

# SAFETY DATA SHEET

<b>SECTION 1</b>	<b>IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING</b>
------------------	---

As of the revision date above, this SDS meets the regulations in the United Kingdom & Ireland.

## 1.1. PRODUCT IDENTIFIER

**Product Name:** DIESEL  
**Product Description:** Hydrocarbons and Additives  
**Product Code:** 708607-60

Trade Names	Trade Names
AUTODIESEL	DIESEL
ESSO ADO .005%S -15CFPP(W) 100%A DIES:BI	ESSO AUTODIESEL
ESSO BUNKER DIESEL ULS (UA)	ESSO DIESEL ULS (A)
ESSO DIESEL ULS (UA)	ESSO HEAVY-DUTY DIESEL
ESSO HEAVY-DUTY DIESEL FE	SYNERGY DIESEL
SYNERGY SUPREME+ DIESEL	

## 1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

**Intended Use:** Diesel engine fuel

### Identified Uses:

Manufacture of substance  
Distribution of substance  
Use as an intermediate  
Formulation and (re)packing of substances and mixtures  
Lubricants - Industrial  
Use as a fuel - Industrial  
Functional Fluids - Industrial  
Use as a fuel - Professional  
Use as a fuel - Consumer

See Section 16 for list of REACH Use Descriptors for Identified Uses shown above.

**Uses advised against:** This product is not recommended for any industrial, professional or consumer use other than the Identified Uses above.

## 1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

**Supplier:** Esso Petroleum Company Ltd.  
Ermyrn Way  
Ermyrn House  
KT22 8UX LEATHERHEAD, SURREY  
Great Britain

Product Name: DIESEL  
Revision Date: 10 Jan 2020  
Page 2 of 46

**Supplier General Contact:**  
**SDS Internet Address:**  
**E-Mail:**

(UK) (+44) (0) 1372 222 000  
www.msds.exxonmobil.com  
sds.uk@exxonmobil.com

#### 1.4. EMERGENCY TELEPHONE NUMBER

**24 Hour Emergency Telephone:**  
**National Poison Control Centre:**

(UK) (+44) (0) 1372 222 000  
(UK) 111 / (IE) (+353)1 809 2166

## SECTION 2 HAZARDS IDENTIFICATION

### 2.1. CLASSIFICATION OF SUBSTANCE OR MIXTURE

#### Classification according to Regulation (EC) No 1272/2008

Flammable liquid: Category 3.

Acute inhalation toxicant: Category 4. Skin irritation: Category 2. Carcinogen: Category 2. Specific target organ toxicant (repeated exposure): Category 2. Aspiration toxicant: Category 1.

Chronic aquatic toxicant: Category 2.

H226: Flammable liquid and vapour.

H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H332: Harmful if inhaled.

H351: Suspected of causing cancer. H373: May cause damage to organs through prolonged or repeated exposure. Bone marrow, Liver, Thymus

H411: Toxic to aquatic life with long lasting effects.

### 2.2. LABEL ELEMENTS

#### Label elements according to Regulation (EC) No 1272/2008

##### Pictograms:



**Signal Word:** Danger

Product Name: DIESEL  
Revision Date: 10 Jan 2020  
Page 3 of 46

---

**Hazard Statements:**

H226: Flammable liquid and vapour.

H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H332: Harmful if inhaled.

H351: Suspected of causing cancer. H373: May cause damage to organs through prolonged or repeated exposure.  
Bone marrow, Liver, Thymus

H411: Toxic to aquatic life with long lasting effects.

**Precautionary Statements:**

P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233: Keep container tightly closed. P240: Ground and bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating and lighting equipment. P242: Use non-sparking tools. P243: Take action to prevent static discharges. P260: Do not breathe mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/attention. P314: Get medical advice/attention if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish. P391: Collect spillage.

P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.

P501: Dispose of contents and container in accordance with local regulations.

**Contains:** Fuels, diesel

**2.3. OTHER HAZARDS****Physical / Chemical Hazards:**

Material can accumulate static charges which may cause an ignition. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited.

**Health Hazards:**

May cause central nervous system depression. High-pressure injection under skin may cause serious damage. Under conditions of poor personal hygiene and prolonged repeated contact, some polycyclic aromatic compounds (PACs) have been suspected as a cause of skin cancer in humans. May be irritating to the eyes, nose, throat, and lungs.

**Environmental Hazards:**

No additional hazards. Material does not meet the criteria for PBT or vPvB in accordance with REACH Annex XIII.

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 4 of 46

**3.1. SUBSTANCES** Not Applicable. This material is regulated as a mixture.

**3.2. MIXTURES**

This material is defined as a mixture.

**Reportable hazardous substance(s) complying with the classification criteria and/or with an exposure limit (OEL)**

Name	CAS#	EC#	Registration#	Concentration *	GHS/CLP classification
Fuels, diesel	68334-30-5	269-822-7	01-2119484664-27	> 92 %	[Aquatic Acute 2 H401], Aquatic Chronic 2 H411, Acute Tox. 4 H332, Asp. Tox. 1 H304, Carc. 2 H351, Flam. Liq. 3 H226, Skin Irrit. 2 H315, STOT RE 2 H373, Note N

Note - any classification in brackets is a GHS building block that was not adopted by the EU in the CLP regulation (No 1272/2008) and therefore is not applicable in the EU or in non-EU countries which have implemented the CLP regulation and is shown for informational purposes only.

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

NOTE: Composition may contain up to 0.5% performance additives and / or dyes.

Note: See SDS Section 16 for full text of hazard statements.

**SECTION 4 FIRST AID MEASURES**

**4.1. DESCRIPTION OF FIRST AID MEASURES**

**INHALATION**

Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device.

**SKIN CONTACT**

Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

**EYE CONTACT**

Flush thoroughly with water. If irritation occurs, get medical assistance.

## INGESTION

Seek immediate medical attention. Do not induce vomiting.

### 4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Headache, dizziness, drowsiness, nausea and other CNS effects. Itching, pain, redness, swelling of skin. Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

### 4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately. Contains hydrocarbon solvent/petroleum hydrocarbons; skin contact may aggravate an existing dermatitis.

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
------------------	-------------------------------

#### 5.1. EXTINGUISHING MEDIA

**Suitable Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Unsuitable Extinguishing Media:** Straight streams of water

#### 5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

**Hazardous Combustion Products:** Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

#### 5.3. ADVICE FOR FIRE FIGHTERS

**Fire Fighting Instructions:** Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Unusual Fire Hazards:** Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

## FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >56°C (133°F) [ASTM D-93]

**Upper/Lower Flammable Limits (Approximate volume % in air):** UEL: 7.0 LEL: 0.6 [test method unavailable]

**Autoignition Temperature:** >250°C (482°F) [test method unavailable]

<b>SECTION 6</b>	<b>ACCIDENTAL RELEASE MEASURES</b>
------------------	------------------------------------

### 6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

#### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

#### PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 6 of 46

the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H<sub>2</sub>S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

## 6.2. ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

## 6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

**Land Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces.

**Water Spill:** Stop leak if you can do so without risk. Eliminate sources of ignition. Warn other shipping. If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

## 6.4. REFERENCES TO OTHER SECTIONS

See Sections 8 and 13.

# SECTION 7

# HANDLING AND STORAGE

## 7.1. PRECAUTIONS FOR SAFE HANDLING

Avoid all personal contact. Do not siphon by mouth. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put petrol into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) during safety critical tasks, such as bulk fuel loading or unloading operations, or in storage areas where vapours may be present, unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition

source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

**Static Accumulator:** This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

### 7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The type of container used to store the material may affect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be earthed and bonded. Fixed storage containers, transfer containers and associated equipment should be earthed and bonded to prevent accumulation of static charge. Keep away from incompatible materials.

### 7.3. SPECIFIC END USES

Section 1 informs about identified end-uses. No industrial or sector specific guidance available.

## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1. CONTROL PARAMETERS

#### EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard		Note	Source
Fuels, diesel	Stable Aerosol.	TWA	5 mg/m <sup>3</sup>	Skin	ExxonMobil
Fuels, diesel	Vapour.	TWA	200 mg/m <sup>3</sup>	Skin	ExxonMobil
Fuels, diesel [total hydrocarb, vapor&aerosol]	Inhalable fraction and vapour	TWA	100 mg/m <sup>3</sup>	Skin	ACGIH

Note: Information about recommended monitoring procedures can be obtained from the relevant agency(ies)/institute(s):

UK Health and Safety Executive (HSE)

**DERIVED NO EFFECT LEVEL (DNEL)/DERIVED MINIMAL EFFECT LEVEL (DMEL)**

**Worker**

Substance Name	Dermal	Inhalation
Fuels, diesel	2.9 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects	68 mg/m <sup>3</sup> DNEL, Chronic Exposure, Systemic Effects

**Consumer**

Substance Name	Dermal	Inhalation	Oral
Fuels, diesel	1.3 mg/kg bw/day DNEL, Chronic Exposure, Systemic Effects	20 mg/m <sup>3</sup> DNEL, Chronic Exposure, Systemic Effects	NA

Note: The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute short-term exposure limit (STEL). While also considered to be protective of health, OELs are derived by a process different from that of REACH.

**PREDICTED NO EFFECT CONCENTRATION (PNEC)**

Substance Name	Aqua (fresh water)	Aqua (marine water)	Aqua (intermittent release)	Sewage treatment plant	Sediment	Soil	Oral (secondary poisoning)
Fuels, diesel	NA	NA	NA	NA	NA	NA	NA

For hydrocarbon UVCBs, no single PNEC value is identified for the overall substance or used in risk assessment calculations. Therefore, no PNEC values are disclosed in the above table. For further information, please contact ExxonMobil.

**8.2. EXPOSURE CONTROLS**

**ENGINEERING CONTROLS**

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:  
 Use explosion-proof ventilation equipment to stay below exposure limits.

**PERSONAL PROTECTION**

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator



Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 9 of 46

selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator Type AP filter material., European Committee for Standardization (CEN) standards EN 136, 140 and 405 provide respirator masks and EN 149 and 143 provide filter recommendations.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves. Nitrile, minimum 0.38 mm thickness or comparable protective barrier material with a high performance level for continuous contact use conditions, permeation breakthrough minimum 480 minutes in accordance with CEN standards EN 420 and EN 374.

**Eye Protection:** If contact with material is likely, chemical goggles are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

**For Summary of Risk Management Measures across all identified uses, see Annex.**

## ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

### 9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Liquid

**Colour:** Light Coloured

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 10 of 46

**Odour:** Petroleum/Solvent  
**Odour Threshold:** No data available  
**pH:** Not technically feasible  
**Melting Point:** No data available  
**Freezing Point:** No data available  
**Initial Boiling Point / and Boiling Range:** > 180°C (356°F) [test method unavailable]  
**Flash Point [Method]:** >56°C (133°F) [ASTM D-93]  
**Evaporation Rate (n-butyl acetate = 1):** No data available  
**Flammability (Solid, Gas):** Not technically feasible  
**Upper/Lower Flammable Limits (Approximate volume % in air):** UEL: 7.0 LEL: 0.6 [test method unavailable]  
**Vapour Pressure:** < 0.04 kPa (0.3 mm Hg) at 20 °C [test method unavailable]  
**Vapour Density (Air = 1):** No data available  
**Relative Density (at 15 °C):** 0.82 - 0.845 [EN ISO 3675]  
**Solubility(ies): water** Negligible  
**Partition coefficient (n-Octanol/Water Partition Coefficient):** > 3.5 [test method unavailable]  
**Autoignition Temperature:** >250°C (482°F) [test method unavailable]  
**Decomposition Temperature:** No data available  
**Viscosity:** 2 cSt (2 mm<sup>2</sup>/sec) at 40°C - 4 cSt (4 mm<sup>2</sup>/sec) at 40°C [test method unavailable]  
**Explosive Properties:** None  
**Oxidizing Properties:** None

## 9.2. OTHER INFORMATION

**Density (at 15 °C):** 820 kg/m<sup>3</sup> (6.84 lbs/gal, 0.82 kg/dm<sup>3</sup>) - 845 kg/m<sup>3</sup> (7.05 lbs/gal, 0.85 kg/dm<sup>3</sup>) [EN ISO 3675]

<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
-------------------	---------------------------------

**10.1. REACTIVITY:** See sub-sections below.

**10.2. CHEMICAL STABILITY:** Material is stable under normal conditions.

**10.3. POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

**10.4. CONDITIONS TO AVOID:** Open flames and high energy ignition sources.

**10.5. INCOMPATIBLE MATERIALS:** Halogens, Strong Acids, Strong Bases, Strong oxidisers

**10.6. HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

<b>SECTION 11</b>	<b>TOXICOLOGICAL INFORMATION</b>
-------------------	----------------------------------

### 11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: (Rat) 4 hour(s) LC50 >	Moderately toxic. Based on test data for structurally similar

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 11 of 46

4000 mg/m3 (Vapor and aerosol)	materials. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
<b>Ingestion</b>	
Acute Toxicity (Rat): LD50 > 5000 mg/kg Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401
<b>Skin</b>	
Acute Toxicity (Rabbit): LD50 > 5000 mg/kg Test scores or other study results do not meet criteria for classification.	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 434
Skin Corrosion/Irritation (Rabbit): Data available. Test scores or other study results meet criteria for classification.	Irritating to the skin. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
<b>Eye</b>	
Serious Eye Damage/Irritation (Rabbit): Data available. Test scores or other study results do not meet criteria for classification.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
<b>Sensitisation</b>	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406
<b>Aspiration:</b> Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
<b>Germ Cell Mutagenicity:</b> Data available. Test scores or other study results do not meet criteria for classification.	Not expected to be a germ cell mutagen. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 475
<b>Carcinogenicity:</b> Data available.	Caused cancer in laboratory animals, but the relevance to humans is uncertain. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 451
<b>Reproductive Toxicity:</b> No end point data for material.	Not expected to be a reproductive toxicant.
<b>Lactation:</b> No end point data for material.	Not expected to cause harm to breast-fed children.
<b>Specific Target Organ Toxicity (STOT)</b>	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: Data available.	Concentrated, prolonged or deliberate exposure may cause organ damage. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 410 413

## OTHER INFORMATION

### For the product itself:

Target Organs Repeated Exposure: Bone marrow, Liver, Thymus

Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Diesel fuel: Carcinogenic in animal tests. Caused mutations in-vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 12 of 46

maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function. Diesel exhaust fumes: Carcinogenic in animal tests. Inhalation exposures to exhaust for 2 years in test animals resulted in lung tumours and lymphoma. Extract of particulate produced skin tumours in test animals. Caused mutations in-vitro.

<b>SECTION 12</b>	<b>ECOLOGICAL INFORMATION</b>
-------------------	-------------------------------

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

**12.1. TOXICITY**

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

**12.2. PERSISTENCE AND DEGRADABILITY**

**Biodegradation:**

Material -- Expected to be inherently biodegradable

**Atmospheric Oxidation:**

Majority of components -- Expected to degrade rapidly in air

**12.3. BIOACCUMULATIVE POTENTIAL**

Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

**12.4. MOBILITY IN SOIL**

More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

Less volatile component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

Majority of components -- Low potential to migrate through soil.

**12.5. PERSISTENCE, BIOACCUMULATION AND TOXICITY FOR SUBSTANCE(S)**

Material does not meet the Reach Annex XIII criteria for PBT or vPvB.

**12.6. OTHER ADVERSE EFFECTS**

No adverse effects are expected.

**ECOLOGICAL DATA**

**Ecotoxicity**

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EL50 1 - 1000 mg/l: data for similar materials

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 13 of 46

Aquatic - Acute Toxicity	96 hour(s)	Fish	LL50 1 - 100 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	EL50 1 - 100 mg/l: data for similar materials
Aquatic - Chronic Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	NOELR 1 - 10 mg/l: data for similar materials

**Persistence, Degradability and Bioaccumulation Potential**

Media	Test Type	Duration	Test Results: Basis
Water	Ready Biodegradability	28 day(s)	Percent Degraded < 60 : similar material

**SECTION 13 DISPOSAL CONSIDERATIONS**

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**13.1. WASTE TREATMENT METHODS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

**European Waste Code:** 13 07 01\*

NOTE: These codes are assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste producers need to assess the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code(s).

This material is considered as hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

**SECTION 14 TRANSPORT INFORMATION**

**LAND (ADR/RID)**

- 14.1. UN Number: 1202
- 14.2. UN Proper Shipping Name (Technical Name): DIESEL FUEL, GAS OIL OR HEATING OIL, LIGHT
- 14.3. Transport Hazard Class(es): 3
- 14.4. Packing Group: III

Product Name: DIESEL  
Revision Date: 10 Jan 2020  
Page 14 of 46

---

**14.5. Environmental Hazards:** Yes  
**14.6. Special Precautions for users:**  
**Proper Shipping Name Suffix:** Special Provision 640L  
**Classification Code:** F1  
**Label(s) / Mark(s):** 3, EHS  
**Hazard ID Number:** 30  
**Hazchem EAC:** 3Y

#### INLAND WATERWAYS (ADN)

**14.1. UN (or ID) Number:** 1202  
**14.2. UN Proper Shipping Name (Technical Name):** DIESEL FUEL, GAS OIL OR HEATING OIL, LIGHT  
**14.3. Transport Hazard Class(es):** 3  
**14.4. Packing Group:** III  
**14.5. Environmental Hazards:** Yes  
**14.6. Special Precautions for users:**  
**Hazard ID Number:** 30  
**Label(s) / Mark(s):** 3 (N2, F), EHS

#### SEA (IMDG)

**14.1. UN Number:** 1202  
**14.2. UN Proper Shipping Name (Technical Name):** DIESEL FUEL, GAS OIL OR HEATING OIL, LIGHT  
**14.3. Transport Hazard Class(es):** 3  
**14.4. Packing Group:** III  
**14.5. Environmental Hazards:** Marine Pollutant  
**14.6. Special Precautions for users:**  
**Label(s):** 3  
**EMS Number:** F-E, S-E  
**Transport Document Name:** UN1202, DIESEL FUEL, GAS OIL OR HEATING OIL, LIGHT, 3, PG III, (56°C c.c.), MARINE POLLUTANT

#### SEA (MARPOL 73/78 Convention - Annex II):

**14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**  
Not classified according to Annex II

#### AIR (IATA)

**14.1. UN Number:** 1202  
**14.2. UN Proper Shipping Name (Technical Name):** DIESEL FUEL, GAS OIL OR HEATING OIL, LIGHT  
**14.3. Transport Hazard Class(es):** 3  
**14.4. Packing Group:** III  
**14.5. Environmental Hazards:** Yes  
**14.6. Special Precautions for users:**  
**Label(s) / Mark(s):** 3  
**Transport Document Name:** UN1202, DIESEL FUEL, GAS OIL OR HEATING OIL, LIGHT, 3, PG III

<b>SECTION 15</b>
-------------------

<b>REGULATORY INFORMATION</b>
-------------------------------

#### REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Product Name: DIESEL  
Revision Date: 10 Jan 2020  
Page 15 of 46

---

**Listed or exempt from listing/notification on the following chemical inventories (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA):** AICS, DSL, IECSC, KECI, PICCS, TCSI, TSCA

## 15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

### Applicable EU Directives and Regulations:

1907/2006 [... on the Registration, Evaluation, Authorisation and Restriction of Chemicals ... and amendments thereto]  
92/85/EEC [...pregnant workers...recently given birth or...breastfeeding directive]  
94/33/EC [...on the protection of young people at work]  
96/82/EC as extended by 2003/105/EC [ ... on the control of major-accident hazards involving dangerous substances]. Product contains a substance that falls within the criteria defined in Annex I. Refer to Directive for details of requirements taking into account the volume of product stored on site.  
98/24/EC [... on the protection of workers from the risk related to chemical agents at work ...]. Refer to Directive for details of requirements.  
1272/2008 [on classification, labelling and packaging of substances and mixtures.. and amendments thereto]

## 15.2. CHEMICAL SAFETY ASSESSMENT

**REACH Information:** A Chemical Safety Assessment has been carried out for one or more substances present in the material.

<b>SECTION 16</b>	<b>OTHER INFORMATION</b>
-------------------	--------------------------

### IDENTIFIED USES:

Manufacture of substance (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, SU10, SU3, SU8, SU9)  
Distribution of substance (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, SU3, SU8, SU9)  
Use as an intermediate (PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, SU3, SU8, SU9)  
Formulation and (re)packing of substances and mixtures (PROC1, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, SU10, SU3)  
Lubricants - Industrial (PROC1, PROC10, PROC13, PROC17, PROC18, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, SU3)  
Use as a fuel - Industrial (PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b, SU3)  
Functional Fluids - Industrial (PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, SU3)  
Use as a fuel - Professional (PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b, SU22)  
Use as a fuel - Consumer (PC13, SU21)

**REFERENCES:** Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations,

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 16 of 46

such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate.

**List of abbreviations and acronyms that could be (but not necessarily are) used in this safety data sheet:**

Acronym	Full text
N/A	Not applicable
N/D	Not determined
NE	Not established
VOC	Volatile Organic Compound
AICS	Australian Inventory of Chemical Substances
AIHA WEEL	American Industrial Hygiene Association Workplace Environmental Exposure Limits
ASTM	ASTM International, originally known as the American Society for Testing and Materials (ASTM)
DSL	Domestic Substance List (Canada)
EINECS	European Inventory of Existing Commercial Substances
ELINCS	European List of Notified Chemical Substances
ENCS	Existing and new Chemical Substances (Japanese inventory)
IECSC	Inventory of Existing Chemical Substances in China
KECI	Korean Existing Chemicals Inventory
NDSL	Non-Domestic Substances List (Canada)
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances
TLV	Threshold Limit Value (American Conference of Governmental Industrial Hygienists)
TSCA	Toxic Substances Control Act (U.S. inventory)
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials
LC	Lethal Concentration
LD	Lethal Dose
LL	Lethal Loading
EC	Effective Concentration
EL	Effective Loading
NOEC	No Observable Effect Concentration
NOELR	No Observable Effect Loading Rate

**Classification according to Regulation (EC) No 1272/2008**

Classification according to Regulation (EC) No 1272/2008	Classification procedure
Aquatic Chronic 2; H411	Calculation
Carc. 2; H351	Bridging, structurally similar materials
Flam. Liq. 3; H226	Based on test data
Skin Irrit. 2; H315	Bridging, structurally similar materials
STOT RE 2; H373	Bridging, structurally similar materials

**KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):**

Flam. Liq. 3 H226: Flammable liquid and vapor; Flammable Liquid, Cat 3  
 Asp. Tox. 1 H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1  
 Skin Irrit. 2 H315: Causes skin irritation; Skin Corr/Irritation, Cat 2  
 Acute Tox. 4 H332: Harmful if inhaled; Acute Tox Inh, Cat 4  
 Carc. 2 H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2  
 STOT RE 2 H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2  
 [Aquatic Acute 2 H401]: Toxic to aquatic life; Acute Env Tox, Cat 2  
 Aquatic Chronic 2 H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2



Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 17 of 46

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

- Distribution of substance: Annex Information information was modified.
- Formulation and (re)packing of substances and mixtures: Annex Information information was modified.
- Functional Fluids - Industrial: Annex Information information was modified.
- Lubricants - Industrial: Annex Information information was modified.
- Manufacture of substance: Annex Information information was modified.
- Section 01: Company Contact Methods information was modified.
- Section 01: Company Emergency Contact information was modified.
- Section 06: Accidental Release - Spill Management - Land information was modified.
- Section 07: Handling and Storage - Handling information was modified.
- Section 12: PBT/vPvB information was modified.
- Section 12: information was modified.
- Use as a fuel - Industrial: Annex Information information was modified.
- Use as a fuel - Professional: Annex Information information was modified.
- Use as an intermediate: Annex Information information was modified.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only  
 MHC: 1A, 0B, 2, 0, 4, 1 PPEC: C  
 DGN: 7106759XGB (1017892)

**ANNEX**

Section 1 Exposure Scenario Title	
<b>Title:</b>	
Manufacture of substance	
<b>Use Descriptor</b>	
Sector(s) of Use	SU10, SU3, SU8, SU9
Process Categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b
Environmental Release Categories	ERC1

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 18 of 46

Specific Environmental Release Category	ESVOC 1.1.v1
<b>Processes, tasks, activities covered</b>	
Manufacture of the substance or use as an intermediate, process chemical or extracting agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1] Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7]	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<p><b>General measures applicable to all activities</b> 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 clear 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.</p> <p><b>General measures (Aspiration Hazard)</b> The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.</p> <p><b>General measures (Flammable Liquid)</b> Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.</p> <p><b>General measures (skin irritants)</b> Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.</p> <p><b>General exposures (closed systems) PROC1</b> No specific measures identified.</p> <p><b>General exposures (closed systems) PROC2</b> Handle substance within a closed system.</p>	

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 19 of 46

<p><b>General exposures (closed systems) PROC3</b>          Handle substance within a closed system.</p> <p><b>General exposures (open systems) PROC4</b>          Wear suitable gloves tested to EN374.</p> <p><b>Process sampling PROC3</b>          No other specific measures identified.</p> <p><b>Laboratory activities PROC15</b>          No other specific measures identified.</p> <p><b>Bulk transfers (closed systems) PROC8b</b>          Handle substance within a closed system.          Wear suitable gloves tested to EN374.</p> <p><b>Bulk transfers (open systems) PROC8b</b>          Wear suitable gloves tested to EN374.</p> <p><b>Equipment cleaning and maintenance PROC8a</b>          Drain down system prior to equipment break-in or maintenance.          Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.</p> <p><b>Bulk product storage PROC1</b>          Store substance within a closed system.</p> <p><b>Bulk product storage PROC2</b>          Store substance within a closed system.</p>
<p><b>Section 2.2 Control of environmental exposure</b></p>
<p><b>Product characteristics</b></p> <p>Predominantly hydrophobic.          Substance is complex UVCB.</p>
<p><b>Duration, frequency and amount</b></p> <p>Annual site tonnage (tonnes/year): 600000 tons/yr          Continuous release.          Emission Days (days/year): 300 days/yr          Fraction of EU tonnage used in region: 0.1          Fraction of Regional tonnage used Locally: 0.022          Maximum daily site tonnage (kg/d): 2000000 kg / day          Regional use tonnage (tonnes/year): 27000000 tons/yr</p>
<p><b>Environmental factors not influenced by risk management</b></p> <p>Local freshwater dilution factor [EF1] 10          Local marine water dilution factor: [EF2] 100</p>
<p><b>Other given operational conditions affecting environmental exposure</b></p> <p>Release fraction to air from process (initial release prior to RMM): 0.01          Release fraction to soil from process (initial release prior to RMM): 0.0001          Release fraction to wastewater from process (initial release prior to RMM): 0.0000025</p>
<p><b>Technical conditions and measures at process level (source) to prevent release</b></p> <p>Common practices vary across sites thus conservative process release estimates used.</p>
<p><b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b></p> <p>If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.          If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: &gt;= 0 %          Risk from environmental exposure is driven by freshwater sediment.          Treat air emissions to provide a typical removal (or abatement?) efficiency of: 90 %          Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: &gt;= 90.3 %</p>
<p><b>Organisation measures to prevent/limit release from site</b></p> <p>Do not apply industrial sludge to natural soils.</p>

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 20 of 46

Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
<b>Conditions and measures related to municipal sewage treatment plant</b>
Assumed domestic sewage treatment plant effluent flow is:[STP5] 10000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 % The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 3600000 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %
Conditions and measures related to external treatment of waste for disposal
During manufacturing no waste of the substance is generated [ETW4]
Conditions and measures related to external recovery of waste
During manufacturing no waste of the substance is generated [ERW2]
<b>Section 3 Exposure Estimation</b>
<b>3.1. Health</b>
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
<b>3.2. Environment</b>
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>
<b>4.1. Health</b>
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] Available hazard data do not support the need for a DNEL to be established for other health effects.[G36] Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Risk Management Measures are based on qualitative risk characterisation. [G37] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
<b>4.2. Environment</b>
Further details on scaling and control technologies are provided in factsheet 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. If scaling reveals a condition of unsafe use (i.e. RCRs >1), additional RMMs or a site-specific chemical safety assessment is required. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - 'Site-Specific Production' worksheet. [DSU6]

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 21 of 46

Section 1 Exposure Scenario Title	
<b>Title:</b>	
Distribution of substance	
<b>Use Descriptor</b>	
Sector(s) of Use	SU3, SU8, SU9
Process Categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC4, ERC5, ERC6A, ERC6B, ERC6C, ERC6D, ERC7
Specific Environmental Release Category	ESVOC 1.1b.v1
<b>Processes, tasks, activities covered</b>	
Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2]	
Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1]	
Assumes use at not more than 20°C above ambient temperature[G15]	
Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
<b>General measures (Aspiration Hazard)</b>	
The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures (Flammable Liquid)</b>	
Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	
<b>General measures applicable to all activities</b>	
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 clear 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.	
<b>General measures (skin irritants)</b>	

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 22 of 46

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

**General exposures (closed systems) PROC1**

No specific measures identified.

**General exposures (closed systems) PROC2**

Handle substance within a closed system.

**General exposures (closed systems) PROC3**

Handle substance within a closed system.

**General exposures (open systems) PROC4**

Wear suitable gloves tested to EN374.

**Process sampling PROC3**

No specific measures identified.

**Laboratory activities PROC15**

No specific measures identified.

**Bulk transfers (closed systems) PROC8b**

Handle substance within a closed system.

Wear suitable gloves tested to EN374.

**Bulk transfers (open systems) PROC8b**

Wear suitable gloves tested to EN374.

**Drum and small package filling PROC9**

Wear suitable gloves tested to EN374.

**Equipment cleaning and maintenance PROC8a**

Drain down system prior to equipment break-in or maintenance.

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

**Storage PROC1**

Handle substance within a closed system.

**Storage PROC2**

Handle substance within a closed system.

**Section 2.2 Control of environmental exposure**

**Product characteristics**

Predominantly hydrophobic.

Substance is complex UVCB.

**Duration, frequency and amount**

Annual site tonnage (tonnes/year): 67000 tons/yr

Continuous release.

Emission Days (days/year): 300 days/yr

Fraction of EU tonnage used in region: 0.1

Fraction of Regional tonnage used Locally: 0.002

Maximum daily site tonnage (kg/d): 220000 kg / day

Regional use tonnage (tonnes/year): 34000000 tons/yr

**Environmental factors not influenced by risk management**

Local freshwater dilution factor [EF1] 10

Local marine water dilution factor: [EF2] 100

**Other given operational conditions affecting environmental exposure**

Release fraction to air from process (initial release prior to RMM): 0.001

Release fraction to soil from process (initial release prior to RMM): 0.00001

Release fraction to wastewater from process (initial release prior to RMM): 0.000001

**Technical conditions and measures at process level (source) to prevent release**

Common practices vary across sites thus conservative process release estimates used.

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 23 of 46

<p><b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b></p> <p>If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.          If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =:          0 %          No secondary wastewater treatment required.          Risk from environmental exposure is driven by freshwater sediment.          Treat air emissions to provide a typical removal (or abatement?) efficiency of: 90 %          Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: 75.3 %</p>
<p><b>Organisation measures to prevent/limit release from site</b></p> <p>Do not apply industrial sludge to natural soils.          Sludge should be incinerated, contained or reclaimed.</p>
<p><b>Conditions and measures related to municipal sewage treatment plant</b></p> <p>Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m<sup>3</sup>/day          Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 %          The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 1000000 kg / day          Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %</p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p> <p>External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]</p>
<p><b>Conditions and measures related to external recovery of waste</b></p> <p>External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1]</p>
<p><b>Section 3 Exposure Estimation</b></p>
<p><b>3.1. Health</b></p> <p>The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]</p>
<p><b>3.2. Environment</b></p> <p>The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]</p>
<p><b>Section 4 Guidance to check compliance with the Exposure Scenario</b></p>
<p><b>4.1. Health</b></p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]          Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]          Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]          Risk Management Measures are based on qualitative risk characterisation. [G37]          Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]</p>
<p><b>4.2. Environment</b></p> <p>Further details on scaling and control technologies are provided in factsheet          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 air can be achieved using on-site technologies, either alone or in combination.          Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.</p>

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 24 of 46

<b>Section 1 Exposure Scenario Title</b>	
<b>Title:</b>	
Use as an intermediate	
<b>Use Descriptor</b>	
Sector(s) of Use	SU3, SU8, SU9
Process Categories	PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b
Environmental Release Categories	ERC6A
Specific Environmental Release Category	ESVOC 6.1a.v1
<b>Processes, tasks, activities covered</b>	
Use as an intermediate (not related to Strictly Controlled Conditions). Includes incidental exposures during recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1] Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7]	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<b>General measures (Aspiration Hazard)</b>	
The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures applicable to all activities</b>	
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 clear 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.	
<b>General measures (Flammable Liquid)</b>	
Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	



Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 25 of 46

<p><b>General measures (skin irritants)</b>          Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.</p> <p><b>General exposures (closed systems) PROC1</b>          No specific measures identified.</p> <p><b>General exposures (closed systems) PROC2</b>          Handle substance within a closed system.</p> <p><b>General exposures (closed systems) PROC3</b>          Handle substance within a closed system.</p> <p><b>General exposures (open systems) PROC4</b>          Wear suitable gloves tested to EN374.</p> <p><b>Process sampling PROC3</b>          No specific measures identified.</p> <p><b>Laboratory activities PROC15</b>          No specific measures identified.</p> <p><b>Bulk transfers (open systems) PROC8b</b>          Wear suitable gloves tested to EN374.</p> <p><b>Bulk transfers (closed systems) PROC8b</b>          Handle substance within a closed system.          Wear suitable gloves tested to EN374.</p> <p><b>Equipment cleaning and maintenance PROC8a</b>          Drain down system prior to equipment break-in or maintenance.          Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.</p> <p><b>Bulk product storage PROC1</b>          Store substance within a closed system.</p> <p><b>Bulk product storage PROC2</b>          Store substance within a closed system.</p>
<p><b>Section 2.2 Control of environmental exposure</b></p>
<p><b>Product characteristics</b>          Predominantly hydrophobic.          Substance is complex UVCB.</p>
<p><b>Duration, frequency and amount</b>          Annual site tonnage (tonnes/year): 15000 tons/yr          Continuous release.          Emission Days (days/year): 300 days/yr          Fraction of EU tonnage used in region: 0.1          Fraction of Regional tonnage used Locally: 0.0091          Maximum daily site tonnage (kg/d): 50000 kg / day          Regional use tonnage (tonnes/year): 1700000 tons/yr</p>
<p><b>Environmental factors not influenced by risk management</b>          Local freshwater dilution factor [EF1] 10          Local marine water dilution factor: [EF2] 100</p>
<p><b>Other given operational conditions affecting environmental exposure</b>          Release fraction to air from process (initial release prior to RMM): 0.001          Release fraction to soil from process (initial release prior to RMM): 0.001          Release fraction to wastewater from process (initial release prior to RMM): 0.00003</p>
<p><b>Technical conditions and measures at process level (source) to prevent release</b>          Common practices vary across sites thus conservative process release estimates used.</p>
<p><b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b></p>

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 26 of 46

<p>If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.</p> <p>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: 0 %</p> <p>Risk from environmental exposure is driven by freshwater sediment.</p> <p>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 80 %</p> <p>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: 93 %</p>
<p><b>Organisation measures to prevent/limit release from site</b></p> <p>Do not apply industrial sludge to natural soils.</p> <p>Prevent discharge of undissolved substance to or recover from wastewater.</p> <p>Sludge should be incinerated, contained or reclaimed.</p>
<p><b>Conditions and measures related to municipal sewage treatment plant</b></p> <p>Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day</p> <p>Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 %</p> <p>Not applicable as there is no release to wastewater.</p> <p>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 64000 kg / day</p> <p>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %</p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p> <p>This substance is consumed during use and no waste of the substance is generated [ETW5]</p>
<p><b>Conditions and measures related to external recovery of waste</b></p> <p>This substance is consumed during use and no waste of the substance is generated [ERW3]</p>
<p><b>Section 3 Exposure Estimation</b></p>
<p><b>3.1. Health</b></p> <p>The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]</p>
<p><b>3.2. Environment</b></p> <p>The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]</p>
<p><b>Section 4 Guidance to check compliance with the Exposure Scenario</b></p>
<p><b>4.1. Health</b></p> <p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]</p> <p>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]</p> <p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]</p> <p>Risk Management Measures are based on qualitative risk characterisation. [G37]</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]</p>
<p><b>4.2. Environment</b></p> <p>Further details on scaling and control technologies are provided in factsheet</p> <p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.</p> <p>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.</p> <p>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.</p>

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 27 of 46

Section 1 Exposure Scenario Title	
<b>Title:</b>	
Formulation and (re)packing of substances and mixtures	
<b>Use Descriptor</b>	
Sector(s) of Use	SU10, SU3
Process Categories	PROC1, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC2
Specific Environmental Release Category	ESVOC 2.2.v1
<b>Processes, tasks, activities covered</b>	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
Section 2.1 Control of worker exposure	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2]	
Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1]	
Assumes use at not more than 20°C above ambient temperature[G15]	
Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)	
<b>General measures (Aspiration Hazard)</b>	
The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures (Flammable Liquid)</b>	
Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	
<b>General measures (skin irritants)</b>	
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.	
<b>General measures applicable to all activities</b>	
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 clear 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.

**General exposures (closed systems) PROC1**

No specific measures identified.

**General exposures (closed systems) PROC2**

Handle substance within a closed system.

**General exposures (closed systems) PROC3**

Handle substance within a closed system.

**General exposures (open systems) PROC4**

Wear suitable gloves tested to EN374.

**Process sampling PROC3**

No specific measures identified.

**Laboratory activities PROC15**

No specific measures identified.

**Bulk transfers PROC8b**

Use drum pumps or carefully pour from container.

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

**Mixing operations (open systems) PROC5**

Provide extract ventilation to points where emissions occur.

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

**Drum/batch transfers PROC8b**

Wear suitable gloves tested to EN374.

**Production of preparations or articles by tableting, compression, extrusion, pelettisation PROC14**

Wear suitable gloves tested to EN374.

**Drum and small package filling PROC9**

Wear suitable gloves tested to EN374.

**Equipment cleaning and maintenance PROC8a**

Drain down system prior to equipment break-in or maintenance.

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

**Storage PROC1**

Store substance within a closed system.

**Storage PROC2**

Store substance within a closed system.

**Section 2.2 Control of environmental exposure**

**Product characteristics**

Predominantly hydrophobic.

Substance is complex UVCB.

**Duration, frequency and amount**

Annual site tonnage (tonnes/year): 30000 tons/yr

Continuous release.

Emission Days (days/year): 300 days/yr

Fraction of EU tonnage used in region: 0.1

Fraction of Regional tonnage used Locally: 0.00094

Maximum daily site tonnage (kg/d): 100000 kg / day

Regional use tonnage (tonnes/year): 32000000 tons/yr

**Environmental factors not influenced by risk management**

Local freshwater dilution factor [EF1] 10

Local marine water dilution factor: [EF2] 100

**Other given operational conditions affecting environmental exposure**

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 29 of 46

<p>Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements): [OOC11] 0.01</p> <p>Release fraction to soil from process (initial release prior to RMM): 0.0001</p> <p>Release fraction to wastewater from process (initial release prior to RMM): 0.000018</p>
<p><b>Technical conditions and measures at process level (source) to prevent release</b></p>
<p>Common practices vary across sites thus conservative process release estimates used.</p>
<p><b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b></p>
<p>If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.</p> <p>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of <math>\geq 0\%</math></p> <p>Risk from environmental exposure is driven by freshwater sediment.</p> <p>Treat air emissions to provide a typical removal (or abatement?) efficiency of: <math>0\%</math></p> <p>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of <math>\geq 94\%</math></p>
<p><b>Organisation measures to prevent/limit release from site</b></p>
<p>Do not apply industrial sludge to natural soils.</p> <p>Prevent discharge of undissolved substance to or recover from wastewater.</p> <p>Sludge should be incinerated, contained or reclaimed.</p>
<p><b>Conditions and measures related to municipal sewage treatment plant</b></p>
<p>Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m<sup>3</sup>/day</p> <p>Estimated substance removal from wastewater via domestic sewage treatment is: <math>94.5\%</math></p> <p>Not applicable as there is no release to wastewater.</p> <p>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 110000 kg / day</p> <p>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: <math>94.5\%</math></p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p>
<p>External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]</p>
<p><b>Conditions and measures related to external recovery of waste</b></p>
<p>External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1]</p>
<p><b>Section 3 Exposure Estimation</b></p>
<p><b>3.1. Health</b></p>
<p>The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]</p>
<p><b>3.2. Environment</b></p>
<p>The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]</p>
<p><b>Section 4 Guidance to check compliance with the Exposure Scenario</b></p>
<p><b>4.1. Health</b></p>
<p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]</p> <p>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]</p> <p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]</p> <p>Risk Management Measures are based on qualitative risk characterisation. [G37]</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]</p>
<p><b>4.2. Environment</b></p>
<p>Further details on scaling and control technologies are provided in factsheet</p> <p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.</p> <p>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.</p> <p>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.</p>

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 30 of 46

<b>Section 1 Exposure Scenario Title</b>	
<b>Title:</b>	
Lubricants - Industrial	
<b>Use Descriptor</b>	
Sector(s) of Use	SU3
Process Categories	PROC1, PROC10, PROC13, PROC17, PROC18, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC4, ERC7
Specific Environmental Release Category	ESVOC 4.6a.v1
<b>Processes, tasks, activities covered</b>	
Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20°C above ambient temperature[G15]	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<b>General measures applicable to all activities</b> 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 clear 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.	
<b>General measures (Aspiration Hazard)</b> The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures (Flammable Liquid)</b> Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	
<b>General measures (skin irritants)</b>	

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 31 of 46

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

Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

**General exposures (closed systems) PROC1**

Handle substance within a closed system.

**General exposures (closed systems) PROC2**

Handle substance within a closed system.

**General exposures (closed systems) PROC3**

Handle substance within a closed system.

**General exposures (open systems) PROC4**

Provide extract ventilation to points where emissions occur.

**Bulk transfers PROC8b**

Handle substance within a closed system.

Wear suitable gloves tested to EN374.

**Filling / preparation of equipment from drums or containers PROC8a**

Wear suitable gloves tested to EN374.

**Filling / preparation of equipment from drums or containers PROC8b**

Wear suitable gloves tested to EN374.

**Initial factory fill of equipment PROC9**

Wear suitable gloves tested to EN374.

**Operation and lubrication of high energy open equipment PROC17**

Provide extract ventilation to points where emissions occur.

Restrict area of openings to equipment.

**Operation and lubrication of high energy open equipment PROC18**

Provide extract ventilation to points where emissions occur.

Restrict area of openings to equipment.

**Roller application or brushing PROC10**

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

**Treatment by dipping and pouring PROC13**

Wear suitable gloves tested to EN374.

**Spraying PROC7**

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Wear suitable gloves (tested to EN374), coverall and eye protection.

**Maintenance (of larger plant items) and machine set up PROC8b**

Wear suitable gloves tested to EN374.

**Maintenance (of larger plant items) and machine set up Operation is carried out at elevated temperature (> 20°C above ambient temperature). PROC8b**

Ensure material transfers are under containment or extract ventilation.

Provide extract ventilation to emission points when contact with warm (> 50°C) lubricant is likely.

Wear suitable gloves tested to EN374.

**Maintenance of small items PROC8a**

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

**Remanufacture of reject articles PROC9**

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

**Storage PROC1**

Store substance within a closed system.

**Storage PROC2**

Store substance within a closed system.

**Section 2.2 Control of environmental exposure**

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 32 of 46

<b>Product characteristics</b>
Predominantly hydrophobic. Substance is complex UVCB.
<b>Duration, frequency and amount</b>
Annual site tonnage (tonnes/year): 100 tons/yr Continuous release. Emission Days (days/year): 20 days/yr Fraction of EU tonnage used in region: 0.1 Fraction of Regional tonnage used Locally: 0.028 Maximum daily site tonnage (kg/d): 5000 kg / day Regional use tonnage (tonnes/year): 3500 tons/yr
<b>Environmental factors not influenced by risk management</b>
Local freshwater dilution factor [EF1] 10 Local marine water dilution factor: [EF2] 100
<b>Other given operational conditions affecting environmental exposure</b>
Release fraction to air from process (initial release prior to RMM): 0.005 Release fraction to soil from process (initial release prior to RMM): 0.001 Release fraction to wastewater from process (initial release prior to RMM): 0.000003
<b>Technical conditions and measures at process level (source) to prevent release</b>
Common practices vary across sites thus conservative process release estimates used.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 % Risk from environmental exposure is driven by freshwater sediment. Treat air emissions to provide a typical removal (or abatement?) efficiency of: 70 % Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 57.9 %
<b>Organisation measures to prevent/limit release from site</b>
Do not apply industrial sludge to natural soils. Prevent discharge of undissolved substance to or recover from wastewater. Sludge should be incinerated, contained or reclaimed.
<b>Conditions and measures related to municipal sewage treatment plant</b>
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 39000 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %
<b>Conditions and measures related to external treatment of waste for disposal</b>
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
<b>Conditions and measures related to external recovery of waste</b>
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1]
<b>Section 3 Exposure Estimation</b>
<b>3.1. Health</b>
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
<b>3.2. Environment</b>
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>
<b>4.1. Health</b>
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]



Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 33 of 46

Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]  
Risk Management Measures are based on qualitative risk characterisation. [G37]  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]

#### **4.2. Environment**

Further details on scaling and control technologies are provided in factsheet  
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 air can be achieved using on-site technologies, either alone or in combination.  
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 34 of 46

<b>Section 1 Exposure Scenario Title</b>	
<b>Title:</b>	
Use as a fuel - Industrial	
<b>Use Descriptor</b>	
Sector(s) of Use	SU3
Process Categories	PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b
Environmental Release Categories	ERC7
Specific Environmental Release Category	ESVOC 7.12a.v1
<b>Processes, tasks, activities covered</b>	
Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20°C above ambient temperature[G15]	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<b>General measures applicable to all activities</b>	
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 clear 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.	
<b>General measures (Aspiration Hazard)</b>	
The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures (Flammable Liquid)</b>	
Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	
<b>General measures (skin irritants)</b>	
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if	

hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Bulk transfers PROC8b**

Wear suitable gloves tested to EN374.

**Drum/batch transfers PROC8b**

Wear suitable gloves tested to EN374.

**Equipment cleaning and maintenance PROC8a**

Drain down system prior to equipment break-in or maintenance.

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

**Vessel and container cleaning PROC8a**

Apply vessel entry procedures including use of supplied compressed air.

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

**Storage PROC1**

Store substance within a closed system.

**Storage PROC2**

Store substance within a closed system.

**Use as a fuel PROC1**

No specific measures identified.

**Use as a fuel PROC2**

No specific measures identified.

**Use as a fuel (closed systems) PROC16**

No specific measures identified.

**Use as a fuel (closed systems) PROC3**

No specific measures identified.

**Section 2.2 Control of environmental exposure**

**Product characteristics**

Predominantly hydrophobic.  
 Substance is complex UVCB.

**Duration, frequency and amount**

Annual site tonnage (tonnes/year): 1500000 tons/yr  
 Continuous release.  
 Emission Days (days/year): 300 days/yr  
 Fraction of EU tonnage used in region: 0.1  
 Fraction of Regional tonnage used Locally: 0.35  
 Maximum daily site tonnage (kg/d): 5000000 kg / day  
 Regional use tonnage (tonnes/year): 4300000 tons/yr

**Environmental factors not influenced by risk management**

Local freshwater dilution factor [EF1] 10  
 Local marine water dilution factor: [EF2] 100

**Other given operational conditions affecting environmental exposure**

Release fraction to air from process (initial release prior to RMM): 0.005  
 Release fraction to soil from process (initial release prior to RMM): 0  
 Release fraction to wastewater 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 onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil**

If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.  
 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %  
 Risk from environmental exposure is driven by freshwater sediment.

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 36 of 46

Treat air emissions to provide a typical removal (or abatement?) efficiency of: 95 %
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 62.4 %
<b>Organisation measures to prevent/limit release from site</b>
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
<b>Conditions and measures related to municipal sewage treatment plant</b>
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 % Not applicable as there is no release to wastewater. The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 34000000 kg / day Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %
Conditions and measures related to external treatment of waste for disposal
Combustion emissions considered in regional exposure assessment [ETW2] Combustion emissions limited by required exhaust emission controls [ETW1] External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
Conditions and measures related to external recovery of waste
This substance is consumed during use and no waste of the substance is generated [ERW3]
<b>Section 3 Exposure Estimation</b>
<b>3.1. Health</b>
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
<b>3.2. Environment</b>
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>
<b>4.1. Health</b>
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] Available hazard data do not support the need for a DNEL to be established for other health effects.[G36] Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22] Risk Management Measures are based on qualitative risk characterisation. [G37] Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
<b>4.2. Environment</b>
Further details on scaling and control technologies are provided in factsheet 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 air can be achieved using on-site technologies, either alone or in combination. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 37 of 46

<b>Section 1 Exposure Scenario Title</b>	
<b>Title:</b>	
Functional Fluids - Industrial	
<b>Use Descriptor</b>	
Sector(s) of Use	SU3
Process Categories	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC7
Specific Environmental Release Category	ESVOC 7.13a.v1
<b>Processes, tasks, activities covered</b>	
Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2]	
Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1]	
Assumes use at not more than 20°C above ambient temperature[G15]	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<b>General measures applicable to all activities</b>	
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 clear 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.	
<b>General measures (Aspiration Hazard)</b>	
The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures (Flammable Liquid)</b>	
Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	
<b>General measures (skin irritants)</b>	

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 38 of 46

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

**Bulk transfers (closed systems) PROC1**

No specific measures identified.

**Bulk transfers (closed systems) PROC2**

No specific measures identified.

**Drum/batch transfers PROC8b**

Wear suitable gloves tested to EN374.

**Filling of articles/equipment (closed systems) PROC9**

Transfer via enclosed lines

**Filling / preparation of equipment from drums or containers PROC8a**

Wear suitable gloves tested to EN374.

**General exposures (closed systems) PROC2**

Ensure operatives are trained to minimise exposures.

**General exposures (open systems) PROC4**

Wear suitable gloves tested to EN374.

**General exposures (open systems) Operation is carried out at elevated temperature (> 20°C above ambient temperature). PROC4**

Use dry break couplings for material transfer.

**Remanufacture of reject articles PROC9**

Wear suitable gloves tested to EN374.

**Equipment maintenance PROC8a**

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

**Storage PROC1**

Store substance within a closed system.

**Storage PROC2**

Store substance within a closed system.

**Bulk transfers (closed systems) PROC3**

No specific measures identified.

**Section 2.2 Control of environmental exposure**

**Product characteristics**

Predominantly hydrophobic.  
 Substance is complex UVCB.

**Duration, frequency and amount**

Annual site tonnage (tonnes/year): 10 tons/yr  
 Continuous release.  
 Emission Days (days/year): 20 days/yr  
 Fraction of EU tonnage used in region: 0.1  
 Fraction of Regional tonnage used Locally: 0.76  
 Maximum daily site tonnage (kg/d): 500 kg / day  
 Regional use tonnage (tonnes/year): 13 tons/yr

**Environmental factors not influenced by risk management**

Local freshwater dilution factor [EF1] 10  
 Local marine water dilution factor: [EF2] 100

**Other given operational conditions affecting environmental exposure**

Release fraction to air from process (initial release prior to RMM): 0.005  
 Release fraction to soil from process (initial release prior to RMM): 0.001  
 Release fraction to wastewater from process (initial release prior to RMM): 0.000003

**Technical conditions and measures at process level (source) to prevent release**

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 39 of 46

Common practices vary across sites thus conservative process release estimates used.
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ 0 %
Risk from environmental exposure is driven by freshwater sediment.
Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of $\geq$ 55.9 %
<b>Organisation measures to prevent/limit release from site</b>
Do not apply industrial sludge to natural soils.
Prevent discharge of undissolved substance to or recover from wastewater.
Sludge should be incinerated, contained or reclaimed.
<b>Conditions and measures related to municipal sewage treatment plant</b>
Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m <sup>3</sup> /day
Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 %
The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 4000 kg / day
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %
Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]
Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1]
<b>Section 3 Exposure Estimation</b>
<b>3.1. Health</b>
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]
<b>3.2. Environment</b>
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]
<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>
<b>4.1. Health</b>
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]
Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]
Risk Management Measures are based on qualitative risk characterisation. [G37]
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
<b>4.2. Environment</b>
Further details on scaling and control technologies are provided in factsheet
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 air can be achieved using on-site technologies, either alone or in combination.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 40 of 46

<b>Section 1 Exposure Scenario Title</b>	
<b>Title:</b>	
Use as a fuel - Professional	
<b>Use Descriptor</b>	
Sector(s) of Use	SU22
Process Categories	PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b
Environmental Release Categories	ERC9A, ERC9B
Specific Environmental Release Category	ESVOC 9.12b.v1
<b>Processes, tasks, activities covered</b>	
Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of worker exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Covers daily exposures up to 8 hours (unless stated differently)[G2] Covers percentage substance in the product up to 100 %[G13]	
<b>Other given operational conditions affecting workers exposure</b>	
Assumes a good basic standard of occupational hygiene is implemented [G1] Assumes use at not more than 20°C above ambient temperature[G15]	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<b>General measures applicable to all activities</b>	
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 clear 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.	
<b>General measures (Aspiration Hazard)</b>	
The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.	
<b>General measures (Flammable Liquid)</b>	
Risks from the physicochemical hazards of substances, such as flammability or explosiveness can be controlled by implementing risk management measures at the workplace. It is recommended to follow the recast ATEX Directive 2014/34/EU. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, the risk can be regarded as controlled to an acceptable level. Use in contained systems. Avoid ignition sources – No Smoking. Handle in well ventilated area to prevent formation of explosive atmosphere. Use equipment and protective systems approved for flammable substances. Restrict line velocity during pumping to avoid generation of electrostatic discharge. Ground/bond container and receiving equipment. Use non-sparking tools. Comply with relevant EU/national regulations. Review SDS for additional advice.	
<b>General measures (skin irritants)</b>	
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if	



Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 41 of 46

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.

**Bulk transfers PROC8b**

Wear suitable gloves tested to EN374.

**Drum/batch transfers PROC8b**

Use drum pumps or carefully pour from container.

Wear suitable gloves tested to EN374.

**Equipment cleaning and maintenance PROC8a**

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.

**Vessel and container cleaning PROC8a**

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

**Storage PROC1**

Store substance within a closed system.

**Use as a fuel (closed systems) PROC3**

No specific measures identified.

**Use as a fuel (closed systems) PROC16**

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

or

Ensure operation is undertaken outdoors.

**refuelling PROC8b**

Wear suitable gloves tested to EN374.

**Use as a fuel PROC1**

No specific measures identified.

**Use as a fuel PROC2**

No specific measures identified.

**Section 2.2 Control of environmental exposure**

**Product characteristics**

Predominantly hydrophobic.

Substance is complex UVCB.

**Duration, frequency and amount**

Annual site tonnage (tonnes/year): 3600 tons/yr

Continuous release.

Emission Days (days/year): 365 days/yr

Fraction of EU tonnage used in region: 0.1

Fraction of Regional tonnage used Locally: 0.0005

Maximum daily site tonnage (kg/d): 9900 kg / day

Regional use tonnage (tonnes/year): 7200000 tons/yr

**Environmental factors not influenced by risk management**

Local freshwater dilution factor [EF1] 10

Local marine water dilution factor: [EF2] 100

**Other given operational conditions affecting environmental exposure**

Release fraction to air from wide dispersive use (regional only): 0.0001

Release fraction to soil from wide dispersive use (regional only): 0.00001

Release fraction to wastewater from wide dispersive use: 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 onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil**

If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >=

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 42 of 46

<p>0 %</p> <p>Risk from environmental exposure is driven by freshwater sediment.</p> <p>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable</p> <p>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of <math>\geq 67.2</math> %</p>
<p><b>Organisation measures to prevent/limit release from site</b></p>
<p>Do not apply industrial sludge to natural soils.</p> <p>Sludge should be incinerated, contained or reclaimed.</p>
<p><b>Conditions and measures related to municipal sewage treatment plant</b></p>
<p>Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m<sup>3</sup>/day</p> <p>Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 %</p> <p>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 59000 kg / day</p> <p>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.5 %</p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p>
<p>Combustion emissions considered in regional exposure assessment [ETW2]</p> <p>Combustion emissions limited by required exhaust emission controls [ETW1]</p> <p>External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]</p>
<p><b>Conditions and measures related to external recovery of waste</b></p>
<p>This substance is consumed during use and no waste of the substance is generated [ERW3]</p>
<p><b>Section 3 Exposure Estimation</b></p>
<p><b>3.1. Health</b></p>
<p>The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21]</p>
<p><b>3.2. Environment</b></p>
<p>The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]</p>
<p><b>Section 4 Guidance to check compliance with the Exposure Scenario</b></p>
<p><b>4.1. Health</b></p>
<p>Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]</p> <p>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]</p> <p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]</p> <p>Risk Management Measures are based on qualitative risk characterisation. [G37]</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]</p>
<p><b>4.2. Environment</b></p>
<p>Further details on scaling and control technologies are provided in factsheet</p> <p>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.</p> <p>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.</p> <p>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.</p>

Product Name: DIESEL  
 Revision Date: 10 Jan 2020  
 Page 43 of 46

<b>Section 1 Exposure Scenario Title</b>	
<b>Title:</b>	
Use as a fuel - Consumer	
<b>Use Descriptor</b>	
Sector(s) of Use	SU21
Product Categories	PC13
Environmental Release Categories	ERC9A, ERC9B
Specific Environmental Release Category	ESVOC 9.12c.v1
<b>Processes, tasks, activities covered</b>	
Covers consumer uses in liquid fuels.	
<b>Section 2 Operational conditions and risk management measures</b>	
<b>Section 2.1 Control of consumer exposure</b>	
<b>Product Characteristic</b>	
Liquid	
<b>Duration, frequency and amount</b>	
Not applicable	
<b>Other given operational conditions affecting consumer exposure</b>	
Not applicable	
<b>Contributing Scenarios/ Specific Risk Management Measures and Operating Conditions (only required controls to demonstrate safe use listed)</b>	
<p><b>General measures (Aspiration Hazard)</b>          The H304 risk phrase (May be fatal if swallowed and enters airways) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures need to be implemented to control the aspiration hazard. Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. Just a sip of lamp oil - or even sucking the wick of lamps may lead to life threatening lung damage. Keep lamps filled with this liquid out of the reach of children.</p> <p><b>General measures (Flammable Liquid)</b>          Risks from the physicochemical hazards of substances can be controlled by implementing risk management measures. For flammable substances a selection of the following measures need to be implemented to control unintended ignition of flammable substances. These measures are expected to be suitable to prevent minor accidents which might occur during consumer use. Based on the implementation of a selection of handling and storage risk management measures for the identified uses, it is anticipated that there is no immediate concern as the risk should be controlled to an acceptable level. Use only with adequate ventilation. Avoid ignition sources – No Smoking. Review SDS for additional advice.</p> <p><b>Liquid: Automotive Refuelling PC13</b>          Covers concentrations up to 100 %          Covers use up to 1 times per day          Covers use up to 52 days/yr          Covers skin contact area up to 210 cm<sup>2</sup>          For each use event, covers use amounts up to 37500 grams          Covers outdoor use. 0.6 Air changes per hour          Covers use in room size of 100 m<sup>3</sup>          Covers exposure up to 0.05 hour(s)          Liquid, vapour pressure &lt; 0,5 kPa at STP.</p> <p><b>Liquid, Garden Equipment - Use PC13</b>          Covers concentrations up to 100 %</p>	

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 44 of 46

<p>Covers use up to 1 times per day  Covers use up to 26 days/yr  For each use event, covers use amounts up to 750 grams  Covers outdoor use. 0.6 Air changes per hour  Covers use in room size of 100 m<sup>3</sup>  Covers exposure up to 2 hour(s)  Liquid, vapour pressure &lt; 0,5 kPa at STP.  Covers skin contact area up to 420 cm<sup>2</sup>  <b>Liquid: Garden Equipment - Refueling PC13</b>  Covers concentrations up to 100 %  Covers use up to 26 days/yr  Covers use up to 1 times per day  Covers skin contact area up to 420 cm<sup>2</sup>  For each use event, covers use amounts up to 750 grams  Covers use in a one car garage (34 m<sup>3</sup>) under typical ventilation. 1.5 Air changes per hour  Covers use in room size of 34 m<sup>3</sup>  Covers exposure up to 0.03 hour(s)  Liquid, vapour pressure &lt; 0,5 kPa at STP.</p>
<p><b>Section 2.2 Control of environmental exposure</b></p>
<p><b>Product characteristics</b></p> <p>Predominantly hydrophobic.  Substance is complex UVCB.</p>
<p><b>Duration, frequency and amount</b></p> <p>Annual site tonnage (tonnes/year): 9700 tons/yr  Continuous release.  Emission Days (days/year): 365 days/yr  Fraction of EU tonnage used in region: 0.1  Fraction of Regional tonnage used Locally: 0.0005  Maximum daily site tonnage (kg/d): 27000 kg / day  Regional use tonnage (tonnes/year): 19000000 tons/yr</p>
<p><b>Environmental factors not influenced by risk management</b></p> <p>Local freshwater dilution factor [EF1] 10  Local marine water dilution factor: [EF2] 100</p>
<p><b>Other given operational conditions affecting environmental exposure</b></p> <p>Release fraction to air from wide dispersive use (regional only): 0.0001  Release fraction to soil from wide dispersive use (regional only): 0.00001  Release fraction to wastewater from wide dispersive use: 0.00001</p>
<p><b>Conditions and measures related to municipal sewage treatment plant</b></p> <p>Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m<sup>3</sup>/day  Estimated substance removal from wastewater via domestic sewage treatment is: 94.5 %  Not applicable as there is no release to wastewater.  The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 110000 kg / day</p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p> <p>Combustion emissions considered in regional exposure assessment [ETW2]  Combustion emissions limited by required exhaust emission controls [ETW1]  External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]</p>
<p><b>Conditions and measures related to external recovery of waste</b></p> <p>This substance is consumed during use and no waste of the substance is generated [ERW3]</p>
<p><b>Section 3 Exposure Estimation</b></p>
<p><b>3.1. Health</b></p> <p>The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.[G30]</p>

Product Name: DIESEL

Revision Date: 10 Jan 2020

Page 45 of 46

<b>3.2. Environment</b>
-------------------------

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.[EE2]
---

<b>Section 4 Guidance to check compliance with the Exposure Scenario</b>
--

<b>4.1. Health</b>
--------------------

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. [G22]
--

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.[G23]
--

<b>4.2. Environment</b>
-------------------------

Further details on scaling and control technologies are provided in factsheet
---

Product Name: DIESEL  
Revision Date: 10 Jan 2020  
Page 46 of 46

---