G36] Risk Management Measures are based on qualitative risk characterisation. [G37]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1] Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. [DSU3] Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). [DSU4]

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

Section 1
Title

Formulation & (re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of Use	3, 10
Process Categories	1, 2, 3, 8a, 8b, 15
Environmental Release Categories	2
Specific Environmental Release Category	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities	
Assessment Method	
See Section 3.	
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. [OC3]
Vapour Pressure	See above
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently). [G2]
Human factors not influenced by risk management	Not Applicable
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. [G15] Assumes a good basic standard of occupational hygiene is implemented . [G1]
Contributing Scenarios Specific Risk Management Measures and Operating Conditions	

General Measures

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures.Consider the need for risk based health surveillance. [G20]

[CS137] Product sampling

Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 15 minutes. [OC26]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS15+CS2] General exposures (closed systems). Process sampling

Handle substance within a closed system. [E47]
Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 15 minutes. [OC26]

Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS15] General exposures (closed systems)
Handle substance within a closed system. [E47]
Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS36] Laboratory activities
Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. [E12]
Wear suitable gloves tested to EN374. [PPE15]

[CS39] Equipment cleaning and maintenance
Drain down and flush system prior to equipment break-in or maintenance . [E55]
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. . [PPE17]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]

[CS510] Marine vessel/barge (un)loading
Transfer via enclosed lines. [E52]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Clear transfer lines prior to de-coupling. [E39]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS511] Road tanker/rail car loading
Ensure material transfers are under containment or extract ventilation. [E66]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS85] Bulk product storage
Store substance within a closed system. [E84]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS8] Drum/batch transfers
Ensure material transfers are under containment or extract ventilation. [E66]
Avoid carrying out activities involving exposure for more than 1 hour. [OC27]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

Section 2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. [PrC3] Predominantly hydrophobic. [PrC4a]

Amounts used

Fraction of EU tonnage used in region [A1]: 0.1
Regional use tonnage (tonnes/year) [A2]: 1.10E+07
Fraction of Regional tonnage used locally [A3]: 0.0026
Annual site tonnage (tonnes/year) [A5]: 30400
Maximum daily site tonnage (kg/day) [A4]: 1.00E+05

Frequency and duration of use

Continuous release. [FD2] Emission Days (days/year) [FD4]: 300
Environmental factors not influenced by risk management
Local freshwater dilution factor [EF1]: 10 Local marine water dilution factor [EF2]: 100
Other given operational conditions affecting environmental exposure
Release fraction to air from process (initial release prior to RMM) [OOC4]: 0.0022 Release fraction to wastewater from process (initial release prior to RMM) [OOC5]: 5.00E-06 Release fraction to soil from process (initial release prior to RMM) [OOC6]: 0.0001
Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites thus conservative process release estimates used. [TCS1]
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion). [TCR1j] If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. [TCR9] Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14] Treat air emission to provide a typical removal efficiency of (%) [TCR7]: 0 Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) [TCR8]: 54 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%) [TCR10]: 0
Organisation measures to prevent/limit release from site
Do not apply industrial sludge to natural soils. [OMS2] Sludge should be incinerated, contained or reclaimed. [OMS3]
Conditions and measures related to municipal sewage treatment plant
Estimated substance removal from wastewater via domestic sewage treatment (%) [STP3]: 88.8 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) [STP4]: 88.8 Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) [STP6]: 1.10E+05 Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]
Section 3 Exposure Estimation
3.1. Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. [G21]
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model . [EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23] Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. [G33] Available hazard data do not support the need for a DNEL to be

established for other health effects. [G36] Risk Management Measures are based on qualitative risk characterisation. [G37]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1] Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2] Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. [DSU3] Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). [DSU4]

Use as a fuel - Industrial

Section 1	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of Use	3
Process Categories	1, 2, 3, 8a, 8b, 16
Environmental Release Categories	7
Specific Environmental Release Category	ESVOC SpERC 7.12a.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP. [OC3]
Vapour Pressure	See above
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently). [G13]
Amount used	Not Applicable
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently). [G2]
Human factors not influenced by risk management	Not Applicable
Other Operational Conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. [G15] Assumes a good basic standard of occupational hygiene is implemented . [G1]
Contributing Scenarios Specific Risk Management Measures and Operating Conditions	
General Measures Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.Where there is potential for	

exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely.Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures.Consider the need for risk based health surveillance. [G20]

[CS117] Operation of solids filtering equipment
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) . [E11]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS15+CS137] General exposures (closed systems). Product sampling
Handle substance within a closed system. [E47]
Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 1 hour. [OC27]
Provide a good standard of controlled ventilation (10 to 15 air changes per hour). [E40]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS15] General exposures (closed systems)
Handle substance within a closed system. [E47]
Sample via a closed loop or other system to avoid exposure. [E8]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS39] Equipment cleaning and maintenance
Drain down and flush system prior to equipment break-in or maintenance . [E55]
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. . [PPE17]
Retain drain downs in sealed storage pending disposal or for subsequent recycle. [ENVT4]

[CS85] Bulk product storage
Store substance within a closed system. [E84]
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) . [E11]
Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[CS8] Drum/batch transfers
Ensure material transfers are under containment or extract ventilation. [E66]
, or:
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) . [E11]
Avoid carrying out activities involving exposure for more than 1 hour. [OC27]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[GEST_12l+CS107] Use as a fuel (closed systems)
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

[OC9+CS502] Outdoor. Bulk closed unloading
Transfer via enclosed lines. [E52]

Avoid carrying out activities involving exposure for more than 4 hours. [OC28]
Wear chemically resistant gloves (tested to EN374) in combination with ¿basic¿ employee training. [PPE16]

Section 2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. [PrC3] Predominantly hydrophobic. [PrC4a]

Amounts used

Fraction of EU tonnage used in region [A1]: 0.1
Regional use tonnage (tonnes/year) [A2]: 1.10E+07
Fraction of Regional tonnage used locally [A3]: 0.14
Annual site tonnage (tonnes/year) [A5]: 1.50E+06
Maximum daily site tonnage (kg/day) [A4]: 5.00E+06

Frequency and duration of use

Continuous release. [FD2]
Emission Days (days/year) [FD4]: 300

Environmental factors not influenced by risk management

Local freshwater dilution factor [EF1]: 10
Local marine water dilution factor [EF2]: 100

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM) [OOC4]: 0.0007
Release fraction to wastewater from process (initial release prior to RMM) [OOC5]: 4.40E-07
Release fraction to soil from process (initial release prior to RMM) [OOC6]: 0.01

Technical conditions and measures at process level (source) to prevent release

Common practices vary across sites thus conservative process release estimates used. [TCS1]: 0

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

Risk from environmental exposure is driven by freshwater sediment. [TCR1b]
Onsite wastewater treatment required. [TCR13]
Prevent discharge of undissolved substance to or recover from onsite wastewater. [TCR14]
Treat air emission to provide a typical removal efficiency of (%) [TCR7]: 95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) [TCR8]: 87.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%) [TCR10]: 0

Organisation measures to prevent/limit release from site

Do not apply industrial sludge to natural soils. [OMS2]
Sludge should be incinerated, contained or reclaimed. [OMS3]

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%) [STP3]: 88.8
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) [STP4]: 88.8
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) [STP6]: 5.20E+06
Assumed domestic sewage treatment plant flow (m3/d) [STP5]: 2000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Section 3 Exposure Estimation

3.1. Health

Not Applicable
3.2. Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model . [EE2]
Section 4 Guidance to check compliance with the Exposure Scenario
4.1. Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. [G23] Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. [G33] Available hazard data do not support the need for a DNEL to be established for other health effects. [G36] Risk Management Measures are based on qualitative risk characterisation. [G37]
4.2. Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. [DSU1] Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. [DSU2] Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. [DSU3] Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). [DSU4]