SAFETY DATA SHEET

Revision: 03 March 2025 Version: 1.0

Renewable hydrocarbons (kerosene type fraction) V3020

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

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

1.1 Product identifier

Product name	Renewable hydrocarbons (kerosene type fraction)
Product description	V3020 - Renewable hydrocarbons (kerosene type fraction)
Trade Name	Renewable hydrocarbons (kerosene type fraction)
Product code	Renewable hydrocarbons (kerosene type fraction) - V3020
CAS No.	2252265-89-5
EC No.	931-082-4
REACH Registration No.	01-2119850115-46-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	Use as a fuel - industrial	13
3	Use as a fuel - Professional	15

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 Regulation (EC) No. 1272/2008 (CLP)

Flam. Liquid 3: H226
Asp. Tox. 1; H304
EUH066

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product name: Renewable hydrocarbons (kerosene type fraction)
Contains: Not applicable

Hazard Pictogram(s)

Signal Word(s): DANGER

Hazard Statement(s):
H226: Flammable liquid and vapour.
H304: May be fatal if swallowed and enters airways.

Precautionary Statement(s)	P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P240: Ground/bond container and receiving equipment. P280: Wear protective gloves/eye protection/face protection. P301+P310: IF SWALLOWED: Immediately call a doctor. P331: Do NOT induce vomiting. 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.	REACH Registration No.	%W/W
Renewable hydrocarbons (kerosene type fraction)	2252265-89-5	931-082-4	01-2119850115-46-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.
Skin contact	Remove clothing and wash thoroughly before use. Wash affected skin with soap and water. If skin irritation or rash occurs: Get medical advice/attention.
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. Slight eye irritation, skin irritation may arise in case of repeated or prolonged exposure. Nausea and diarrhoea might occur. 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
5.2	**Special hazards arising from the substance or mixture**	Flammable liquid and vapour. 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.
5.3	**Advice for firefighters**	Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. 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. Evacuate the area and keep personnel upwind. Avoid all contact. Eliminate sources of ignition. Ground/bond container and receiving equipment. Use explosion-proof equipment. Take action to prevent static discharges. 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. Ground/bond container and receiving equipment. Use explosion-proof equipment. 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. Use explosion-proof equipment. Keep away from fire, sparks and heated surfaces - no smoking. Keep good industrial hygiene. Avoid splash filling of bulk volumes when handling hot liquid product. Keep away from food, drinks and animal food. 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. Use explosion-proof equipment. Keep container tightly closed. 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	Keep away from oxidising agents, Synthetic materials.
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/m³) Systemic effects	147mg/m³
		Dermal (mg/kg bw/day) Systemic effects	42mg/kg bw/day

Environmental Parameters (PNECs)	
Freshwater (mg/L)	1.72E-06
Marine water (µg/L)	9.88E-08
Freshwater Sediment (mg/kg Sediment dw)	4.65E-05
Marine water Sediment (mg/kg Sediment dw)	3.73E-06
Sewage treatment plant (mg/L)	-
Soil (mg/kg soil dw)	6.31E-07
Air	5.37E-04
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

Physical state	Liquid
Colour	Colourless
Odour	Not established
Melting point/freezing point	-20 °C
Boiling point or initial boiling point and boiling range	125°C
Flammability	Flammable liquid and vapour.
Lower and upper explosion limit	Not established
Flash point	48°C at 1013 hPa [Closed cup]
Auto-ignition temperature	202°C at 1013 hPa

Decomposition temperature	Not established
pH	Not established
Kinematic viscosity	3.27mm²/s (static) at 20°C
Solubility(ies)	0.000413 mg/L at 25°C (in water)
Partition coefficient: n-octanol/water (log value)	Log Kow (Log Pow): 7.5 at 20°C
Vapour pressure	43 Pa at 25°C
Density and/or relative density	0.767 at 20°C
Relative vapour density	Not established
Particle characteristics	Not applicable

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**	Keep away from oxidising agents, Synthetic materials
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 hazard classes as defined in Regulation (EC) No 1272/2008

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): 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: 3.27mm²/s (static) at 20°C

11.2 Information on other hazards

11.2.1	Endocrine disrupting properties	This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.
11.2.2	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 (%): 79 after 28d (% degradation (CO2 evolution)) (OECD Guideline 301 F)
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: >427000 log Koc: >5.63 EU Method C.19 (OECD 121)
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Endocrine disrupting properties**	This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.
12.7	**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.
	Hazardous waste according to Directive 2008/98/EC (waste framework directive).	Hp3 - Flammable HP5 - Specific Target Organ Toxicity (STOT)/Aspiration Toxicity

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	ADN	IMDG	IATA/ICAO
14.1	**UN number or ID number**	1863	1863	1863	1863
14.2	**UN proper shipping name**	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE	FUEL, AVIATION, TURBINE ENGINE
14.3	**Transport hazard class(es)**	3	3	3	3
14.4	**Packing group**	III	III	III	III
14.5	**Environmental hazards**	Not classified	Not classified	Not classified as a Marine Pollutant.	Not classified
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**	
	Authorisations and/or restrictions on use	None assigned
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 (kerosene type fraction) (EC No.: 931-082-4)

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Legend

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

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vitol SA gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vitol SA accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Annex to the extended Safety Data Sheet (eSDS)

See below -

NAME - Renewable hydrocarbons (kerosene type fraction)

CAS No. : 2252265-89-5
EC No. : 931-082-4

Summary of Parameters

Physical parameters			
Melting Point (°C)			-20°C
Vapour pressure (Pa)			43 Pa at 25°C
Partition Coefficient (log K_{OW})			Log Kow (Log Pow): 7.5 at 20°C
Solubility (Water) (mg/l)			0.000413 mg/L at 25°C (in water)
Molecular weight			142 - 240
Biodegradability			Readily biodegradable. Degradation rate (%): 79 after 28d (% degradation (CO2 evolution)) (OECD Guideline 301 F)
Human Health (DNEL)			
Workers	Long Term	Inhalation (mg/m³) Systemic effects	147mg/m³
		Dermal (mg/kg bw/day) Systemic effects	42mg/kg bw/day

Environmental Parameters (PNECs)	
Freshwater (mg/L)	1.72E-06
Marine water (µg/L)	9.88E-08
Freshwater Sediment (mg/kg Sediment dw)	4.65E-05
Marine water Sediment (mg/kg Sediment dw)	3.73E-06
Sewage treatment plant (mg/L)	-
Soil (mg/kg soil dw)	6.31E-07
Air	5.37E-04
Secondary poisoning (g/kg food)	No indication of bioaccumulation potential.

Contents

Contributing Scenarios

PROC Codes
PROC1 Use in closed process, no likelihood of exposure (closed systems)
PROC2 Use in closed, continuous process with occasional controlled exposure (closed systems) (with sample collection)
PROC3 Use in closed batch process (synthesis or formulation) (closed systems) (Batch process)
PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises (General exposures)
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (Mixing operations)
PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (Transfer from/pouring from containers)
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Bulk transfers) (Dedicated facility)
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (Process sampling)
PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15 Use as laboratory reagent
PROC16 Using material as fuel sources, limited exposure to unburned product to be expected (Closed systems)
PROC28 Manual maintenance (cleaning and repair) of machinery

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) PROC2 Use in closed, continuous process with occasional controlled exposure (closed systems) (with sample collection) PROC3 Use in closed batch process (synthesis or formulation) (closed systems) (Batch process) PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises (General exposures) PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (Mixing operations) PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (Transfer from/pouring from containers) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Bulk transfers) (Dedicated facility) PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (Process sampling) PROC14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15 Use as laboratory reagent
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 - 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	100	
Other operational conditions affecting worker exposure		
Area of use	All PROC's	Indoor use
Operating temperature	All PROC's	<= 20 °C
General measures applicable to all activities Implementation of the following RMMs and operational conditions will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. ***Technical and organisational conditions and measures***		
PROC1 (closed systems)	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) (with sample collection) PROC3 (closed systems) (Batch process)	Occupational Health and Safety Management System: Advanced Closed continuous process with occasional controlled exposure Room ventilation: Good (3 to 5 ACH)	
PROC4 (General exposures) PROC5 (Mixing operations) PROC8a (Transfer from/pouring from containers) PROC8b (Bulk transfers) (Dedicated facility) PROC9 (Process sampling) PROC14 PROC15	Occupational Health and Safety Management System: Advanced 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):	1000	
Local fraction (%)	100	
Annual site tonnage (tons/year):	<= 1E3	
Maximum daily site tonnage (kg/day):	100,000	
Environment factors not influenced by risk management		
Flow rate of receiving surface water (m^3/d):	2000000	
Local freshwater dilution factor:	10	
Local marine water dilution factor:	100	
Operational conditions		
Place of use	Indoor	
Emission days (days/year):	100	
Release fraction to air from process (initial release prior to RMM):	1	
Release fraction to water from process (initial release prior to RMM	0.002	
Release fraction to soil from process (initial release prior to RMM):	0.03	
Release fraction to waste from process (initial release prior to RMM	0.2	
Release fraction to air from process	1	
Release fraction to water from process	0.002	
Release fraction to waste from process	0.4	
Technical and organisational conditions and measures		
Oil-water separation (e.g. via oil water separators, oil skimmers, or dissolved air flotation) is required		
No obligatory RMM limiting the release to air		
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 (%):	98.59	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m^3 (%):	0	
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 (%)	96.66% (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 factor to external waste	0%	
Maximum allowable site tonnage (MSafe) (kg/d):	8.52E+3	
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

	Inhalation		Dermal		Combined
Process category [PROC]	**inhalation exposure (mg/m³)**	**Risk characterisation ratio (RCR)**	**dermal exposure(mg/kg bw/day)**	**Risk characterisation ratio (RCR)**	**Risk characterisation ratio (RCR)**
PROC1 (closed systems)	0.07	< 0.01	3.4E-3	< 0.01	< 0.01

PROC2 (closed systems) (with sample collection)	7	0.048	0.137	< 0.01	0.051
PROC3 (closed systems) (Batch process)	21	0.143	0.069	< 0.01	0.144
PROC4 (General exposures)	35	0.238	0.686	0.016	0.254
PROC5 (Mixing operations)	35	0.238	1.371	0.033	0.271
PROC8a (Transfer from/pouring from containers)	70	0.476	1.371	0.033	0.509
PROC8b (Bulk transfers) (Dedicated facility)	35	0.238	1.371	0.033	0.271
PROC9 (Process sampling)	35	0.238	0.686	0.016	0.254
PROC14	35	0.238	0.343	< 0.01	0.246
PROC15	35	0.238	0.034	< 0.01	0.239

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)	PETRORISK

environmental exposure	air	freshwater	marine water	soil	freshwater sediment	marine sediment
PEC	0.0278	0.00999	0.000999	0.0000463 (30d) 0.0000463 (180d)	0.125	0.0125

Indirect exposure to humans via the environment:

Exposure route	Exposure estimation (µg/kg/day)	Risk characterisation ratio (RCR)
Oral	0.00293	0.00E+00
Inhalation	0.00418	0.00E+00
Dermal	-	-

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	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 (Closed systems)
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 - 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	20 days	
Other operational conditions affecting worker exposure		
Area of use	All PROC's	Indoor use
Operating temperature	All PROC's	<= 40 °C
General measures applicable to all activities Implementation of the following RMMs and operational conditions will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. ***Technical and organisational conditions and measures***		
PROC1 (closed systems) PROC1 (Storage) PROC2 (closed systems) PROC2 (Storage) PROC8b (Bulk transfers) PROC8b (Drum/batch transfers) PROC16	Occupational Health and Safety Management System: Advanced Room ventilation: Basic (up to 3)	
PROC8a	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: Basic (up to 3 ACH)	
Risk management measures related to human health		
Respiratory protection	All PROC's	Not required
Hand and/or Skin protection	All PROC's	Not required
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):	1000	
Annual site tonnage (tons/year):	<= 1E3	
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):	2000000	
Local freshwater dilution factor:	10	
Local marine water dilution factor:	100	

Operational conditions		
Place of use	Indoor	
Emission days (days/year):	20	
Release fraction to air from process (initial release prior to RMM):	0.5	
Release fraction to water from process (initial release prior to RMM	0.00002	
Release fraction to soil from process (initial release prior to RMM):	0.001	
Release fraction to waste from process (initial release prior to RMM	0.2	
Release fraction to air from process	0.5	
Release fraction to water from process	0.00002	
Release fraction to waste from process	0.4	
Technical and organisational conditions and measures		
Oil-water separation (e.g. via oil water separators, oil skimmers, or dissolved air flotation) is required		
No obligatory RMM limiting the release to air		
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 (%):	98.59	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m^3 (%):	0	
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 (%)	96.66% (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 factor to external waste	2%	
Maximum allowable site tonnage (MSafe) (kg/d):	8.52E+5	
Release to surface water from process	Estimated release factor	1E-3%
	Local release rate (kg/day)	10 kg/day
	Release to surface water from process STP (%)	3.339%
Release to air from process	Estimated release factor	0.6%
	Local release rate (kg/day)	6E3 kg/day
	Release to air from process STP (%)	20.45%
Release to soil from process	Estimated release factor	0%
	Local release rate (kg/day)	-
	Release to soil from process STP (%)	66.56%
Release Degraded (%)		9.65%

3. Exposure estimation and reference to its source

3.1 Human exposure prediction

Exposure assessment (method/calculation model)	ECETOC TRA

	Inhalation		Dermal		Combined
Process category [PROC]	**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)	0.1	< 0.01	0.034	< 0.01	< 0.01
PROC1 (Storage)	0.1	< 0.01	0.034	< 0.01	< 0.01
PROC2 (closed systems)	10	0.068	1.37	0.033	0.101
PROC2 (Storage)	10	0.068	1.37	0.033	0.101
PROC8a	10	0.068	13.71	0.326	0.394

PROC8b (Bulk transfers)	50	0.34	13.71	0.326	0.667
PROC8b (Drum/batch transfers)	50	0.34	13.71	0.326	0.667
PROC16	10	0.068	0.34	< 0.01	0.076

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)	PETRORISK

environmental exposure	air	freshwater	marine water	soil	freshwater sediment	marine sediment
PEC	0.0695	0.0005	0.00005	0.0000231 (30d) 0.0000231 (180d)	0.00628	0.000628

Indirect exposure to humans via the environment:

Exposure route	Exposure estimation (µg/kg/day)	Risk characterisation ratio (RCR)
Oral	0.0000293	0
Inhalation	0.00209	0
Dermal	-	-

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	PETRORISK

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) PROC2 Use in closed, continuous process with occasional controlled exposure (closed systems) PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (Equipment maintenance) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (Bulk transfers) PROC16 Using material as fuel sources, limited exposure to unburned product to be expected (Closed systems) PROC28 Manual maintenance (cleaning and repair) of machinery (Equipment maintenance)
Environmental release categories [ERC]	ERC9a Wide dispersive indoor use of substances in closed systems ERC9a Wide dispersive indoor use of substances in closed systems (Use as a fuel) ERC9b Wide dispersive outdoor use of substances in closed systems
Product code	PC13 Fuels
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 - 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)	Outdoor
	All other PROC's	Indoor
Operating temperature	All PROC's	<= 20 °C
General measures applicable to all activities		
Implementation of the following RMMs and operational conditions will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.		
Technical and organisational conditions and measures		
PROC1 (closed systems)	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)	Occupational Health and Safety Management System: Basic Closed continuous process with occasional controlled exposure Room ventilation: Good (3 to 5 ACH)	
PROC8b (Bulk transfers)	Occupational Health and Safety Management System: Basic	
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%) Drain down and flush system prior to equipment break-in or maintenance. 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):	100
Daily local widespread use amount (tonnes/day)	<= 1.37E-4
Environment factors not influenced by risk management	
Flow rate of receiving surface water (m^3/d):	2000000
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Operational conditions	
Place of use	Indoor/Outdoor
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	0.0001
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	0.5
Release fraction to water from process	0.0001
Release fraction to waste from process	4
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 m3 /day	
No obligatory RMM limiting the release to air.	
No obligatory RMM limiting the release to soil.	
Treat air emission to provide a typical removal efficiency of (%):	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%):	90.02
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of m^3 (%):	0
Conditions and measures related to municipal sewage treatment plant (Biological STP)	
Degradation effectiveness (%)	98.06% (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 factor to external waste	2%	
Maximum allowable site tonnage (MSafe) (kg/d):	1.27E+4	
Release to waste water from process	Estimated release factor (%)	1E-4%
	Local release rate (kg/day)	1.37E-7 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

	Inhalation		Dermal		Combined
Process category [PROC]	**inhalation exposure (mg/m³)**	**Risk characterisation ratio (RCR)**	**dermal exposure(mg/kg bw/day)**	**Risk characterisation ratio (RCR)**	**Risk characterisation ratio (RCR)**
PROC1 (closed systems)	0.07	< 0.01	6.8E-3	< 0.01	< 0.01
PROC2 (closed systems)	35	0.238	0.274	< 0.01	0.245
PROC8a	35	0.238	2.742	0.065	0.303
PROC8b (Bulk transfers)	70	0.476	2.742	0.065	0.541
PROC16	7	0.048	0.068	< 0.01	0.049
PROC28	35	0.238	2.742	0.065	0.303

3.2 Environmental exposure prediction

Exposure assessment (method/calculation model)	PETRORISK

environmental exposure	**air**	**freshwater**	**marine water**	**soil**	**freshwater sediment**	**marine sediment**
PEC	3.80E-7	1.29E-8	7.25E-10	3.02E-9 (30d) 2.30E-9 (180d)	6.12E-7	3.30E-8

Indirect exposure to humans via the environment:

Exposure route	**Exposure estimation (µg/kg/day)**	**Risk characterisation ratio (RCR)**
Oral	1.45E-8	0.0
Inhalation	2.09E-7	0.0
Dermal	-	0.0

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	PETRORISK