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

1.1. Product identifier

REACH – type	Substance
Product name	HVO (bunker use) – DIESEL (bunker use) – XTL (bunker use) – RENEWABLE DIESEL (bunker use)
Chemical name	Renewable Hydrocarbons (diesel type fraction)
IUPAC name	Renewable Hydrocarbons (diesel type fraction)
CE number	700-571-2
REACH – registration number	01-2120043692-58-0000
Product type	Mixture of hydrocarbons
Formula	UVCB
Product class	Commerciale product

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

1.2.1. Identified uses

Main use category	Industrial use, professional use, consumer use
Specification of professional/Industrial use	Use in closed System
Use of substance/mixture	Fuels
Function or use category	Fuels

Title	Descriptors of uses
Use as fuel (ES Rif.: 01)	SU3, PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC1 PROC16, ERC7, ESVOC SPERC 7.12a.v1
Substance distribution (ES Rif.: 11)	SU8, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC1, ESVOC SPERC 1.1b.v1
Formulation and (re)packaging of substances and mixtures (ES Rif.: 12)	SU10, PROC2, PROC3, PROC8a, PROC8b, PROC15, ERC2, ESVOC SPERC 2.2.v1
Formulation and (re)packaging of substances and mixtures (ES Rif.: 14)	SU10, PROC1, PROC3, PROC8a, PROC8b, PROC9, PROC15, ERC2, ESVOC SPERC 2.2.v1
Use as intermediate (ES Rif.: 16)	SU8, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC6a, ESVOC SPERC 6.1a.v1
Use as fuels (ES Rif.: 02)	SU22, PROC1, PROC2, PROC8a, PROC8b, PROC16, ERC8b, ERC8e, ESVOC SPERC 9.12b.v1
Use as fuels (ES Rif.: 03)	SU21, PC13, ERC8b, ERC8e, ESVOC SPERC 9.12c.v1

1.2.2. Uses advised against

The relevant uses are listed above. No other uses are recommended unless an assessment has been conducted, prior to the start of such use, demonstrating that the risks associated with that use are controlled.

1.3. Supplier information for the safety data sheet

Company name	jENERGY S.p.A.
Address	Via Adolfo Ravà, 49 00142 – ROMA (RM) ITALIA Phone: +39 06-59.010.1 Fax: +39 06-54.14.923
Product Information:	Phone: +39 06-59.010.1 e-mail: reach@jenergyspa.it

1.4. Emergency phone number

Emergency number	CNIT +39 0382 24444 (24h) (IT + EN) CAV "Pediatric Hospital Bambino Gesù" - Roma - +39 06 6859 3726 - 24h Hospital company "University of Foggia" - Foggia - +39 800 18 3459 - 24h Hospital company "A. Cardarelli" - Napoli - +39 081 5453 333 - 24h CAV "Policlinico Umberto I" - Roma - +39 06 4997 8000 - 24h CAV "Policlinico A. Gemelli" - Roma - +39 06 3054 343 - 24h Hospital company "Careggi" Medical Toxicology Department - Firenze - +39 055 7947 819 - 24h CAV "National" - Pavia - +39 0382 24444 - 24h Hospital company "Niguarda Ca' Granda" - Milano - +39 02 6610 1029 - 24h Hospital company "Papa Giovanni XXIII" - Bergamo - +39 800 88 3300 - 24h Hospital company Verona - Verona - +39 800 01 1858 - 24h ------- (CH): Tox Info Suisse (24h): +41 44 251 51 51 (in Svizzera: 14

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CE) n. 1272/2008 [EU-GHS / CLP]

Hazard in case of aspiration, category 1 H304
Full text of H and EUH statements: see section 16

Adverse physical-chemical effects, for human health and the environment

Flammable liquid and vapours. Aspiration into the lungs may cause chemical pneumonia. Repeated and prolonged contact may cause skin redness, irritation, and contact dermatitis due to degreasing effect. For specific information on the toxicological properties and classification of the product, refer to section 11 and/or 12 of the safety data sheet.

2.2. Label elements

Classifications (CE) n. 1272/2008 [CLP]

Hazard pictograms (CLP)

GHS08

Signal word CLP: Danger

Hazard statements (CLP):
H304 - May be fatal if swallowed and enters airways.

Precautionary statements (CLP):
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 - Wear: eye protection, face protection, protective clothing, gloves.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 – DON'T induce vomiting.
P370+P378 - In case of fire: extinguish with dry extinguishing powder.
P403+P235 - Store in a cool, well-ventilated place.
P501 - Dispose of the product and container in accordance with applicable regulations (Legislative Decree No. 152/2006 and subsequent amendments).

EUH:
EUH066 - Repeated exposure may cause dryness or cracking of the skin.

2.3. Other hazards (not relevant for classification)

Other hazards not relevant for classification

The vapours may form a flammable and explosive mixture with air. The product can become electrostatically charged: always use grounding connections when transferring it from one container to another. Vapours emitted by the product are heavier than air and may accumulate in high concentrations in low-lying areas, underground cavities, ducts, and basements. Contact with eyes may cause irritation. Long-term exposure may cause adverse environmental effects. Any substance, in the event of accidents involving pressurized pipes and similar equipment, can be accidentally injected into subcutaneous tissues, even without visible external injuries. In such cases, the injured person must be taken to the hospital as soon as possible for appropriate treatment. Do not wait for symptoms to appear.

This substance/mixture doesn't fulfil the PBT criteria of the REACH regulation, Annex XIII.
This substance/mixture doesn't fulfil the vPvB criteria of the REACH regulation, Annex XIII.

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine-disrupting properties, nor is it identified as having endocrine-disrupting properties according to the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/information on ingredients

3.1. SUBSTANCE

Notes

Renewable hydrocarbons (diesel fraction) obtained by catalytic treatment with hydrogen of vegetable oils and/or animal fats, followed by hydroisomerisation. Predominantly rich in saturated hydrocarbons with a carbon number range of C15 to C18.

Name	Product identifier	%	Classification according to Regulation (EC) No 1272/2008 [EU-GHS / CLP].
Renewable hydrocarbons (diesel fraction) Full text of H and EUH indications: see section 16	CE no: 700-571-2 no. REACH: 01-2120043692-58-0000	100	Asp. Tox. 1, H304 EUH066

3.2. Mixtures

Not applicable

SECTION 4: First aids measures

4.1. Description of first aids measures

First aids general measures

In the event of spontaneous or mistakenly induced vomiting, transport the subject urgently to hospital to check for aspiration into the lungs.

First aids measures in case of inhalation

The risk of inhalation is unlikely due to the low vapour pressure at room temperature. Exposure to vapours may, however, occur when the substance is handled at elevated temperatures under poor ventilation. Move the person to a well-ventilated area, keep warm and at rest. If the victim is unconscious and not breathing: check that there are no obstructions to breathing and administer artificial respiration by competent personnel. If necessary, perform external cardiac massage and consult a doctor. If the casualty is breathing: Keep in a safe lateral position. Administer oxygen if necessary.

First aids measures in case of skin contact

Remove contaminated footwear and clothing and dispose of safely. Wash skin with soap and water. Seek medical attention immediately if irritation, swelling or redness develops and persists. Do not apply ointments or anything else unless ordered by a doctor. When using high-pressure equipment, an injection of product may occur. Immediately transfer the injured person to hospital. Do not wait for symptoms to appear.

First aids measures in case of eye contact

Remove contact lenses, if present, if the situation permits. Rinse thoroughly for at least 15 minutes. Keep eyelids wide open. In case of irritation, blurred vision or persistent swelling, consult a medical specialist. In case of contact with hot product, cool the area with plenty of cold water and cover with gauze or clean cloths. Call a doctor or take to hospital. Do not apply ointments or anything else, unless ordered by a doctor.

First aids measures in case of ingestion

Do not induce vomiting to avoid the risk of aspiration. Do not administer anything by mouth to an unconscious person. If swallowed, always assume that aspiration has occurred. Immediately transfer the casualty to hospital. Do not wait for symptoms to appear. In case of spontaneous or mistakenly induced vomiting, take the casualty to a hospital to check for possible aspiration into the lungs.

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

Symptoms and effects in case of inhalation

Inhalation of vapours may cause headaches, nausea, vomiting and an altered state of consciousness.

Symptoms and effects in case of skin contact

Repeated and prolonged contact can cause skin redness, irritation and contact dermatitis due to the degreasing effect.

Symptoms and effects in case of eye contact

Contact with the eyes may cause temporary redness and irritation.

Symptoms and effects in case of ingestion

Ingestion of the liquid can cause aspiration into the lungs with the risk of pneumonia chemical. It can be fatal if swallowed and enters the respiratory tract.

Symptoms and effects in case of intravenous administration	No available information.
Chronic symptoms	None to highlighted, according to the current classification criteria.

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

Seek medical advice if the injured person is in an altered state of consciousness, or if symptoms do not disappear. If necessary, perform gastric lavage ONLY under qualified medical supervision. Seek medical attention in all cases of severe burns.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing media	Small fires: carbon dioxide, dust, foam, sand or earth. Large fires: foam or water spray. These media should only be used by adequately trained personnel. Other extinguishing gases (according to regulations).
Unsuitable Extinguishing media	Do not use direct water jets. These can cause splashing and spread the fire. Avoid the simultaneous use of foam and water on the same surface as water destroys foam.

5.2. Special hazards arising from the substance or mixture

Fire hazard	Vapours can give rise to fire/explosion in the presence of an ignition source. They can be ignited by heat, sparks, static electricity or flames. Vapours heavier than air; may disperse at ground level. Possibility of remote ignition. Risk of fire or explosion from heating.
Explosion hazard	Risk of explosion from impact, rubbing, fire or other sources of ignition. Vapours are heavier than air, expand on the ground and form explosive mixtures with air.
Hazardous combustion products in case of fire	Incomplete combustion could generate a complex mixture of airborne solid and liquid particles and gases, including carbon monoxide and NOx (harmful/toxic gases).

5.3. Advice for firefighters

Precautionary measures in case of fire	Cover any spillages that have not caught fire with foam or earth. If possible, block leaks at the source.
Extinction instructions	Remove damaged containers not from the danger zone if it is possible to do so without danger. Use water jets to cool surfaces and containers exposed to flames or heat. If the fire cannot be controlled, evacuate the area.
Special equipment for fire-fighters	Personal protective equipment for fire-fighters (see also sect. 8). EN 443. EN 469. EN 659. In the event of fire or in confined or poorly ventilated spaces, wear full fireproof protective clothing and a self-contained breathing apparatus with a full-face mask working under positive pressure.
Other information (fire)	In case of fire, do not disperse wastewater, residual product and other contaminated materials, but collect separately and treat appropriately.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	If safety conditions permit, stop or contain the leak at the source. Eliminate all sources of ignition if safety conditions permit (e.g. electricity, sparks, fires, torches). Avoid direct contact with the released material. Stay upwind. Use only non-sparking tools. In case of large spills, warn residents of areas downwind.

6.1.1. For those who do not intervene directly

Protection media	See section 8.
Emergency procedures	Remove uninvolved personnel from the spill area. Notify emergency teams. Except in the case of small spills, the feasibility of interventions should always be assessed and approved, if possible, by qualified and competent personnel in charge of managing the emergency.

6.1.2. For those who intervene directly

Protection media	Minor spills: normal antistatic workwear is generally appropriate. Large spills: chemical-resistant full protective clothing made of antistatic material. Work gloves (preferably half-arm gloves) that provide adequate resistance to chemicals.

Protection media	Gloves made of PVA (polyvinyl alcohol) are not water-resistant and are not suitable for emergency use. Chemical-resistant, anti-static, non-slip safety shoes or boots. Protective helmet. Protective goggles and/or face protection if splashes or eye contact are possible or foreseeable. Respiratory protection: A half or full-face mask with filter(s) for organic vapours (AX), or a self-contained breathing apparatus may be used, depending on the extent of the spill and the foreseeable level of exposure. If the situation cannot be fully assessed or if there is a risk of oxygen deficiency, use only a self-contained breathing apparatus.
Emergency procedure	In the event of major spills, warn residents of areas downwind. Notify the competent authorities in accordance with current regulations.

6.2. Environmental precautions

Prevent the product from accumulating in confined spaces or below ground level. Prevent the product from flowing into sewers or water courses or otherwise dispersing into the environment. In the event of contamination of environmental matrices (soil, subsoil, surface water and groundwater), remove the contaminated soil if possible and in any case treat the contaminated matrices in accordance with Legislative Decree 152/06 and subsequent amendments and supplements (and applicable local regulations). The site must have a spill response plan to ensure that adequate safeguards are in place to minimise the impact of sporadic releases.

6.3. Methods and material for containment and cleaning up

Methods for containment	Cover spilled product with non-combustible material, e.g. sand, earth, vermiculite. Large spills can be carefully covered with foam, if available, to prevent fire hazards. Inside buildings or confined spaces, ensure adequate ventilation. Absorb spilled product with non-flammable materials. Collect spilled product by suitable mechanical means. Transfer the collected product and other contaminated materials to suitable tanks or containers for recycling or safe disposal. If it is necessary to store contaminated material for later safe disposal, use only suitable containers (watertight, sealed, impermeable, grounded). If in water: In case of small spills in closed waters, contain the product using floating barriers or other devices. Collect spilled product with specific floating absorbent materials. If possible, contain larger spills in water using floating barriers or other suitable mechanical means. If this is not possible, check the level of spread of spilled product and collect the material using a skimmer or other mechanical means. Collect recovered product and other materials in suitable tanks or containers for recycling or safe disposal. Do not use solvents or dispersing agents, unless expressly indicated by an expert and, where required, authorised by the competent local authorities.
Other information (accidental spillage)	The recommended measures are based on the most likely spill scenarios for this product. Local conditions (wind, air or water temperature, direction and speed of waves and currents) may, however, significantly influence the choice of action to be taken. Local legislation may determine or limit the action to be taken. Therefore, consult local experts if necessary.

6.4. Reference to other sections

For further information, see section 8: " Exposure control-personal protection ". For further information, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Ensure that all provisions on management and storage facilities for flammable products are properly complied with. Do not use electrical equipment (cell phones, etc.) not approved for use, according to the risk characteristics of the area. Do not use compressed air during filling, discharging or handling operations. Keep away from heat sources (e.g. hot surfaces), sparks and open flames. Steam is heavier than air. Pay particular attention to accumulation in wells and confined spaces. Do not smoke. Use and store outside or in a well-ventilated place only. During transfer and mixing operations, ensure proper grounding of equipment and avoid the accumulation of electrical charges. Ensure the earthing of the container, tanks and reception and transfer equipment. Empty containers may contain combustible product residues. Do not drill, cut, grind, weld, braze, burn or incinerate empty containers or untreated drums. Before entering the storage tanks and initiating any kind of intervention in a confined space (e.g., tunnels), carry out an appropriate remediation, check the atmosphere and check the oxygen content and the degree of flammability.
Handling temperature	≤ 55 °C
Hygiene measures	Ensure that appropriate housekeeping measures are taken. Use appropriate personal protective equipment if necessary. Keep away from food and drink. Do not breathe smoke/mist/vapours. Avoid contact with skin. Wash hands thoroughly after handling. Do not ingest. Do not smoke. Contaminated material must not accumulate in the workplace and must never be stored in pockets. Do not re-use contaminated clothing. Prevent the risk of slipping.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	The storage area structure, equipment and electrical installations must have the appropriate safety features, depending on the specific risk characteristics of the area.
Storage precautions	Store in a dry, well-ventilated place. Do not smoke. Keep away from open flames, hot surfaces and sources of ignition. Vapours are heavier than air and may spread above ground. Pay particular attention to accumulation in wells and confined spaces.
Incompatible product	Keep away from: strong oxidants.
Storage temperature	≤ 55 °C
Storage location	Storage area design, tank characteristics, equipment and operating procedures must comply with relevant European, national or local legislation. Storage facilities/areas must be equipped with appropriate systems to prevent soil and water contamination in the event of leaks or spills. Cleaning, inspection and maintenance of the internal structure of storage tanks must be carried out by qualified and properly equipped personnel, as stipulated by national, local legislation or company regulations. Before accessing storage tanks and starting any work in a confined space (e.g. tunnels), carry out adequate cleaning, check the atmosphere and verify oxygen content and flammability.
Packaging and containers	If product is supplied in containers: Keep containers tightly closed and correctly labelled. Store only in the original container or in a container suitable for the type of product. Store away from sun and other heat sources. Light hydrocarbon vapours may accumulate at the top of containers. Open slowly to keep pressure releases under control. Empty containers may contain flammable product residues. Do not weld, braze, drill, cut or incinerate empty containers unless they have been properly cleaned/boned.
Packaging and materials	Use approved material suitable for the use of the product when making containers or inner linings. Use mild steel and stainless steel for containers and liners. Some synthetic materials may not be suitable for containers or liners based on material characteristics and intended uses. Check with the manufacturer for compatibility.

7.3. Particular end uses

No information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational and biological exposure limit values

No further information available

8.1.2. Recommended monitoring procedures

Monitoring methods	
Monitoring methods (monitoring)	The monitoring procedures should be selected on the basis of the specifications laid down by the competent local authorities or national employment contracts. Refer to D.Lgs 81/2008 and good industrial hygiene practices.

8.1.3. Formation of air contaminants

No further information available.

8.1.4. DNEL e PNEC

Renewable hydrocarbons (diesel fraction type)	
DNEL / DMEL (workers)	
Long term – systemic effects, skin	42 mg/kg body weight/day (DNEL) (Read-across)
Long term – systemic effects, inhalation	16,49 ppm (DNEL) (Read-across) (147 mg/m3)
DNEL / DMEL (general population)	
Long term – systemic effects, oral	18 mg/kg body weight/day (DNEL) (Read-across)
Long term – systemic effects, inhalation	94 mg/m³ (DNEL) (Read-across)
Long term – systemic effects, skin	18 mg/kg di body weight/day (DNEL) (Read-across)
PNEC (Water)	
PNEC aqua (fresh water)	0,01 mg/l
PNEC aqua (sea water)	0,01 mg/l
PNEC aqua (intermittent, fresh water)	0,1 mg/l
PNEC (sediments)	
Sediments (fresh water)	3810 mg/kg dwt
Sediment (sea water)	3,73 mg/kg dwt
PNEC (Ground)	
PNEC ground	761 mg/kg dwt
PNEC (oral)	
PNEC oral (secondary poisoning)	33,3 mg/kg alimenti
PNEC (STP)	
Sewage plant	10 mg/l

Note	The derived no-effect level (DNEL) is a safe exposure level derived from toxicological data in accordance with specific guidance contained in the European REACH legislation. The DNEL may differ from an occupational exposure limit value (OEL) for the same chemical. OEL may be recommended by an individual company, a state control body or an expert organisation such as the Scientific Committee for Occupational Exposure Limit Values (SCOEL) or the American Conference of Government Industrial Hygienists (ACGIH). OELs are considered safe exposure levels for a typical worker in an 8-hour shift with a working week of 40 hours, as a time weighted average concentration (TWA) or as a short-term exposure limit (15 minutes) (STEL). Although they are also considered as health protection indicators, the OEL is derived by a different process from the REACH.

8.1.5. Control band

No further information available

8.2. Controls of exposure

8.2.1. Appropriate technical controls

Technical control measures:
Minimize exposure to mist/vapours/aerosols. Before entering the storage tanks and starting any kind of work in a confined space (e.g., tunnels), carry out an appropriate remediation, check the atmosphere and check the oxygen content and flammability.

8.2.2. Personal protective equipment

Personal protective equipment (for industrial or professional use):
Protective visor. Gloves. Protective clothing. Safety glasses.Safety shoes.

Symbolo(i) Personal protective equipment

8.2.2.1. Eye and face protection

Eye protection:
In case of possible skin contact, use waterproof gloves resistant to chemicals, fleece internally.

8.2.2.2. Skin protection

Skin and body protection:
Anti-static work clothes with long sleeves, heat-resistant if necessary. For the definition of the characteristics and performance according to the risks of the work area, refer to UNI EN 340 and other applicable UNI-EN-ISO standards. Wash contaminated clothing before wearing it again. Anti-static and anti-slip safety shoes or boots, chemical resistant if necessary, heat resistant and thermally insulated.

Hands protection:
In case of possible skin contact, use oil-resistant gloves which are fleece lined internally. Presumably suitable materials: nitrile (NBR) or PVC with protection index of at least 5 (permeation time 240 min). If contact with the hot product is possible or foreseeable, the gloves must be heat resistant and thermally insulated. Use gloves in accordance with the manufacturer's conditions and limits. Immediately replace the gloves if they show cuts, holes or other signs of deterioration. In this case, refer to UNI EN 374. Personal hygiene is essential for effective hand care. Gloves should only be worn with clean hands. After wearing gloves, hands should be washed and dried thoroughly.

8.2.2.3. Respiratory protection

Respiratory protection:
Apart from other possible actions (plant adaptations, operating procedures and other means to reduce worker exposure), personal protective equipment shall be indicated which may be adopted as necessary. In ventilated environments or outdoors: if the product is handled without adequate vapour containment systems, use masks or semi-masks with a hydrocarbon vapour filter (AX). (EN 136/140/145). In confined environments (e.g. inside tanks): the use of respiratory protection devices (half-masks, masks, breathing apparatus) should be evaluated according to the work activity, duration and foreseeable intensity of exposure. For the characteristics, refer to DM 02/05/2001. If exposure levels cannot be determined or estimated with good certainty, or if oxygen deficiency is possible, use only a self-contained respirator.

8.2.2.4. Thermal hazards

Thermal protection:
None under normal use.

8.2.3. Environmental exposure controls

Environmental exposure controls:
Do not disperse the product in the environment. Storage facilities/areas shall be equipped with appropriate systems to prevent contamination of soil and water in the event of leakage or spill. Prevent the release of undissolved substances into, or recover them from, wastewater. Do not distribute sludge generated by industrial water treatment on natural soils. Sludge generated by industrial water treatment shall be incinerated, contained or treated.

Limitation and control of consumer exposure:

Must always be handled in a closed system.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Colour	Colourless
Appearance	Limpid liquid
Molecular mass	Not applicable (UVCB)
Odour	Light smell of oil
Olfactory threshold	Not determined
Melting point	Not determined
Freezing point	≤ -20 °C
Boiling point	242 °C (EU A2)
Flammability	Flammable liquid and vapour
Lower explosive limit	Not determined
Upper explosive limit	Not determined 60
Flash point	≥ 60°C
Self-ignition temperature	≥ 204 °C (EU A15)
Decomposition temperature	Not determined
pH	Not applicable
Viscosity, kinematics	2,6 mm²/s (40 °C) (ASTM D 445)
Viscosity, dynamics	Not determined
Solubility	Product practically insoluble in water
Log Kow	Water: ≈ 0,075 mg/l (EU A6)
Log Pow	Organic solvent: Soluble: ≈ 8,4 (20 °C - EU A8)
Vapour pressure	Not applicable (UVCB) ≈ 87,1 Pa (25 °C) (EU A4)
Vapour pressure at 50°C	Not determined
Density	770 – 790 kg/m³ (EN ISO 3675 / EN ISO 12185)
Relative density	0,72 (20°C) (EU A3)
Relative vapour density at 20°C	Not determined
Characteristics of the particles	Not applicable

9.2. Other information

9.2.1. Information on classes of physical hazards

Explosivity limits	0,6 – 7,5 vol % (Reference: Fuels, diesel - Gas oil, unspecified)

9.2.2. Other safety features

Evaporative rate. rel. Butyl acetate	Not applicable (UVCB)
Further information	Data not available

SECTION 10: Stability and reactivity

10.1. Reactivity

This substance does not present any additional reactivity hazards compared to the following subheadings.

10.2. Chemical stability

Product stable in relation to its intrinsic characteristics.

10.3. Potential for dangerous reactions

No hazardous reactions are foreseeable (under normal storage and handling conditions). Contact with strong oxidants (such as peroxides and chromates) can cause a fire hazard. A mixture with nitrates or other strong oxidants (such as chlorates, perchlorates and liquid oxygen) can generate an explosive mass. Sensitivity to heat, friction and shock cannot be assessed in advance.

10.4. Conditions to be avoided

Store away from open flames, hot surfaces and ignition sources. Avoid the accumulation of electrostatic charges. Do not smoke.

10.5. Incompatible materials

Oxidising agents.

10.6. Dangerous decomposition products

Under normal conditions of storage and use, no dangerous decomposition products should be created. Thermal decomposition generates: Toxic fumes.

SECTION 11: Toxicological information

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

Acute toxicity (oral)	Unclassified (conclusive data but not sufficient for classification)
Acute toxicity (dermal)	Unclassified (conclusive data but not sufficient for classification)
Acute toxicity (inhalation)	Unclassified (conclusive data but not sufficient for classification)

Renewable hydrocarbons (diesel fraction type)	
DL50 oral	> 2000 mg/kg of weight body (EU Method B.1 - Mullaney T., 2005) (Read-across)
DL50 dermal	> 2000 mg/kg of weight body (EU Method B.3 - Sanders, A, 2006) (Read-across)
CL50 inhalation	4667 ppm (OECD 403, 8h - Nilsen, OG; Haugen, OA; Zaglsen, K et al., 1988) (Read-Across)

Skin corrosion/skin irritation	Unclassified (conclusive data but not sufficient for classification) pH: Not applicable (Test UE B.4) (Rabbit - Read-across) (Sanders A, 2007)
Further information	Repeated and prolonged contact can cause skin redness, irritation and contact dermatitis due to degreasing effect.
Severe eye damage/eye irritation	Not classified (conclusive data but not sufficient for classification) pH: Not applicable
Further information	(Test UE B.5) (Rabbit - Read-across) (Sanders A, 2007)
Respiratory or skin sensitisation	Not classified (conclusive data but not sufficient for classification)
Further information	(Test UE B.42) (LLNA - Read across) (Sanders A, 2007) (Test UE B.6) (Read across - Richeux F, 2008)
Mutagenicity on germ cells	Not classified (conclusive data but not sufficient for classification)
Further information	(OECD 471 - Ames test) (Read-across) (Thompson, PW - 2005) (Test UE B.17) (Read across - Flanders, L - 2008)
Carcinogenicity	Not classified (conclusive data but not sufficient for classification)
Further information	(Read-across)
Toxicity to reproduction	Not classified (conclusive data but not sufficient for classification)
Further information	(OECD 416) (Read across - Dhinsa, NK, Brooks, P and Watson, P 2009)

Renewable hydrocarbons (diesel fraction type)	
NOAEL (animal/male, F0/P)	1000 mg/kg of body weight
NOAEL (animal/male, F1)	1000 mg/kg of body weight

Specific toxicity to target organs (STOT) — single exposure	Not classified (conclusive data but not sufficient for classification)
Further information	(Read-across)

Specific toxicity to target organs (STOT) — repeated exposure	Not classified (conclusive data but not sufficient for classification)
Further information	(Read-across)

Renewable hydrocarbons (diesel fraction type)	
NOAEL (oral, rat, 90 days)	≥ 1000 mg/kg body weight/day (OECD 408 - (Read-across) (Dhinsa, NK; Brooks, P and Watson, P; 2009)

Hazard in case of aspiration	Can be lethal if swallowed and penetrating the respiratory tract. For all petroleum products with a viscosity of less than 20.5 mm2/s at 40 °C, a specific risk is associated with the aspiration of liquid into the lungs, which may occur directly following ingestion or subsequently in case of vomiting, spontaneous or provoked.
Further information	In this case, chemical pneumonia may develop, a condition that requires medical treatment and can be fatal. Aspiration in the lungs can cause chemical pneumonia.

Renewable hydrocarbons (diesel fraction type)	
Viscosity, kinematics	2,6 mm²/s (40 °C) (ASTM D 445)
Hydrocarbons	Yes

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties	The substance is not included in the list established in accordance with Article 59(1) of REACH for possessing endocrine disrupting properties, or it is not identified as having endocrine disrupting properties according to the criteria established by the Delegated Regulation (EU) 2017/2100 of the Commission or by Regulation (EU) 2018/605 of the Commission.

11.2.2. Other information

Possible harmful effects on humans and possible symptoms	Aspiration into the lungs can cause chemical pneumonia,Repeated and prolonged contact can cause skin redness, irritation and contact dermatitis for degreasing effect,Contact with eyes can cause temporary redness and irritation.
Other information	None to report, based on our current knowledge.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	The product is not considered dangerous for aquatic organisms and does not cause any effects long-term undesirable on the environment. Dispersion in the environment can however contamination of environmental matrices (air, soil, subsoil, water surface and underground). Use according to good working practice, avoiding disperse the product in the environment.
Ecology - air	The product has a low vapour pressure, which at room temperature is not sufficient to produce a significant concentration of vapours. If used for operations that cause spray or mist, exposure to high concentrations of mist may cause respiratory irritation, nausea and malaise.
Dangerous to aquatic environment, short term (acute)	Not classified (conclusive data but not sufficient for classification)
Dangerous for the aquatic environment, long term (chronic)	Not classified (conclusive data but not sufficient for classification)

Renewable hydrocarbons (diesel fraction type))	
CL50 fish 1	> 1000 mg/l (LL50, WAF, 96 h) (Read-across - Oncorhynchus mykiss, OECD 203) (Goodband, TJ, 2005)
CE50 Daphnia 1	> 100 mg/l (EL50, WAF, 48 h) (Read-Across - OECD 202) (Goodband, TJ, 2005)
CrE50 (algae)	> 100 mg/l (EL50, WAF, 72 h) (Read-across - Scenedesmus subspicatus, OECD 201) (Vryenhoef V, 2005)

Renewable hydrocarbons (diesel fraction type)	
NOEC (acute)	> 1 mg/l NOEC, WAF, 21d (OECD 211 - Read-Across - Daphnia Magna) (Sewell IG, 2008)
NOEC chronic crustaceans	1 mg/l (21d, OECD 211) (Sewell IG 2008)

12.2. Persistence and degradability

Renewable hydrocarbons (diesel fraction type)	
Persistence and degradability	Rapidly degradable
Biodegradation	82 % (28d) (OECD 301B -Read-across) (Clarke, N, 2008)

12.3. Bioaccumulative potential

Renewable hydrocarbons (diesel fraction type)	
Bioconcentration factor (FCB REACH)	116,3
Log Pow	Not applicable (UVCB)
Log Kow	≈ 8,4 (20 °C - EU A8)
Bioaccumulative potential	Test methods for this endpoint are not applicable to UVCB substances

12.4. Mobility in soil

Renewable hydrocarbons (diesel fraction type)	
Log Koc	> 5,63
Ecology - soil	Test methods for this endpoint are not applicable to UVCB substances

12.5. Results of PBT and vPvB assessment

Renewable hydrocarbons (diesel fraction type)	
This substance/mixture does not meet the PBT criteria of REACH Annex XIII.	
This substance/mixture does not meet the vPvB criteria of REACH Annex XIII.	
PBT-vPvB assessment	The substance does not meet the criteria for classification as PBT or vPvB. From an environmental point of view, the product should be considered prudently as "persistent" according to the criteria of reg. REACH, Annex XIII (point 1.1)

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties	The substance is not included in the list established in accordance with Article 59(1) of REACH for possessing endocrine disrupting properties or is not identified as having endocrine disrupting properties according to the criteria set out in the Delegated Regulation (EU) 2017/2100 of the Commission or by Regulation (EU) 2018/605 of the Commission.

12.7. Other adverse effects

Other adverse effects	No one.
Further information	This product has no specific bacterial culture inhibition characteristics. In any case, water contaminated by the product must be treated in purification suitable for the purpose.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	Do not discharge the product, whether new or used, into sewers, tunnels or watercourses. Collect and deliver to authorized collectors (DLgs 152/2006 and norm. linked).

Recommendations for disposal in sewers	Do not distribute sludge generated by industrial water treatment on natural soils. Sludge generated by industrial water treatment shall be incinerated, contained or treated. Dispose safely in accordance with Legislative Decree 152/06 as amended.
Recommendations for disposal	European Waste Catalogue code(s) (Decision 2001/118/EC): 13 07 03* ("other fuels (including mixtures)"). The CER code given is only a general indication, based on the original composition of the product and its intended use. The user is ultimately responsible for choosing the most appropriate CER code, based on actual use of the product and any alterations or contamination.
Further information	Empty containers may contain combustible product residues. Do not drill, cut, grind, weld, braze, burn or incinerate empty containers or untreated drums.
Ecology - waste	The product as such does not contain halogenated compounds.
EURAL (CER)	13 07 03* - other fuels (including mixtures)

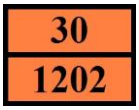
SECTION 14: Transport information

In accordance with: ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 1202	UN 1202	UN 1202	UN 1202	UN 1202
14.2. Official UN designation of carriage				
DIESEL FUEL	DIESEL FUEL	DIESEL FUEL	DIESEL FUEL	DIESEL FUEL
Description of the transport document				
UN 1202 DIESEL FUEL, 3, III, (D/E)	UN 1202 DIESEL FUEL, 3, III	UN 1202 DIESEL FUEL, 3, III	UN 1202 DIESEL FUEL, 3, III	UN 1202 DIESEL FUEL, 3, III
14.3. Transport hazard classes				
3	3	3	3	3
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No further information available				

14.6. Special precautions for users

Ground transportation

ADR transport rules	Subject to requirements
Classification code (UN)	F1
Limited quantities (ADR)	5l
Quantities exempted from ADR	E1
Transport category (ADR)	3
Hazard identification number (no. Kemler)	30
Orange panel	
Tunnel restriction code (ADR)	D/E

Sea transport

IMDG transport regulation	Subject to requirements
Limited quantities (IMDG)	5 L
Exempt quantities (IMDG)	E1
EmS-No. (Fire class)	F-E
EmS-No. (Spill)	S-E
Stowage category (IMDG)	A

Aviation

ICAO Regulations for transport	Subject to requirements
Air passenger and cargo exempt quantities (IATA)	E1
Max. net quantity of limited air passenger and cargo quantities (IATA)	10 L
Net quantity max. for passenger and cargo aircraft (IATA)	60 L
Max. net cargo aircraft quantity (IATA)	220 L

River transport

Transport Regulation (ADN)	Subject to requirements
Classification code (ADN)	F1
Limited quantities (ADN)	5 L
Exempt quantities (ADN)	E1

Rail transport

Transport Regulation (RID)	Subject to requirements
Classification code (RID)	F1
Limited quantities (RID)	5L
Exempt quantities (RID)	E1
Transport catgeory (RID)	3
N° hazard (RID)	30

14.7. Bulk shipping in accordance with IMO acts

IBC code: Not applicable (refer to MARPOL Annex I).

SECTION 15: Regulatory information

15.1. Health, safety and environmental laws and regulations specific to the substance or mixture

15.1.1. EU Regulations

Additional rules, limitations and legal requirements: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 on the registration, evaluation, authorisation and restriction of chemical substances (REACH). (et sequens). Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on the classification, labelling and packaging of substances and mixtures amending and repealing Directives 67/548/EEC and 1999/45/EC and amending the Regulation (EC) No. 1907/2006 (et sequens). Directive 89/391/CEE, 89/654/CEE, 89/655/CEE, 89/656/CEE, 90/269/CEE, 90/270/CEE, 90/394/CEE, 90/679/CEE, 93/88/CEE, 95/63/CE, 97/42/CE, 98/24/CE, 99/38/CE, 99/92/CE, 2001/45/CE, 2003/10/CE e 2003/18/CE (Improving the safety and health of workers in the workplace). Directive 98/24/EC (protection of the health and safety of workers against risks arising from chemical agents during work). Directive 92/85/EC (measures to promote the improvement of safety and health at work for pregnant workers, women who have recently given birth or are breastfeeding). Directive 2012/18/EC (Control of major accident hazards involving certain dangerous substances). Directive 2004/42/EC (limitation of emissions of volatile organic compounds). Substances that deplete the ozone layer (1005/2009) - Annex I substances (ODP). EU Regulation (649/2012) - Export and import of dangerous chemicals (PIC). POP (2019/1021) - Persistent Organic Pollutants.

Annex XVII to REACH (List of restrictions)

No restrictions under Annex XVII of the REACH Regulation.

Annex XIV to REACH (Permissions list)

Renewable hydrocarbons (diesel fraction type) is not on the REACH Annex XIV list

REACH Candidate List (SVHC)

Renewable hydrocarbons (diesel fraction type) is not on the REACH Candidate List

PIC Regulation (prior informed consent)

Not included in the PIC list (EU Regulation 649/2012)

POP Regulation (Persistent organic pollutants)

Not on the POP list (EU Regulation 2019/1021)

Ozone Depletion Regulation (EU 1005/2009)

Not listed on the ozone depletion list (EU Regulation 1005/2009)

Seveso Directive (Major accident reduction)

Seveso Further information P5c 34

Regulation on explosives precursors (EU 2019/1148)

Does not contain any substance listed in the list of explosives precursors (EU regulation 2019/1148 on placing on the market and use of explosives precursors)

Regulation on drug precursors (EC 273/2004)

Does not contain substances listed in the list of drug precursors (EC Regulation 273/2004 on the manufacture and placing on the market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National rules

Legislative Decree n. 81/2008, on "Implementation of art. 1 of the law 3 August 2007, regarding health protection and safety in the workplace"
Legislative Decree n. 105/2015 (adoption of Directive 2012/18/EC on the control of major-accident hazards involving certain dangerous substances)
Legislative Decree n. 152/06 "Norms in environmental matters", and successive modifications and integrations
Legislative Decree n. 151/2001 (T.U. of the legislative provisions on the protection and support of maternity and paternity)

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms:	
N/A	Not applicable
N/D	Not available
ADN	European Agreement on the International Carriage of Dangerous Goods by Inland Waterway
ADR	European agreement on the international transport of dangerous goods by road
STA	Acute toxicity estimate
BCF	Bioconcentration factor
CLP	Regulation on classification, labelling and packaging; Regulation (EC) No. 1272/2008
DMEL	Derived level with minimal effects
DNEL	No effect derived level
EC50	Effective concentration for 50% of the test population (median effective concentration)

Abbreviations and acronyms:	
IARC	International Agency for Research on Cancer
IATA	International air transport association
IMDG	International Maritime Dangerous Goods Code
LC50	Lethal concentration for 50% of the tested population (median lethal concentration)
LD50	Lethal dose leading to death in 50% of the population tested (median lethal dose)
LOAEL	Lowest level at which adverse effect is observed
NOAEC	Concentration without observed adverse effects
NOAEL	Dose without observed adverse effects
NOEC	Concentration without observed effects
OECD	Organisation for Economic Cooperation and Development
PBT	Persistent, bio accumulative and toxic
PNEC	Intended concentration without effect
REACH	Registration, evaluation, authorisation and restriction of chemical substances, Regulation (EC) No. 1907/2006
RID	Regulation on the international carriage of dangerous goods by rail
SDS	Safety Data Sheet
STP	Waste water treatment plant
TLM	Median tolerance limit
vPvB	Very persistent and highly bio accumulative

Data sources	Chemical safety assessment. Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on the classification, labelling and packaging of substances and mixtures amending and repealing Directives 67/548/EEC and 1999/45/EC and amending the Regulation (EC) No. 1907/2006 (et sequens). Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 on the registration, assessment, authorisation and restriction of chemical substances (REACH). (et sequens).
Professional training suggestion	Provide appropriate training to professional operators for the use of Personal Protective Equipment (PPE), based on the information contained in this safety sheet.
Other information	Do not use the product for purposes that have not been indicated by the manufacturer.

Full text of hazard statements H and EUH:	
Asp. Tox. 1	Aspiration hazard, category 1
EUH066	Repeated exposure may cause skin dryness or cracking
Flam. Liq. 3	Flammable liquids, category 3
H226	Flammable liquid and vapour
H304	Can be lethal if swallowed and penetrating the respiratory tract

Full text of usage descriptors:	
ERC1	Manufacture of the substance
ERC2	Formulation of preparations
ERC4	Use of non-reactive processing aids in the industrial site (no inclusion in or on article)
ERC6a	Use of intermediates
ERC7	Industrial use of functional fluids

Full text of usage descriptors:	
ERC8a	Wide use of dispersive technology aids in open systems
ERC8b	Widespread use of reactive processing aids (no inclusion in or on article, inside)
ERC8d	Wide dispersion outdoor use of technological aids in open systems
ERC8e	Widespread use of reactive processing aids (without inclusion in or on the surface of an article, outdoor use)
ERC8f	Widespread use leading to inclusion in/on article (outside)
ERC9a	Widespread indoor dispersive use of substances in closed systems
ERC9b	Wide dispersion outdoor use of substances in closed systems
ESVOC SPERC 1.1.v1	Manufacture of substances: Industrial (SU8, SU9)
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
ESVOC SPERC 2.2.v1	Formulation and (re)packaging of substances and mixtures: Industrial (SU10)
ESVOC SPERC 3.22a.v1	Water treatment products: Industrial (SU10)
ESVOC SPERC 4.3a.v1	Use in coatings: Industrial (SU3)
ESVOC SPERC 4.6a.v1	Lubricants: Industrial (SU3)
ESVOC SPERC 6.1a.v1	Substance production: Industrial (SU8, SU9)
ESVOC SPERC 7.12a.v1	Use as fuel: Industrial (SU3)
ESVOC SPERC 7.13a.v1	Use as functional fluids: Industrial (SU3)
ESVOC SPERC 8.15.v1	Road and building applications: Professional (SU22)
ESVOC SPERC 8.22b.v1	Water treatment products: Professional (SU22)
ESVOC SPERC 8.24.v1	Production and use of explosives: Professional (SU22)
ESVOC SPERC 8.3b.v1	Use in coatings: Professional (SU22)
ESVOC SPERC 8.3c.v1	Use in coatings: Consumer (SU21)
ESVOC SPERC 8.6c.v1	Lubricants: Professional (SU22) - high environmental release
ESVOC SPERC 8.6e.v1	Lubricants: Consumer (SU21) - high environmental release
ESVOC SPERC 9.12b.v1	Use as fuel: Professional (SU 22)
ESVOC SPERC 9.12c.v1	Use as fuel: Consumer (SU21)
ESVOC SPERC 9.13b.v1	Use as functional fluids: Professional (SU22)
ESVOC SPERC 9.13c.v1	Use as functional fluids: Consumer (SU21)
PC1	Adhesives, sealants
PC13	Fuels
PC15	Products for the treatment of non-metallic surfaces
PC16	Fluids for heat transfer
PC17	Hydraulic fluids
PC18	Ink and toner
PC23	Products for the treatment of hides and skins
PC24	Lubricants, greases and release products
PC3	Environmental deodorant products
PC31	Polishing agents and wax mixtures
PC34	Dyes and textile impregnation products

Full text of usage descriptors:	
PC35	Cleaning and washing products
PC37	Water treatment chemicals
PC4	Antifreeze and defrosting products
PC9a	Coatings and paints, thinners, paint stripping solutions
PC9b	Additives, fillers, plasters, modelling clay
PC9c	Finger colours
PROC1	Production or refining of chemicals in closed processes, with no possibility of exposure or in processes with equivalent containment conditions
PROC10	Roller or brush application
PROC11	Non-industrial spray application
PROC13	Treatment of eco-immersion articles
PROC14	Pastilling, compression, extrusion, pelletizing, granulation
PROC15	Use as laboratory reagents
PROC16	Use of fuels
PROC17	Lubrication in heavy energy conditions in metal working operations
PROC18	General greasing/lubrication under severe kinetic conditions
PROC19	Manual activities involving contact with hands
PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions
PROC20	Use of functional fluids in small devices
PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions
PROC4	Production of chemicals with potential exposure
PROC5	Batch blending or mixing
PROC7	Industrial spray application
PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities
PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities
PROC9	Transfer of a substance or preparation into small containers (dedicated filling line, including weighing)
SU10	Formulation [mixing] of preparations and/or repackaging (except alloys)
SU21	Consumption uses: households (= general population = consumers)
SU22	Professional uses: public sector (administration, education, entertainment, services, crafts)
SU3	Industrial uses: uses of substances on their own or in preparations at industrial sites
SU8	Large-scale production of basic chemicals (including petroleum products)

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product solely for health, safety and environmental protection purposes. Therefore, they are not intended as a guarantee of any specific product characteristics.

Annex to the Safety Data Sheet

Identified uses	Nr. ES	Short title	Page
Use as fuel - Industrial	1	Use as fuel	21
Use as fuel - Professional	2	Use as fuel	32
Use as fuel (consumer)	3	Use as fuel	42
Distribution of substance	11	Distribution of substance	48
Formulation and (re)packaging of substances and mixtures: fuel mixtures	12	Formulation and (re)packaging of substances and mixtures	56
Formulation and (re)packaging of substances and mixtures: (re)packaging	14	Formulation and (re)packaging of substances and mixtures	64

1. 01 - Industrial; Use as fuel - Industrial

1.1. Title section

Use as fuel - Industrial	
ES Rif.: 01 SE type: Industrial Version: 3.0 Revision date: 02/04/2021	

Environment		Usage descriptors
Gen06	General measures applicable to all activities	ERC7, ESVOC SPERC 7.12a.v1

Worker		Usage descriptors
CS14	Transfer of bulk products; closed systems	PROC8b
CS45	Filling/preparation of equipment from drums or containers.	PROC8b
CS167	Supply	PROC8b
CS15	General exposures (closed systems) + Continuous process	PROC1
CS15	General exposures (closed systems) + Continuous process	PROC2
CS15	General exposures (closed systems)	PROC16
CS2	Sampling during the process	PROC3
CS36	Laboratory activities	PROC15
CS39	Cleaning and maintenance of equipment	PROC8a
CS103	Cleaning equipment and containers	PROC8a
CS67	Storage	PROC2

Processes, tasks, activities covered	Covers use as fuel (or fuel additive and additive component) within closed or under containment systems, including accidental exposures during transfer activities, the use, maintenance of equipment and waste handling.
Assessment methods	See section 3.

1.2. Conditions of use affecting exposure

1.2.1. Environmental exposure control: General measures applicable to all activities (ERC7, ESVOC SPERC 7.12a.v1)

ERC7	Industrial use of functional fluids
ESVOC SPERC 7.12a.v1	Use as fuel: Industrial (SU3)
Assessment methods	The ECETOC TRA method was used to assess the level of exposure in the workplace, where not expressly indicated. A quantitative exposure assessment (RCR) for potential aerosol formation has been carried out for all scenarios. The HBM (Hydrocarbon Block Method) was used to calculate the exposure environmental with the Petrorisk model.

Product characteristics	
Physical form of the product	Liquid, vapour pressure < 0.5 kPa under standard conditions
Concentration of substance in product	(unless otherwise specified)
	100 %
Vapour pressure	0,871 hPa

Quantity used, frequency and duration of use (or useful life)	
Annual tonnage of the site (tonnes/year):	45700
Regional tonnage (tonnes/year):	457000
Fraction of regional tonnage used locally:	1 %
Maximum daily tonnage of the site (kg/days):	150000
Covers daily exposure up to 8 hours (unless otherwise specified)	
Issue Days (days/year):	300

Technical and organisational conditions and measures	
Treat the emissions in such a way as to ensure typical removal efficiency of (%):	95 %
Ensure removal efficiency equal to 3 (%):	92.5 %
Do not distribute sludge generated by industrial water treatment on natural soils. Sludge generated by industrial water treatment shall be incinerated, contained or treated.	
Establish a containment structure around the storage facilities to prevent contamination of soil and water in case of leakage	

Conditions and measures relating to personal protection, hygiene and health assessment	
The implementation of relevant RMMs will ensure that the likelihood of an event occurring to because the risk of aspiration of the substance is negligible and that the risk is controlled at a level of no concern. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible, and the risk is considered to be controlled. Workers: - Do not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Do not ingest	General measures applicable to all activities

Conditions and measures relating to the municipal wastewater treatment plant	
Estimated range for urban wastewater treatment plant	2000 m³/d
Estimated wastewater substance removal by urban treatment plant	92,5 %

Conditions and measures related to waste treatment (including waste from articles)	
Dispose of waste in accordance with local environmental protection legislation.	
Dispose of waste in accordance with local environmental protection legislation.	

Other conditions affecting environmental exposure		
Local dilution factor in fresh water	10	
Local dilution factor in seawater	100	
Fraction released to air by the process (initial release before application of risk management measures)	0,00025	
Fraction released into process wastewater (initial release before application of risk management measures):	0,000001	
Fraction released into the soil by the process (initial release before application of Risk management)	0	

1.2.2. Worker exposure control: Bulk product transfer; Closed systems (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Transfer through closed lines	
Empty transfer lines before decoupling	
Wear protective gloves in accordance with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outside	
(closed systems)	

1.2.3. Worker exposure control: Filling/preparation of equipment from drums or containers. (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	

Conditions and measures relating to personal protection, hygiene and health assessment	
Use drum pumps or pay particular attention when pouring from containers	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Inside	

1.2.4. Worker exposure control: Refuelling (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Use drum pumps or pay particular attention when pouring from containers	
Use vapour recovery systems if necessary	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

1.2.5. Worker exposure control: General exposures (closed systems) + Continuous process (PROC1)

PROC1	Production or refining of chemicals in closed processes, with no possibility of exposure or in processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Equipment closed	
Ensure that the transfer of material takes place under containment or extraction ventilation conditions	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Inside	

1.2.6. Worker exposure control: General exposures (closed systems) + Continuous process (PROC2)

PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Equipment closed	
Ensure that the transfer of material takes place under containment or extraction ventilation conditions	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Inside	
With sampling	

1.2.7. Worker exposure control: General exposures (closed systems) (PROC16)

PROC16	Fuel use

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Closed equipment	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor	

1.2.8. Worker exposure control: Sampling during the process (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	≤ 1 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

1.2.9. Worker exposure control: laboratory activities (PROC15)

PROC15	Use as laboratory reagents

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Handle under a chemical hood or with extraction ventilation	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Inside	

1.2.10. Worker exposure control: Cleaning and maintenance of equipment (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Drain and flush the system before opening or servicing equipment	

Conditions and measures relating to personal protection, hygiene and health assessment	
Store drains in watertight containers pending disposal or subsequent recycling	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

1.2.11. Worker exposure control: Cleaning equipment and containers (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day
Not frequent	

Conditions and measures relating to personal protection, hygiene and health assessment	
Wear protective gloves that comply with EN374	
Wear appropriate protective clothing to prevent exposure through the skin	
Drain and flush the system before opening or servicing equipment	
Store drains in watertight containers pending disposal or subsequent recycling	
Ensure improved general ventilation by mechanical equipment	
If it is not possible to adopt the above technical and organizational control measures, provide the following Personal Protective Equipment	
Wear a forced ventilation respirator if required by safe access procedures.	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

1.2.12. Worker exposure control: Storage (PROC2)

PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Store the substance in a closed system	
Transfer through closed lines	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

1.3. Estimated exposure and reference to its source

1.3.1. Release and exposure to the environment General measures applicable to all activities (ERC7, ESVOC SPERC 7.12a.v1)

Information on additional scenarios
The ECETOC TRA method was used to assess the level of exposure in the workplace, where not explicitly stated. The HBM (Hydrocarbon Block Method) was used to calculate environmental exposure with the Petrorisk model.

1.3.2. Worker exposure Transfer of bulk products; Closed systems (PROC8b)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	5 ppm	0,303	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,466	

1.3.3. Worker exposure Filling/preparing equipment from drums or containers (PROC8b)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	5 ppm	0,303	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,466	

1.3.4. Worker exposure: Refuelling (PROC8b)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	5 ppm	0,303	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,466	

1.3.5. Worker exposure: general exposures (closed systems) + continuous process (PROC1)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,03 mg/kg bw/day	0,001	The ECETOC TRA method was used

Information on additional scenarios			
Inhalation – Long term - systemic effects	0,01 ppm	0,001	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,002	

1.3.6. Worker exposure: general exposures (closed systems) + continuous process (PROC2)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	1,37 mg/kg bw/day	0,033	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	0,1 ppm	0,006	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,039	

1.3.7. Worker exposure: general exposures (closed systems) (PROC16)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	0,1 ppm	0,006	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,014	

1.3.8. Worker exposure: Sampling during the process (PROC3)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	3 ppm	0,182	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,19	

1.3.9. Worker exposure: laboratory activities (PROC15)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	0,5 ppm	0,03	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,038	

1.3.10. Worker exposure: Cleaning and maintenance of equipment (PROC8a)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	13,71 mg/kg bw/day	0,326	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	1 ppm	0,061	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,387	

1.3.11. Worker exposure control: Cleaning equipment and containers (PROC8a)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	13,71 mg/kg bw/day	0,326	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	1 ppm	0,061	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,387	

1.3.12. Worker exposure Storage (PROC2)

Information on additional scenarios			
Exposure path and type of effects	**Exposure estimation**	**RCR**	**Method**
Dermal - Long term - systemic effects	1,37 mg/kg bw/day	0,033	The ECETOC TRA method was used
Inhalation – Long term - systemic effects	1 ppm	0,061	The ECETOC TRA method was used
RCR Sum – Long term - systemic effects		0,094	

1.4. Guidelines for downstream users (DU) to verify compliance with the exposure scenario (ES)

1.4.1. Environment

Guide - Environment	The guideline is based on assumptions of conditions of use that may not be applicable to all sites; therefore, a scaling exercise may be necessary to define appropriate site-specific risk management measures. The required air removal efficiency can be achieved using onsite technologies, individually or in combination. Treat the wastewater on site (before starting the discharge operation) to ensure the required removal efficiency of 92.5%.

1.4.2. Health

Guide - Health	Exposures are expected not to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions as described in Section 2 are applied. Where several Risk Management Measures/Operational Conditions are taken, Users shall be required to ensure that risks are managed at a level at least equivalent. The available data on hazard characteristics do not support the need to establish a DNEL for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be lethal in case of ingestion and penetration into the respiratory tract) refers to the possibility of inhalation, a non-quantifiable risk determined by physico-chemical properties (i.e., viscosity) which may occur during ingestion and in the case of vomiting after ingestion. A DNEL cannot be derived. Physical and chemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures shall be implemented to check the risk of inhalation. EXPOSURE SCENARIOS. The exposure scenarios for this substance did not require a quantitative assessment of exposures, but only a qualitative one. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible, and the risk is considered to be controlled. Worker: - Do not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Do not ingest

2. 02 - Professional; Use as fuel - Professional

2.1. Title section

Use as fuel - Professional	
ES Rif.: 02 Type of SE: Professional Version: 3.00 Date di revision: 02/04/2021	

Environment		Descriptors of uses
Gen07	General measures applicable to all activities	ERC8b, ERC8e, ESVOC SPERC 9.12b.v1

Worker		Descriptor of uses
CS14	Transfer of bulk products; closed systems	PROC8b
CS45	Filling/preparation of equipment from drums or container	PROC8b
CS167	Refuelling	PROC8b
CS15	General exposures (closed systems)	PROC1
CS15	General exposures (closed systems)	PROC2
CS15	General exposures (closed systems)	PROC16
CS39	Cleaning and maintenance of equipment	PROC8a
CS103	Cleaning and maintenance of equipment	PROC8a
CS67	Storage	PROC1
CS67	Storage	PROC2

Process, tasks, activities covered	Covers use as a fuel (or fuel additive), including activities associated with the transfer, use, maintenance of equipment and waste disposal.
Assessment method	See section 3.

2.2. Conditions of use affecting exposure

2.2.1. Environmental exposure control: General measures applicable to all activities (ERC8b, ERC8e, ESVOC SPERC 9.12b.v1)

ERC8b	Widespread use of reactive processing aids (no inclusion in or on article, inside)
ERC8e	Widespread use of reactive processing aids (without inclusion in or on the surface of an article, outdoor use)
ESVOC SPERC 9.12b.v1	Use as fuel: Professional (SU 22)
Assessment method	The ECETOC TRA method was used to assess the level of exposure in the workplace, where not expressly indicated. A quantitative exposure assessment (RCR) for potential aerosol formation has been carried out for all scenarios. The HBM (Hydrocarbon Block Method) was used to calculate the exposure environmental with the Petrorisk model.

Product characteristics	
Physical form of the product	Liquid, vapour pressure < 0.5 kPa under standard conditions
Concentration of substance in product	(unless otherwise specified)

Product characteristics	
	100 %
Vapour pression	0,871 hPa

Quantity used, frequency and duration of use (or useful life)	
Annual tonnage of the site (tonnes/year)	4,45
Regional tonnage (tonnes/year)	89000
Fraction of regional tonnage used locally	0,0005 %
Maximum daily tonnage of the site (kg/day)	120
Days of issue (days/year)	365
Covers daily exposure up to 8 hours (if not otherwise specified)	

Conditions and measures relating to personal protection, hygiene and health assessment	
Implementation of the relevant RMM will ensure that the probability of an event occurring due to the aspiration risk of the substance is negligible and that the risk is considered to be controlled at a level which is not of concern. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Do not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Do not ingest	General measures applicable to all activities

Conditions and measures relating to the municipal wastewater treatment plant	
Estimated range for urban wastewater treatment plant:	2000 m³/d
Estimated wastewater substance removal by means of an urban treatment plant:	92,5 %

Conditions and measures related to waste treatment (including waste from articles)	
Dispose of waste in accordance with local environmental protection legislation	
Dispose of waste in accordance with local environmental protection legislation.	

Other conditions affecting environmental exposure	
Local dilution factor in fresh water	10
Local dilution factor in seawater	100

Other conditions affecting environmental exposure		
Fraction released to air by the process (initial release before application of risk management measures)	0,0001	
Fraction released into process wastewater (initial release before application of risk management measures)	0,00001	
Fraction released into the soil by the process (initial release before application of risk management)	0,00001	

2.2.2. Worker exposure control: Bulk product transfer; Closed systems (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Make sure the operation is done outside	
Transfer through closed lines	
Empty transfer lines before decoupling	
Handling in a closed system	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outside	
Delivery of heating oil and diesel fuel	

2.2.3. Worker exposure control: Filling/preparation of equipment from drums or containers (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Use drum pumps or pay particular attention when pouring from containers	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	

Other conditions affecting worker exposure	
Indoor/outdoor uses	

2.2.4. Worker exposure control: Refuelling (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Use drum pumps or pay particular attention when pouring from containers	
Use vapour recovery systems if necessary	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

2.2.5. Worker exposure control: General exposure (closed system) (PROC1)

PROC1	Production or refining of chemicals in closed processes, with no possibility of exposure or in processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Closed equipment	
Handling in a closed system	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

2.2.6. Exposure worker control: General exposure (closed system) (PROC2)

PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Closed equipment	
Handling the substance within a predominantly closed system with extraction ventilation	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	
With sampling	

2.2.7. Exposure worker control: General exposure (closed system) (PROC16)

PROC16	Fuels use

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Closed equipment	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

2.2.8. Exposure worker control: Cleaning and maintenance of equipment (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	

Conditions and measures relating to personal protection, hygiene and health assessment	
Drain and flush the system before opening or servicing equipment	
Wear protective gloves that comply with EN374	
Store drains in watertight containers pending disposal or subsequent recycling	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

2.2.9. Worker exposure control: Cleaning equipment and containers (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Drain and flush the system before opening or servicing equipment	
Store drains in watertight containers pending disposal or subsequent recycling	
Ensure improved general ventilation by mechanical equipment	
If it is not possible to adopt the above technical and organizational control measures, provide the following Personal Protective Equipment	
Wear a forced ventilation respirator if required by safe access procedures.	
Wear protective gloves that comply with EN374	
Wear appropriate protective clothing to prevent exposure through the skin	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

2.2.10. Worker exposure control: Storage (PROC1)

PROC1	Production or refining of chemicals in closed processes, with no possibility of exposure or in processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Store the substance in a closed system	

Conditions and measures relating to personal protection, hygiene and health assessment	
Transfer through closed lines	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

2.2.11. Worker exposure control: Storage (PROC2)

PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Store the substance in a closed system	
Transfer through closed lines	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

2.3. Estimated exposure and reference to its source

2.3.1. Release and exposure to the environment General measures applicable to all activities (ERC8b, ERC8e, ESVOC SPERC 9.12b.v1)

Information of additional scenarios
The ECETOC TRA method was used to assess the level of exposure in the workplace, where not explicitly stated. The HBM (Hydrocarbon Block Method) was used to calculate environmental exposure with the Petrorisk model.

2.3.2. Worker exposure: Transfer of bulk products; Closed systems (PROC8b)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	0,7 ppm	0,042	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,205	

2.3.3. Worker exposure: Filling/preparing equipment from drums or containers (PROC8b)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used

Information of additional scenarios			
Inhalation - Long term - systemic effects	10 ppm	0,606	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects	0,769		

2.3.4. Worker exposure: Refuelling (PROC8b)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	10 ppm	0,606	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects	0,769		

2.3.5. Worker exposure: General exposure (closed system) (PROC1)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,03 mg/kg bw/day	0,001	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	0,01 ppm	0,001	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,002	

2.3.6. Worker exposure: General exposure (closed system) (PROC2)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	1,37 mg/kg bw/day	0,033	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	1 ppm	0,061	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,094	

2.3.7. Worker exposure: General exposure (closed system) (PROC16)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	0,14 ppm	0,008	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,016	

2.3.8. Worker exposure: Cleaning and maintenance of equipment (PROC8a)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	13,71 mg/kg bw/day	0,326	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	5 ppm	0,303	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,629	

2.3.9. Worker exposure: Cleaning of equipment and containers (PROC8a)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	1,371 mg/kg bw/day	0,033	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	5 ppm	0,303	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,336	

2.3.10. Worker exposure: Storage (PROC1)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,03 mg/kg bw/day	0,001	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	0,01 ppm	0,001	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,002	

2.3.11. Worker exposure: Storage (PROC2)

Information of additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	5 ppm	0,303	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,311	

2.4. Guidelines for downstream users (DU) to verify compliance with the exposure scenario (ES)

2.4.1. Environment

Guide - Environment	The guideline is based on assumptions of conditions of use that may not be applicable to all sites; therefore, a scaling exercise may be necessary to define appropriate site-specific risk management measures. The required air removal efficiency can be achieved using onsite technologies, individually or in combination. Treat wastewater on site (before discharging) to ensure the required removal efficiency of 92.5%

2.4.2. Health

Guide - Health	Exposures are expected not to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions as described in Section 2 are applied. Where several Risk Management Measures/Operational Conditions are taken, Users shall be required to ensure that risks are managed at a level at least equivalent. The available data on hazard characteristics do not support the need to establish a DNEL for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be lethal in case of ingestion and penetration into the respiratory tract) refers to the possibility of inhalation, a non-quantifiable risk determined by physico-chemical properties (i.e., viscosity) which may occur during ingestion and in the case of vomiting after ingestion. A DNEL cannot be derived. Physical and chemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the measures listed below shall be implemented to control the risk of inhalation. EXPOSURE SCENARIO Exposures are not expected to exceed the DN(M)EL when applied Exposure scenarios for this substance did not require a quantitative assessment of exposures, but only a qualitative one. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Not Ingest

3. 03 - Consumer; Use as fuel (consumer)

3.1. Title section

Use as fuel (consumer)	
ES Rif.: 03 Type of SE: Consumer Version: 3.0 Date of revision: 02/04/2021	

Consumer		Descriptors of uses
Gen08	Measures of a general nature	PC13, ERC8b, ERC8e, ESVOC SPERC 9.12c.v1
Cons01	Fuels (liquid): Motor vehicle refuelling	PC13
Cons02	Fuels (liquid): gardening equipment – use	PC13
Cons03	Fuels (liquid): gardening equipment – Refuelling	PC13
Cons04	Liquid: Lamp oil	PC13
Cons05	Liquid: heating fuel domestic environments	PC13

Processes, tasks, activities covered	Covers consumer use as liquid fuel
Assessment method	See Section 3.

3.2. Conditions of use affecting exposure

3.2.1. Control of end-consumer exposures: General measures (PC13, ERC8b, ERC8e, ESVOC SPERC 9.12c.v1)

PC13	Fuels
ERC8b	Widespread use of reactive processing aids (no inclusion in or on article, inside)
ERC8e	Widespread use of reactive processing aids (without inclusion in or on the surface of an article, outdoor use)
ESVOC SPERC 9.12c.v1	Use as fuel: Consumer (SU21)

Product characteristics	
Physical form of the product	Liquid, vapour pressure < 0.5 kPa under standard conditions
Concentration of substance in product	(unless otherwise specified)
	≤ 100 %

Quantity used (or contained in articles), frequency and duration of use/exposure	
Regional tonnage (tonnes/year)	55700 t/year
Fraction of regional tonnage used locally	0,0005
Annual tonnage of the site	2,79 t/year
Maximum daily tonnage of the site (kg/day)	7,6 kg/day
Days of issue (days/year):	365 days/year

Measures concerning advice and information for consumers, including on hygiene and personal protection	
Implementation of the relevant RMMs will ensure that the likelihood of an event occurring due to the aspiration risk of the substance is negligible and that the risk is considered to be controlled at a level of no concern. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Not Ingest	

Other conditions affecting consumer exposure	
Unless otherwise specified:	
Covers concentrations up to (%)	100 %
Covers exposure up to (hours/event)	2
Requires the product to be used at room temperature	
Covers use in a room the size of (m^3)	20 m^3
Maintain good ventilation.	

3.2.2. End-consumer exposure control: Fuels (liquid): Motor vehicle refuelling (PC13)

PC13	Fuels

Other conditions affecting consumer exposure	
Unless otherwise specified:	
Covers concentrations up to (%)	100 %
Covers usage up to (days/year)	52
Covers usage up to (times/day of use)	1
Covers an area of skin contact up to (cm^2)	210 cm^2
For each occasion of use, it covers the use of a quantity of (g)	8600
Covers use in a room the size of (m^3)	100 m^3
Covers exposure up to (hours/event)	0,05
Covers outdoor use	

3.2.3. End-consumer exposure control: Fuels (liquid): gardening equipment - use (PC13)

PC13	Fuels

Other conditions affecting consumer exposure	
Unless otherwise specified:	
Covers concentrations up to (%)	100 %
Covers usage up to (days/year)	26
Covers usage up to (times/day of use)	1
For each occasion of use, it covers the use of a quantity of (g)	772
Covers use in a room the size of (m^3)	100 m^3
Covers exposure up to (hours/event)	2
Covers outdoor use	

3.2.4. End-consumer exposure control: Fuels (liquid): gardening equipment - use – Refuelling (PC13)

PC13	Fuels

Specific operating conditions	
Unless otherwise specified:	
Covers concentrations up to (%)	1 %
Covers usage up to (days/year)	26 days/year
Covers usage up to (times/day of use)	1
Covers an area of skin contact up to (cm^2)	420 cm^2
For each occasion of use, it covers the use of a quantity of (g):	750 g
Covers use in a garage for one car (34 m^3) with typical ventilation	
Covers use in a room the size of (m^3):	34 m^3
Covers exposure up to (hours/event):	0,03 hours/event

Other conditions affecting consumer exposure	
Unless otherwise specified:	
Covers concentrations up to (%)	100 %
Covers usage up to (days/year)	26
Covers usage up to (times/day of use)	1
Covers an area of skin contact up to (cm^2)	420 cm^2
For each occasion of use, it covers the use of a quantity up to (g):	772
Covers use in a garage for one car (34 m^3) with typical ventilation	
Maintain good ventilation	
Covers use in a room the size of (m^3)	34 m^3
Covers exposure up to (hours/event): 0,03	

3.2.5. Final consumer exposure control: Liquid: Lamp oil (PC13)

PC13	Fuels

Other conditions affecting consumer exposure	
Unless otherwise specified:	
Covers concentrations up to (%)	100 %
Covers usage up to (days/year)	52
Covers usage up to (times/day of use)	1
Covers an area of skin contact up to (cm^2):	210 cm^2
For each occasion of use, it covers the use of a quantity up to (g):	100
Covers use in a room the size of (m^3)	20 m^3
Covers exposure up to (hours/event)	0,01

3.2.6. End-consumer exposure control: Liquid: domestic heating fuel (PC13)

PC13	Fuels

Other conditions affecting consumer exposure	
Unless otherwise specified:	
Covers concentrations up to (%)	100 %
Covers usage up to (days/year)	365
Covers usage up to (times/day of use)	1
Covers an area of skin contact up to (cm^2):	210 c m^2
For each occasion of use, it covers the use of a quantity up to (g):	1500
Covers use in a room the size of (m^3):	20 m^3
Covers exposure up to (hours/event)	0,03

3.3. Estimated exposure and reference to its source

3.3.1. Consumer exposure General measures (PC13, ERC8b, ERC8e, ESVOC SPERC 9.12c.v1)

Information on additional scenarios
To assessing exposures to the consumer, where not expressly indicated, the ECETOC TRA tool has been used.

3.3.2. Consumer exposure Fuels (liquid): Motor vehicle refuelling (PC13)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Oral - Long term - systemic effects	0 mg/kg body weight/day		The ECETOC TRA model was used
Dermal - Long term - systemic effects	4 mg/kg body weight/day	0,222	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,227 mg/m^3	0,002	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,224	

3.3.3. Consumer exposure Fuels (liquid): gardening equipment - use (PC13)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Oral - Long term - systemic effects	0 mg/kg body weight/day	0	The ECETOC TRA model was used
Dermal - Long term - systemic effects	0 mg/kg body weight/day	0	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,524 mg/m³	0,006	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,006	

3.3.4. Consumer exposure Fuels (liquid): gardening equipment - Refuelling (PC13)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Oral - Long term - systemic effects	0 mg/kg body weight/day	0	The ECETOC TRA model was used
Dermal - Long term - systemic effects	3,92 mg/kg body weight/day	0,218	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,058 mg/m³	0,001	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,219	

3.3.5. Consumer exposure Liquid: Lamp oil (PC13)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Oral - Long term - systemic effects	0 mg/kg body weight/day	0	The ECETOC TRA model was used
Dermal - Long term - systemic effects	4 mg/kg body weight/day	0,222	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,019 mg/m³	0	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,222	

3.3.6. Consumer exposure Liquid: domestic heating fuel (PC13)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Oral - Long term - systemic effects	0 mg/kg body weight/day	0	The ECETOC TRA model was used
Dermal - Long term - systemic effects	2,8 mg/kg body weight/day	0,156	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	1,858 mg/m³	0,02	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,176	

3.4. Guidelines for downstream users (DU) to verify compliance with the exposure scenario (ES)

3.4.1.
Environment

Guide - Environment	The guideline is based on assumptions of conditions of use that may not be applicable to all sites; therefore, a scaling exercise may be necessary to define appropriate site-specific risk management measures

3.4.2. Health

Guide - Health	EXPOSURE SCENARIO The exposure scenarios for this substance did not require a quantitative assessment of exposures, but only a qualitative one. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Do not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Do not ingest

11. 11 - Industrial, Production; Distribution of the substance

11.1. Titles section

Substance distribution	
ES Rif.: 11 Type of SE: Industrial Version: 3.0 Date of revision: 02/04/2021	

Environment		Descriptors of uses
Gen02	General measures applicable to all activities	ERC1, ESVOC SPERC 1.1b.v1

Worker		Descriptors of uses
CS15	General exposures (closed systems) + closed batch process	PROC3
CS2	Sampling during the process	PROC3
CS36	Laboratory activities	PROC15
CS14	Transfer of bulk products; Closed systems	PROC8b
CS14	Transfer of bulk products; Closed systems	PROC8b
CS39	Cleaning and maintenance of equipment	PROC8a
CS67	Storage	PROC2

Processes, tasks, activities covered	Loading (on boats/barges, wheeled or rail-mounted tank wagons and IBC containers) and repacking (into drums and small containers) of the substance including sampling, storage, unloading, distribution and associated laboratory activities.
Method of valuation	See Section 3.

11.2. Conditions of use affecting exposure

11.2.1. Environmental exposure control: General measures applicable to all activities (ERC1, ESVOC SPERC 1.1b.v1)

ERC1	Manufacture of the substance
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
Method of valuation	The ECETOC TRA method was used to assess the level of exposure in the workplace, where not expressly indicated A quantitative exposure assessment (RCR) for potential aerosol formation has been carried out for all scenarios. The HBM (Hydrocarbon Block Method) was used to calculate environmental exposure with the Petrorisk model.

Characteristics of the product	Liquid, vapour pressure < 0.5 kPa under standard conditions
Physical form of the product	(unless otherwise specified)
Concentration of substance in product	100 %
	0,871 hPa
Vapour pressure	

Quantity used, frequency and duration of use (or useful life)	
Annual tonnage of the site (tonnes/year)	40

Quantity used, frequency and duration of use (or useful life)	
Regional tonnage (tonnes/year)	800000
Fraction of regional tonnage used locally	0,0005 %
Maximum daily tonnage of the site (kg/days)	130
Issue Days (days/year)	300
Covers daily exposure up to 8 hours (unless otherwise specified)	

Technical and organisational conditions and measures	
Treat the emissions in such a way as to ensure a typical removal efficiency of (%)	90 %
Ensure removal efficiency equal to (%):	≥ 92,5 %
Do not distribute sludge generated by industrial water treatment on natural soils. Sludge generated by industrial water treatment shall be incinerated, contained or treated.	
Establish a containment structure around the storage facilities to prevent contamination of soil and water in case of leakage	

Conditions and measures relating to personal protection, hygiene and health assessment	
The implementation of relevant RMMs will ensure that the likelihood of an event occurring due to the aspiration risk of the substance is negligible and that the risk is considered to be controlled at a level which is not of concern. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Do not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumers: - Do not ingest	General measures applicable to all activities

Conditions and measures related to waste treatment (including waste from articles)	
Dispose of waste in accordance with local environmental protection legislation.	
Dispose of waste in accordance with local environmental protection legislation.	

Other conditions affecting environmental exposure		
Local dilution factor in fresh water	10	
Local dilution factor in seawater	100	
Fraction released to air by the process (initial release before application of risk management measures)	0,00001	

Other conditions affecting environmental exposure		
Fraction released into process wastewater (initial release before application of risk management measures)	0,0000001	
Fraction released into the soil by the process (initial release before application of risk management)	0,00001	

11.2.2. Worker exposure control: general exposures (closed systems) + discontinuous Process (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Make sure the operation is done outside	
Handling in a closed system	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

11.2.3. Worker exposure control: Sampling during the process (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	≤ 1 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Make sure the operation is done outside	
Wear protective gloves in accordance with EN374	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

11.2.4. Worker exposure control: laboratory activities (PROC15)

PROC15	Use as laboratory reagents

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
With LEV	
Handle under a chemical hood or with extraction ventilation	
Wear protective gloves in accordance with EN374	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor	

11.2.5. Worker exposure control: Bulk product transfer; Closed systems (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Make sure the operation is done outdoor	
Transfer through closed lines	
Empty transfer lines before decoupling	
Use vapour recovery systems if necessary	
Wear protective gloves in accordance with EN374	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	
Loading on road or rail tank wagons	
(closed system)	

11.2.6. Worker exposure control: Bulk product transfer; Closed systems (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Make sure the operation is done outdoor	
Transfer through closed lines	
Empty transfer lines before decoupling	

Conditions and measures relating to personal protection, hygiene and health assessment	
Wear protective gloves in accordance with EN374	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	
(closed system)	
Loading or unloading on and from vessels/barges	

11.2.7. Worker exposure control: Cleaning and maintenance of equipment (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Drain and flush the system before opening or servicing equipment	
Store drains in watertight containers pending disposal or subsequent recycling	
Wear protective gloves that comply with EN374.	
It is assumed that all waste products are collected for reprocessing or use as fuel	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor use	

11.2.8. Worker exposure control: Storage (PROC2)

PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Make sure the operation is done outside	
Transfer through closed lines	
Store the substance in a closed system	
Wear protective gloves that comply with EN374.	

Other conditions affecting exposure workers	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

11.3. Estimated exposure and reference to its source

11.3.1. Release and environmental exposure General measures applicable to all activities (ERC1, ESVOC SPERC 1.1b.v1)

Information on additional scenarios
The ECETOC TRA method was used to assess the level of exposure in the workplace, where not explicitly stated. The HBM (Hydrocarbon Block Method) was used to calculate environmental exposure with the Petrorisk model.

11.3.2. Worker exposure General exposures (closed systems) + discontinuous process (PROC3)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	2,1 ppm	0,127	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,135	

11.3.3. Worker exposure: Sampling during the process (PROC3)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	2,1 ppm	0,127	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,135	

11.3.4. Worker exposure: Laboratory activities (PROC15)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	0,5 ppm	0,03	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,038	

11.3.5. Worker exposure: Transfer of bulk products; Closed systems (PROC8b)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	6,86 mg/kg bw/day	0,163	

Information on additional scenarios			
Inhalation - Long term - systemic effects	0,11 ppm	0,007	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,17	

11.3.6. Worker exposure: Transfer of bulk products; Closed systems (PROC8b)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	3,5 ppm	0,212	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,375	

11.3.7. Worker exposure: Cleaning and maintenance of equipment (PROC8a)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	13,71 mg/kg bw/day	0,326	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	1 ppm	0,061	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,387	

11.3.8. Worker exposure: Storage (PROC2)

Information on additional scenarios			
Exposure path and type of effect	**Estimated exposure**	**RCR**	**Method**
Dermal – Long term - systemic effects	1,37 mg/kg bw/day	0,033	The ECETOC TRA model was used
Inhalation - Long term - systemic effects	0,7 ppm	0,042	The ECETOC TRA model was used
RCR Sum - Long term - systemic effects		0,075	

11.4. Guidelines for downstream users (DU) to verify compliance with the exposure scenario (ES)

11.4.1. Environment

Guide - Environment	The guideline is based on assumptions of conditions of use that may not be applicable to all sites; therefore, a scaling exercise may be necessary to define appropriate site-specific risk management measures. The required air removal efficiency can be achieved using onsite technologies, individually or in combination. Treat wastewater on site (before discharging) to ensure required removal efficiency of 92.5%

11.4.2. Health

Guide - Health	Exposures are not expected to exceed DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are applied. Where different Risk Management Measures/Operating Conditions are adopted, users are required to ensure that risks are managed to at least an equivalent level. Available data on hazard characteristics do not support the need to establish a DNEL for other health effects. Risk Management Measures are based on qualitative risk characterisation. Risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a non-quantifiable risk determined by the physicochemical properties (i.e. viscosity) that may occur during ingestion and also in the case of vomiting after ingestion. A DNEL cannot be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the measures listed below must be implemented to control the risk of inhalation. EXPOSURE SCENARIO The exposure scenarios for this substance did not require a quantitative exposure assessment, only a qualitative one. Given the hazard characteristics (H304), the implementation of relevant risk management measures ensures that the probability of the event related to the substance aspiration hazard is negligible, and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumer: - Not ingest

12. 12 - Industrial, Formulation; Formulation and (re)packaging of substances and mixtures: fuel mixtures

12.1. Titles section

Formulation and (re)packaging of substances and mixtures: fuel mixtures	
ES Rif.: 12 Type of SE: Industrial Version: 3.0 Date of revision: 02/04/2021	

Environment		Descriptors of uses
Gen03	General measures applicable to all activities	ERC2, ESVOC SPERC 2.2.v1

Worker		Descriptors of uses
CS15	General exposures (closed systems) + discontinuous process	PROC3
CS29	Mixing operations (closed systems)	PROC3
CS2	Sampling during the process	PROC3
CS36	Laboratory activities	PROC15
CS14	Transfer of bulk products; closed systems	PROC8b
CS39	Cleaning and maintenance of equipment	PROC8a
CS67	Storage	PROC2

Processes, tasks, covered activities	Formulation, packaging and repackaging of the substance and its mixtures in discontinuous or continuous operations, including storage, transfer of materials, mixing, pelletisation, compression, pelletisation, extrusion, large and small-scale packaging, sampling, maintenance and associated laboratory activities.
Assessment method	See section 3.

12.2. Use condition affecting exposure

12.2.1. Environmental exposure control: General measures applicable to all activities (ERC2, ESVOC SPERC 2.2.v1)

ERC2	Formulation of preparations
ESVOC SPERC 2.2.v1	Formulation and (re)packaging of substances and mixtures: Industrial (SU10)
Assessment method	The ECETOC TRA method was used to assess the level of exposure in the workplace, where not expressly indicated. A quantitative exposure assessment (RCR) for potential aerosol formation has been carried out for all scenarios. The HBM (Hydrocarbon Block Method) was used to calculate the exposure environmental with the Petrorisk model

Product characteristics	
Physical form of the product	Liquid, vapour pressure < 0.5 kPa under standard conditions
Concentration of substance in product	(unless otherwise specified)
	100 %
Vapour pressure	0,871 hPa

Quantity used, frequency and duration of use (or useful life)	
Annual tonnage of the site (tonnes/year)	30000
Regional tonnage (tonnes/year)	672000
Fraction of regional tonnage used locally	1 %
Maximum daily tonnage of the site (kg/day)	10000
Days of issue (days/year)	300
Covers daily exposure up to 8 hours (unless otherwise specified)	

Technical and organisational conditions and measures	
Treat the emissions in such a way as to ensure a typical removal efficiency of (%)	0 %
Ensure removal efficiency of (%):	≥ 92,5 %
Do not distribute sludge generated by industrial water treatment on natural soils. Sludge generated by industrial water treatment shall be incinerated, contained or treated	
Establish a containment structure around the storage facilities to prevent contamination of soil and water in case of leakage	

Conditions and measures relating to personal protection, hygiene and health assessment	
Implementation of the relevant RMMs will ensure that the likelihood of an event occurring due to the aspiration risk of the substance is negligible and that the risk is considered to be controlled at a level of no concern. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumer: - Not ingest	General measures applicable to all activities

Conditions and measures related to waste treatment (including waste from articles)	
Dispose of waste in accordance with local environmental protection legislation	
Dispose of waste in accordance with local environmental protection legislation	

Other conditions affecting environmental exposure	
Local dilution factor in fresh water	10
Local dilution factor in sea water	100

Other conditions affecting environmental exposure		
Fraction released to air by the process (initial release before application of risk management measures)	0,0025	
Fraction released into process wastewater (initial release before application of risk management measures)	0,000005	
Fraction released into the soil by the process (initial release before application of risk management)	0,0001	

12.2.2. Worker exposure control: General exposure (closed system) + discontinuous Process (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Handling the substance in a closed system	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.2.3. Worker exposure control: Mixing operations (closed systems) (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day
Discontinuous process	

Conditions and measures relating to personal protection, hygiene and health assessment	
Ensure activities are carried out outdoor	
Transfer through closed lines	
Wear protective gloves in accordance with EN374.	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.2.4. Worker exposure control: sampling during process (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	≤ 1 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Wear protective gloves in accordance with EN374.	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.2.5. Worker exposure control: Laboratory activities (PROC15)

PROC15	Use as laboratory reagents

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
With LEV	
Handle under a chemical hood or with extraction ventilation	
Wear protective gloves in accordance with EN374.	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.2.6. Worker exposure control: Bulk product transfer; Closed systems (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities dedicate

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Transfer through closed lines	
Empty transfer lines before decoupling	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.2.7. Worker exposure control: Cleaning and maintenance of equipment (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Drain and flush the system before opening or servicing equipment	
Store drains in watertight containers pending disposal or subsequent recycling	
Wear protective gloves that comply with EN374.	
It is assumed that all waste products are collected for reprocessing or use as fuel	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.2.8. Worker exposure control: Storage (PROC2)

PROC2	Production or refining of chemicals in a closed and continuous process, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Store the substance in a closed system	
Transfer through closed lines	
Wear protective gloves in accordance with EN374.	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Outdoor	

12.3. Estimated exposure and reference to its source

12.3.1. Release and exposure to the environment General measures applicable to all activities (ERC2, ESVOC SPERC 2.2.v1)

Information on additional scenarios
The ECETOC TRA method was used to assess the level of exposure in the workplace, where not explicitly stated. The HBM (Hydrocarbon Block Method) was used to calculate environmental exposure with the Petrorisk model.

12.3.2. Worker exposure: General exposure (closed system) + discontinuous Process (PROC3)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	2,1 ppm	0,127	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,135	

12.3.3. Worker exposure: Mixing operations (closed system) (PROC3)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	2,1 ppm	0,127	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,135	

12.3.4. Worker exposure: Sampling during the process (PROC3)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	2,1 ppm	0,127	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,135	

12.3.5. Worker exposure: Laboratory activities (PROC15)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,5 ppm	0,03	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,038	

12.3.6. Worker exposure: Transfer of bulk products; closed systems (PROC8b)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	3,5 ppm	0,212	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,375	

12.3.7. Worker exposure: Cleaning and maintenance of equipment (PROC8a)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	13,71 mg/kg bw/day	0,326	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	1 ppm	0,061	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,387	

12.3.8. Worker exposure: Storage (PROC2)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	1,37 mg/kg bw/day	0,033	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,7 ppm	0,042	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,075	

12.4. Guidelines for downstream users (DU) to verify compliance with the exposure scenario (ES)

12.4.1. Environment

Guide - Environment	The guideline is based on assumptions of conditions of use that may not be applicable to all sites; therefore, a scaling exercise may be necessary to define appropriate site-specific risk management measures. The required air removal efficiency can be achieved using onsite technologies, individually or in combination. Treat wastewater on site (before discharging) to ensure required removal efficiency of 92.5%

12.4.2. Health

Guide - Health	Exposures are expected not to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions as described in Section 2 are applied. Where several Risk Management Measures/Operational Conditions are taken, Users shall be required to ensure that risks are managed at a level at least equivalent. The available data on hazard characteristics do not support the need to establish a DNEL for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be lethal in case of ingestion and penetration into the respiratory tract) refers to the possibility of inhalation, a non-quantifiable risk determined by physic-chemical properties (i.e., viscosity) which may occur during ingestion and also in the case of vomiting after ingestion. A DNEL cannot be derived. Physical and chemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the measures listed below shall be implemented to control the risk of inhalation EXPOSURE SCENARIOS The exposure scenarios for this substance did not require a quantitative assessment of exposures, but only a qualitative one. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumer: - Not ingest

14. 14 - Industrial, Formulation; Formulation and (re)packaging of substances and mixtures: (re)packaging

14.1. Titles section

Formulation and (re)packaging of substances and mixtures: (re)packaging	
ES Rif.: 14 Type of SE: Industrial Version: 3.0 Date of revision: 02/04/2021	

Environment		Descriptors of uses
Gen05	General measures applicable to all activities	ERC2, ESVOC SPERC 2.2.v1

Worker		Descriptors of uses
CS2	Sampling during the process	PROC3
CS36	Laboratory activities	PROC15
CS14	Transfer of bulk products; closed systems	PROC8b
CS8	Bulk/lot transfers	PROC8b
CS6	Filling of drums and small containers	PROC9
CS39	Cleaning and maintenance of equipment	PROC8a
CS67	Storage	PROC1

Processes, tasks, covered activities	Formulation, packaging and repackaging of the substance and its mixtures in discontinuous or continuous operations, including storage, transfer of materials, mixing, pelletisation, compression, pelletisation, extrusion, large and small-scale packaging, sampling, maintenance and associated laboratory activities.
Assessment method	See Section 3.

14.2. Use conditions affecting exposure

14.2.1. Environment exposure control: General measures applicable to all activities (ERC2, ESVOC SPERC 2.2.v1)

ERC2	Formulation of preparations
ESVOC SPERC 2.2.v1	Formulation and (re)packaging of substances and mixtures: Industrial (SU10)
Assessment method	The ECETOC TRA method was used to assess the level of exposure in the workplace, where not expressly indicated. A quantitative exposure assessment (RCR) for potential aerosol formation has been carried out for all scenarios. The HBM (Hydrocarbon Block Method) was used to calculate the exposure environmental with the Petrorisk model.

Product characteristics	
Physical form of the product	Liquid, vapour pression < 0,5 kPa in standard conditions
Concentration of substance in product	(unless otherwise specified)
	100 %
Vapour pression	0,871 hPa

Quantity used, frequency and duration of use (or useful life)	
Annual tonnage of the site (tonnes/year)	4000
Regional tonnage (tonnes/year)	40000
Fraction of regional tonnage used locally	1 %
Maximum daily tonnage of the site (kg/day)	13000
Day of issue (day/year):	300
Covers daily exposure up to 8 hours (unless otherwise specified)	

Technical and organisational conditions and measures	
Treat the emissions in a way that ensures typical removal efficiency of (%):	0 %
Ensure removal efficiency equal to [3] (%):	≥ 92,5 %
Do not distribute sludge generated by industrial water treatment on natural soils. Sludge generated by industrial water treatment shall be incinerated, contained or treated	
Establish a containment structure around the storage facilities to prevent contamination of soil and water in case of leakage	

Conditions and measures relating to personal protection, hygiene and health assessment	
The implementation of relevant RMMs will ensure that the likelihood of an event occurring due to the aspiration risk of the substance is negligible and that the risk is considered to be controlled at a level which is not of concern. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumer: - Not ingest	General measures applicable to all activities

Conditions and measures relating to the municipal wastewater treatment plant	
Estimated range for urban wastewater treatment plant	2000 m³/d
Estimated wastewater substance removal by means of an urban treatment plant	92,5 %

Conditions and measures related to waste treatment (including waste from articles)	
Dispose of waste in accordance with local environmental protection legislation.	
Dispose of waste in accordance with local environmental protection legislation	

Other conditions affecting environmental exposure		
Local dilution factor in fresh water	10	
Local dilution factor in sea water	100	
Fraction released to air by the process (initial release before application of risk management measures	0,0025	
Fraction released into process wastewater (initial release before application of risk management measures)	0,000005	
Fraction released into the soil by the process (initial release before application of risk management)	0,0001	

14.2.2. Worker exposure control: Sampling during the process (PROC3)

PROC3	Manufacture or formulation of chemicals in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	≤ 1 h/day

Technical and organisational conditions and measures		
Ensure that samples are taken under containment or ventilation extraction conditions		

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Wear protective gloves in accordance with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	

14.2.3. Worker exposure control: Laboratory activities (PROC15)

PROC15	Use as laboratory reagents

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
With LEV	
Handle under a chemical hood or with extraction ventilation	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor	

14.2.4. Worker exposure control: Bulk product transfer; Closed systems (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Transfer through closed lines	
Empty transfer lines before decoupling	
Ensure that the material is transferred under containment or extraction ventilation conditions	
Store drains in watertight containers pending disposal or subsequent recycling	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assumes that the activities are carried out at room temperature (unless otherwise specified)	
Indoor/outdoor uses	
(closed system)	

14.2.5. Worker exposure control: Transfer of drums/lots (PROC8b)

PROC8b	Transfer of a substance or mixture (filling/emptying) to dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day
Covers frequency up to	monthly use

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Use drum pumps or pay particular attention when pouring from containers	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assume that activities are carried out at a room temperature (unless otherwise specified)	
Outdoor/indoor uses	

14.2.6. Worker exposure control: Filling of drums and small containers (PROC9)

PROC9	Transfer of a substance or preparation into small containers (dedicated filling line, including weighing)

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
With LEV	
Fill containers/jerrycans at dedicated filling points provided ventilation to localised extractions	
Transfer through closed lines	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assume that activities are carried out at a room temperature (unless otherwise specified)	
Outdoor/indoor uses	

14.2.7. Worker exposure control: Cleaning and maintenance of equipment (PROC8a)

PROC8a	Transfer of a substance or preparation (filling/emptying) to non-dedicated facilities

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Drain and flush the system before opening or servicing equipment	
Store drains in watertight containers pending disposal or subsequent recycling	
Wear protective gloves that comply with EN374	

Other conditions affecting worker exposure	
Assume that activities are carried out at a room temperature (unless otherwise specified)	
Indoor	

14.2.8. Worker exposure control: Storage (PROC1)

PROC1	Production or refining of chemicals in closed processes, with no possibility of exposure or in processes with equivalent containment conditions

Quantity used (or contained in articles), frequency and duration of use/exposure	
Duration of exposure	> 4 h/day

Conditions and measures relating to personal protection, hygiene and health assessment	
Without LEV	
Store the substance in a closed system	
Transfer through closed lines	

onditions and measures relating to personal protection, hygiene and health assessment	
Storing finished products in closed containers (e.g.: bulk storage tanks, cans, drums)	

Other conditions affecting worker exposure	
Assume that activities are carried out at a room temperature (unless otherwise specified)	
Outdoor/indoor uses	

14.3. Estimated exposure and reference to its source

14.3.1. Release and environmental exposure General measures applicable to all activities (ERC2, ESVOC SPERC 2.2.v1)

Information on additional scenarios
The ECETOC TRA method was used to assess the level of exposure in the workplace, where not explicitly stated. The HBM (Hydrocarbon Block Method) was used to calculate environmental exposure with the Petrorisk model.

14.3.2. Worker exposure: Sampling during the process (PROC3)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	3 ppm	0,182	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,19	

14.3.3. Worker exposure: Laboratory activities (PROC15)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,34 mg/kg bw/day	0,008	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,5 ppm	0,03	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,038	

14.3.4. Worker exposure: Transfer of bulk products; Closed systems (PROC8b)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	5 ppm	0,303	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,466	

14.3.5. Worker exposure: Transfer of drums/lots (PROC8b)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	5 ppm	0,303	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,466	

14.3.6. Worker exposure: Filling of drums and small containers (PROC9)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	6,86 mg/kg bw/day	0,163	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,5 ppm	0,03	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,193	

14.3.7. Worker exposure: Cleaning and maintenance of equipment (PROC8a)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	13,71 mg/kg bw/day	0,326	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	1 ppm	0,061	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,387	

14.3.8. Worker exposure: Storage (PROC1)

Information on additional scenarios			
Exposure path and type of effects	**Estimated exposure**	**RCR**	**Method**
Dermal - Long term - systemic effects	0,03 mg/kg bw/day	0,001	The ECETOC TRA model was used
Inhalation – Long term - systemic effects	0,01 ppm	0,001	The ECETOC TRA model was used
RCR Sum – Long term - systemic effects		0,002	

14.4. Guidelines for downstream users (DU) to verify compliance with the exposure scenario (ES)

14.4.1. Environment

Guide - Environment	The guideline is based on assumptions of conditions of use that may not be applicable to all sites; therefore, a scaling exercise may be necessary to define appropriate site-specific risk management measures. The required air removal efficiency can be achieved using onsite technologies, individually or in combination. Treat wastewater on site (before discharging) to ensure required removal efficiency of 92,5%.

14.4.2. Health

Guide - Health	Exposures are expected not to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions as described in Section 2 are applied. Where several Risk Management Measures/Operational Conditions are taken, Users shall be required to ensure that risks are managed at a level at least equivalent. The available data on hazard characteristics do not support the need to establish a DNEL for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be lethal in case of ingestion and penetration into the respiratory tract) refers to the possibility of inhalation, a non-quantifiable risk determined by physic-chemical properties (i.e., viscosity) which may occur during ingestion and also in the case of vomiting after ingestion. A DNEL cannot be derived. Physical and chemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the measures listed below shall be implemented to control the risk of inhalation. EXPOSURE SCENARIOS The exposure scenarios for this substance did not require a quantitative assessment of exposures, but only a qualitative one. Given the hazard characteristics (H304), implementation of relevant risk management measures ensures that the likelihood of the aspirating hazard event of the substance is negligible and the risk is considered to be controlled. Workers: - Not ingest - Implement basic industrial hygiene conditions - Avoid splashing - Avoid contact with contaminated objects or tools - Implement management and supervisory measures to verify that risk management measures are used correctly and operating conditions are followed. - Training of personnel on proper use practices - Adequate standard of personal hygiene Consumer: - Not ingest