

SAFETY DATA SHEET



Revision: 03 February 2025 Version: 1.0

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830 AS AMENDED
BY UK REACH REGULATIONS SI 2019/758

HVO, V3019

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

1.1 Product identifier

Product name	Renewable hydrocarbons (diesel type fraction)
Product description	V3019 – Hydrotreated Vegetable Oil, Renewable hydrocarbons (diesel type fraction)
Trade Name	Hydrotreated Vegetable Oil
Product code	HVO , V3019
CAS No.	928771-01-1
EC No.	700-571-2
UK-REACH Registration No.	UK-01-3270249828-1-XXXX

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

Identified Use(s)	No.	Exposure Scenario	Page:
	1	Formulation & (re)packing of substances and mixtures	10
	2	Distribution of substance	13
	3	Use as an intermediate	16
	4	Use as a fuel	19
Uses advised against		Anything other than the above.	

1.3 Details of the supplier of the safety data sheet

Company Identification	Vitol SA Place des Bergues 3 1201 Geneva Switzerland
Telephone	+31 10 498 7200
Fax	+31 10 452 9545
E-mail (competent person)	xreach@vitol.com

1.4 Emergency Telephone Number

Emergency Phone No.	+44 (0) 1235 239 670, 24/7
Language(s) spoken:	All official European languages.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 The retained CLP Regulation (EU) No 1272/2008, as amended for Great Britain	Asp. Tox. 1; H304 EUH066
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2.2 Label elements

Product name	According to the retained CLP Regulation (EU) No 1272/2008, as amended for Great Britain
Contains:	Renewable hydrocarbons (diesel type fraction) Not applicable

Hazard Pictogram(s)



Signal Word(s)

DANGER

Hazard Statement(s)

H304: May be fatal if swallowed and enters airways.

Precautionary Statement(s)

P301+P310: IF SWALLOWED: Immediately call a doctor.
P331: Do NOT induce vomiting.

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P405: Store locked up.
P501: Dispose of contents/container to hazardous waste collection point.

Supplemental information

EUH066: Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards

Not classified as PBT or vPvB. Does not cause endocrine disruption.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

SUBSTANCE	CAS No.	EC No.	UK-REACH Registration No.	%W/W
Renewable hydrocarbons (diesel type fraction)	928771-01-1	700-571-2	UK-01-3270249828-1-XXXX	100

SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Self-protection of the first aider

Eliminate sources of ignition. Do not breathe vapour. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact. Contaminated clothing should be laundered before reuse. Do not ingest. If swallowed then seek immediate medical assistance.

Inhalation

If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If irritation develops and persists, get medical attention. Remove clothing and wash thoroughly before use. Repeated exposure may cause skin dryness or cracking. Wash affected skin with soap and water. If skin irritation or rash occurs: Get medical advice/attention.

Skin contact

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, get medical attention.

Ingestion

IF SWALLOWED: Immediately call a doctor. Do not induce vomiting because of risk of aspiration into the lungs. Do not give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If unconscious, place in recovery position and get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

May be fatal if swallowed and enters airways. Repeated exposure may cause skin dryness or cracking.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Extinguish with sand or dry chemical, Foam, Carbon dioxide, Water fog or dry powder.

Unsuitable extinguishing media

Do not use water jet. Direct water jet may spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.

5.2 Special hazards arising from the substance or mixture

5.3 Advice for firefighters

Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

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Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- | | | |
|------------|--|--|
| 6.1 | Personal precautions, protective equipment and emergency procedures | Stop leak if safe to do so. Ensure suitable personal protection during removal of spillages. Avoid all contact. Keep upwind. Eliminate sources of ignition. Ensure suitable personal protection during removal of spillages. Keep away from fire, sparks and heated surfaces - no smoking. |
| 6.2 | Environmental precautions | Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. |
| 6.3 | Methods and material for containment and cleaning up | Sweep up and shovel into waste drums or plastic bags. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete. Small amounts can be collected using absorbent material. Pay attention to the fire and health hazards caused by the product. |
| 6.4 | Reference to other sections | See Section: 8, 13 |

SECTION 7: HANDLING AND STORAGE

- | | | |
|------------|---|--|
| 7.1 | Precautions for safe handling | Use only outdoors or in a well-ventilated area. Avoid all contact. Do not ingest. Use personal protective equipment as required. See Section: 8. Keep away from fire, sparks and heated surfaces - no smoking. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned. |
| 7.2 | Conditions for safe storage, including any incompatibilities | Ground/bond container and receiving equipment. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in the original container. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue. |
| | Storage temperature | Keep cool. Protect from sunlight. |
| | Storage measures | Keep only in the original container. |
| | Incompatible materials | None Known |
| 7.3 | Specific end use(s) | See Section: 1.2 |

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- | | | |
|--------------|-------------------------------------|-----------------|
| 8.1 | Control parameters | |
| 8.1.1 | Occupational exposure limits | Not established |
| 8.1.2 | Biological limit value | Not established |
| 8.1.3 | PNECs and DNELs | |

Human Health (DNEL)

Workers	Long Term	Inhalation (mg/m ³) Systemic effects	147mg/m ³
		Dermal (mg/kg bw/day) Systemic effects	42mg/kg bw/day
Consumer	Long Term	Inhalation (mg/m ³) Systemic effects	94mg/m ³
		Dermal (mg/kg bw/day) Systemic effects	18mg/kg bw/day
		Oral (mg/kg bw/day) Systemic effects	18mg/kg bw/day

Environmental Parameters (PNECs)

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Freshwater (mg/L)	Not applicable
Marine water (µg/L)	Not applicable
Freshwater Sediment (mg/kg Sediment dw)	Not applicable
Marine water Sediment (mg/kg Sediment dw)	Not applicable
Sewage treatment plant (mg/L)	Not applicable
Soil (mg/kg soil dw)	Not applicable
Air	0.00126
Secondary poisoning (g/kg food)	No indication of bioaccumulation potential.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure adequate ventilation to remove vapours, fumes, dust etc. Guarantee that the eye flushing systems and safety showers are located close to the working place.

8.2.2 Individual protection measures, such as personal protective equipment

Keep good industrial hygiene. Wash contaminated clothing before reuse.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/ face protection



Wear eye protection with side protection (EN166).

Skin protection



Wear suitable chemical resistant protective gloves for frequent or prolonged operations tested to EN374 with an acceptable permeation test. Contaminated gloves should be carefully rinsed with water before reuse. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Respiratory protection



When the product is heated / In case of inadequate ventilation wear respiratory protection.

Thermal hazards

Not applicable

8.2.3 Environmental exposure controls

Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Liquid
Odour	Not established
Odour threshold	Not established
pH	Not established
Melting point/freezing point	-20 °C
Initial boiling point and boiling range	242°C
Flash point	64°C at 1013 hPa [Closed cup]
Evaporation rate	Not established
Flammability (solid, gas)	Not established
Upper/lower flammability or explosive limits	Not established
Vapour pressure	87.1Pa at 25°C
Vapour density	Not established
Relative density	0.772 at 20°C
Solubility(ies)	0.075mg/L at 25°C (in water)
Partition coefficient: n-octanol/water	Log Kow (Log Pow): 8.4 at 20°C
Auto-ignition temperature	204°C at 1013 hPa
Decomposition temperature	Not established

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Viscosity	3.97mm ² /s (static) at 20°C
Explosive properties	Not explosive
Oxidising properties	Not oxidising

9.2 Other information None known

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Stable under normal conditions
10.2 Chemical stability	Stable under normal conditions
10.3 Possibility of hazardous reactions	Hazardous polymerisation will not occur.
10.4 Conditions to avoid	Keep away from heat, sources of ignition and direct sunlight.
10.5 Incompatible materials	None Known
10.6 Hazardous decomposition products	Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects	
Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. LD50: >2000 (Rat) mg/kg bw/day (guideline EU Method B.1)
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. LC50: 4467 ppm (rat) (OECD 403)
Acute toxicity - Skin contact	Based upon the available data, the classification criteria are not met. LD50 (dermal) mg/kg: > 2000 mg/kg bw/day (guideline EU Method B.3)
Skin corrosion/irritation	Based upon the available data, the classification criteria are not met. Non-irritant (rabbit) (EU Method B.4)
Serious eye damage/irritation	Based upon the available data, the classification criteria are not met. Non-irritant (rabbit) (EU Method B.5)
Respiratory or skin sensitisation	Repeated exposure may cause skin dryness or cracking. Sensitisation (guinea pig) – Negative (EU Method B.6)
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met. There is no evidence of mutagenic potential. (EU Method B.13/14)
Carcinogenicity	Based upon the available data, the classification criteria are not met. No evidence of carcinogenicity.
Reproductive toxicity	Based upon the available data, the classification criteria are not met. No evidence of reproductive effects. (NOAEL (rat) (PO) 1000 mg/kg bw/day (nominal)) (OECD Guideline 416)
STOT - Single Exposure	Based upon the available data, the classification criteria are not met.
STOT - Repeated Exposure	Based upon the available data, the classification criteria are not met. NOAEL (rat): 1000 mg/kg bw/day
Aspiration hazard	Asp. Tox. 1; H304: May be fatal if swallowed and enters airways. Kinematic viscosity: 3.97mm ² /s (static) at 20°C
11.2 Other information	None known

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity	Based upon the available data, the classification criteria are not met. LL50 (Oncorhynchus mykiss (Rainbow trout)) (96h): >1000 mg/L LC50 (Oncorhynchus mykiss (Rainbow trout)) (96h): >1000 mg/L
12.2 Persistence and degradability	Readily biodegradable. Degradation rate (%): 82 after 28d (% degradation (CO ₂ evolution)) (OECD Guideline 301 B)
12.3 Bioaccumulative potential	Substance is complex UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance
12.4 Mobility in soil	Immobile Koc: >4.27

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12.5	Results of PBT and vPvB assessment	log Koc: >5.63 EU Method C.19 Not classified as PBT or vPvB.
12.6	Other adverse effects	None known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1	Waste treatment methods	Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue. Containers must not be punctured or destroyed by burning, even when empty.
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SECTION 14: TRANSPORT INFORMATION

	ADR/RID	ADN	IMDG	IATA/ICAO
14.1	UN number or ID number	1202	1202	1202
14.2	UN proper shipping name	DIESEL FUEL (Flash point more than 60 °C and not more than 100 °C)	DIESEL FUEL (Flash point more than 60 °C and not more than 100 °C)	DIESEL FUEL (Flash point more than 60 °C and not more than 100 °C)
14.3	Transport hazard class(es)	3	3	3
14.4	Packing group	III	III	III
14.5	Environmental hazards	Not classified	Not classified	Not classified as a Marine Pollutant.
14.6	Special precautions for user	See Section: 2		
14.7	Maritime transport in bulk according to IMO instruments	Not applicable		
14.8	Additional information	None		

SECTION 15: REGULATORY INFORMATION

15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture	
15.1.1	EU regulations	None assigned
	Authorisations and/or restrictions on use	
	GB regulations	None assigned
	Authorisations and/or restrictions on use	
15.1.2	National regulations	
	Germany	Water hazard class: slightly hazardous to water (WGK 1)
15.2	Chemical Safety Assessment	For this substance a chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Not applicable – V1.0

References:

Chemical Safety Report
Existing ECHA registration for Renewable hydrocarbons (diesel type fraction) (CAS No. 928771-01-1)

Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830. Compiled in accordance with REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

Legend

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: European Agreement on the International Transport of Dangerous Goods by Inland Waterways
CAS: Chemical Abstracts Service

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CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DNEL	Derived no effect level
EC	European Community
EU	European Union
IATA	IATA: International Air Transport Association
ICAO	ICAO: International Civil Aviation Organization
IMDG	IMDG: International Maritime Dangerous Goods
LC50	Lethal Concentration at which 50% of the population is killed
LD50	Lethal Dose at which 50% of the population is killed
LTEL	Long term exposure limit
MARPOL	The International Convention for the Prevention of Pollution from Ships
OECD	Organisation for Economic Cooperation and Development
PBT	PBT: Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	RID: Regulations concerning the international railway transport of dangerous goods
UN	United Nations
vPvB	vPvB: very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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Annex to the extended Safety Data Sheet (eSDS)

See below -

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NAME - Renewable hydrocarbons (diesel type fraction)

CAS No. : 928771-01-1

EC No. : 700-571-2

Summary of Parameters

Physical parameters			
Vapour pressure (Pa)		87.1 Pa at 25°C	
Partition Coefficient (log K _{OW})		Log Kow (Log Pow): 8.4 at 20°C	
Solubility (Water) (mg/l)		0.075mg/L at 25°C (in water)	
Molecular weight		>142.3 - <285.5	
Biodegradability		Readily biodegradable. Degradation rate (%): 82 after 28d (% degradation (CO ₂ evolution)) (OECD Guideline 301 B)	
Human Health (DNEL)			
Workers	Long Term	Inhalation (mg/m ³) Systemic effects	147mg/m ³
		Dermal (mg/kg bw/day) Systemic effects	42mg/kg bw/day
Consumer	Long Term	Inhalation (mg/m ³) Systemic effects	94mg/m ³
		Dermal (mg/kg bw/day) Systemic effects	18mg/kg bw/day
		Oral (mg/kg bw/day) Systemic effects	18mg/kg bw/day
Environmental Parameters (PNECs)			
Freshwater (mg/L)		Not applicable	
Marine water (µg/L)		Not applicable	
Freshwater Sediment (mg/kg Sediment dw)		Not applicable	
Marine water Sediment (mg/kg Sediment dw)		Not applicable	
Sewage treatment plant (mg/L)		Not applicable	
Soil (mg/kg soil dw)		Not applicable	
Air		0.00126	
Secondary poisoning (g/kg food)		No indication of bioaccumulation potential.	

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Contributing Scenarios

PROC Codes

PROC1 Use in closed process, no likelihood of exposure

PROC2 Use in closed, continuous process with occasional controlled exposure

PROC3 Use in closed batch process (synthesis or formulation)

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises

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PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15 Use as laboratory reagent
PROC16 Using material as fuel sources, limited exposure to unburned product to be expected
PROC28 Manual maintenance (cleaning and repair) of machinery

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Exposure Scenario 1 - Formulation & (re)packing of substances and mixtures

1.0 Contributing Scenarios	
Process category [PROC]	PROC1 Use in closed process, no likelihood of exposure (closed systems) PROC1 Use in closed process, no likelihood of exposure (Storage) PROC2 Use in closed, continuous process with occasional controlled exposure (closed systems) PROC2 Use in closed, continuous process with occasional controlled exposure (Storage) PROC3 Use in closed batch process (synthesis or formulation) PROC3 Use in closed batch process (synthesis or formulation) (Elevated temperature) PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (Transfer from/pouring from containers) PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (Cleaning) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Bulk transfers) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Drum/batch transfers) PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15 Use as laboratory reagent PROC28 Manual maintenance (cleaning and repair) of machinery
Environmental release categories [ERC]	ERC2 Formulation of preparations
Specific Environmental Release Categories SPERC	ESVOC SPERC 2.2.v2

2.0 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid - paste/slurry/suspension
Concentration of substance in product	100%
Frequency and duration of use	
Exposure duration per day	PROC1 (closed systems) PROC1 (Storage) PROC2 (closed systems) PROC2 (Storage) PROC3 (closed systems) PROC3 (Elevated temperature) PROC4 PROC5 PROC8a (Transfer from/pouring from containers) PROC8a (Cleaning) PROC8b (Bulk transfers) PROC9 PROC15 PROC28 PROC8b (Drum/batch transfers)
Exposure duration per year	300
Other operational conditions affecting worker exposure	
Area of use	All PROC's
Operating temperature	All other PROC's
	PROC3 (Elevated temperature)

General measures applicable to all activities

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Consider technical advances and process upgrades (including automation) for the elimination of releases. minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance Where there is potential for exposure: restrict access to authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenario; clear up spills immediately and dispose of waste safely. Ensure safe

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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.

Organisational measures

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

PROC1 (closed systems) PROC1 (Storage)	Occupational Health and Safety Management System: Advanced Use in closed process, no likelihood of exposure. Room ventilation: Good (3 to 5 ACH)
PROC2 (closed systems) PROC2 (Storage)	Occupational Health and Safety Management System: Advanced Closed continuous process with occasional controlled exposure Room ventilation: Good (3 to 5 ACH)
PROC3 (closed systems)	Occupational Health and Safety Management System: Advanced Closed batch process with occasional controlled exposure Room ventilation: Good (3 to 5 ACH)
PROC4 PROC5 PROC8a (Transfer from/pouring from containers) PROC8b (Bulk transfers) PROC8b (Drum/batch transfers) PROC9 PROC14 PROC15	Occupational Health and Safety Management System: Advanced Room ventilation: Good (3 to 5 ACH)
PROC3 (Elevated temperature) PROC8a (Cleaning) PROC28	Occupational Health and Safety Management System: Advanced Local exhaust ventilation: Yes, specifically designed fixed capturing hood, on tool extraction or enclosing hoods (assumed effectiveness >= 90-95%) Room ventilation: Good (3 to 5 ACH)

Risk management measures related to human health

Respiratory protection	All PROC's	Not required
Hand and/or Skin protection	All PROC's	Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)
Eye Protection	All PROC's	Not required

2.2 Control of environmental exposure

Amounts used

Fraction of EU tonnage used in region:	100 %
Percentage of tonnage used at regional scale	100 %
Regional use tonnage (tons/year):	1.5E6
Local fraction (%)	1
Annual site tonnage (tons/year):	<= 3E4
Maximum daily site tonnage (kg/day):	100,000

Environment factors not influenced by risk management

Flow rate of receiving surface water (m ³ /d):	2.00E+06
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Operational conditions

Emission days (days/year):	300
Release fraction to air from process (initial release prior to RMM):	2.25
Release fraction to water from process (initial release prior to RMM)	4.80E-04
Release fraction to soil from process (initial release prior to RMM):	0.01
Release fraction to waste from process (initial release prior to RMM)	4
Release fraction to air from process	2.3
Release fraction to water from process	6.35E-06

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Release fraction to waste from process	4.0	
Technical and organisational conditions and measures		
<i>Oil-water separation (e.g. via oil water separators, oil skimmers, or dissolved air flotation) is required</i>		
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 (%):	98.7	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m ³ (%):	2.00E+06	
Conditions and measures related to municipal sewage treatment plant		
Discharge rate of STP	>= 2E3 m ³ /day	
Application of the STP sludge on agricultural soil	No	
Degradation effectiveness (%)	94.63% (Water)	
Conditions and measures related to external treatment of waste for disposal		
Residual raw materials and are in some cases recycled and fed back into the process reactor to improve efficiencies. In other cases, residues and by-products are used as raw materials for other downstream applications (EU, 2016). Wastewater generated during cleaning and maintenance operations is directed to a waste water treatment plant for biological degradation. Atmospheric release of waste vapor may be ameliorated using wet scrubbers, thermal oxidizers, solid adsorbents, membrane separators, biofilters, and/or cold oxidizers for trapping residual vapours. All unrecovered waste is handled as an industrial waste that can be incinerated or in some cases re-distilled.		
Substance release quantities after risk management measures		
Release to waste water from process (mg/l)	0%	
Maximum allowable site tonnage (MSafe) (kg/d):	5.51E+06	
Release to waste water from process	Estimated release factor (%)	5E-4%
	Local release rate (kg/day)	0.5 kg/day
Release to air from process	Estimated release factor (%)	0.5%
	Local release rate (kg/day)	500
Release to soil from process	Estimated release factor (%)	0.01%
	Local release rate (kg/day)	-

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model) | ECETOC TRA

Process category [PROC]	Inhalation		Dermal		Combined
	inhalation exposure (mg/m ³)	Risk characterisation ratio (RCR)	dermal exposure(mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1 (closed systems)	0.083	< 0.01	3.4E-3	< 0.01	< 0.01
PROC1 (Storage)	0.083	< 0.01	3.4E-3	< 0.01	< 0.01
PROC2 (closed systems)	8.327	0.057	0.137	< 0.01	0.06
PROC2 (Storage)	8.327	0.057	0.137	< 0.01	0.06
PROC3 (closed systems)	24.98	0.17	0.069	< 0.01	0.172
PROC3 (Elevated temperature)	41.63	0.283	0.069	< 0.01	0.285
PROC4	41.63	0.283	0.686	0.016	0.3
PROC5	41.63	0.283	1.371	0.033	0.316
PROC8a (Transfer from/pouring from containers)	83.27	0.566	1.371	0.033	0.599
PROC8a (Cleaning)	8.327	0.057	1.371	0.033	0.089
PROC8b (Bulk transfers)	41.63	0.283	1.371	0.033	0.316
PROC8b (Drum/batch transfers)	41.63	0.283	1.371	0.033	0.316
PROC9	41.63	0.283	0.686	0.016	0.3
PROC14	41.63	0.283	0.343	< 0.01	0.291
PROC15	41.63	0.283	0.034	< 0.01	0.284
PROC28	8.327	0.057	1.371	0.033	0.089

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model) | PETRORISK

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environmental exposure	air	freshwater	marine water	soil	freshwater sediment	marine sediment
PEC	3.13E+01	1.59E-02	1.59E-03	1.04E-01	2.51E-01	2.53E-02

Indirect exposure to humans via the environment:

Exposure route	Exposure estimation (µg/kg/day)	Risk characterisation ratio (RCR)
Oral	3.94E-02	0.00E+00
Inhalation	1.41E+01	5.00E-04
Dermal	-	5.00E-04

4. Evaluation guidance to downstream user

For scaling see	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 support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Exposure assessment instrument/tool/method	Workers environmental exposure	TRA Workers 3.0 PETRORISK

Exposure Scenario 2 - Use as a fuel (Use at industrial sites)

1.0 Contributing Scenarios

Process category [PROC]	PROC1 Use in closed process, no likelihood of exposure (closed systems) PROC1 Use in closed process, no likelihood of exposure (Storage) PROC2 Use in closed, continuous process with occasional controlled exposure (closed systems) PROC2 Use in closed, continuous process with occasional controlled exposure (Storage) PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Bulk transfers) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Drum/batch transfers) PROC16 Using material as fuel sources, limited exposure to unburned product to be expected PROC28 Manual maintenance (cleaning and repair) of machinery
Chemical product category [PC]	PC13 Fuels
Environmental release categories [ERC]	ERC7 Industrial use of substances in closed systems
Specific Environmental Release Categories SPERC	ESVOC SPERC 7.12a.v3

2.0 Operational conditions and risk management measures

2.1 Control of worker exposure

Product characteristics

Physical form of product	Liquid - paste/slurry/suspension
Concentration of substance in product	100%

Frequency and duration of use

Exposure duration per day	All PROC's	<= 8 h/day
Exposure duration per year	300 days	

Other operational conditions affecting worker exposure

Area of use	All PROC's	Indoor use
Operating temperature	All PROC's	<= 25 °C

General measures applicable to all activities

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

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

Organisational measures

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

PROC1 (closed systems) PROC1 (Storage)	Occupational Health and Safety Management System: Advanced Use in closed process, no likelihood of exposure. Room ventilation: Good (3 to 5 ACH)
PROC2 (closed systems) PROC2 (Storage)	Occupational Health and Safety Management System: Advanced Closed continuous process with occasional controlled exposure Room ventilation: Good (3 to 5 ACH)
PROC8b (Bulk transfers) PROC8b (Drum/batch transfers) PROC16	Occupational Health and Safety Management System: Advanced Room ventilation: Good (3 to 5 ACH)
PROC8a PROC28	Occupational Health and Safety Management System: Advanced Local exhaust ventilation: Yes, specifically designed fixed capturing hood, on tool extraction or enclosing hoods (assumed effectiveness >= 90-95%) Room ventilation: Good (3 to 5 ACH)

Risk management measures related to human health

Respiratory protection	All PROC's	Not required
Hand and/or Skin protection	All PROC's	Chemical resistant dermal protection with basic employee training. (effectiveness >= 90%)
Eye Protection	All PROC's	Not required

2.2 Control of environmental exposure

Amounts used

Fraction of EU tonnage used in region:	100 %
Percentage of tonnage used at regional scale	100 %
Regional use tonnage (tons/year):	10000
Annual site tonnage (tons/year):	<= 1E4
Maximum daily site tonnage (kg/day):	5,000,000

Environment factors not influenced by risk management

Flow rate of receiving surface water (m ³ /d):	2.00E+06
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Operational conditions

Emission days (days/year):	300
Release fraction to air from process (initial release prior to RMM):	5
Release fraction to water from process (initial release prior to RMM)	1.00E-03
Release fraction to soil from process (initial release prior to RMM):	0
Release fraction to waste from process (initial release prior to RMM)	2
Release fraction to air from process	5
Release fraction to water from process	0
Release fraction to waste from process	2

Technical and organisational conditions and measures

Oil-water separation (e.g. via oil water separators, oil skimmers, or dissolved air flotation) is required	
Treat air emission to provide a typical removal efficiency of (%):	0

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Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	98.7	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m ³ (%):	2.00E+06	
Conditions and measures related to municipal sewage treatment plant		
Discharge rate of STP	>= 2E3 m ³ /day	
Application of the STP sludge on agricultural soil	No	
Degradation effectiveness (%)	94.63% (Water)	
Conditions and measures related to external treatment of waste for disposal		
Residual raw materials and are in some cases recycled and fed back into the process reactor to improve efficiencies. In other cases, residues and by-products are used as raw materials for other downstream applications (EEA, 2016). Wastewater generated during cleaning and maintenance operations is directed to a waste water treatment plant for biological degradation. Atmospheric release of waste vapour may be ameliorated using wet scrubbers, thermal oxidizers, solid adsorbents, membrane separators, biofilters, and/or cold oxidizers for trapping residual vapours. All unrecovered waste is handled as an industrial waste that can be incinerated.		
Substance release quantities after risk management measures		
Release to waste water from process (mg/l)	0%	
Maximum allowable site tonnage (MSafe) (kg/d):	1.80E+06	
Release to surface water from process (%)	Estimated release factor	1E-3%
	Local release rate (kg/day)	50 kg/day
Release to air from process (%)	Estimated release factor	0.6%
	Local release rate (kg/day)	3E4 kg/day
Release to soil from process	Estimated release factor	0%
	Local release rate (kg/day)	-

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model) ECETOC TRA

Process category [PROC]	Inhalation		Dermal		Combined Risk characterisation ratio (RCR)
	inhalation exposure (mg/m ³)	Risk characterisation ratio (RCR)	dermal exposure(mg/kg bw/day)	Risk characterisation ratio (RCR)	
PROC1 (closed systems)	0.083	< 0.01	3.4E-3	< 0.01	< 0.01
PROC1 (Storage)	0.083	< 0.01	3.4E-3	< 0.01	< 0.01
PROC2 (closed systems)	8.327	0.057	0.137	< 0.01	0.06
PROC2 (Storage)	8.327	0.057	0.137	< 0.01	0.06
PROC8a	8.327	0.057	1.371	0.033	0.089
PROC8b (Bulk transfers)	41.63	0.283	1.371	0.033	0.316
PROC8b (Drum/batch transfers)	41.63	0.283	1.371	0.033	0.316
PROC16	8.327	0.057	0.034	< 0.01	0.057
PROC28	8.327	0.057	1.371	0.033	0.089

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model) PETRORISK

environmental exposure	air	freshwater	marine water	soil	freshwater sediment	marine sediment
PEC	4.65E-01	2.23E-04	2.22E-05	1.60E-03	7.07E-03	8.22E-04

Indirect exposure to humans via the environment:

Exposure route	Exposure estimation (µg/kg/day)	Risk characterisation ratio (RCR)
Oral	6.26E-04	3.48E-08
Inhalation	2.10E-01	7.82E-06
Dermal	-	7.85E-06

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4. Evaluation guidance to downstream user

For scaling see	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 support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Exposure assessment instrument/tool/method	Workers	TRA Workers 3.0
	environmental exposure	PETRRORISK

Exposure Scenario 3 - Use as a fuel (Widespread use by professional workers)

1.0 Contributing Scenarios

Process category [PROC]	PROC1 Use in closed process, no likelihood of exposure (closed systems) PROC1 Use in closed process, no likelihood of exposure (Storage) PROC2 Use in closed, continuous process with occasional controlled exposure (closed systems) PROC2 Use in closed, continuous process with occasional controlled exposure PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Bulk transfers) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Drum/batch transfers) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Refuelling) PROC16 Using material as fuel sources, limited exposure to unburned product to be expected PROC28 Manual maintenance (cleaning and repair) of machinery
Environmental release categories [ERC]	ERC9a Wide dispersive indoor use of substances in closed systems ERC9b Wide dispersive outdoor use of substances in closed systems
Specific Environmental Release Categories SPERC	ESVOC SPERC 9.12b.v3

2.0 Operational conditions and risk management measures

2.1 Control of worker exposure

Product characteristics

Physical form of product	Liquid - paste/slurry/suspension
Concentration of substance in product	100%

Frequency and duration of use

Exposure duration per day	All PROC's	<= 8 h/day
Exposure duration per year	365 days	

Other operational conditions affecting worker exposure

Area of use	PROC8b (Bulk transfers) PROC8b (Refuelling)	Outdoor
	PROC1 (closed systems) PROC1 (Storage) PROC2 (closed systems) PROC2 (Storage) PROC8b (Drum/batch transfers) PROC8a PROC16 PROC28	Indoor
Operating temperature	All PROC's	<= 25 °C

General measures applicable to all activities

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Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Organisational measures

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

PROC1 (closed systems) PROC1 (Storage)	Occupational Health and Safety Management System: Basic Use in closed process, no likelihood of exposure. Room ventilation: Good (3 to 5 ACH)
PROC2 (closed systems) PROC2 (Storage)	Occupational Health and Safety Management System: Advanced Closed continuous process with occasional controlled exposure Room ventilation: Good (3 to 5 ACH)
PROC8b (Bulk transfers) PROC8b (Refuelling)	Occupational Health and Safety Management System: Basic
PROC8b (Drum/batch transfers) PROC16	Occupational Health and Safety Management System: Basic Room ventilation: Good (3 to 5 ACH)
PROC8a PROC28	Occupational Health and Safety Management System: Basic Local exhaust ventilation: Yes, Provide specifically designed and maintained LEV (receiving hood type). (assumed effectiveness >= 80-90%) Room ventilation: Good (3 to 5 ACH)

Risk management measures related to human health

Respiratory protection	All PROC's	Not required
Hand and/or Skin protection	All PROC's	Chemical resistant dermal protection with basic employee training. (effectiveness >= 80%)
Eye Protection	All PROC's	Not required

2.2 Control of environmental exposure

Amounts used

Fraction of EU tonnage used in region:	10 %
Percentage of tonnage used at regional scale	0.05 %
Regional use tonnage (tons/year):	30000
Daily local widespread use amount (tonnes/day)	<= 0.041
Annual site tonnage (tons/year):	270000

Environment factors not influenced by risk management

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

Operational conditions

Emission days (days/year):	365 days
Release fraction to air from process (initial release prior to RMM):	0.5
Release fraction to water from process (initial release prior to RMM)	1.00E-04
Release fraction to soil from process (initial release prior to RMM):	0.025
Release fraction to waste from process (initial release prior to RMM)	2
Release fraction to air from process	0
Release fraction to water from process	1.00E-04
Release fraction to waste from process	2

Technical and organisational conditions and measures

The release to water is modified after biological treatment at a standard municipal sewage treatment plant (STP) with an effluent flow rate of 2,000 m ³ /day	
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 (%):	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m ³ (%):	2.00E+06

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Conditions and measures related to municipal sewage treatment plant (Biological STP)		
Degradation effectiveness (%)	94.63% (Water)	
Conditions and measures related to external treatment of waste for disposal		
Unused and spent products and solutions should be appropriately labelled and stored for eventual recovery or disposal as hazardous waste. A suitable unbreakable and closable container should be used when storing and shipping hazardous materials. The containers must be solvent compatible, leakproof, and free of any defects. Contaminated debris such as disposable paper towels, brushes, rollers, masks, transfer vessels, and wipes that may contain small amounts of solvent residue need to be handled as hazardous waste and properly disposed of in a manner that is consistent with local, regional, and national regulations. Direct disposal of waste into a municipal sewer system needs to conform with all applicable laws and regulations. A spill plan needs to be available that outlines the steps to be taken to minimize any potential health and environmental threats.		
Substance release quantities after risk management measures		
Release to waste water from process	2%	
Maximum allowable site tonnage (MSafe) (kg/d):	8.41E+03	
Release to waste water from process	Estimated release factor (%)	1E-4%
	Local release rate (kg/day)	4.11E-5 kg/day
Release to air from process	Estimated release factor (%)	0.5%
	Local release rate (kg/day)	- kg/day
Release to soil from process	Estimated release factor (%)	0.025%
	Local release rate (kg/day)	-

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model) ECETOC TRA

Process category [PROC]	Inhalation		Dermal		Combined
	inhalation exposure (mg/m ³)	Risk characterisation ratio (RCR)	dermal exposure(mg/kg bw/day)	Risk characterisation ratio (RCR)	Risk characterisation ratio (RCR)
PROC1 (closed systems)	0.083	< 0.01	6.8E-3	< 0.01	< 0.01
PROC1 (Storage)	0.083	< 0.01	6.8E-3	< 0.01	< 0.01
PROC2 (closed systems)	41.63	0.283	0.274	< 0.01	0.29
PROC2 (Storage)	41.63	0.283	0.274	< 0.01	0.29
PROC8a	41.63	0.283	2.742	0.065	0.349
PROC8b (Bulk transfers)	83.27	0.566	2.742	0.065	0.632
PROC8b (Drum/batch transfers)	83.27	0.566	2.742	0.065	0.632
PROC8b (Refuelling)	83.27	0.566	2.742	0.065	0.632
PROC16	8.327	0.057	0.068	< 0.01	0.058
PROC28	41.63	0.283	2.742	0.065	0.349

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model) PETRORISK

environmental exposure	air	freshwater	marine water	soil	freshwater sediment	marine sediment
PEC	1.85E-03	2.90E-06	2.09E-07	6.47E-05	3.63E-03	4.78E-04

Indirect exposure to humans via the environment:

Exposure route	Exposure estimation (µg/kg/day)	Risk characterisation ratio (RCR)
Oral	4.89E-05	2.72E-09
Inhalation	1.02E-03	3.79E-08
Dermal	-	4.06E-08

4. Evaluation guidance to downstream user

For scaling see Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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	Available hazard data do not support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Exposure assessment instrument/tool/method	Workers	TRA Workers 3.0
	environmental exposure	PETRORISK

Exposure Scenario 4 – (Consumer) Use as a fuel (Consumer uses)

1.0 Contributing Scenarios	
Chemical product category [PC]	PC13 Fuels
Environmental release categories [ERC]	ERC9a Wide dispersive indoor use of substances in closed systems ERC9b Wide dispersive outdoor use of substances in closed systems
Specific Environmental Release Categories SPERC	ESVOC SPERC 9.12c.v3

2.0 Operational conditions and risk management measures			
2.1 Control of worker exposure			
Product characteristics			
Physical form of product	Liquid - paste/slurry/suspension		
Concentration of substance in product	100%		
Other operational conditions affecting worker exposure			
Area of use	PC13 (Automotive refuelling) PC13 (Liquid Scooter Refuelling) PC13 (Garden equipment use)	Outdoor	
	PC13 (Garden equipment refueling) PC13 (Liquid: Home space heater fuel) PC13 (Liquid: Lamp oil)	Indoor	
Adults/children use	All PROC's	Covers adult use.	
Human factors not influenced by risk management			
Potential exposure area	Chemical product category [PC]	Category	Skin Contact (cm ²)
	PC13	Automotive refuelling	210 (Palm of one hand)
		Liquid Scooter Refuelling	210 (Palm of one hand)
		Garden equipment use	0
		Garden equipment refueling	420
		Liquid: Home space heater fuel	210 (Palm of one hand)
Liquid: Lamp oil		210 (Palm of one hand)	
Amount of product swallowed	Chemical product category [PC]	Category	Amount (mg)
	PC13	Automotive refuelling	0
		Liquid Scooter Refuelling	0
		Garden equipment use	0
		Garden equipment refueling	0
		Liquid: Home space heater fuel	0
Liquid: Lamp oil		0	
Frequency and duration of use			

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Exposure duration (hours/Event)	Chemical product category [PC]	Category	Duration (h/event)
	PC13	Automotive refuelling	0.05
		Liquid Scooter Refuelling	0.033
		Garden equipment use	2
		Garden equipment refueling	0.03
		Liquid: Home space heater fuel	0.03
		Liquid: Lamp oil	0.013
Frequency of use (events per day)	Chemical product category [PC]	Category	Use frequency (events per day)
	PC13	Automotive refuelling	1
		Liquid Scooter Refuelling	1
		Garden equipment use	1
		Garden equipment refueling	1
		Liquid: Home space heater fuel	1
		Liquid: Lamp oil	1
Amounts used (g/Event)	Chemical product category [PC]	Category	Mass (g)
	PC13	Automotive refuelling	<= 3.75E4
		Liquid Scooter Refuelling	<= 3.75E3
		Garden equipment use	<= 750
		Garden equipment refueling	<= 750
		Liquid: Home space heater fuel	<= 3E3
		Liquid: Lamp oil	<= 100
Operational conditions			
Use Dilution Factor	Chemical product category [PC]	Category	Use Dilution Factor
	PC13	Automotive refuelling	1
		Liquid Scooter Refuelling	1
		Garden equipment use	1
		Garden equipment refueling	1
		Liquid: Home space heater fuel	1
		Liquid: Lamp oil	1
Characteristics of the surroundings	Chemical product category [PC]	Category	Room size (m³)
	PC13	Automotive refuelling	100
		Liquid Scooter Refuelling	100
		Garden equipment use	100
		Garden equipment refueling	34
		Liquid: Home space heater fuel	20
		Liquid: Lamp oil	20
Air exchange rate			

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	Chemical product category [PC]	Category		air exchange rate (L/h)
	PC13	Automotive refuelling		2.5
		Liquid Scooter Refuelling		2.5
		Garden equipment use		2.5
		Garden equipment refueling		1.5
		Liquid: Home space heater fuel		0.61
		Liquid: Lamp oil		0.6
Respiratory protection	Use self-contained breathing apparatus.			
Hand/Skin protection	Wear chemical resistant apron, chemical protection suit.			
Eye Protection	Not required			
2.2 Control of environmental exposure				
Amounts used				
Fraction of EU tonnage used in region:	10			
Percentage of tonnage used at regional scale	0.05			
Regional use tonnage (tons/year):	100000			
Daily local widespread use amount (tonnes/day)	<= 1.37E-7			
Annual site tonnage (tons/year):	900000			
Maximum daily site tonnage (kg/day):	137			
Environment factors not influenced by risk management				
Local freshwater dilution factor:	10			
Local marine water dilution factor:	100			
Operational conditions				
Emission days (days/year):	365 days			
Release fraction to air from process (initial release prior to RMM):	0.2			
Release fraction to water from process (initial release prior to RMM)	2.00E-05			
Release fraction to soil from process (initial release prior to RMM):	0.005			
Release fraction to waste from process (initial release prior to RMM)	2			
Release fraction to air from process	0			
Release fraction to water from process	2.00E-05			
Release fraction to waste from process	2			
Technical and organisational conditions and measures				
Release to wastewater from process	The release to water is modified after biological treatment at a standard municipal sewage treatment plant (STP) with an effluent flow rate of 2,000 m3 /day			
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 (%):	0			
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m ³ (%):	2.00E+06			
Conditions and measures related to municipal sewage treatment plant				
Degradation effectiveness (%)	94.63% (Water)			
Conditions and measures related to external treatment of waste for disposal				
produced by consumers, it needs to be separated from normal trash and amassed for special handling. Many regional municipalities have established voluntary procedures for the identification, collection, and disposal of HHW in a safe and efficient manner. Once amassed, the HHW can be transported to collection sites where it is reused, recycled, or incinerated. The handling and disposal of hazardous waste needs to conform with established practices and local/regional regulations in order to minimize environmental release and the potential for ecological harm.				
Substance release quantities after risk management measures				
Release to waste water from process (mg/l)	0%			
Maximum allowable site tonnage (MSafe) (kg/d):	2.81E+04			
Release to waste water from process	Estimated release factor (%)	2E-5%		
	Local release rate (kg/day)	2.74E-11 kg/day		
Release to air from process	Estimated release factor (%)	0.01%		
	Local release rate (kg/day)	- kg/day		
Release to soil from process	Estimated release factor (%)	5E-3%		
	Local release rate (kg/day)	-		

3. Exposure estimation and reference to its source

SAFETY DATA SHEET



Revision: 03 February 2025 Version: 1.0

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830 AS AMENDED
BY UK REACH REGULATIONS SI 2019/758

HVO, V3019

3.1 Human exposure prediction

Exposure assessment (method/calculation model) EGRET 2.0

Chemical product category [PC]	Inhalation		Dermal		Oral		Combined inhalation exposure (mg/m ³)
	inhalation exposure (mg/m ³)	Risk characterisation ratio (RCR)	dermal exposure (mg/kg bw/day)	Risk characterisation ratio (RCR)	oral exposure mg/kg bw/day	Risk characterisation ratio (RCR)	
PC13 CS2	0.734	< 0.01	13.51	0.751	0	< 0.01	0.758
PC13 CS3	0.495	< 0.01	13.51	0.751	0	< 0.01	0.756
PC13 CS4	2.483	0.026	0	< 0.01	0	< 0.01	0.026
PC13 CS5	0.162	< 0.01	10.80	0.6	0	< 0.01	0.602
PC13 CS6	0.116	< 0.01	13.51	0.751	0	< 0.01	0.752
PC13 CS7	0.067	< 0.01	13.51	0.751	0	< 0.01	0.751

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model) PETRORISK

environmental exposure	air	freshwater	marine water	soil	freshwater sediment	marine sediment
PEC	1.85E-03	2.88E-06	2.08E-07	6.45E-05	3.63E-03	4.78E-04

Indirect exposure to humans via the environment:

Exposure route	Exposure estimation (µg/kg/day)	Risk characterisation ratio (RCR)
Oral	4.89E-05	2.72E-09
Inhalation	1.02E-03	3.79E-08
Dermal	-	4.06E-08

4. Evaluation guidance to downstream user

For scaling see	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 support the need for a DNEL to be established for other health effects. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).	
Exposure assessment instrument/tool/method	Consumer	EGRET 2.0
	environmental exposure	PETRORISK