

Material Safety Data Sheet

According to Regulation (EC) n. 1907/2006 and subsequent amendments thereto

FUELS, DIESEL

Q8 Quaser s.r.l.



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

1.1 Product identifier

<i>Product name:</i>	Fuels, Diesel
<i>Synonym:</i>	Fuels, Diesel (all types)
<i>CAS Number:</i>	not applicable (mixture)
<i>EC Number:</i>	not applicable (mixture)
<i>Index Number:</i>	not applicable (mixture)
<i>REACH Registration Number:</i>	not applicable (mixture)

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

COMMON USE: Use as a fuel, heating fuel and other industrial uses

IDENTIFIED USES IN THE CHEMICAL SAFETY REPORT: description of Identified Uses

Life cycle:

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

Uses at industrial sites: Distribution of substance, Use as a fuel

Widespread uses by professional workers: Use as a fuel

Consumer uses: Use as a fuel

USES ADVISED AGAINST: The uses of substances are the uses are indicated above. Other uses are not recommended unless an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled.

See Annex for a complete list of uses and use descriptors, for which an ES is provided.

1.3 Details of the supplier of the safety data sheet

<i>Company name:</i>	Q8 Quaser s.r.l.
<i>Address:</i>	Via dell'Oceano Indiano, 13
<i>City / Nation:</i>	00144 – Roma (Italia)
<i>Telephone:</i>	+39 06-520881
<i>Competent Technician E-mail:</i>	schede@q8.it

1.4 Emergency telephone number

Italy:	Centro Antiveneni Ospedale Niguarda (Milano), +39 02.66101029
Foreign countries:	Contact the closest Poisons Information Centre

SECTION 2: HAZARDS IDENTIFICATION

Physico-chemical hazards: Liquid and vapour flammable.

Human health hazard: The mixture causes skin irritation, harmful if inhaled. Because of the low viscosity of the product, it may be aspirated into the lungs or directly after ingestion or later in the case of spontaneous or induced vomiting, in such cases there may be aspiration pneumonia. May cause damage to organs through prolonged or repeated exposure. Suspected of causing cancer.

Environmental hazard: Toxic to aquatic life with long lasting effects.

2.1 Classification of the substance or mixture

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Flam. Liq. 3:	H226
Asp. Tox. 1:	H304
Skin Irrit. 2:	H315
Acute Tox. 4:	H332
Carc. 2:	H351
STOT RE 2:	H373 (<i>thyme, liver, bone marrow</i>)
Aquatic Chronic 2:	H411

For full text of H-phrases see Section 16.

2.2 Label elements

Hazard pictogram(s):



Signal word: DANGER

Hazard statement(s):

- H226 - Flammable liquid and vapour
- H304 - May be fatal if swallowed and enters airways
- H315 - Causes skin irritation
- H332 - Harmful if inhaled
- H351 - Suspected of causing cancer
- H373 - May cause damage to organs through prolonged or repeated exposure (*thyme, liver, bone marrow*)
- H411 - Toxic to aquatic life with long lasting effects

Precautionary statement(s):

Prevention:

- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
- P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
- P273 - Avoid release to the environment
- P280 - Wear protective gloves/protective clothing/eye protection/face protection

Response:

- P301+310 - IF SWALLOWED: Immediately call a POISON CENTER or a doctor
- P331 - Do NOT induce vomiting

Disposal:

- P501 - Dispose of contents/container in accordance with local / regional / national / international regulation

Other Information: Note N (full text given in Section 16)

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2.3 Other hazards

Hot product may form explosive and flammable vapour-air. The vapour product is heavier than air: may accumulate in confined spaces and low lying areas where it may easily be accidentally ignited.

The product does not meet the criteria for classification as PBT or vPvB required by Annex XIII of REACH.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable.

3.2 Mixtures

Component	Identifier	Concentration	Classification accordig to Reg. (CE) 1272/2008
1. UVCB Substance: FUELS, DIESEL (<i>"A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C9 through C20 and boiling in the range of approximately 163°C to 357°C"</i>)	CAS Number: 68334-30-5 EINECS Number: 269-822-7 INDEX Number: 649-224-00-6 Registration Number: 01-2119484664-27-XXXX	> 93% v/v	Flam. Liq. 3: H226 Asp. Tox. 1: H304 Skin Irrit. 2: H315 Acute Tox. 4: H332 Carc. 2: H351 STOT RE 2: H373 Aquatic Chronic 2: H411
2. FAME	CAS Number: 68990-52-3 EINECS Number: 273-606-8 Registration Number: 01-2119485821-32—xxxx or CAS Number: 67762-26-9 EINECS Number: 267-007-0 Registration Number: 01-2119471662-36-xxxx or CAS Number: 67762-38-3 EINECS Number: 267-015-4 Registration Number: xx- xxxxxxxxxx-xx—xxxx	0 - 7% v/v	Not classified

For full text of H-phrases see Section 16.

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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

- Eye contact:** Rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do so. Seek medical attention if skin irritation, swelling or redness develops and persists.
- Skin contact:** Remove contaminated clothing, contaminated footwear and dispose of safely. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist. For minor thermal burns, cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. Body hypothermia must be avoided. When using high-pressure equipment, injection of product can occur. If high-pressure injuries occur, immediately seek professional medical attention. Do not wait for symptoms to develop.
- Swallowing /aspiration:** Do not induce vomiting as there is high risk of aspiration. Do not give anything by mouth to an unconscious person. If vomiting occurs, the head should be kept low so that the vomit does not enter the lungs (aspiration).
- Inhalation:** Inhalation is unlikely because of the low vapour pressure of the substance at ambient temperature. Exposure to vapours may however occur when the substance is handled at high temperatures with poor ventilation. In case of symptoms arising from inhalation of product fumes, mists or vapour: remove casualty to a quiet and well ventilated place if safe to do so. If casualty is unconscious and not breathing, ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical advice. If the casualty is breathing, place in the recovery position. Administer oxygen if necessary.

4.2 Most important symptoms and effects, both acute and delayed

The mixture may cause skin irritation, slight eye irritation. It can cause irritation of the respiratory tract due to excess fume, mists or vapour exposure. In case of ingestion: few or no symptoms expected. If any, nausea and diarrhea might occur.

4.3 Indication of any immediate medical attention and special treatment needed

In case of ingestion, always assume that aspiration has occurred. Send the casualty immediately to hospital. Do not wait for symptoms to develop.

SECTION 5: FIREFIGHTING MEASURE

5.1 Extinguishing media

- Suitable extinguishing media:** Small fires: Sand or earth, carbon dioxide, foam, dry chemical powder. Large fires: Foam, water fog (trained personnel only). Other inert gases (subject to regulations).
- Unsuitable extinguishing media:** Do not use direct water jets on the burning product; they could cause splattering and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2 Special hazards arising from the substance or mixture

Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including CO (carbon monoxide), SO_x (sulphur oxides), H₂SO₄ (sulfuric acid) unidentified organic and inorganic compounds.

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5.3 Advice for firefighters

In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

Stop or contain leak at the source, if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert occupants in downwind areas. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). If required, notify relevant authorities according to all applicable regulations.

For emergency personnel:

Small spillages: normal antistatic working clothes are usually adequate.

Large spillages: full body suit of chemically resistant and antistatic material. Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Gloves made of PVA are not water-resistant, and are not suitable for emergency use. Wear work helmet, antistatic non-skid safety shoes or boots with adequate chemical resistance. Goggles and /or face shield, if splashes or contact with eyes is possible or anticipated. Respiratory protection: a half or full-face respirator with filter(s) for organic vapours or a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

6.2 Environmental precautions

Prevent product from entering sewers, rivers or other bodies of water.

6.3 Methods and material for containment and cleaning up

Spillages to the ground: If necessary dike the product with dry earth, sand or similar non-combustible materials. Large spillages may be cautiously covered with foam, if available, to limit fire risk. Do not use direct jets. When inside buildings or confined spaces, ensure adequate ventilation. Absorb spilled product with suitable non-combustible materials. If it is necessary to store any contaminated materials for safe disposal, only suitable containers (airtight, labelled, sealed, waterproof, earthed and bonded) should be used. In case of soil contamination, remove contaminated soil and treat in accordance with local regulations.

Spillages to the water: In case of small spillages in closed waters (i.e. ports), contain product with floating barriers or other equipment. Collect spilled product by absorbing with specific floating absorbents. Large spillages: If possible, large spillages in open waters should be contained with floating barriers or other mechanical means. The use of dispersants should be advised by an expert, and, if required, approved by local authorities. If possible, collect the product and contaminated materials with mechanical means, and store/dispose of according to relevant regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions). For this reason, local experts should be consulted when necessary.

6.4 Reference to other sections

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For more information on personal protective equipment, refer to "SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION".

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed.

Take precautionary measures against static electricity. Ground/bond containers, tanks and transfer/receiving equipment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep away from heat/sparks/open flames/hot surfaces. Do not smoke. Avoid contact with skin and eyes. Do not ingest. Do not breathe vapours

Use and store only outdoors or in a well-ventilated area. Avoid contact with the product. Use adequate personal protective equipment as needed. Do not use compressed air for filling, discharging, or handling operations. Prevent the risk of slipping. Avoid release to the environment.

For more information regarding protective equipment and operational conditions see Exposure scenarios.

7.1.2 Advice on general occupational hygiene

Ensure that proper housekeeping measures are in place. Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets. Keep away from food and beverages. Avoid contact with skin. Do not eat, drink or smoke when using this product. Wash the hands thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. After cleaning of tanks and before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content, and flammability. Store separately from oxidising agents. Store in a well-ventilated place.

Recommended materials for containers, or container linings use mild steel, stainless steel. Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

If the product is supplied in containers, keep only in the original container or in a suitable container for this kind of product.

Keep containers tightly closed and properly labelled. Protect from the sunlight.

Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Empty containers may contain combustible product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

7.3 Specific end use(s)

See attached Exposure Scenarios

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values:

Component	Occupational exposure limit values	Reference
FUELS, DIESEL	TLV®-TWA: 100 mg/m ³	ACGIH 2019

Monitoring procedures: refer to relevant legislation and in any case to the good industrial health practices in the work place.

DNEL (Derived No Effect Level) / DMEL (Derived Minimum Effect Level):

Exposure Route	DNEL Workers				DNEL General Population			
	Long-term, local effects	Long-term, systemic effects (b)	Acute, local effects	Acute, systemic effects	Long-term, local effects	Long-term, systemic effects (b)	Acute, local effects	Acute, systemic effects
oral	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
dermal	Note (a) for 13-wk exposure Note (c) for chronic exposures	2,9 mg/kg /8 h	Note (a)	Note (a)	Note (a) for 13-wk exposure Note (c) for chronic exposures	1,3 mg/kg /24 h	Note (a)	Note (a)
inhalation	Note (a)	68 mg/m ³ /8 h aerosol	Note (a)	4300 mg/m ³ /15 min	Note (a)	20 mg/m ³ /24 h aerosol	Note (a)	2600 mg/m ³ /15 min

Note a: No hazard identified for this route (data available)

Note b: Long-term systemic effects include non-reproductive effects and developmental/reproductive effects. Lowest DNEL is shown.

Note c: No-threshold effect and/or no dose-response information available

PNEC(S) (Predicted No Effect Concentration):

PNEC(S) Water, Sediment and Soil: Substance is a hydrocarbon UVCB: The hydrocarbon block method is used for environmental risk assessment (see REACH guidance, R7, app.13-1). A PNEC cannot be derived for UVCBs, therefore, the risk assessment on the library of representative constituents uses HC5 from the Target Lipid Model (TLM). Following Final Decisions issued by ECHA, a review of the TLM has been conducted that led to a revised TLM-model and the new results are used in this dossier. For full details refer to the following Appendixes attached in IUCLID Section 13: PETRORISK – ProductLibrary tab, PAH Phototoxicity, PNEC HC5, TLM

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Validation, PETROTOX Verification and NOS Heterocyclics.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Minimize exposure to mists/vapours/aerosols. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability.

8.2.2 Individual protection measures

Eye/face protection:

In the absence of containment systems and if splashing is likely, full head and face protection (protective shield and/or safety goggles) should be used (EN 166).

Skin protection:

i) Hand protection: In the absence of containment systems and in case of possible contact with the skin, use gloves with hydrocarbon-resistant high cuffs, felt-lined, and insulated if necessary. Supposedly adequate materials: nitrile, PVC or PVA (polyvinyl alcohol) with an index of protection against chemical agents at least equal to 5 (breakthrough time > 240 minutes). Neoprene or natural rubber (latex) do not have adequate characteristics of strength. Use gloves in accordance with the conditions and limits set by the manufacturer. In the case, refer to UNI EN 374. Gloves must be periodically inspected and changed in case of wear, perforations or contaminations.

ii) Other: In case of contamination of the clothes, clean and replace them immediately.

Respiratory protection:

In confined spaces: Use approved devices for respiratory protection: masks with cartridge filter type A (brown for organic vapors). If can not be determined or estimated with good certainty the levels of exposure or if it is possible that there is a lack of oxygen, only use a SCBA (EN 529).

In the open spaces: Use approved devices for respiratory protection: masks with cartridge filter type AX (brown for organic vapors with a low boiling point).

Thermal hazards:

See previous *Skin protection*.



8.2.3 Controlli dell'esposizione ambientale

Avoid release to the environment. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills.

Sludge should be incinerated, contained or reclaimed.

8.3 Other information

For more information on personal protective equipment and operating conditions, refer to attached Exposure Scenarios.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) <i>Appearance</i>	yellow liquid (automotive use) red liquid (heating use Italy) green liquid (agricultural use Italy)
b) <i>Odour</i>	Petroleum odour
c) <i>Odour threshold</i>	Not available
d) <i>pH</i>	Not applicable
e) <i>Melting point/freezing point</i>	≤ 5 °C
f) <i>Initial boiling point and boiling range</i>	150 - 400 °C (range)
g) <i>Flash point</i>	>56 °C @ 101325 Pa
h) <i>Evaporation rate</i>	Not applicable
i) <i>Flammability (solid, gas)</i>	Not applicable
j) <i>Upper/lower flammability or explosive limits</i>	LEL 1%; UEL 6%
k) <i>Vapour pressure</i>	0.4 kPa @ 40 °C
l) <i>Vapour density</i>	Not applicable
m) <i>Density</i>	815 - 875 kg/m ³ @ 15 °C
n) <i>Solubility(ies)</i>	Not applicable: substance is a hydrocarbon UVCB.
o) <i>Partition coefficient: n-octanol/water</i>	Not applicable: substance is a hydrocarbon UVCB
p) <i>Auto-ignition temperature</i>	>225 °C
q) <i>Decomposition temperature</i>	Not applicable
r) <i>Viscosity</i>	1,5 – 7,4 mm ² /s @ 40 °C (range)
s) <i>Explosive properties</i>	Non explosive, there are no chemical groups associated with explosive properties in the molecules (Ref. Column 2 of REACH Annex VII)
t) <i>Oxidising properties</i>	Non oxidising, on the basis of its chemical structure, the substance is incapable of reacting exothermically with combustible materials (Ref. Column 2 of REACH Annex VII)

Please note that the information above are the main component of the mixture (hydrocarbon UVCB CAS 68334-30-5)

9.2 Other information

Products that relate to this sheet have a sulfur content ranging from 10 mg/kg maximum (eg., use in traction) and 1000 mg/kg maximum (eg., use for heating).

The methods of analysis for the characteristics, which correspond to those recognized nationally and internationally, are set mostly in the technical specifications of the product.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The mixture does not present additional dangers of reactivity than those reported in the next subtitle.

10.2 Chemical stability

This substance is stable in relation to its intrinsic properties.

10.3 Possibility of hazardous reactions

Contact with strong oxidizers (peroxides, chromates, etc.) may cause a fire hazard. A mixture with nitrates or other strong oxidisers (e.g. chlorates, perchlorates, liquid oxygen) may create an explosive mass. Sensitivity to heat, friction or shock cannot be assessed in advance..

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10.4 Conditions to avoid

Store separately from oxidising agents.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

Avoid Static Electricity.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

The mixture does not decompose when used for its intended uses.

SECTION 11: TOXICOLOGICAL INFORMATION

Please note that the information below are the main component of the mixture (hydrocarbon UVCB CAS 68334-30-5)

Toxicokinetics, metabolism and distribution

No experimental data were located on the toxicokinetics of fuels, diesel in vivo.

Experimental studies in animals have shown an absorption through the lungs. Physico-chemical considerations also suggest that highly respirable aerosols of poorly water soluble substances with a log Pow greater than zero will be absorbed to some extent from the respiratory tract. In the absence of further guidance, it will assumed that 50% of an inhaled dose of aerosolized gas oil will be absorbed by the lung in animals and humans.

No measured data are available on the dermal absorption of fuels diesel, however, repeated dose toxicity studies indicates that some absorption across the skin is possible. Results from the SKINPERM model indicate that uptake of gas oil across the skin is likely to be low (with an estimated dermal flux of 0.0001058 mg cm⁻² hour, for human skin). However, the reliability of this value is not known, and therefore complete absorption of gas oil by human skin has been assumed.

11.1 Information on toxicological effects

a) Acute toxicity

Acute Oral Toxicity:

Toxicity was evaluated on samples of fuel diesel products of VGOs/HGOs/Distillate fuels, categories. These studies have shown an oral LD50 > 2000 mg/kg bw. Therefore VGOs/HGOs/Distillate Fuels are not classified for acute oral toxicity.

Based on available data, the classification criteria are not met.

Acute Inhalation Toxicity:

Animal studies on rats are available for samples of products in this category (VGOs/HGOs/Distillate fuels).

Based on results of these studies, VGOs/HGOs/Distillate fuel sare classified as Acute Tox. 4, H332 (Harmful if inhaled).

Acute Dermal Toxicity:

Toxicity was evaluated on samples of products in this category (VGOs/HGOs/Distillate fuels). These studies have shown an dermal LD50 > 5000 mg/kg bw. Therefore VGOs/HGOs/Distillate Fuels are not classified for acute dermal toxicity.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
Oral			
RAT (M/ F)	LD50: 9 ml/ kg (M/ F) (approx 7600 mg/kg)	Key Study CAS 68334-30-5	American Petroleum Institute (API) 1980b

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ORAL (gavage) OECD Guideline 420		Reliable without restriction	
Inhalation			
RAT (M/ F) aerosol and vapour mixture OECD Guideline 403	LC50 mg/l/4 h: 3,6 (F) LC50 mg/l/4 h: 5,4 (M) LC50 mg/l/4 h: 4,1 (M/F)	Key Study CAS 68334-30-5 Reliable without restriction	Atlantic Richfield Company (ARCO) 1988a
Dermal			
RABBIT (M/ F) OECD Guideline 434	LD50>5 ml/kg (M/F) (approx > 4300 mg/kg)	Key Study CAS 68334-30-5 Reliable without restriction	American Petroleum Institute (API) 1980b

(b) Skin corrosion/irritation

The potential for skin irritation of products in this category have been tested in a large number of studies on rabbits in general. Most of the studies and the overall weight of evidence indicates that VGOs/HGOs/Distillate fuels are irritating to skin and are classified as Skin Irrit. 2, H315 (Causes skin irritation).

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
RABBIT Coverage: occlusive (on each animal, 2 sites were abraded and 2 sites were intact skin) 24/72 h OECD Guideline 404	Irritating Mean erythema score: 3,9 (intact skin) Mean edema score: 2,96 (intact skin)	Key Study CAS 68334-30-5 Reliable without restriction	American Petroleum Institute (API) 1980b

(c) Serious eye damage/irritation

Multiple studies were available to assess the skin irritation potential of VGOs/HGOs/Distillate fuels. Animal studies (rabbits) demonstrate that these products are not irritating to eyes. Therefore VGOs/HGOs/Distillate fuels are not classified for eye irritation.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
RABBIT 24/48/72 h OECD Guideline 405	Not irritating Mean cornea score: 0 Mean iride score: 0 Mean conjunctivae score: 0	Key Study CAS 68334-30-5 Reliable without restriction	American Petroleum Institute (API) 1980b

(d) Respiratory or skin sensitization

Respiratory system:

This endpoint is not a REACH requirement. Furthermore no data were available for this endpoint.

Skin sensitisation:

Multiple studies were available to assess the skin sensitising potential of VGOs/HGOs/Distillate fuels.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

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Method	Results	Remarks	Reference
GUINEA PIG Buehler test OECD Guideline 406	Not sensitising	Supporting study Reliable without restriction CAS 68334-30-5	Atlantic Richfield Company (ARCO) 1990d

(e) Germ cell mutagenicity

The weight of evidence from in vitro and in vivo mutagenic studies indicates that VGOs/HGOs/Distillate fuels are not mutagens, therefore, no classification is given according.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
In vitro gene mutation (Test di Ames) in Salmonella thyphimurium TA 98 Doses: 0, 1, 3, 5, 7, 10, 15, 20, 25, 40, 50, 60 µl/plate OECD Guideline 471	Positive	Key Study CAS 68334-30-5 Reliable with restriction	Deininger, G., Jungen, H., Wenzel-Hartung, R. (1991)
In vivo chromosome aberration RAT (M/ F) intraperitoneal Doses: 300, 1000, 3000 mg/kg OECD Guideline 475	Negative	Key Study CAS 64741-44-2 Reliable without restriction	American Petroleum Institute (API) 1985a

(f) Carcinogenicity

VGO/HGOs/Distillate fuels exhibited varying levels of activity in carcinogenicity testing with some materials demonstrating low carcinogenic potential and others a marked response both in the presence of severe irritation. Carcinogenic activity is reported in the presence of repeated dermal irritation. However, in view of the questionable adequacy of the PAH (polycyclic aromatic hydrocarbons) analysis and the high levels of phenanthrene and pyrene found in some samples tested in the key study, it is uncertain whether a genotoxic mechanism can be ruled out. Therefore VGO/HGOs/Distillate fuels are classified as Carc. 2, H351 (Suspected of causing cancer).

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
MOUSE (male) Dermal exposure Dose: 25 µl Exposure: Lifetime (three times a week) Compound was applied dermally 3 times a week for the lifespan of the animal (only male mice used) and animals were examined for dermal tumours. Animals were examined grossly for internal tumours at the end of the study period.	skin tumour development	Key Study Reliable with restriction	Biles, R.W., Mckee, R.H., Lewis, S.C., Scala, R.A., DePass, L.R. (1988)

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(g) Reproductive toxicity

Effects on fertility:

The information available currently on reproduction toxicity parameters is insufficient to determine the impact on human fertility. No classification is appropriate at this time. However, a testing proposal is included for a two generation fertility study to meet data requirements for this endpoint.

Based on available data, the classification criteria are not met.

Effects on fertility/ Developmental toxicity:

Developmental studies were only observed developmental effects at doses that caused maternal toxicity and the developmental effects cannot be separated from the maternal effects; therefore, there is no appropriate developmental classification.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
RAT inhalation: vapour Doses: 0, 101.8, 401.5 ppm Exposure: 10 days (gestational days 6 through 15) (6 hours a day) OECD Guideline 414	NOAEC (maternal toxicity): 401.5 ppm (analytical) (overall effects) NOAEC (developmental toxicity): 401.5 ppm (analytical) (overall effects)	Key Study Reliable without restriction CAS 68334-30-5	American Petroleum Institute (API) 1979a

(h) STOT-single exposure

Data not available.

(i) STOT-repeated exposure

Repeated dose toxicity studies were conducted in animals for classification of repeated dose toxicity for oral exposure of VGO/Hydrocracked/Distillate fuels. A NOAEC of > 1710 mg/m³ will be carried forward for risk characterisation of systemic effects following sub-chronic exposure to aerosolised diesel fuel. A NOAEL of 30 mg/kg body weight/day, reflecting dose-related changes in liver and thymus, for systemic effects following sub-chronic dermal exposure was obtained.

The overall weight of evidence indicates that VGOs/HGOs/Distillate fuels are classified as STOT RE 2, H373 (May cause damage to organs through prolonged or repeated exposure).

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
Inhalation			
RAT (M/F) inhalation: aerosol Exposure: 13 weeks (Twice a week) OECD Guideline 413	NOAEC (Systemic effects): > 1.71 mg/L air (analytical) (male/female) NOAEC (Local effects): 0.88 mg/L air (analytical) (male/female) (Lung weight)	Key Study Reliable with restriction Diesel Fuel	Lock, S., Dalbey, W. Schmoyer, R., Griesemer, K. (1984)

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Dermal			
RAT (M/F) subacute OECD Guideline 410	NOEL (systemic): 0.5 ml/kg (male/female) NOEL: 0.0001 ml/kg (male/female)	Key Study Reliable with restriction CAS 68334-30-5	Atlantic Richfield Company (ARCO) 1992e
RAT (M/F) Exposure: continuous exposure for 13 weeks (Five days per week for 13 weeks) Doses: 30, 125 e 500 mg/kg/day OECD Guideline 411	NOAEL: 30 mg/kg bw/day (male/female) (clinical signs; body weight; haematology; clinical chemistry; organ weights)	Key Study Reliable with restriction CAS 64741-49-7	Mobil 1989a

(j) Aspiration hazard

The low viscosity of this product <7 mm² at 40 °C, may cause risk of aspiration into the lungs during swallowing or subsequent vomiting with lung inflammation (chemical pneumonitis) in accordance with the criteria in Part 3 of Annex I of Regulation 1272/2008.

Thus, VGOs/HGOs/Distillate fuels are Asp. Tox. 1, H304 (May be fatal if swallowed and enters airways).

Other information

There are no further information.

SECTION 12: ECOLOGICAL INFORMATION

Note that the information in this section refer to the main component of the mixture (UVCB Substance, CAS number 68334-30-5).

According to the information below (toxicity short/long term to fish invertebrates algae and aquatic plants, biodegradation etc), this product is classified as Aquatic Chronic 2, H411 (Toxic to aquatic life with long lasting effects).

12.1 Toxicity

The following is a summary of the more representative study of the registration dossier.

Endpoint	Results	Remarks	Reference
Aquatic Toxicity			
Short-term Invertebrates Daphnia magna OECD Guideline 202	EL50 48/h: 68 mg/l NOEL 48/h: 46 mg/l	Key Study Reliable without restriction CAS 68334-30-5	Girling A and Cann, B (1996b)
Long-term Invertebrates Daphnia magna QSAR modeled data	NOEL 21/days : 0,2 mg/l	Key Study Reliable with restriction	Redman, et Al.(20010b)
Short-term Algae Raphidocelis subcapitata OECD Guideline 201	ErL50 72/h: 22 mg/l NOEL 72/h: 1 mg/l	Key Study Reliable with restriction CAS 68334-30-5	Girling, A and Cann, B (1996)

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Short-term Fish Oncorhynchus mykiss OECD Guideline 203	LL50 96/h: 21 mg/l NOEL 96/h: 10 mg/l	Key Study Reliable with restriction CAS 68334-30-5	Girling A and Cann, B (1996b)
Long-term Fish Oncorhynchus mykiss QSAR modeled data	NOEL 14 days: 0,083 mg/l	Key Study Reliable with restriction	Redman, et Al.(20010b)

12.2 Persistence and degradability

Abiotic degradation:

Hydrolysis: these products are resistant to hydrolysis because they lack a functional group that is hydrolytically reactive. Therefore, this fate process will not contribute to a measurable degradative loss of these substances from the environment.

Photolysis in air: endpoint not required by REACH.

Photolysis in water and soil: endpoint is not required by REACH.

Biotic degradation:

Water / sediment / soil: substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substance.

12.3 Bioaccumulative potential

Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

12.4 Mobility in soil

Partition coefficient K_{oc}: Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

12.5 Results of PBT and vPvB assessment

Comparison with the criteria in Annex XIII of REACH

Persistence Assessment: An evaluation of representative hydrocarbon structures indicate some structures meet the Persistent (P) or very Persistent (vP) criteria.

Bioaccumulation Assessment: An evaluation of representative hydrocarbon structures indicate NO structures meet the very Bioaccumulative (vB) criterion but some structures meet the Bioaccumulative (B) criterion.

Toxicity Assessment: For representative hydrocarbons structures that were found to meet the P and B criteria, a toxicity evaluation was performed. No structures relevant to petroleum substances were found to meet the toxicity criterion except anthracene which has been confirmed as a PBT substance. Anthracene is not present in this substance at greater than 0.1%, therefore, this substance is not considered a PBT/vPvB.

12.6 Other adverse effects

No data available.

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SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Do not dispose the product, either new or used, by discharging into sewers, tunnels, lakes or water courses.

Dispose wastes and contaminated packaging according to local regulations.

European Waste Catalogue code(s) (Decision 2001/118/CE): 13 07 01* - 13 07 03*. These codes can be given only as a suggestion, according to the original composition of the product, and its intended (foreseeable) use(s).

The final user (producer of the waste) has the responsibility for the attribution of the most suitable code, according to the actual use(s) of the material, contaminations or alterations. The product does not contain halogenated compounds.

Disposal of emptied containers: do not dispose the containers in the environment. Dispose in accordance with local regulations.

Do not cut, weld, bore, burn or incinerate emptied containers, unless they have been cleaned and declared safe.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

UN 1202

14.2 UN proper shipping name

Italian: GASOLIO / CARBURANTE DIESEL / OLIO DA RISCALDAMENTO LEGGERO
English: GAS OIL/DIESEL FUEL/HEATING OIL, LIGHT

14.3 Transport hazard class(es)

<i>Road transport (ADR):</i>	Class: 3 Subsidiary risks: -
<i>Railway transport (RID):</i>	Class: 3 Subsidiary risks: -
<i>Inland waterways transport (ADN):</i>	Class: 3 Subsidiary risks: N2, F
<i>Sea transport (IMDG):</i>	Class: 3 Subsidiary risks: -
<i>Air transport (IATA):</i>	Class: 3 Subsidiary risks: -

14.4 Packing group

PG: III

14.5 Environmental hazards

<i>Road transport (ADR):</i>	Dangerous for the environment
<i>Railway transport (RID):</i>	Dangerous for the environment

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<i>Inland waterways transport (ADN):</i>	Dangerous for the environment
<i>Sea transport (IMDG):</i>	Marine Pollutant (P)
<i>Air transport (IATA):</i>	Dangerous for the environment

14.6 Special precautions for user

Transportation, including loading and unloading, must be performed by personnel who have received the necessary training required by the relevant modal regulations concerning the transport of dangerous goods.

Ensure that the transfer of the material under conditions of containment or extraction ventilation.

During loading and unloading apply safety measures required by section 7.1 and individual protection measures required by section 8.2.2 of this SDS.

Further prescriptions are reported in the applicable regulations.

General additional information

Mark and labeling:
(except packaging exemption)

WARNING LABEL N. 3 + MARK OF ENVIRONMENTAL HAZARD

Additional information on road transport (ADR)

Tunnel restriction code: (D/E)
Hazard Identification Number (tank): 30
High Consequence Dangerous Goods (HCDG): NO

Additional information on railway transport (RID)

Hazard Identification Number (tank): 30
High Consequence Dangerous Goods (HCDG): NO

Additional information on internal waterways transport (ADN)

Hazard Identification Number (tank): 30
High Consequence Dangerous Goods (HCDG): NO

Additional information on sea transport (IMDG)

Emergency measures on board: EmS F-E, S-E

Additional information on air transport (IATA)

Emergency measures in case of aircraft accidents: ERG Code 3L

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable (refer to Annex I of MARPOL Convention).

SECTION 15: REGULATORY INFORMATION

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

Authorisations according to REACH Regulation (Title VII):

Product not subject to authorisation.

Restrictions according to REACH Regulation (Title VIII):

Product subject to restrictions: entry 3 (dangerous liquid substances/mixtures), entry 40 (flammable substances)

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Other European Regulation and National Legislation

- Directive 2012/18/UE and Italian D. Lgs. 105/2015, on the control of major-accident hazards involving dangerous substances.
Seveso category:
Annex 1, part 1: category P5C- flammable liquids
category E2- Hazardous to the Aquatic Environment in Category Chronic 2
Annex 1 part 2: category 34- Petroleum products and alternative fuels
- Directive 98/24/EC and Italian D. Lgs. 81/2008 e s.m.i., on the protection of the health and safety of workers from the risks related to chemical agents at work
- Italian D. Lgs. 152/2006 e s.m.i., on waste disposal

15.2 Chemical safety assessment

Chemical safety assessment has been carried out for components of the mixture.

SECTION 16: OTHER INFORMATION

Revision Index:

First issue date: 01/12/2010

Revision Number: 01

Revision Date: 20/05/2016

Grounds for review: Deletion of classification according to Directive 67/548/CEE and related references
Addition of new precautionary statement P210 and P273
Deletion of Note H
Section 8 updated
Section 14 updated
Section 15, subsection 15.1 updated
Exposure scenario updated

Revision Number: 02

Revision Date: 15/02/2018

Grounds for review: Section 14 updated

Revision Number: 03

Revision Date: 29/07/2019

Grounds for review: Section 1 updated
Section 3 updated
Section 8 updated
Section 16
Exposure scenario updated

Legend to abbreviations and acronyms

ACGIH	=	American Conference of Governmental Industrial Hygienists
API	=	American Petroleum Institute
CSR	=	Chemical Safety Report
DNEL	=	Derived No Effect Level
DMEL	=	Derived Minimum Effect Level
EC50	=	Effective Concentration, 50%

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EL50	=	Effective Load, 50%
Klimisch	=	Criterion for the evaluation of the method reliability
LC50	=	Lethal Concentration, 50%
LD50	=	Lethal Dose, 50%
LL50	=	Lethal Load, 50%
NOAEC	=	No Observed Adverse Effect Concentration
NOAEL	=	No Observed Adverse Effect Level
NOEL	=	No Observed Effect Level
OECD	=	Organisation for Economic Co-operation and Development
PNEC	=	Predicted No Effect Concentration
PBT	=	Persistent, Bioaccumulative and Toxic
STOT	=	Tossicità specifica per organi bersaglio
(STOT) RE	=	Specific target organ toxicity — repeated exposure
(STOT) SE	=	Specific target organ toxicity — single exposure
TLV®TWA	=	Threshold Limit Value – time-weighted average
TLV®STEL	=	Threshold Limit Value – short-term exposure limit
UVCB	=	Unknown or Variable composition, Complex reaction products or Biological materials
vPvB	=	very Persistent and very Bioaccumulative
P	=	Persistent
vP	=	very Persistent
B	=	Bioaccumulative
vB	=	very Bioaccumulative

Key literature references and sources for data

Registration Dossier.

CRS 2016

CRS 2017

CSR 2018

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008

Expert judgment and/or Calculation method.

Full text of appropriate statements

Hazard Statements

H226:	Flammable liquid and vapour
H304:	May be fatal if swallowed and enters airways
H315:	Causes skin irritation
H332:	Harmful if inhaled
H351:	Suspected of causing cancer
H373:	May cause damage to organs through prolonged or repeated exposure
H411:	Toxic to aquatic life with long lasting effects

Hazard Classes

Acute Tox. 4:	Acute toxicity, Category 4
Aquatic Chronic 2:	Hazardous to the aquatic environment, Category 2
Asp. Tox. 1:	Aspiration hazard, Category 1
Carc. 2:	Carcinogenicity, Category 2
Flam. Liq. 3:	Flammable Liquid, Category 3
Skin Irrit. 2:	Skin irritation, Category 2
STOT RE 2:	Specific target organ toxicity — repeated exposure, Category 2

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Notes

note N: The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it is produced is not a carcinogen. This note applies only to certain complex oil-derived substances in Part 3.

Advice on workers training

Properly traine workers potentially exposed to this substance on the basis of the contents of this safety data sheet

To the best of our knowledge, the information contained herein is accurate. This information is intended to describe the product for the purposes of health, safety and environmental requirements only and it should not therefore be construed as guaranteeing any specific property of the product. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. Uses not listed in this document are not recommended unless an assessment is completed.

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ANNEX 1

EXPOSURE SCENARIOS Related to FUELS, DIESEL

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Identified use name	Life cycle	Sector of Use (SU)	Chemicals product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Specific Environmental Release Category (spERC)
1. Distribution of substance	Industrial	n.a.	n.a.	1, 2, 3, 4, 8a, 8b, 9, 15	4, 5, 6a, 6b, 6c, 6d, 7	ESVOC SpERC 1.1b.v1
2. Formulation & (re)packing of substances and mixtures	Industrial	n.a.	n.a.	1, 2, 3, 4, 5, 8a, 8b, 9, 14 15	2	ESVOC SpERC 2.2.v1
3. Use as a fuel	Industrial	n.a.	n.a.	1, 2, 3, 8a, 8b, 16	7	ESVOC SpERC 7.12a.v1
4. Use as a fuel	Professional	n.a.	n.a.	1, 2, 3, 8a, 8b, 16	9a, 9b	ESVOC SpERC 9.12b.v1
5. Use as a fuel	Consumer	n.a.	13	n.a.	9a, 9b	ESVOC SpERC 9.12c.v1

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FUELS, DIESEL

1. Distribution of substance – Industrial

Section 1 Exposure Scenario	
Title	
Distribution of substance	
Use Descriptor	
Sector(s) of Use	NA
Process Categories	1, 2, 3, 4, 8a, 8b, 9, 15
Environmental Release Categories	4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, and associated laboratory activities. Excludes emissions during transport.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid With potential for aerosol generation [CS138]
Vapour Pressure (kPa)	Liquid, vapour pressure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Other Operational Conditions Affecting Exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General exposures (Closed systems) CS15	Handle substance within a closed system E47
General exposures (Open systems) CS16	Wear suitable gloves tested to EN374 PPE15
Process sampling CS2	No other specific measures identified E120
Laboratory activities CS36	No other specific measures identified E120
Bulk closed loading and unloading CS501	Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15
Bulk open loading and unloading CS503	Wear suitable gloves tested to EN374 PPE15
Drum and small pack filling CS6	Wear suitable gloves tested to EN374 PPE15
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Storage CS67	Handle substance within a closed system. E84

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Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	3.1e7
Fraction of Regional tonnage used locally	2e-3
Annual site tonnage (tonnes/year)	6.1e4
Maximum daily site tonnage (kg/day)	2.2e5
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	1.0e-5
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater secondary poisoning. [TCR1g]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	74.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0.0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.9
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.9
Maximum allowable site tonnage (M_{safe}) based on release following total wastewater treatment removal (kg/d)	1.0e6
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.[ETW3]	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.	
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support	

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the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

4.2 Environment

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

Maximum Risk Characterisation Ratio for Air Emissions RCRair	2.5 e-2
Maximum Risk Characterisation Ratio for Wastewater Emissions RCRwater	2.0 e-1

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. Formulation & (re)packing of substances and mixtures – Industrial

Section 1 Exposure Scenario	
Title	
Formulation & (re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of Use	NA
Process Categories	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15
Environmental Release Categories	2
Specific Environmental Release Category	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletization, extrusion, large and small scale packing, maintenance, sampling and associated laboratory activities	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid With potential for aerosol generation [CS138]
Vapour Pressure	Liquid, vapour pressure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Other Operational Conditions Affecting Exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
General exposures (Closed systems) CS15	Handle substance within a closed system E47
General exposures (Open systems) CS16	Wear suitable gloves tested to EN374 PPE15
Batch processes at elevated temperatures [CS136]	Provide extract ventilation to points where emissions occur E54
Process sampling CS2	No other specific measures identified EI20
Drum and batch transfers CS8	Use drum pumps or carefully pour from container E64 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Bulk transfers CS14	Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15
Mixing operations (open systems) CS30	Provide extract ventilation to points where emissions occur E54 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Production or preparation or articles by tableting, compression,	Wear suitable gloves tested to EN374 PPE15

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extrusion or pelletisation CS100	
Drum and small package filling CS8	Wear suitable gloves tested to EN374 PPE15
Laboratory activities CS36	No other specific measures identified EI20
Equipment clean down and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Storage CS67	Store substance within a closed system. E84
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	3.0e7
Fraction of Regional tonnage used locally	1e-3
Annual site tonnage (tonnes/year)	3.0e4
Maximum daily site tonnage (kg/day)	1.0e5
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	1.2e-4
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by Freshwater Sediment [TCR1b] Prevent discharge of undissolved substance to or recover from onsite wastewater [TCR14]. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	94.4
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Not applicable as there is no release to wastewater [STP1].	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.9
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.9
Maximum allowable site tonnage (M_{safe}) based on release following total wastewater treatment removal (kg/d)	1.1e5
Assumed domestic sewage treatment plant flow (m3/d)	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations. [ETW3]	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations. [ERW1]	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2 Environment	

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The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.</p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.</p>	
4.2 Environment	
<p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].</p>	
Maximum Risk Characterisation Ratio for Air Emissions RCR _{air}	2.7e-2
Maximum Risk Characterisation Ratio for Wastewater Emissions RCR _{water}	9.1 e-1

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3. Use as a fuel – Industrial

Section 1 Exposure Scenario	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of Use	N.A.
Process Categories	1, 2, 3, 8a, 8b, 16
Environmental Release Categories	7
Specific Environmental Release Category	ESVOC SpERC 7.12a.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additives and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid With potential for aerosol generation [CS138]
Vapour Pressure	Liquid, vapour pressure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Other Operational Conditions Affecting Exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
Bulk transfers CS14	Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15
Drum and batch transfers CS8	Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15
Use as a fuel (closed systems) GEST_12I, CS107	No other specific measures identified E120
Equipment clean down and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Storage CS67	Store substance within a closed system. E84
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	3.7e6
Fraction of Regional tonnage used locally	4e-1
Annual site tonnage (tonnes/year)	1.5e6

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Maximum daily site tonnage (kg/day)	5.0e6
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	5.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	2.4e-6
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by Freshwater Sediment [TCR1b] If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].	
Treat air emission to provide a typical removal efficiency of (%)	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	94.4
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0.0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Not applicable as there is no release to wastewater [STP1].	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.9
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.9
Maximum allowable site tonnage (M_{safe}) based on release following total wastewater treatment removal (kg/d)	5.5.e6
Assumed domestic sewage treatment plant flow (m3/d)	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2]. External treatment and disposal of waste should comply with applicable local and/or national regulations.[ETW3]	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated. [ERW3]	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using	

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onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>) [DSU4].

Maximum Risk Characterisation Ratio for Air Emissions RCR _{air}	2.8e-2
Maximum Risk Characterisation Ratio for Wastewater Emissions RCR _{water}	9.1e-1

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4. Use as a fuel – Professional Sector

Section 1 Exposure Scenario	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of Use	n.a.
Process Categories	1, 2, 3, 8a, 8b, 16
Environmental Release Categories	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additives and additive components) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Assessment Method	
See Section 3.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid With potential for aerosol generation [CS138]
Vapour Pressure	Liquid, vapour pressure <0.5 kPa at STP. OC3.
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2
Other Operational Conditions Affecting Exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. G15. Assumes a good basic standard of occupational hygiene is implemented G1.
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3
Bulk transfers CS14	Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15
Drum and batch transfers CS8	Use drum pumps or carefully pour from container E64 Wear suitable gloves tested to EN374.PPE15
Refuelling activities CS507	Wear suitable gloves tested to EN374 PPE15
Use as a fuel (closed systems) GEST_12I, CS107	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 or Ensure operation is undertaken outdoors E69
Equipment clean down and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Storage CS67	Store substance within a closed system. E84
Section 2.2 Control of environmental exposure	
Product characteristics	
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].	
Amounts used	
Fraction of EU tonnage used in region	0.1

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Regional use tonnage (tonnes/year)	6.9e6
Fraction of Regional tonnage used locally	5e-4
Annual site tonnage (tonnes/year)	3.4e3
Maximum daily site tonnage (kg/day)	9.4e3
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1e-3
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by Freshwater Sediment [TCR1b] If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR10].	
Treat air emission to provide a typical removal efficiency of (%)	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency \geq (%)	62.9
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of \geq (%)	0
Organisation measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].	
Conditions and measures related to municipal sewage treatment plant	
Not applicable as there is no release to wastewater [STP1].	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.9
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.9
Maximum allowable site tonnage (M_{safe}) based on release following total wastewater treatment removal (kg/d)	1.2e5
Assumed domestic sewage treatment plant flow (m3/d)	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2]. External treatment and disposal of waste should comply with applicable local and/or national regulations.[ETW3]	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated. [ERW3]	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.	
4.2 Environment	

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

Maximum Risk Characterisation Ratio for Air Emissions RCR _{air}	2.4e-2
Maximum Risk Characterisation Ratio for Wastewater Emissions RCR _{water}	7.5e-2

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5. Use as a fuel – Consumer

Section 1 Exposure Scenario		
Title		
Use as a fuel		
Use Descriptor		
Sector(s) of Use	n.a.	
Process Categories	13	
Environmental Release Categories	9a, 9b	
Specific Environmental Release Category	ESVOC SpERC 9.12c.v1	
Processes, tasks, activities covered		
Covers consumer uses in fuels.		
Assessment Method		
See Section 3.		
Section 2 Operational conditions and risk management measures		
Section 2.1 Control of worker exposure		
Product characteristics		
Physical form of product	Liquid	
Vapour Pressure	Liquid, vapour pressure > 10 Pa OC15	
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently) G13	
Amounts used	Unless otherwise stated, covers use amounts up to 37500g [ConsOC2]; covers skin contact area up to 420cm ² [ConsOC5]	
Frequency and duration of use/exposure	Unless otherwise stated, covers use frequency up to 0.143 times per day [ConsOC4]; covers exposure up to 2 hours per event [ConsOC14]	
Other Operational Conditions Affecting Exposure	Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m ³ room [ConsOC11]; assumes use with typical ventilation [ConsOC8].	
Contributing Scenarios		
Specific Risk Management Measures and Operating Conditions		
PC13:Fuels--Liquid - subcategories added: Automotive Refuelling	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 52 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 210.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 37500g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m ³ [ConsOC11]; for each use event, covers exposure up to 0.05hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated [ConsRMM15]
PC13:Fuels--Liquid - subcategories added: Garden Equipment - Use	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 26 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 750g [ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of 100m ³ [ConsOC11]; for each use event, covers exposure up to 2.00hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated [ConsRMM15]
PC13:Fuels--Liquid - subcategories added: Garden Equipment - Refuelling	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 26 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 420.00 cm ² [ConsOC5]; for each use event, covers use amounts up to 750g [ConsOC2]; Covers use in a one car garage (34m ³) under typical ventilation [ConsOC10]; covers use in room size of 34m ³ [ConsOC11]; for each use event, covers exposure up to 0.03hr/event[ConsOC14];
	RMM	No specific RMMs developed beyond those OCs stated [ConsRMM15]
Section 2.2 Control of environmental exposure		
Product characteristics		
Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].		
Amounts used		
Fraction of EU tonnage used in region	0.1	

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Regional use tonnage (tonnes/year)	1.9e7
Fraction of Regional tonnage used locally	0.0005
Annual site tonnage (tonnes/year)	9.5e3
Maximum daily site tonnage (kg/day)	2.6e4
Frequency and duration of use	
Continuous release [FD2].	
Emission days (days/year)	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Conditions and measures related to municipal sewage treatment plant	
Not applicable as there is no release to wastewater [STP1].	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.9
Maximum allowable site tonnage (M_{safe}) based on release following total wastewater treatment removal (kg/d)	3e5
Assumed domestic sewage treatment plant flow (m ³ /d)	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2]. External treatment and disposal of waste should comply with applicable local and/or national regulations.[ETW3]	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated. [ERW3]	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22 . Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23 .	
4.2 Environment	
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].	
Maximum Risk Characterisation Ratio for Air Emissions RCRair	2.4e-2
Maximum Risk Characterisation Ratio for Wastewater Emissions RCRwater	8.5e-2