SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Commission Regulation (EU) 2020/878

MARINE DISTILLATE FUELS (DMB/ DFB)

SDS # : 36587

previous revision date : 2024/07/15

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

1.1 Product identifier

Product name : MARINE DISTILLATE FUELS (DMB/DFB)

UFI : FSRU-PHDJ-VA0J-X0VX

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

Identified uses
Fuel for diesel engines: vessel, boat Distribution of substance - Industrial Formulation & (re)packing of substances and mixtures - Industrial Use as a fuel - Industrial Use as a fuel - Professional Use as a fuel - Consumer

1.3 Details of the supplier of the safety data sheet

TotalEnergies Marine Fuels Pte Ltd
182 Cecil Street
#27-01 Frasers Tower
Singapore 069547
Tel : +65 6849 5266
ms.ap-sds@totalenergies.com

TotalEnergies Marketing France
562 avenue du parc de l'île
92000 Nanterre
FRANCE
Tel: +33 (0)1 41 35 40 00
rm.mkefr-fds@totalenergies.com

Contact

H.S.E

1.4 Emergency telephone number

National advisory body/Poison Center

Telephone number : France - ORFILA (INRS) Tél : +33 (0)1 45 42 59 59
In France - Poison centers:
ANGERS : 02 41 48 21 21
BORDEAUX : 05 56 96 40 80
LILLE : 08 00 59 59 59
LYON : 04 72 11 69 11
MARSEILLE : 04 91 75 25 25
NANCY : 03 83 22 50 50
PARIS : 01 40 05 48 48
STRASBOURG : 03 88 37 37 37
TOULOUSE : 05 61 77 74 47

Supplier

Telephone number : Emergency phone: +44 1235 239670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226
Acute Tox. 4, H332
Skin Irrit. 2, H315
Muta. 2, H341
Carc. 1B, H350
Repr. 2, H361d
STOT RE 2, H373 (blood, bone marrow, liver, thymus)
Asp. Tox. 1, H304
Aquatic Acute 1, H400
Aquatic Chronic 1, H410

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

See Section 16 for the full text of the H statements declared above.

For more details about adverse physical, human health and environmental effects, see sections 9 to 12.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H226 - Flammable liquid and vapor.
H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H332 - Harmful if inhaled.
H341 - Suspected of causing genetic defects.
H350 - May cause cancer.
H361d - Suspected of damaging the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure. (blood, bone marrow, liver, thymus)
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : P260 - Do not breathe gas, vapor or spray.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 - Avoid release to the environment.

Response : P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P331 - Do NOT induce vomiting.

Storage : P403 + P235 - Store in a well-ventilated place. Keep cool.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Contains	:	Fuels, diesel Fuel oil, residual
Supplemental label elements	:	Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	:	Restricted to professional users.

2.3 Other hazards

This mixture does not contain any substances that are assessed to be a PBT or a vPvB in a concentration >= 0,1 %. This product does not contain any substance present at a concentration equal to or greater than 0.1% by mass, included in the list drawn up in accordance with article 59, paragraph 1 of the REACh Regulation, due to its endocrine disrupting properties, or a substance known to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation 2018/605.

Other hazards which do not result in classification : The product may form flammable mixtures with air when heated above the flash point.
In the presence of hot spots, there is a special risk of fire or explosion under certain conditions involving accidental release of vapor or leaks of product under pressure.
Hazard of slipping on spilled product.
Vapor may be irritating to eyes and respiratory system.
High vapor concentrations can cause headaches, dizziness, drowsiness and nausea and may lead to unconsciousness.
Hydrogen sulphide can accumulate in the head space of storage tanks containing this product and can reach potentially hazardous concentrations
If swallowed accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious pulmonary lesions (medical survey during 48 hours)

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/substance	Identifiers	% (w/w)	Classification	Specific Conc. Limits, M-factors and ATEs	Type
Fuels, diesel	REACH #: 01-2119484664-27 EC: 269-822-7 CAS: 68334-30-5	>70	Flam. Liq. 3, H226 Acute Tox. 4, H332 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373 (bone marrow, liver, thymus) Asp. Tox. 1, H304 Aquatic Chronic 2, H411	ATE [Inhalation (dusts and mists)] = 4.1 mg/l	[1]
Fuel oil, residual	REACH #: 01-2119474894-22 EC: 270-675-6 CAS: 68476-33-5	<30	Acute Tox. 4, H332 Muta. 2, H341 (dermal) Carc. 1B, H350 Repr. 2, H361d STOT RE 2, H373 (blood, liver, thymus) Aquatic Acute 1, H400	ATE [Inhalation (dusts and mists)] = 4.1 mg/l M [Acute] = 1 M [Chronic] = 1	[1]

			Aquatic Chronic 1, H410 EUH066 **See Section 16 for the full text of the H statements declared above.**		

Additional information : Contains: multi-purposes additives to boost performance
May contain: Mixture of C16-C18 fatty acids methyl esters
Hydrogen sulphide can accumulate in the head space of storage tanks containing this product and can reach potentially hazardous concentrations
Component: % (v/v)

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

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.
Remove victim to fresh air and keep at rest in a position comfortable for breathing.
If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.
If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Seek immediate medical attention/advice.
If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Immediately remove any contaminated clothing, shoes or socks. Wash contaminated skin with soap and water. Continue to rinse for at least 10 minutes. Get medical attention if symptoms appear. Wash clothing before reuse. Clean shoes thoroughly before reuse.
High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent. In this case, the casualty should be sent immediately to hospital.

Ingestion : Take victim immediately to hospital. SYMPTOMS MAY NOT APPEAR IMMEDIATELY. Wash out mouth with water. Keep person warm and at rest. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person.
If unconscious, place in recovery position and get medical attention immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : First aid personnel must be aware of personal risk during rescue! Put on appropriate personal protective equipment (see Section 8).
Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply. Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces.
CAUTION! Hazard of slipping on spilled product.
IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

Eye contact : May cause mild reversible eye irritation.
watering
redness

Inhalation : In case of exposure to hot product, inhalation of vapors in high concentration may cause irritation of respiratory system.
Can cause central nervous system (CNS) depression.
nausea or vomiting
headache
dizziness/vertigo
convulsive seizures
cardiac arrhythmia
Loss of coordination

Skin contact : Causes skin irritation.

Ingestion : nausea or vomiting
stomach pains
diarrhea
Can cause central nervous system (CNS) depression.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Aspiration hazard if swallowed. In this case, the product may enter the lungs and lead to the rapid development of very serious pulmonary lesions that may appear in the following hours. Seek immediate medical attention. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : on small fires:
Use dry chemical, CO_2, water spray (fog) or foam. Sand.
large fires:
Foam, Water fog (trained personnel only)

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread 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

Hazards from the substance or mixture	:	Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous combustion products	:	Carbon dioxide (CO_2). carbon monoxide nitrogen oxides (NO, NO_2 etc.) various hydrocarbons Aldehyde. Soot These maybe highly dangerous if inhaled in confined spaces or at high concentration. If sulphur compounds are present in appreciable amounts, combustion products may include also H2S and SOx (sulfur oxides) or sulfuric acid

5.3 Advice for firefighters

Special protective actions for fire-fighters	:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water to cool tanks and parts exposed to the thermal flux not caught up in the flames.
Special protective equipment for fire-fighters	:	In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistantprotective clothing and self-contained breathing apparatus (SCBA) with a full face-pieceoperated in positive pressure mode.
Additional information	:	Not considered explosive based on chemical structure and oxygen balance considerations

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	No action shall be taken involving any personal risk or without suitable training. Only allow access to authorised persons. Do not touch or walk through spilled material. Hazard of slipping on spilled product. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions	:	Very toxic to aquatic life with long lasting effects. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill	:	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Absorb with dry earth, sand or other non-combustible material. Dispose of via a licensed waste disposal contractor.
Large spill	:	Stop leak if without risk. Cover discharges with foam in order to reduce the risks of ignition. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use spark-proof tools and explosion-proof equipment. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.
6.4 Reference to other sections	:	See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures	:	Put on appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin and clothing. Avoid breathing vapor. Never siphon by mouth. Manipulate in a well-ventilated area. Ensure ventilation is adequate if there is a risk of aerosol formation or vapor build-up. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Avoid release to the environment.
Advice on general occupational hygiene	:	After handling, always wash hands thoroughly with soap and water. Take off immediately all contaminated clothing and wash it before reuse. Provide regular cleaning of equipment, work area and clothing. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Hazard of slipping on spilled product.

7.2 Conditions for safe storage, including any incompatibilities

Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

OPERATE ONLY ON COLD AND DEGASSED TANKS IN VENTILATED PREMISES (TO AVOID RISK OF EXPLOSION). Never weld any container or empty pipe that has not been degassed.
Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability.
Ensure all equipment is electrically grounded before beginning transfer operations.

Design installations (machinery and equipment) to prevent burning product from spreading (tanks, retention systems, interceptors (traps) in drainage systems). Friction generated by product discharge can create static charges of sufficient magnitude to cause SPARKS WHICH MAY LEAD TO FIRE OR EXPLOSION.

Storage installations should be designed with adequate bunds so as to prevent ground orwater pollution in case of leaks or spills.
Prevent leaks and prevent soil/water pollution caused by leaks. Take all necessary precautions to prevent water from entering the containers, tanks, transfer lines etc...
Use only containers, seals, pipes, etc... made in a material suitable for use with aromatic hydrocarbons.
Recommended materials for containers, or container linings: Mild steel, Stainless steel. High density polyethylene (HDPE). 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 working temperature is higher than the flash point : Ground and bond container and receiving equipment.

Keep in a bunded area

Seveso Directive - Reporting thresholds

Named substances

Name	Notification and MAPP threshold	Safety report threshold
GAS OIL - Category 34	2500 tonne	25000 tonne

7.3 Specific end use(s)

Recommendations : See exposure scenarios

Industrial sector specific solutions : Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Biological Limit Values (BLV)

No exposure indices known.

Recommended monitoring procedures : Not applicable.

Advisory OEL : Hydrogen sulphide (EU): OEL = 7 mg/m3, 5ppm (8 h), 14 mg/m3, 10ppm (short-time). (US) ACGIH: TLV-TWA = 1ppm, 1.4 mg/m3/ TLV-STEL = 5ppm, 7mg/m3. NIOSH: REL = 10ppm, 10 minute ceiling. IDHL = 100ppm

DNELs/DMELs

Product/substance	Type	Exposure	Value	Population	Effects
Fuels, diesel	DNEL	Long term Oral	1.25 mg/ kg bw/day	General population	Systemic
	DNEL	Long term Dermal	1.25 mg/ kg bw/day	General population	Systemic
	DNEL	Long term Dermal	2.91 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	20.22 mg/ m³	General population	Systemic
	DNEL	Long term Inhalation	68.34 mg/ m³	Workers	Systemic
	DNEL	Short term Inhalation	2572.8 mg/ m³	General population	Systemic
	DNEL	Short term Inhalation	4288 mg/ m³	Workers	Systemic
Fuel oil, residual	DNEL	Long term Oral	0.015 mg/	General	Systemic

			kg bw/day	population	
	DNEL	Long term Dermal	0.065 mg/ kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	0.18 mg/m³	Workers	Systemic
	DNEL	Short term Inhalation	4716.8 mg/ m³	Workers	Systemic

PNECs

Product/ingredient name	Compartment Detail	Name	Method Detail
Fuel oil, residual	Secondary Poisoning	66.7 mg/kg	-

8.2 Exposure controls

Appropriate engineering controls : Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces.
Explosive atmosphere in confined spaces. Check that the vapor concentration is lower than the lower flammability limit (explosimeter, ...).

Individual protection measures

Hygiene measures : See section 7.1.
Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : In case of contact through splashing: Chemical splash goggles or face shield.

Skin protection

Hand protection : Hydrocarbon-proof gloves for aromatic hydrocarbons.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Note: Gloves made of PVA are not water-resistant, and are not suitable for emergency use.

Repeated or prolonged exposure:
Glove material: polyvinyl alcohol (PVA); any thickness; Break through time > 480 min; standard : EN 374
Glove material: Fluorinated rubber; any thickness; Break through time > 480 min; standard : EN 374
Glove material: Nitrile rubber; Glove thickness > 0.5 mm; Break through time > 480 min; standard : EN 374

In case of contact through splashing:
Glove material: Neoprene; Glove thickness > 0.75 mm; Break through time > 60 min; standard : EN 374
Glove material: polyvinyl chloride (PVC); Glove thickness > 1.3 mm; Break through time > 30 min; standard : EN 374

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant protective suit. When there is a risk of ignition from static electricity, wear anti-static protective clothing.
Antistatic non-skid safety shoes or boots

Respiratory protection	:	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. In case of insufficient ventilation, wear suitable respiratory equipment. When using a mask or half mask : Full face piece respirator with organic vapor/acid gas cartridge or canister, Type A. Respirator with combination filter for vapor/particulate, Type A/P2. In an emergency or for exceptional short-lasting jobs in an atmosphere polluted by the product, it is necessary to wear protective respiratory equipment. To enter tankers, tanks, reservoirs where the oxygen content is too low, wear insulating respiratory apparatus. The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.
Environmental exposure controls	:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature (20°C / 68°F) and pressure (1013 hPa) unless otherwise indicated

9.1 Information on basic physical and chemical properties

Appearance

Physical state	:	Liquid. [limpid]
Color	:	Brown.
Odor	:	Characteristic.
pH	:	Not applicable. Product is non-soluble (in water).
Melting point/freezing point	:	Not available.
Initial boiling point and boiling range	:	≥150°C [ISO 3405]
Flash point	:	Closed cup: ≥60°C [ISO 2719]
Flammability	:	Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.
Lower and upper explosion limit	:	Lower: 0.5% Upper: 5%
Vapor pressure	:	Not available.
Vapor density	:	>5 [Air = 1]
Relative density	:	<0.9 [ISO 12185]
Density	:	<0.9 g/cm³ [15°C] [ISO 12185]
Solubility(ies)	:	

Media	Result
water	Not soluble

Miscible with water	:	No.
Partition coefficient: n-octanol/ water	:	Not applicable.
Auto-ignition temperature	:	>250°C [ASTM E 659]
Decomposition temperature	:	Not available.
Viscosity	:	Dynamic (room temperature): Not available. Kinematic (room temperature): Not available. Kinematic (40°C): <20.5 mm^2/s [ISO 3104]

Particle characteristics

Median particle size : Not applicable.

9.2 Other information

Explosive properties : Not considered explosive based on chemical structure and oxygen balance considerations

Oxidizing properties : This product is not considered oxidising based on chemical structure considerations

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : Stable under recommended storage and handling conditions (see Section 7).

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Take precautionary measures against static discharges.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
strong acids
Strong oxidizing agents
Strong bases
Halogens

10.6 Hazardous decomposition products : Use as a fuel.: Carbon dioxide (CO_2), carbon monoxide, nitrogen oxides (NO, NO_2 etc.), various hydrocarbons, Aldehyde. Soot.

SECTION 11: Toxicological information

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

Acute toxicity

Product/substance	Result	Species	Dose	Exposure	Test
Fuels, diesel	LC50 Inhalation Dusts and mists	Rat - Male, Female	4.1 mg/l	4 hours	OECD 403
	LD50 Dermal	Rabbit - Male, Female	>4300 mg/kg	-	OECD 434
	LD50 Oral	Rat - Male, Female	>5000 mg/kg	-	OECD 401
Fuel oil, residual	LC50 Inhalation Dusts and mists	Rat - Male, Female	4.1 mg/l	4 hours	OECD 403
	LD50 Dermal	Rabbit - Male, Female	>2000 mg/kg	-	OECD 434
	LD50 Oral	Rat	4320 mg/kg	-	OECD 401

Acute toxicity estimates

Product/substance	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
MARINE DISTILLATE FUELS (DMB/DFB) Fuels, diesel Fuel oil, residual	N/A N/A 4320	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	4.1 4.1 4.1

Conclusion/Summary : Based on available data, the classification criteria are met.

Irritation/Corrosion

Product/substance	Result	Species	Score	Exposure	Test
Fuels, diesel	Eyes - Cornea opacity Skin - Edema Skin - Erythema/Eschar	Rabbit Rabbit Rabbit	0 3.9 2.96	0.5 minutes 24 hours 24 hours	OECD 405 OECD 404 OECD 404

Conclusion/Summary

Skin : Based on available data, the classification criteria are met.

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

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

Sensitization

Product/substance	Route of exposure	Species	Result
Fuels, diesel	skin	Guinea pig	Not sensitizing

Conclusion/Summary

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

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

Mutagenicity

Conclusion/Summary : Based on available data, the classification criteria are met.

Carcinogenicity

Product/substance	Result	Species	Dose	Exposure
Fuels, diesel Fuel oil, residual	Positive - Dermal - TC Positive - Dermal - TD	Mouse Mouse	- -	2 years -

Conclusion/Summary : Based on available data, the classification criteria are met.

Reproductive toxicity

Conclusion/Summary : Based on available data, the classification criteria are not met.

Teratogenicity

Product/substance	Result	Species	Dose	Exposure
Fuel oil, residual	Positive - Dermal	Rat	-	-

Conclusion/Summary : Based on available data, the classification criteria are met.

Specific target organ toxicity (single exposure)

Conclusion/Summary : Based on available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure)

Product/substance	Category	Route of exposure	Target organs
Fuels, diesel	Category 2	-	bone marrow, liver, thymus
Fuel oil, residual	Category 2	-	blood, liver, thymus

Conclusion/Summary : Based on available data, the classification criteria are met.

Aspiration hazard

Product/substance	Result
Fuels, diesel	ASPIRATION HAZARD - Category 1

Conclusion/Summary : Based on available data, the classification criteria are met.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Harmful if inhaled.

Skin contact : Causes skin irritation.

Ingestion : May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : May cause mild reversible eye irritation.
watering
redness

Inhalation : In case of exposure to hot product, inhalation of vapors in high concentration may cause irritation of respiratory system.
Can cause central nervous system (CNS) depression.
nausea or vomiting
headache
dizziness/vertigo
convulsive seizures
cardiac arrhythmia
Loss of coordination

Skin contact : Causes skin irritation.

Ingestion : nausea or vomiting
stomach pains
diarrhea
Can cause central nervous system (CNS) depression.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/substance	Result	Species	Dose	Exposure
Fuels, diesel	Sub-chronic NOAEC Inhalation Dusts and mists	Rat - Male, Female	>1710 mg/m³	13 weeks; 2 days per week
	Sub-chronic NOAEC Inhalation Dusts and mists	Rat - Male, Female	880 mg/m³	13 weeks; 2 days per week
	Sub-chronic NOAEL Dermal	Rat	30 mg/kg	13 weeks; 5 days per week
Fuel oil, residual	Sub-chronic NOAEL Dermal	Rat	1 mg/kg Read across	-

Conclusion/Summary : Not available.

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : May cause cancer.

Mutagenicity : Suspected of causing genetic defects.

Reproductive toxicity : Suspected of damaging the unborn child.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

This product does not contain any substance present at a concentration equal to or greater than 0.1% by mass, included in the list drawn up in accordance with article 59, paragraph 1 of the REACh Regulation, due to its endocrine disrupting properties, or a substance known to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation 2018/605.

11.2.2 Other information

Not available.

SECTION 12: Ecological information

Very toxic to aquatic life with long lasting effects.

12.1 Toxicity

Product/substance	Result	Species	Exposure	Test
Fuels, diesel	Acute EL50 22 mg/l Fresh water	Algae - *Raphidocelis subcapitata*	72 hours	OECD 201
	Acute EL50 68 mg/l Fresh water	Daphnia	48 hours	OECD 202
	Acute LL50 21 mg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours	OECD 203 203
	Chronic NOEL 1 mg/l	Algae - *Pseudokirchnerella subcapitata*	72 hours	OECD 201
	Chronic NOEL 0.2 mg/l	Daphnia	21 days	QSAR QSAR
Fuel oil, residual	Acute EL50 0.32 mg/l Fresh water	Algae - *Pseudokirchnerella subcapitata*	72 hours	OECD 201
	Acute EL50 0.22 mg/l	Crustaceans - *Daphnia magna*	48 hours	OECD 202
	Acute LL50 79 mg/l Fresh water	Fish - *Oncorhynchus mykiss*	96 hours	OECD 203
	Chronic NOELR 0.05 mg/l Fresh water	Algae - *Pseudokirchnerella subcapitata*	72 hours	OECD 201

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Product/substance	Test	Result	Dose	Inoculum
Fuels, diesel	OECD 301F	60 % - 28 days	-	Activated sludge

Conclusion/Summary : Not available.

Product/substance	Aquatic half-life	Photolysis	Biodegradability
Fuels, diesel Fuel oil, residual	- -	- -	Readily Readily

12.3 Bioaccumulative potential

Product/substance	$LogK_{ow}$	BCF	Potential
Fuels, diesel Fuel oil, residual	1.99 to 18 1.99 to 18.02	0.417 to 71100 0.4 to 71100	High High

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

Mobility in soil : Given its physical and chemical characteristics, the product is generally mobile in the ground It may contaminate ground water. Volatilisation is dependent on Henry's Constant which is not applicable to UVCB The product spreads on the surface of the water. In water, the majority of components of this product will be absorbed on sediments. The product are resistant to hydrolysis because they lack a functional group that is hydrolytically reactive.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB in a concentration >= 0,1 %.

12.6 Endocrine disrupting properties

This product does not contain any substance present at a concentration equal to or greater than 0.1% by mass, included in the list drawn up in accordance with article 59, paragraph 1 of the REACh Regulation, due to its endocrine disrupting properties, or a substance known to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation 2018/605.

12.7 Other adverse effects

Not applicable.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : Hazardous waste.: Dispose of waste product or used containers according to local regulations.

Hazardous waste : Yes.

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: 13 07 03* 13 07 01* 05 07 02 13 04 01 13 04 03

Packaging

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally.
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	ICAO/IATA
14.1 UN number or ID number	UN1202	UN1202	UN1202	UN1202
14.2 UN proper shipping name	GAS OIL	GAS OIL	GAS OIL	Gas oil
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Additional information

ADR/RID : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Hazard identification number 30
Limited quantity 5 L
Special provisions 640M, 664
Tunnel code (D/E)

ADN : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Special provisions 640M

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-E, S-E

ICAO/IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 60 L. Packaging instructions: 355. Cargo Aircraft Only: 220 L. Packaging instructions: 366. Limited Quantities - Passenger Aircraft: 10 L. Packaging instructions: Y344.
Special provisions A3

14.7 Maritime transport in bulk according to IMO instruments : Not available.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorization

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Labeling : Restricted to professional users.

Other EU regulations

Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work
Take note of Dir 94/33/EC on the protection of young people at work.
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
DIRECTIVE 2008/68/EC related on the inland transport of dangerous goods
Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens, mutagens or reprotoxics at work
If the working temperature is higher than the flash point :
DIR 2014/34/UE relating to equipment and protective systems intended for use in potentially explosive atmospheres
Directive 1999/92/EC related on the protection of workers in explosive atmospheres

Industrial emissions (integrated pollution prevention and control) - Air : Not listed

Industrial emissions (integrated pollution prevention and control) - Water : Not listed

Explosive precursors : Not applicable.

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

Seveso Directive

This product is controlled under the Seveso Directive.

Named substances

Name
GAS OIL - Category 34

National regulations

Social Security Code, Articles L 461-1 to L 461-7 : Fuels, diesel RG 84

Classified installations for environmental protection : Environmental Code, Book V Prevention of Pollution, Risks and Nuisance, Title I: Classified Installations for Environmental Protection, Chapter 1 General Provisions; Section 2: Nomenclature of Classified Installations (Article R511-9 to R511-10): ICPE 4734, 1434, 1435, 1436

Reinforced medical surveillance : Decree n ° 2012-135 of January 30, 2012 relating to the organization of occupational medicine: applicable

Other regulations : Annex to article D461-1 of national health insurance code (Illnesses recognized as professionnal illnesses): 601.
Decree of July 1st 2004 concerning technical and safety rules for the storage of petroleum product in collective or individual
Art R4412-1 to R4412-57 of the Labor Code relating to the provisions applicable to dangerous chemical agents.
Art R.4412-59 to R.4412-93 of the Labor Code relating to carcinogen, mutagen or reprotoxic products.
Art R. 4624-18 of the Labor Code relating to young workers.
Art R.4624-19 of the Labor Code relating to pregnant workers and workers who have recently given birth or are breastfeeding.
Art R.4624-22 to R.4624-28 of the Labor Code relating to enhanced individual monitoring of the state of health of workers.
If the working temperature is higher than the flash point :
Art. R4227-42 to R4227-54 of Labor Code related to Explosion prevention
Art. L551-1 to L557-61 of Environmental Code related to specific provisions for certain structures or installations
Art R.4412-149 to R.4412-160 of the Labor Code relating to occupational exposure limits or biological limit values.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

LU - Luxembourg prohibited chemicals in the workplace

Not listed.

Inventory list

Australia inventory (AIIC)	:	All components are listed or exempted.
Canada inventory (DSL/NDSL)	:	All components are listed or exempted.
China inventory (IECSC)	:	All components are listed or exempted.
Europe inventory (EC)	:	All components are listed or exempted.
Japan inventory	:	**Japan inventory (CSCL)**: All components are listed or exempted. **Japan inventory (ISHL)**: Not determined.
New Zealand Inventory of Chemicals (NZIoC)	:	All components are listed or exempted.
Philippines inventory (PICCS)	:	Not determined.
Korea inventory (KECI)	:	Not determined.
Taiwan Chemical Substances Inventory (TCSI)	:	All components are listed or exempted.
Thailand inventory	:	Not determined.
Turkey inventory	:	All components are listed or exempted.
United States inventory (TSCA 8b)	:	All components are listed or exempted.
Vietnam inventory	:	All components are listed or exempted.

The information stated in this section relates solely to the conformity of the chemical product with the countries Inventories. The information used to confirm the inventory status of this product may be based on additional data to the chemical composition shown in Section 3. Other regulations may apply for importation or marketing authorizations.

15.2 Chemical Safety Assessment : See exposure scenarios

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ACGIH = American Conference of Governmental Industrial Hygienists
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
DMEL = Derived Minimal Effect Level
DMSO = Dimethyl Sulfoxide
EL50 = median Effective Loading
EUH statement = CLP-specific Hazard statement
HSE = Health, Safety and Environment
IC50 = Half maximal inhibitory concentration
IDHL = Immediately dangerous to life or health
LC50 = Median lethal concentration
LD50 = Median lethal dose
LL50 = median Lethal Loading
LogKow = logarithm of the octanol/water partition coefficient
N/A = Not available
NIOSH = National Institute of Occupational Safety and Health
NOAEL = No Observed Adverse Effect Level
NOEC No Observed Effect Concentration
NOEL = No Observed Effect Level

NOELR = No observed Effect Loading Rate
OECD = Organisation for Economic Co-operation and Development
OEL = Occupational Exposure Limit
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
QSAR = Quantitative Structure–Activity Relationship
REL = Recommanded Exposure Limit
STEL = Short Term Exposure Limit
TLV = Threshold Limit Value
TWA = Time Weight Average
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative
Unique Formula Identifier (UFI)
UVCB Substance of unknown or Variable composition, Complex reaction products or Biological material

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

Classification	Justification
Flam. Liq. 3, H226	Calculation method
Acute Tox. 4, H332	Calculation method
Skin Irrit. 2, H315	Calculation method
Muta. 2, H341	Calculation method
Carc. 1B, H350	Calculation method
Repr. 2, H361d	Calculation method
STOT RE 2, H373 (blood, bone marrow, liver, thymus)	Calculation method
Asp. Tox. 1, H304	Calculation method
Aquatic Acute 1, H400	Calculation method
Aquatic Chronic 1, H410	Calculation method

Full text of abbreviated H statements

H226	Flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H351	Suspected of causing cancer.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.

Full text of classifications [CLP/GHS]

Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Acute 1	AQUATIC HAZARD (ACUTE) - Category 1
Aquatic Chronic 1	AQUATIC HAZARD (LONG-TERM) - Category 1
Aquatic Chronic 2	AQUATIC HAZARD (LONG-TERM) - Category 2
Asp. Tox. 1	ASPIRATION HAZARD - Category 1
Carc. 1B	CARCINOGENICITY - Category 1B
Carc. 2	CARCINOGENICITY - Category 2
Flam. Liq. 3	FLAMMABLE LIQUIDS - Category 3
Muta. 2	GERM CELL MUTAGENICITY - Category 2
Repr. 2	TOXIC TO REPRODUCTION - Category 2
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY (REPEATED

	EXPOSURE) - Category 2

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Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition : Mixture

Code : 36587

Product name : MARINE DISTILLATE FUELS (DMB/DFB)

Section 1 - Title

Short title of the exposure scenario : Distribution of substance, Industrial

List of use descriptors : **Identified use name:** Distribution of substance - Industrial
Process Category: PROC01, PROC02, PROC03, PROC04, PROC08a, PROC08b, PROC09, PROC15
Sector of end use: SU03
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC01, ERC02, ERC03, ERC04, ERC05, ERC06a, ERC06b, ERC06c, ERC06d, ERC07

Environmental contributing scenarios : **ESVOC SPERC 1.1b.v1**

Health Contributing scenarios : **General measures applicable to all activities**
General measures (skin irritants)
General exposures (closed systems)
General exposures (open systems)
Process sampling
Equipment cleaning and maintenance
Laboratory activities
Drum and small package filling
Storage
Drum/batch transfers
Production of preparation or articles by tabletting, compression, extrusion or pelletisation
Bulk open loading and unloading
Bulk closed loading and unloading

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1: ESVOC SPERC 1.1b.v1

Product characteristics : Substance is complex UVCB. Predominantly hydrophobic

Amounts used : Fraction of EU tonnage used in region: 0.1
Regional use tonnage (tonnes/an) : 2.8E+7
Fraction of regional tonnage used locally: 0.002
Annual site tonnage (en tonnes/an) : 5.6E+4
Maximum daily site tonnage (en kg/jour) : 1.9E+5

Frequency and duration of use : Continuous release
Emission days (jours/an) : 300

Environment factors not influenced by risk management : Local freshwater dilution factor : 10
Local marine water dilution factor : 100

Other operational conditions of use 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-6
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.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation). Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required. Treat air emission to provide a typical removal efficiency of (%) : 90 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of(%): >= 0 h:q1cg:fjq(%): >=0
Organizational measures to prevent/limit release from site	:	Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): (%): 94.1 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):94.1 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal(kg/d) : 2.9E+6 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.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

Contributing scenario controlling worker exposure for 2: General measures applicable to all activities

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., unless stated differently. Assumes a good basic standard of occupational hygiene has been implemented

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Control any potential exposure using measures such as contained or enclosed 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 the nature of exposure 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; consider the need for health surveillance; identify and implement corrective actions.

Contributing scenario controlling worker exposure for 3: General measures (skin irritants)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Contributing scenario controlling worker exposure for 4: General exposures (closed systems)

Process control/change measures	:	Handle substance within a closed system.

Contributing scenario controlling worker exposure for 5: General exposures (open systems)

Process control/change measures : Wear suitable gloves tested to EN374.

Contributing scenario controlling worker exposure for 6: Process sampling

Process control/change measures : No other specific measures identified.

Contributing scenario controlling worker exposure for 7: Equipment cleaning and maintenance

Technical conditions and measures to control dispersion from source towards the worker : Drain down and flush system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Personal protection : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

Contributing scenario controlling worker exposure for 8: Laboratory activities

Process control/change measures : No other specific measures identified.

Contributing scenario controlling worker exposure for 9: Drum and small package filling

Process control/change measures : Wear suitable gloves tested to EN374.

Contributing scenario controlling worker exposure for 10: Storage

Process control/change measures : Handle substance within a closed system.

Contributing scenario controlling worker exposure for 11: Bulk open loading and unloading

Process control/change measures : Wear suitable gloves tested to EN374.

Contributing scenario controlling worker exposure for 12: Bulk closed loading and unloading

Process control/change measures : Handle substance within a closed system. Wear suitable gloves tested to EN374.

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: ESVOC SPERC 1.1b.v1

Exposure assessment (environment): : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 2: General measures applicable to all activities

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 3: General measures (skin irritants)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 4: General exposures (closed systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 5: General exposures (open systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 6: Process sampling

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 7: Equipment cleaning and maintenance

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 8: Laboratory activities

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 9: Drum and small package filling

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 10: Storage

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 11: Drum/batch transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 12: Production of preparation or articles by tabletting, compression, extrusion or pelletisation

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 13: Bulk open loading and unloading

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 14: Bulk closed loading and unloading

Exposure assessment (human):	:	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
Exposure estimation and reference to its source	:	Not available.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition : Mixture

Code : 36587

Product name : MARINE DISTILLATE FUELS (DMB/DFB)

Section 1 - Title

Short title of the exposure scenario : Formulation & (re)packing of substances and mixtures - Industrial

List of use descriptors : **Identified use name:** Formulation & (re)packing of substances and mixtures - Industrial
Process Category: PROC01, PROC02, PROC03, PROC04, PROC05, PROC08a, PROC08b, PROC09, PROC14, PROC15, PROC28
Sector of end use: SU03
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC02

Environmental contributing scenarios : **ESVOC SPERC 2.2.v1**

Health Contributing scenarios : **General measures applicable to all activities**
General measures (skin irritants)
General exposures (closed systems) - PROC01, PROC02, PROC03
General exposures (open systems) - PROC04
Process sampling - PROC09
Equipment cleaning and maintenance - PROC08a, PROC28
Laboratory activities - PROC15
Drum and small package filling - PROC08b
Storage - PROC01, PROC02
Drum/batch transfers
Bulk transfers - PROC08b
Mixing operations (open systems) - PROC05
Batch processes at elevated temperatures - PROC03
General measures (aspiration)
General measures (flammability)
Manual - PROC08a
Tabletting, compression, extrusion or pelletisation - PROC14

Processes and activities covered by the exposure scenario : Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1: ESVOC SPERC 2.2.v1

Product characteristics : Substance is complex UVCB. Predominantly hydrophobic

Frequency and duration of use : Continuous release
Emission days (jours/an) : 300

Environment factors not influenced by risk management : Local freshwater dilution factor : 10
Local marine water dilution factor : 100

Other operational conditions of use 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) : 5.0E-5
Release fraction to soil from process (initial release prior to RMM) : 1.0E-4

Technical conditions and measures at process level (source) to prevent release : Common practices vary across sites thus conservative process release estimates used.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil	:	Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required Treat air emission to provide a typical removal efficiency of (%) : 0 Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) >= : 94.1 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)>= : 0
Organizational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Not applicable as there is no release to wastewater.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via municipal sewage treatment (%): 94.6 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.6 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal(kg/d) : 1.1E+5 Assumed domestic sewage treatment plant flow (m3/d) : 2.0E+3
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.
Conditions and measures related to external recovery of waste	:	External recovery and recycling of waste should comply with applicable local and/or national regulations. Maximum Risk Characterization Ratios for air emissions: 5.8E-2 Maximum Risk Characterization Ratios for waste water emissions: 9.3E-1

Contributing scenario controlling worker exposure for 2: General measures applicable to all activities

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., unless stated differently. Assumes a good basic standard of occupational hygiene has been implemented

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down and flush system prior to equipment break-in or maintenance. Ensure staff are informed of and trained on the nature of exposure and basic actions to minimize exposure. Wear suitable coveralls to prevent exposure to the skin. Wear suitable gloves tested to EN374. Wear respiratory protection when its use is identified for certain contributing scenarios. Clear spills immediately. Dispose of this material and its container at hazardous or special waste collection point. Ensure control measures are regularly inspected and maintained. Consider the need for risk-based health surveillance.

Contributing scenario controlling worker exposure for 3: General measures (skin irritants)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Ensure that direct skin contact is avoided. Identify potential areas for indirect skin contact. Wear suitable gloves tested to EN374. Clear spills immediately. Wash off any skin contamination immediately. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 4: General exposures (closed systems)

Process control/change measures : Handle substance within a closed system.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

Contributing scenario controlling worker exposure for 5: General exposures (open systems)

Process control/change measures : Wear suitable gloves tested to EN374.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 6: Process sampling

Engineering controls : No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 7: Equipment cleaning and maintenance

Technical conditions and measures to control dispersion from source towards the worker : Drain down and flush system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Drain down and flush system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply Wear suitable coveralls to prevent exposure to the skin. Clear spills immediately.

Contributing scenario controlling worker exposure for 8: Laboratory activities

No other specific measures identified.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : No other specific measures identified. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Put lids on containers immediately after use.

Contributing scenario controlling worker exposure for 9: Drum and small package filling

Process control/change measures : Wear suitable gloves tested to EN374.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 10: Storage

Process control/change measures : Store substance within a closed system.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Store substance within a closed system.

Contributing scenario controlling worker exposure for 11: Drum/batch transfers

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 12: Bulk transfers

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Handle substance within a closed system. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 13: Mixing operations (open systems)

Ventilation control measures : Provide extract ventilation to points where emissions occur.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Provide extract ventilation to points where emissions occur. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 14: Batch processes at elevated temperatures

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Provide extract ventilation to points where emissions occur. Handle substance within a closed system. Assumes process temperature up to 60.0°C

Contributing scenario controlling worker exposure for 15: General measures (aspiration)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Applicable if classified as H304, refer to section 2 of the SDS; Do not ingest. If swallowed then seek immediate medical assistance.

Contributing scenario controlling worker exposure for 16: General measures (flammability)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Applicable if classified as H224 or H225 or H226, refer to section 2 of the SDS; For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

Contributing scenario controlling worker exposure for 17: Manual

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Use drum pumps. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 18: Tabletting, compression, extrusion or pelletisation

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: ESVOC SPERC 2.2.v1

Exposure assessment (environment): : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 2: General measures applicable to all activities

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 3: General measures (skin irritants)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 4: General exposures (closed systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 5: General exposures (open systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 6: Process sampling

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 7: Equipment cleaning and maintenance

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 8: Laboratory activities

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 9: Drum and small package filling

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 10: Storage

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 11: Drum/batch transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 12: Bulk transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 13: Mixing operations (open systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 14: Batch processes at elevated temperatures

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 15: General measures (aspiration)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 16: General measures (flammability)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 17: Manual

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 18: Tabletting, compression, extrusion or pelletisation

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Industrial

Identification of the substance or mixture

Product definition : Mixture

Code : 36587

Product name : MARINE DISTILLATE FUELS (DMB/DFB)

Section 1 - Title

Short title of the exposure scenario : Use as a fuel - Industrial

List of use descriptors :
Identified use name: Use as a fuel - Industrial
Process Category: PROC01, PROC02, PROC08a, PROC08b, PROC16, PROC28
Sector of end use: SU03
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC07

Environmental contributing scenarios : **ESVOC SPERC 7.12a.v1**

Health Contributing scenarios :
General measures applicable to all activities
General measures (skin irritants)
Equipment cleaning and maintenance - PROC08a, PROC28
Storage - PROC01, PROC02
Drum/batch transfers - PROC08b
Bulk transfers - PROC08b
General measures (aspiration)
General measures (flammability)
Closed systems - PROC16
General exposures (closed systems) - PROC01, PROC02

Processes and activities covered by the exposure scenario : Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1: ESVOC SPERC 7.12a.v1

Product characteristics : Substance is complex UVCB. Predominantly hydrophobic

Frequency and duration of use : Continuous release
Emission days (jours/an) : 300

Environment factors not influenced by risk management : Local freshwater dilution factor : 10
Local marine water dilution factor : 100

Other operational conditions of use 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) :1.1E-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.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil : Risk from environmental exposure is driven by freshwater sediment.
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required
Treat air emission to provide a typical removal efficiency of (%) : 95
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%) : >= 94.4
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%) : >= 0.0

Organizational measures to prevent/limit release from site : Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Not applicable as there is no release to wastewater.

Conditions and measures related to municipal sewage treatment plant : Estimated substance removal from wastewater via municipal sewage treatment (%): 94.6
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.6
Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal(kg/d) : 5.2E+6
Assumed domestic sewage treatment plant flow (m3/d) : 2.0E+3

Conditions and measures related to external treatment of waste for disposal : Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste : This substance is consumed during use and no waste from the substance is generated.
Maximum Risk Characterization Ratios for air emissions: 5.9E-2
Maximum Risk Characterization Ratios for waste water emissions: 9.7E-1

Contributing scenario controlling worker exposure for 2: General measures applicable to all activities

Concentration of substance in mixture or article : Covers percentage substance in the product up to 100% (unless stated differently).

Physical state : Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure

Frequency and duration of use/exposure : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting worker exposure : Assumes use at not more than 20°C above ambient temperature, unless stated differently., unless stated differently. Assumes a good basic standard of occupational hygiene has been implemented

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Control any potential exposure using measures such as contained or enclosed 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 the nature of exposure 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; consider the need for health surveillance; identify and implement corrective actions. Wear suitable gloves tested to EN374. Wear respiratory protection when its use is identified for certain contributing scenarios.

Contributing scenario controlling worker exposure for 3: General measures (skin irritants)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Ensure that direct skin contact is avoided. Identify potential areas for indirect skin contact. Wear suitable gloves tested to EN374. Clear spills immediately. Wash off any skin contamination immediately. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 4: Equipment cleaning and maintenance

Technical conditions and measures to control dispersion from source towards the worker : Drain down and flush system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Drain down and flush system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply Wear suitable coveralls to prevent exposure to

the skin. Clear spills immediately.

Contributing scenario controlling worker exposure for 5: Storage

Process control/change measures : Handle substance within a closed system.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Store substance within a closed system.

Contributing scenario controlling worker exposure for 6: Drum/batch transfers

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply. Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 7: Bulk transfers

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 8: General measures (aspiration)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Applicable if classified as H304, refer to section 2 of the SDS; Do not ingest. If swallowed then seek immediate medical assistance.

Contributing scenario controlling worker exposure for 9: General measures (flammability)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Applicable if classified as H224 or H225 or H226, refer to section 2 of the SDS; For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

Contributing scenario controlling worker exposure for 10: Closed systems

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Handle substance within a closed system.

Contributing scenario controlling worker exposure for 11: General exposures (closed systems)

Process control/change measures : Handle substance within a closed system.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

Section 3 - Exposure estimation and reference to its source

Website: : Not available.

Exposure estimation and reference to its source - Environment: 1: ESVOC SPERC 7.12a.v1

Exposure assessment (environment): : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 2: General measures applicable to all activities

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 3: General measures (skin irritants)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 4: Equipment cleaning and maintenance

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 5: Storage

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 6: Drum/batch transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 7: Bulk transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 8: General measures (aspiration)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 9: General measures (flammability)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 10: Closed systems

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 11: General exposures (closed systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Additional good practice advice beyond the REACH CSA

Environment	:	Not available.
Health	:	Not available.

Annex to the extended Safety Data Sheet (eSDS)

Professional

Identification of the substance or mixture

Product definition : Mixture

Code : 36587

Product name : MARINE DISTILLATE FUELS (DMB/DFB)

Section 1 - Title

Short title of the exposure scenario : Use as a fuel - Professional

List of use descriptors : **Identified use name:** Use as a fuel - Professional
Process Category: PROC01, PROC02, PROC08a, PROC08b, PROC16, PROC28
Sector of end use: SU22
Subsequent service life relevant for that use: No.
Environmental Release Category: ERC09a, ERC09b

Environmental contributing scenarios : **ESVOC SPERC 9.12b.v1**

Health Contributing scenarios : **General measures applicable to all activities**
General measures (skin irritants)
Equipment cleaning and maintenance - PROC08a, PROC28
Storage - PROC01, PROC02
Drum/batch transfers - PROC08b
Bulk transfers - PROC08a
Refuelling - PROC08b
General measures (aspiration)
General measures (flammability)
Closed systems - PROC16
General exposures (closed systems) - PROC01, PROC02

Processes and activities covered by the exposure scenario : Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Section 2 - Exposure controls

Contributing scenario controlling environmental exposure for 1: ESVOC SPERC 9.12b.v1

Product characteristics : Substance is complex UVCB. Predominantly hydrophobic

Frequency and duration of use : Continuous release
Emission days (days/year) : 365

Environment factors not influenced by risk management : Local freshwater dilution factor : 10
Local marine water dilution factor : 100

Other operational conditions of use affecting environmental exposure : Release fraction to air from process (initial release prior to RMM) : 1.0E-4
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) : 1.0E-5

Technical conditions and measures at process level (source) to prevent release : Common practices vary across sites thus conservative process release estimates used.

Technical on-site conditions and measures to reduce or limit discharges, air emissions and releases to soil : Risk from environmental exposure is driven by freshwater.
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required
No wastewater treatment required.
Treat air emission to provide a typical removal efficiency of (%) : N/A
Treat on-site wastewater (prior to receiving water discharge) to provide the required removal efficiency of(%): >= 38.8
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%) : >= 0

Organizational measures to prevent/limit release from site	:	Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Not applicable as there is no release to wastewater.
Conditions and measures related to municipal sewage treatment plant	:	Estimated substance removal from wastewater via domestic sewage treatment (%): 94.6 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.6 Maximum allowable site tonnage (M_{Safe}) based on release following total wastewater treatment removal (kg/d) : 1.1E+5 Assumed domestic sewage treatment plant flow (m3/d) : 2.0E+3
Conditions and measures related to external treatment of waste for disposal	:	Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to external recovery of waste	:	This substance is consumed during use and no waste from the substance is generated. Maximum Risk Characterization Ratios for air emissions : 2.2E-2 Maximum Risk Characterization Ratios for waste water emissions : 8.9E-2

Contributing scenario controlling worker exposure for 2: General measures applicable to all activities

Concentration of substance in mixture or article	:	Covers percentage substance in the product up to 100% (unless stated differently).
Physical state	:	Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure
Frequency and duration of use/exposure	:	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting worker exposure	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., unless stated differently. Assumes a good basic standard of occupational hygiene has been implemented

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Minimise exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down and flush system prior to equipment break-in or maintenance. Ensure staff are informed of and trained on the nature of exposure and basic actions to minimize exposure. Wear suitable gloves tested to EN374. Wear respiratory protection when its use is identified for certain contributing scenarios. Clear spills immediately. Dispose of this material and its container at hazardous or special waste collection point. Ensure control measures are regularly inspected and maintained. Consider the need for risk-based health surveillance.

Contributing scenario controlling worker exposure for 3: General measures (skin irritants)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. For further specification, refer to section 8 of the SDS.

Contributing scenario controlling worker exposure for 4: Equipment cleaning and maintenance

Technical conditions and measures to control dispersion from source towards the worker	:	Drain down and flush system prior to equipment break-in or maintenance.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene	:	Drain down and flush system prior to equipment break-in or maintenance. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Wear suitable coveralls to prevent exposure to the skin. Clear spills immediately.

Personal protection : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

Contributing scenario controlling worker exposure for 5: Storage

Process control/change measures : Store substance within a closed system.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Store substance within a closed system.

Contributing scenario controlling worker exposure for 6: Drum/batch transfers

Process control/change measures : Wear suitable gloves tested to EN374.

Organizational measures to prevent/limit releases, dispersion and exposure : Use drum pumps or carefully pour from container.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 7: Bulk transfers

Process control/change measures : Wear suitable gloves tested to EN374.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 8: Refuelling

Process control/change measures : Wear suitable gloves tested to EN374.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Ensure no splashing occurs during transfer.

Contributing scenario controlling worker exposure for 9: General measures (aspiration)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Do not ingest. If swallowed then seek immediate medical assistance.

Contributing scenario controlling worker exposure for 10: General measures (flammability)

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : For measures to control risks from physicochemical properties, refer to main body of the SDS, section 7 and/or 8.

Contributing scenario controlling worker exposure for 11: Closed systems

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Handle substance within a closed system.

Contributing scenario controlling worker exposure for 12: General exposures (closed systems)

Process control/change measures : Handle substance within a closed system.

Conditions and measures related to personal protection, hygiene and health evaluation

Advice on general occupational hygiene : Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure.

Section 3 - Exposure estimation and reference to its source

Website: : Not applicable.

Exposure estimation and reference to its source - Environment: 1: ESVOC SPERC 9.12b.v1

Exposure assessment (environment): : The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 2: General measures applicable to all activities

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 3: General measures (skin irritants)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 4: Equipment cleaning and maintenance

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 5: Storage

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 6: Drum/batch transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 7: Bulk transfers

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 8: Refuelling

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 9: General measures (aspiration)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 10: General measures (flammability)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 11: Closed systems

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Exposure estimation and reference to its source - Workers: 12: General exposures (closed systems)

Exposure assessment (human): : The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

Exposure estimation and reference to its source : Not available.

Section 4 - Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterisation.

Additional good practice advice beyond the REACH CSA

Environment : Not available.

Health : Not available.