

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

### 1.1. Product identifier

|                              |                                       |
|------------------------------|---------------------------------------|
| <b>Name of the substance</b> | Jet Fuel                              |
| <b>Identification number</b> | 649-427-00-X (Index number)           |
| <b>Registration number</b>   | 01-2119502385-46-0021                 |
| <b>Synonyms</b>              | Kerosene, Unmarked * Kerosene, Marked |
| <b>SDS number</b>            | 2008                                  |
| <b>Issue date</b>            | 06-February-2023                      |
| <b>Version number</b>        | 02                                    |
| <b>Revision date</b>         | 06-February-2023                      |
| <b>Supersedes date</b>       | 06-February-2023                      |

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

|                             |  |
|-----------------------------|--|
| <b>Identified uses</b>      | Distribution of substance. Formulation and repackaging of substances and mixtures. Manufacture. Use as a fuel. |
| <b>Uses advised against</b> | All other uses.  |

### 1.3. Details of the supplier of the safety data sheet

#### Supplier

|                       |  |
|-----------------------|--|
| <b>Company name</b>   | Valero Energy Ltd<br>27th Floor                        |
| <b>Address</b>        | 1 Canada Square<br>London<br>E14 5AA<br>United Kingdom |
| <b>Telephone</b>      | 01/210 345 4593 (General information; US)              |
| <b>e-mail</b>         | CorpHSE@valero.com                                     |
| <b>Contact person</b> | Industrial Hygienist                                   |

**1.4. Emergency telephone number** 0044/(0)18 65 407333

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

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

##### Physical hazards

|                   |            |                                     |
|-------------------|------------|-------------------------------------|
| Flammable liquids | Category 3 | H226 - Flammable liquid and vapour. |
|-------------------|------------|-------------------------------------|

##### Health hazards

|  |                             |  |
|--|-----------------------------|--|
| Skin corrosion/irritation                        | Category 2                  | H315 - Causes skin irritation.                       |
| Specific target organ toxicity - single exposure | Category 3 narcotic effects | H336 - May cause drowsiness or dizziness.            |
| Aspiration hazard                                | Category 1                  | H304 - May be fatal if swallowed and enters airways. |

##### Environmental hazards

|  |            |   |
|--|------------|---|
| Hazardous to the aquatic environment, long-term aquatic hazard | Category 2 | H411 - Toxic to aquatic life with long lasting effects. |
|--|------------|---|

### 2.2. Label elements

#### Label according to Regulation (EC) No. 1272/2008 as amended

**Contains:** Kerosine (petroleum), sweetened

#### Hazard pictograms



|                          |  |
|--------------------------|--|
| <b>Signal word</b>       | Danger   |
| <b>Hazard statements</b> |  |
| H226                     | Flammable liquid and vapour.                     |
| H304                     | May be fatal if swallowed and enters airways.    |
| H315                     | Causes skin irritation.                          |
| H336                     | May cause drowsiness or dizziness.               |
| H411                     | Toxic to aquatic life with long lasting effects. |

#### Precautionary statements

##### Prevention

|      |  |
|------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P273 | Avoid release to the environment.  |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/. |

##### Response

|             |   |
|-------------|---|
| P301 + P310 | IF SWALLOWED: Immediately call a POISON CENTRE/doctor/. |
| P331        | Do NOT induce vomiting.                                 |

##### Storage

|             |  |
|-------------|--|
| P403 + P233 | Store in a well-ventilated place. Keep container tightly closed. |
|-------------|--|

##### Disposal

Not assigned.

#### Supplemental information on the label

None.

#### 2.3. Other hazards

This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### General information

| Chemical name  | %   | CAS-No. / EC No.        | REACH Registration No. | Index No.    | Notes |
|--|-----|-------------------------|------------------------|--------------|-------|
| Kerosine (petroleum), sweetened  | 100 | 91770-15-9<br>294-799-5 | 01-2119502385-46-0021  | 649-427-00-X |       |
| <b>Classification:</b> Flam. Liq. 3;H226, Skin Irrit. 2;H315, STOT SE 3;H336, Asp. Tox. 1;H304, Aquatic Chronic 2;H411 |     |                         |                        |              |       |

#### List of abbreviations and symbols that may be used above

#: This substance has workplace exposure limit(s).

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

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

#### Composition comments

The full text for all H-statements is displayed in section 16.

## SECTION 4: First aid measures

#### General information

Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

#### 4.1. Description of first aid measures

##### Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison centre or doctor/physician if you feel unwell.

##### Skin contact

Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

##### Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists.

##### Ingestion

Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

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

Aspiration may cause pulmonary oedema and pneumonitis. May cause drowsiness or dizziness. Headache. Nausea, vomiting. Direct contact with eyes may cause temporary irritation. Skin irritation. May cause redness and pain.

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

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

## SECTION 5: Firefighting measures

#### General fire hazards

Flammable liquid and vapour.

|   |  |
|---|--|
| <b>5.1. Extinguishing media</b>                                   |  |
| <b>Suitable extinguishing media</b>                               | Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).   |
| <b>Unsuitable extinguishing media</b>                             | Do not use water jet as an extinguisher, as this will spread the fire.   |
| <b>5.2. Special hazards arising from the substance or mixture</b> | Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed. |
| <b>5.3. Advice for firefighters</b>                               |  |
| <b>Special protective equipment for firefighters</b>              | Self-contained breathing apparatus and full protective clothing must be worn in case of fire.  |
| <b>Special fire fighting procedures</b>                           | In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.   |
| <b>Specific methods</b>   | Use standard firefighting procedures and consider the hazards of other involved materials.   |

## SECTION 6: Accidental release measures

|   |  |
|---|--|
| <b>6.1. Personal precautions, protective equipment and emergency procedures</b> |  |
| <b>For non-emergency personnel</b>  | Avoid breathing mist/vapours. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material.   |
| <b>For emergency responders</b>   | Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Ventilate closed spaces before entering them. Avoid breathing mist/vapours. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.  |
| <b>6.2. Environmental precautions</b>   | Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.   |
| <b>6.3. Methods and material for containment and cleaning up</b>                | Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. The product is immiscible with water and will sediment in water systems. Prevent entry into waterways, sewer, basements or confined areas.<br><br>Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.<br><br>Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.<br><br>Never return spills to original containers for re-use. The product is insoluble in water. |
| <b>6.4. Reference to other sections</b>   | For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.  |

## SECTION 7: Handling and storage

|  |   |
|--|---|
| <b>7.1. Precautions for safe handling</b>                                | Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist/vapours. Avoid contact with eyes, skin, and clothing. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.   |
| <b>7.2. Conditions for safe storage, including any incompatibilities</b> | Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see section 10 of the SDS).<br><br>Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended<br><br>ANNEX 1, PART 1 Categories of dangerous substances<br>Hazard categories in accordance with Regulation (EC) No 1272/2008<br>- P5a, b or c FLAMMABLE LIQUIDS (Lower-tier requirements = 50 tonnes; Upper-tier requirements = 200 tonnes)<br>- E2 Hazardous to the Aquatic Environment Chronic (Lower-tier requirements = 200 tonnes; Upper-tier requirements = 500 tonnes) |
| <b>7.3. Specific end use(s)</b>  | Observe industrial sector guidance on best practices.   |

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

|   |  |
|---|--|
| <b>Occupational exposure limits</b>               | No exposure limits noted for ingredient(s).                |
| <b>Biological limit values</b>                    | No biological exposure limits noted for the ingredient(s). |
| <b>Recommended monitoring procedures</b>          | Follow standard monitoring procedures.                     |
| <b>Derived no effect levels (DNELs)</b>           | Not available.   |
| <b>Predicted no effect concentrations (PNECs)</b> | Not available.   |

## 8.2. Exposure controls

**Appropriate engineering controls** Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

## Individual protection measures, such as personal protective equipment

|                               |   |
|-------------------------------|---|
| <b>General information</b>    | Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.  |
| <b>Eye/face protection</b>    | Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles. Eye protection should meet standard EN 166.   |
| <b>Skin protection</b>        |   |
| - Hand protection             | Wear appropriate chemical resistant gloves. Wear suitable gloves tested to EN374.   |
| - Other                       | Wear appropriate chemical resistant clothing.   |
| <b>Respiratory protection</b> | In case of inadequate ventilation or risk of inhalation of vapours, use suitable respiratory equipment with gas filter (type A2). Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. |
| <b>Thermal hazards</b>        | Wear appropriate thermal protective clothing, when necessary.   |

**Hygiene measures** When using do not smoke. 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.

**Environmental exposure controls** Inform appropriate managerial or supervisory personnel of all environmental releases. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### Appearance

|                       |             |
|-----------------------|-------------|
| <b>Physical state</b> | Liquid.     |
| <b>Form</b>           | Liquid.     |
| <b>Colour</b>         | Colourless. |

**Odour** Kerosene (strong).

**Odour threshold** Not available.

**pH** Not determined.

**Melting point/freezing point** Not determined.

**Initial boiling point and boiling range**  $\geq 90 - \leq 320$  °C ( $\geq 194 - \leq 608$  °F)

**Flash point**  $\geq 29 - \leq 70$  °C ( $\geq 84.2 - \leq 158$  °F)

**Evaporation rate** Not determined.

**Flammability (solid, gas)** Not applicable.

#### Upper/lower flammability or explosive limits

**Explosive limit - lower (%)** 0.7 % v/v

**Explosive limit - upper (%)** 5 % v/v

**Vapour pressure**  $< 1 - 3.7$  (kPa) (37.8°C)

**Vapour density** 5.7

**Relative density**  $\geq 750 - \leq 840$  kg/m<sup>3</sup> (15°C)

|  |   |
|--|---|
| <b>Solubility(ies)</b>                         |   |
| <b>Solubility (water)</b>                      | Insoluble in water.                     |
| <b>Partition coefficient (n-octanol/water)</b> | Not determined.                         |
| <b>Auto-ignition temperature</b>               | >= 220 - <= 250 °C (>= 428 - <= 482 °F) |
| <b>Decomposition temperature</b>               | Not determined.                         |
| <b>Viscosity</b>                               | >= 1 - <= 2.4 cSt (40°C)                |
| <b>Explosive properties</b>                    | Not explosive.                          |
| <b>Oxidising properties</b>                    | Not oxidising.                          |

## 9.2. Other information

|                            |  |
|----------------------------|--|
| <b>Density</b>             | >= 0.77 - <= 0.85 g/cm <sup>3</sup> (15°C) |
| <b>Kinematic viscosity</b> | >= 1 - < 2.4 cSt (40 °C (104 °F))          |

## SECTION 10: Stability and reactivity

|   |  |
|---|--|
| <b>10.1. Reactivity</b>                         | The product is stable and non-reactive under normal conditions of use, storage and transport.  |
| <b>10.2. Chemical stability</b>                 | Material is stable under normal conditions.  |
| <b>10.3. Possibility of hazardous reactions</b> | No dangerous reaction known under conditions of normal use.  |
| <b>10.4. Conditions to avoid</b>                | Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials. |
| <b>10.5. Incompatible materials</b>             | Strong acids. Strong oxidizers such as nitrates, chlorates, peroxides.   |
| <b>10.6. Hazardous decomposition products</b>   | No hazardous decomposition products are known.   |

## SECTION 11: Toxicological information

**General information** Occupational exposure to the substance or mixture may cause adverse effects.

### Information on likely routes of exposure

|                     |  |
|---------------------|--|
| <b>Inhalation</b>   | May cause drowsiness or dizziness. Headache. Nausea, vomiting.   |
| <b>Skin contact</b> | Causes skin irritation.  |
| <b>Eye contact</b>  | Direct contact with eyes may cause temporary irritation.   |
| <b>Ingestion</b>    | Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia. |

**Symptoms** Aspiration may cause pulmonary oedema and pneumonitis. May cause drowsiness or dizziness. Headache. Nausea, vomiting. Skin irritation. May cause redness and pain.

### 11.1. Information on toxicological effects

**Acute toxicity** Not expected to be acutely toxic.

| Components  | Species   | Test Results         |
|---|---|----------------------|
| Kerosine (petroleum), sweetened (CAS 91770-15-9)        |   |                      |
| <b>Acute</b>  |   |                      |
| <b>Dermal</b>   |   |                      |
| LD50  | Rabbit  | > 2000 mg/kg         |
| <b>Inhalation</b>                                       |   |                      |
| <i>Vapour</i>   |   |                      |
| LC50  | Rat   | > 5.28 mg/l, 4 Hours |
| <b>Oral</b>   |   |                      |
| LD50  | Rat   | > 5000 mg/kg         |
| <b>Skin corrosion/irritation</b>                        | Causes skin irritation.   |                      |
| <b>Serious eye damage/eye irritation</b>                | Direct contact with eyes may cause temporary irritation.          |                      |
| <b>Respiratory sensitisation</b>                        | Based on available data, the classification criteria are not met. |                      |
| <b>Skin sensitisation</b>                               | Based on available data, the classification criteria are not met. |                      |
| <b>Germ cell mutagenicity</b>                           | Based on available data, the classification criteria are not met. |                      |
| <b>Carcinogenicity</b>                                  | Based on available data, the classification criteria are not met. |                      |
| <b>Reproductive toxicity</b>                            | Based on available data, the classification criteria are not met. |                      |
| <b>Specific target organ toxicity - single exposure</b> | May cause drowsiness or dizziness.                                |                      |

|   |   |
|---|---|
| <b>Specific target organ toxicity - repeated exposure</b> | Based on available data, the classification criteria are not met. |
| <b>Aspiration hazard</b>                                  | May be fatal if swallowed and enters airways.                     |
| <b>Mixture versus substance information</b>               | No information available.   |
| <b>Other information</b>                                  | None known.   |

## SECTION 12: Ecological information

**12.1. Toxicity** Toxic to aquatic life with long lasting effects.

| Components                                       | Species |                 | Test Results             |
|--|---------|-----------------|--------------------------|
| Kerosine (petroleum), sweetened (CAS 91770-15-9) |         |                 |                          |
| <b>Aquatic</b>                                   |         |                 |                          |
| <i>Acute</i>                                     |         |                 |                          |
| Crustacea  | EL50    | Daphnia         | 1.4 mg/l, 48 hours       |
| Fish   | LL50    | Freshwater fish | > 2 - < 5 mg/l, 96 hours |
| <i>Chronic</i>                                   |         |                 |                          |
| Fish   | NOEL    | Freshwater fish | 0.098 mg/l               |

**12.2. Persistence and degradability** Expected to be inherently biodegradable.

**12.3. Bioaccumulative potential** No data available.

**Partition coefficient n-octanol/water (log Kow)** Not available.

**Bioconcentration factor (BCF)** Not available.

**12.4. Mobility in soil** The product is insoluble in water. It will spread on the water surface while some of the components will eventually sediment in water systems. The volatile components of the product will spread in the atmosphere.

**12.5. Results of PBT and vPvB assessment** This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

**12.6. Other adverse effects** Oil spills are generally hazardous to the environment.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

|                                     |  |
|-------------------------------------|--|
| <b>Residual waste</b>               | Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).   |
| <b>Contaminated packaging</b>       | Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.   |
| <b>EU waste code</b>                | The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.   |
| <b>Disposal methods/information</b> | Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. |
| <b>Special precautions</b>          | Dispose in accordance with all applicable regulations.   |

## SECTION 14: Transport information

### ADR

|   |   |
|---|---|
| <b>14.1. UN number</b>                    | UN1223  |
| <b>14.2. UN proper shipping name</b>      | KEROSENE  |
| <b>14.3. Transport hazard class(es)</b>   |   |
| Class                                     | 3   |
| Subsidiary risk                           | -   |
| Label(s)                                  | 3   |
| Hazard No. (ADR)                          | 30  |
| Tunnel restriction code                   | D/E   |
| <b>14.4. Packing group</b>                | III   |
| <b>14.5. Environmental hazards</b>        | Yes   |
| <b>14.6. Special precautions for user</b> | Read safety instructions, SDS and emergency procedures before handling. |

**RID**

|                                    |   |
|------------------------------------|---|
| 14.1. UN number                    | UN1223  |
| 14.2. UN proper shipping name      | KEROSENE  |
| 14.3. Transport hazard class(es)   |   |
| Class                              | 3   |
| Subsidiary risk                    | -   |
| Label(s)                           | 3   |
| 14.4. Packing group                | III   |
| 14.5. Environmental hazards        | Yes   |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

**ADN**

|                                    |   |
|------------------------------------|---|
| 14.1. UN number                    | UN1223  |
| 14.2. UN proper shipping name      | Kerosene  |
| 14.3. Transport hazard class(es)   |   |
| Class                              | 3   |
| Subsidiary risk                    | -   |
| Label(s)                           | 3   |
| 14.4. Packing group                | III   |
| 14.5. Environmental hazards        | Yes   |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

**IATA**

|                                    |   |
|------------------------------------|---|
| 14.1. UN number                    | UN1223  |
| 14.2. UN proper shipping name      | Kerosene  |
| 14.3. Transport hazard class(es)   |   |
| Class                              | 3   |
| Subsidiary risk                    | -   |
| Label(s)                           | 3   |
| 14.4. Packing group                | III   |
| 14.5. Environmental hazards        | Yes   |
| ERG Code                           | 3L  |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

**IMDG**

|                                    |   |
|------------------------------------|---|
| 14.1. UN number                    | UN1223  |
| 14.2. UN proper shipping name      | KEROSENE  |
| 14.3. Transport hazard class(es)   |   |
| Class                              | 3   |
| Subsidiary risk                    | -   |
| Label(s)                           | 3   |
| 14.4. Packing group                | III   |
| 14.5. Environmental hazards        |   |
| Marine pollutant                   | Yes   |
| EmS                                | F-E, S-E  |
| 14.6. Special precautions for user | Read safety instructions, SDS and emergency procedures before handling. |

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

General information

IMDG Regulated Marine Pollutant.

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****Retained direct EU regulations**

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

**Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

**Authorisations**

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

**Restrictions on use**

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Not listed.

**Other EU regulations**

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

ANNEX 1, PART 1 Categories of dangerous substances  
Hazard categories in accordance with Regulation (EC) No 1272/2008  
- P5a, b or c FLAMMABLE LIQUIDS  
- E2 Hazardous to the Aquatic Environment Chronic

**Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended**

Not listed.

**Other regulations**

This product is classified and labelled in accordance with the retained CLP Regulation (EC) No 1272/2008, as amended for Great Britain. This Safety Data Sheet is compiled in accordance with REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758.

Follow the requirements of the Control of Substances Hazardous to Health Regulations 2002 [SI 2002/2677], as amended, when using this material.

**15.2. Chemical safety assessment**

Chemical Safety Assessment has been carried out.

**SECTION 16: Other information**

**List of abbreviations**

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.  
ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.  
CAS: Chemical Abstract Service.  
CEN: European Committee for Standardization.  
IATA: International Air Transport Association.  
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.  
IMDG: International Maritime Dangerous Goods.  
MARPOL: International Convention for the Prevention of Pollution from Ships.  
PBT: Persistent, bioaccumulative and toxic.  
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.  
STEL: Short term exposure limit.  
TWA: Time Weighted Average.  
vPvB: Very persistent and very bioaccumulative.

**References**

Chemical safety report.  
ECHA: European Chemical Agency.

**Information on evaluation method leading to the classification of mixture**

Not applicable.

**Full text of any statements, which are not written out in full under sections 2 to 15**

H226 Flammable liquid and vapour.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.



H336 May cause drowsiness or dizziness.  
H411 Toxic to aquatic life with long lasting effects.

**Training information**

Follow training instructions when handling this material.

**Disclaimer**

This material Safety Data Sheet (SDS) was prepared in accordance with EC No 1272/2008 by Valero Energy Ltd. Valero Energy Ltd. does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

## Annex to the extended Safety Data Sheet (eSDS)

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# 1 - Exposure Scenario Worker

## 1. Distribution of substance

### List of use descriptors

|  |  |
|--|--|
| <b>Sector(s) of Use</b>  | SU3: Industrial uses   |
| <b>Name of contributing environmental scenario and corresponding ERC</b> | ERC1: Manufacture of substances.<br>.<br>ERC2: Formulation of preparations<br>.<br>ERC3: Formulation in materials<br>.<br>ERC4: Industrial use of processing aids in processes and products, not becoming part of article S.<br>ERC5: Industrial use resulting in inclusion into or onto a matrix<br>.<br>ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)<br>.<br>ERC6b: Industrial use of reactive processing aids<br>.<br>ERC6c: Industrial use of monomers for manufacture of thermoplastics<br>.<br>ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers<br>.<br>ERC7: Industrial use of substances in closed systems<br>. |

**List of names of contributing worker scenarios and corresponding PROCs**

Specific Environmental Release Category:  
ESVOC SpERC 1.1b.v1

PROC1: Use in closed process, no likelihood of exposure.  
PROC2: Use in closed, continuous process with occasional controlled exposure.  
PROC3: Use in closed batch process (synthesis or formulation).  
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises.  
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.  
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.  
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).  
PROC15: Use as laboratory reagent

### Further explanations

**Other Process or activity** Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.

### 2.1.1. Contributing scenario controlling environmental exposure for Manufacture of substances.

#### Product characteristics

**Concentration of the substance in a mixture** Covers percentage substance in the product up to 100 % (unless stated differently). Substance is complex UVCB. Predominantly hydrophobic.

**Physical state** Liquid.

#### Viscosity

**Kinematic viscosity** 1.6 mm<sup>2</sup>/s 40 °C

#### Amounts used

**Fraction of EU tonnage used in region:** 0.1

**Regional use tonnage (tonnes/year):** 5.4 e6

**Fraction of Regional tonnage used locally:** 0.002

**Annual site tonnage (tons/year):** 1.1 e4

**Maximum daily site tonnage (kg/day):** 3.6 e4

#### Frequency and duration of use

**Continuous process** Emission days (days/year): 300

**Environment factors not influenced by risk management**

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

**Other given operational conditions affecting environmental exposure**

| Type                         | Emission days (days/year) | Emission factors |         |         | Remarks |
|------------------------------|---------------------------|------------------|---------|---------|---------|
|                              |                           | Air              | Soil    | Water   |         |
| initial release prior to RMM | 300                       | 0.001            | 0.00001 | 0.00001 |         |

**Risk management measures (RMM)**

**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**

**Air** Treat air emission to provide a typical removal efficiency of (%): 90

**Soil** Not available.

**Water** Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): 0. If discharging to municipal sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): 0

**Sediment** Not available.

**Remarks** Risk from environmental exposure is driven by freshwater sediment. No wastewater treatment required.

**Organisational measures to prevent/limit release from site** Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant****Size of municipal sewage system/treatment plant (m3/d)**

**Type** Municipal STP

**Discharge rate** 2000

**Treatment effectiveness** 94.7

**Sludge treatment technique** Not available.

**Remarks** Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.6e6

**Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)** 94.7

**Conditions and measures related to external treatment of waste for disposal****Fraction of used amount transferred to external waste treatment**

**Suitable waste treatment** Not available.

**Treatment effectiveness** Not available.

**Remarks** External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste****Fraction of used amount transferred to external waste treatment**

**Suitable recover operations** External recovery and recycling of waste should comply with applicable local and/or national regulations.

**Additional good practice advice beyond the REACH CSA** Additional information on the basis for the allocation of the identified OCs and RMMs is contained in the PETRORISK file.

**2.2.1. Contributing scenario controlling worker exposure for Use in closed process, no likelihood of exposure.****Product characteristics**

**Concentration of the substance in a mixture** Covers percentage substance in the product up to 100 % (unless stated differently).

|                                     |   |
|-------------------------------------|---|
| <b>Physical form of the product</b> | Liquid.   |
| <b>vapour pressure</b>              | Liquid, vapour pressure 0,5 - 10 kPa at STP.  |
| <b>Dustiness</b>                    | Not applicable.   |
| <b>Process temperature</b>          | Assumes use at not more than 20°C above ambient temperature, unless stated differently. |

**Amounts used**

Not available.

**Frequency and duration of use**

|   | <b>Duration</b> | <b>Frequency of use</b> | <b>Remarks</b>  |
|---|-----------------|-------------------------|---|
| Covers daily exposures up to 8 hours (unless stated differently). | 8               | 1 hours per day         | Assumes a good basic standard of occupational hygiene is implemented. |

**Human factors not influenced by risk management**

**Exposed skin areas** Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Other given operational conditions affecting workers exposure**

Not available.

**Other relevant operational conditions**

Not available.

**Risk management measures (RMM)**

**Technical conditions and measures to control dispersion from source towards the worker** Not available.

**Organizational measures to prevent/limit releases, dispersion and exposure** Not available.

**Conditions and measures related to personal protection, hygiene and health evaluations** 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.

**3. Exposure Estimation**

**Environment**

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet.

**Health**

|                                    | <b>Exposure level</b> | <b>RCR</b> | <b>Method</b> | <b>Remarks</b>      |
|------------------------------------|-----------------------|------------|---------------|---------------------|
| General exposures (closed systems) | 0.01 ppm              | 0          | **            | Inhalation Exposure |
| General exposures (closed systems) | 10 ppm                | 0.250      | **            | Inhalation Exposure |
| General exposures (closed systems) | 25 ppm                | 0.625      | **            | Inhalation Exposure |
| General exposures (open systems)   | 20 ppm                | 0.500      | **            | Inhalation Exposure |
| Process sampling                   | 25 ppm                | 0.625      | **            | Inhalation Exposure |
| Laboratory activities              | 10 ppm                | 0.250      | **            | Inhalation Exposure |
| Bulk transfers                     | 5 ppm                 | 0.125      | **            | Inhalation Exposure |
| Drum and small package filling     | 50 ppm                | 0.125      | **            | Inhalation Exposure |
| Equipment cleaning and maintenance | 50 ppm                | 0.250      | **            | Inhalation Exposure |
| Bulk product storage               | 10 ppm                | 0.250      | **            | Inhalation Exposure |

\*\* - The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES**

##### Environment

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

##### Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation.

Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

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

## 2 - Exposure Scenario Worker

### 1. Formulation [mixing] of preparations and/or re-packaging

#### List of use descriptors

|   |   |
|---|---|
| <b>Sector(s) of Use</b>   | SU3: Industrial uses.<br>SU10: Formulation [mixing] of preparations and/or re-packaging   |
| <b>Name of contributing environmental scenario and corresponding ERC</b>      | ERC2: Formulation of preparations.<br>Specific Environmental Release Category:<br>ESVOC SpERC 2.2.v1  |
| <b>List of names of contributing worker scenarios and corresponding PROCs</b> | PROC1: Use in closed process, no likelihood of exposure.<br>PROC2: Use in closed, continuous process with occasional controlled exposure.<br>PROC3: Use in closed batch process (synthesis or formulation).<br>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises.<br>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.<br>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing).<br>PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation<br>. PROC15: Use as laboratory reagent |

#### Further explanations

|                                  |   |
|----------------------------------|---|
| <b>Other Process or activity</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. |
|----------------------------------|---|

#### 2.1.1. Contributing scenario controlling environmental exposure for Formulation of preparations.

##### Product characteristics

|  |  |
|--|--|
| <b>Concentration of the substance in a mixture</b> | Covers percentage substance in the product up to 100 % (unless stated differently).<br>Substance is complex UVCB. Predominantly hydrophobic. |
|--|--|

|                       |         |
|-----------------------|---------|
| <b>Physical state</b> | Liquid. |
|-----------------------|---------|

##### Viscosity

|                            |                              |
|----------------------------|------------------------------|
| <b>Kinematic viscosity</b> | 1.6 mm <sup>2</sup> /s 40 °C |
|----------------------------|------------------------------|

##### Amounts used

|   |        |
|---|--------|
| <b>Fraction of EU tonnage used in region:</b>     | 0.1    |
| <b>Regional use tonnage (tonnes/year):</b>        | 5.2 e6 |
| <b>Fraction of Regional tonnage used locally:</b> | 0.0058 |
| <b>Annual site tonnage (tons/year):</b>           | 3 e4   |
| <b>Maximum daily site tonnage (kg/day):</b>       | 1 e5   |

##### Frequency and duration of use

|                           |                                |
|---------------------------|--------------------------------|
| <b>Continuous process</b> | Emission days (days/year): 300 |
|---------------------------|--------------------------------|

##### Environment factors not influenced by risk management

|  |     |
|--|-----|
| <b>Local freshwater dilution factor:</b>   | 10  |
| <b>Local marine water dilution factor:</b> | 100 |

##### Other given operational conditions affecting environmental exposure

| Type                         | Emission days (days/year) | Emission factors |        |        | Remarks |
|------------------------------|---------------------------|------------------|--------|--------|---------|
|                              |                           | Air              | Soil   | Water  |         |
| initial release prior to RMM | 300                       | 0.01             | 0.0002 | 0.0001 |         |

##### Risk management measures (RMM)

|   |  |
|---|--|
| <b>Technical conditions and measures at process level (source) to prevent release</b> | 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**

|                 |  |
|-----------------|--|
| <b>Air</b>      | Treat air emission to provide a typical removal efficiency of (%): 0   |
| <b>Soil</b>     | Not available.   |
| <b>Water</b>    | Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%): 86.0. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%): 0 |
| <b>Sediment</b> | Not available.   |
| <b>Remarks</b>  | Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.            |

**Organisational measures to prevent/limit release from site** Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant****Size of municipal sewage system/treatment plant (m3/d)**

|   |  |
|---|--|
| <b>Type</b>   | Municipal STP  |
| <b>Discharge rate</b>   | 2000   |
| <b>Treatment effectiveness</b>  | 94.7   |
| <b>Sludge treatment technique</b>   | Not available.   |
| <b>Remarks</b>  | Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.6e5 |
| <b>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)</b> | 94.7   |

**Conditions and measures related to external treatment of waste for disposal****Fraction of used amount transferred to external waste treatment**

|                                 |   |
|---------------------------------|---|
| <b>Suitable waste treatment</b> | Not available.  |
| <b>Treatment effectiveness</b>  | Not available.  |
| <b>Remarks</b>                  | External treatment and disposal of waste should comply with applicable local and/or national regulations. |

**Conditions and measures related to external recovery of waste****Fraction of used amount transferred to external waste treatment**

|                                    |   |
|------------------------------------|---|
| <b>Suitable recover operations</b> | External recovery and recycling of waste should comply with applicable local and/or national regulations. |
|------------------------------------|---|

**Additional good practice advice beyond the REACH CSA** Additional information on the basis for the allocation of the identified OCs and RMMs is contained in the PETRORISK file.

**2.2.1. Contributing scenario controlling worker exposure for Use in closed process, no likelihood of exposure.****Product characteristics**

|  |   |
|--|---|
| <b>Concentration of the substance in a mixture</b> | Covers percentage substance in the product up to 100 % (unless stated differently).     |
| <b>Physical form of the product</b>                | Liquid.   |
| <b>vapour pressure</b>                             | Liquid, vapour pressure 0,5 - 10 kPa at STP.  |
| <b>Dustiness</b>                                   | Not applicable.   |
| <b>Process temperature</b>                         | Assumes use at not more than 20°C above ambient temperature, unless stated differently. |

**Amounts used**

Not available.

**Frequency and duration of use**

|   | <b>Duration</b> | <b>Frequency of use</b> | <b>Remarks</b>  |
|---|-----------------|-------------------------|---|
| Covers daily exposures up to 8 hours (unless stated differently). | 8               | 1 hours per day         | Assumes a good basic standard of occupational hygiene is implemented. |

**Human factors not influenced by risk management**



**Exposed skin areas** Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Other given operational conditions affecting workers exposure**

Not available.

**Other relevant operational conditions**

Not available.

**Risk management measures (RMM)**

**Technical conditions and measures to control dispersion from source towards the worker** Not available.

**Organizational measures to prevent/limit releases, dispersion and exposure** Not available.

**Conditions and measures related to personal protection, hygiene and health evaluations** 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.

**3. Exposure Estimation**

**Environment**

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet.

**Health**

|  | <b>Exposure level</b> | <b>RCR</b> | <b>Method</b> | <b>Remarks</b>      |
|--|-----------------------|------------|---------------|---------------------|
| General exposures (closed systems)   | 0.01 ppm              | 0          | **            | Inhalation Exposure |
| General exposures (closed systems)   | 10 ppm                | 0.250      | **            | Inhalation Exposure |
| General exposures (closed systems)   | 25 ppm                | 0.625      | **            | Inhalation Exposure |
| General exposures (open systems)   | 20 ppm                | 0.500      | **            | Inhalation Exposure |
| Process sampling   | 25 ppm                | 0.625      | **            | Inhalation Exposure |
| Laboratory activities  | 10 ppm                | 0.250      | **            | Inhalation Exposure |
| Bulk transfers   | 5 ppm                 | 0.125      | **            | Inhalation Exposure |
| Mixing operations (open systems)   | 50 ppm                | 0.125      | **            | Inhalation Exposure |
| Manual / Transfer from/pouring from containers.  | 50 ppm                | 0.125      | **            | Inhalation Exposure |
| Drum/batch transfers   | 50 ppm                | 0.38       | **            | Inhalation Exposure |
| Production of preparations or articles by tableting, compression, extrusion, pelletisation | 50 ppm                | 0.125      | **            | Inhalation Exposure |
| Drum and small package filling   | 50 ppm                | 0.125      | **            | Inhalation Exposure |
| Equipment cleaning and maintenance   | 50 ppm                | 0.250      | **            | Inhalation Exposure |
| Bulk product storage   | 10 ppm                | 0.250      | **            | Inhalation Exposure |

\*\* - The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES**

##### Environment

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

##### Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation.

Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

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

### 3 - Exposure Scenario Worker

#### 1. Manufacture of substances

##### List of use descriptors

**Sector(s) of Use** SU3: Industrial uses.  
SU8: Manufacture of bulk, large scale chemicals (including petroleum products).  
SU9: Manufacture of fine chemicals

##### Name of contributing environmental scenario and corresponding ERC

ERC1: Manufacture of substances.  
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles.  
Specific Environmental Release Category:  
ESVOC SpERC 1.1.v1

##### List of names of contributing worker scenarios and corresponding PROCs

PROC1: Use in closed process, no likelihood of exposure.  
PROC2: Use in closed, continuous process with occasional controlled exposure.  
PROC3: Use in closed batch process (synthesis or formulation).  
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises.  
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.  
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.  
PROC15: Use as laboratory reagent

##### Further explanations

**Other Process or activity** Manufacture of 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).

#### 2.1.1. Contributing scenario controlling environmental exposure for Manufacture of substances.

##### Product characteristics

**Concentration of the substance in a mixture** Covers percentage substance in the product up to 100 % (unless stated differently). Substance is complex UVCB. Predominantly hydrophobic.

**Physical state** Liquid.

##### Viscosity

**Kinematic viscosity** 1.6 mm<sup>2</sup>/s 40 °C

**Dustiness** Not applicable.

##### Amounts used

**Fraction of EU tonnage used in region:** 0.1

**Regional use tonnage (tonnes/year):** 5.4 e6

**Fraction of Regional tonnage used locally:** 0.11

**Annual site tonnage (tons/year):** 6 e5

**Maximum daily site tonnage (kg/day):** 2 e6

##### Frequency and duration of use

**Continuous process** Emission days (days/year): 300

##### Environment factors not influenced by risk management

**Local freshwater dilution factor:** 10

**Local marine water dilution factor:** 100

##### Other given operational conditions affecting environmental exposure

| Type                         | Emission days (days/year) | Emission factors |        |        | Remarks |
|------------------------------|---------------------------|------------------|--------|--------|---------|
|                              |                           | Air              | Soil   | Water  |         |
| initial release prior to RMM | 300                       | 0.01             | 0.0001 | 0.0003 |         |

##### Risk management measures (RMM)

**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**

|                 |   |
|-----------------|---|
| <b>Air</b>      | Treat air emission to provide a typical removal efficiency of (%): 90   |
| <b>Soil</b>     | Not available.  |
| <b>Water</b>    | Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%): 97.7. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%): 56.1 |
| <b>Sediment</b> | Not available.  |
| <b>Remarks</b>  | Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater. Onsite wastewater treatment required.   |

**Organisational measures to prevent/limit release from site** Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant****Size of municipal sewage system/treatment plant (m<sup>3</sup>/d)**

|   |  |
|---|--|
| <b>Type</b>   | Municipal STP  |
| <b>Discharge rate</b>   | 10000  |
| <b>Treatment effectiveness</b>  | 94.7   |
| <b>Sludge treatment technique</b>   | Not available.   |
| <b>Remarks</b>  | Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.0e6 |
| <b>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)</b> | 97.7   |

**Conditions and measures related to external treatment of waste for disposal****Fraction of used amount transferred to external waste treatment**

|                                 |  |
|---------------------------------|--|
| <b>Suitable waste treatment</b> | Not available.   |
| <b>Treatment effectiveness</b>  | Not available.   |
| <b>Remarks</b>                  | During manufacturing no waste of the substance is generated. |

**Conditions and measures related to external recovery of waste****Fraction of used amount transferred to external waste treatment**

|                                    |   |
|------------------------------------|---|
| <b>Suitable recover operations</b> | During manufacturing no waste of the substance is generated to recover. |
|------------------------------------|---|

**Additional good practice advice beyond the REACH CSA** Additional information on the basis for the allocation of the identified OCs and RMMs is contained in the PETRORISK file.

**2.2.1. Contributing scenario controlling worker exposure for Use in closed process, no likelihood of exposure.****Product characteristics**

|  |  |
|--|--|
| <b>Concentration of the substance in a mixture</b> | Covers percentage substance in the product up to 100 % (unless stated differently).  |
| <b>Physical form of the product</b>                | Liquid.  |
| <b>vapour pressure</b>                             | Liquid, vapour pressure 0,5 - 10 kPa at STP.   |
| <b>Dustiness</b>                                   | Not applicable.  |
| <b>Process temperature</b>                         | Operation is carried out at elevated temperature (> 20°C above ambient temperature). |

**Amounts used**

Not available.

**Frequency and duration of use**

Not available.

**Human factors not influenced by risk management****Other given operational conditions affecting workers exposure**

Not available.

**Other relevant operational conditions**

Not available.

## Risk management measures (RMM)

**Technical conditions and measures to control dispersion from source towards the worker** Not available.

**Organizational measures to prevent/limit releases, dispersion and exposure** General measures (skin irritants);  
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.

**Conditions and measures related to personal protection, hygiene and health evaluations** Not available.

## 3. Exposure Estimation

### Environment

Not available.

### Health

|  | Exposure level | RCR   | Method | Remarks             |
|--|----------------|-------|--------|---------------------|
| General exposures (closed systems)                         | 0.01 ppm       | 0     | **     | Inhalation Exposure |
| General exposures (closed system) + With sample collection | 10 ppm         | 0.250 | **     | Inhalation Exposure |
| General exposures (closed systems)                         | 25 ppm         | 0.625 | **     | Inhalation Exposure |
| General exposures (open systems)                           | 20 ppm         | 0.500 | **     | Inhalation Exposure |
| Bulk transfers   | 5 ppm          | 0.125 | **     | Inhalation Exposure |
| Sample collection  | 25 ppm         | 0.625 | **     | Inhalation Exposure |
| Laboratory activities                                      | 10 ppm         | 0.250 | **     | Inhalation Exposure |
| Clean down and Maintenance                                 | 50 ppm         | 0.250 | **     | Inhalation Exposure |
| Storage  | 10 ppm         | 0.250 | **     | Inhalation Exposure |

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

### Environment

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

### Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation.

Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values.

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

## 4 - Exposure Scenario Worker

### 1. Use as a fuel

#### List of use descriptors

|   |  |
|---|--|
| <b>Sector(s) of Use</b>   | SU3: Industrial uses   |
| <b>Name of contributing environmental scenario and corresponding ERC</b>      | ERC7: Industrial use of substances in closed systems<br>Specific Environmental Release Category:<br>ESVOC SpERC 7.12a.v1   |
| <b>List of names of contributing worker scenarios and corresponding PROCs</b> | PROC1: Use in closed process, no likelihood of exposure.<br>PROC2: Use in closed, continuous process with occasional controlled exposure.<br>PROC3: Use in closed batch process (synthesis or formulation).<br>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.<br>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.<br>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected |

#### Further explanations

|                                  |  |
|----------------------------------|--|
| <b>Other Process or activity</b> | Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste. |
|----------------------------------|--|

### 2.1.1. Contributing scenario controlling environmental exposure for Industrial use of substances in closed systems

#### Product characteristics

|  |  |
|--|--|
| <b>Concentration of the substance in a mixture</b> | Covers percentage substance in the product up to 100 % (unless stated differently).<br>Substance is complex UVCB. Predominantly hydrophobic. |
| <b>Physical state</b>                              | Liquid.  |

#### Viscosity

|                            |                              |
|----------------------------|------------------------------|
| <b>Kinematic viscosity</b> | 1.6 mm <sup>2</sup> /s 40 °C |
|----------------------------|------------------------------|

#### Amounts used

|   |        |
|---|--------|
| <b>Fraction of EU tonnage used in region:</b>     | 0.1    |
| <b>Regional use tonnage (tonnes/year):</b>        | 5.5 e5 |
| <b>Fraction of Regional tonnage used locally:</b> | 1      |
| <b>Annual site tonnage (tons/year):</b>           | 5.5 e5 |
| <b>Maximum daily site tonnage (kg/day):</b>       | 1.8 e6 |

#### Frequency and duration of use

|                           |                                |
|---------------------------|--------------------------------|
| <b>Continuous process</b> | Emission days (days/year): 300 |
|---------------------------|--------------------------------|

#### Environment factors not influenced by risk management

|  |     |
|--|-----|
| <b>Local freshwater dilution factor:</b>   | 10  |
| <b>Local marine water dilution factor:</b> | 100 |

#### Other given operational conditions affecting environmental exposure

| Type                         | Emission days (days/year) | Emission factors |      |         | Remarks |
|------------------------------|---------------------------|------------------|------|---------|---------|
|                              |                           | Air              | Soil | Water   |         |
| initial release prior to RMM | 300                       | 0.005            | 0    | 0.00001 |         |

#### Risk management measures (RMM)

|   |  |
|---|--|
| <b>Technical conditions and measures at process level (source) to prevent release</b> | 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

|             |   |
|-------------|---|
| <b>Air</b>  | Treat air emission to provide a typical removal efficiency of (%): 95 |
| <b>Soil</b> | Not available.  |

**Water** Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): 84.6. If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): 0

**Sediment** Not available.

**Remarks** Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

**Organisational measures to prevent/limit release from site** Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

#### Conditions and measures related to municipal sewage treatment plant

##### Size of municipal sewage system/treatment plant (m3/d)

**Type** Municipal STP

**Discharge rate** 2000

**Treatment effectiveness** 94.7

**Sludge treatment technique** Not available.

**Remarks** Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 5.3e6

**Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)** 94.7

#### Conditions and measures related to external treatment of waste for disposal

##### Fraction of used amount transferred to external waste treatment

**Suitable waste treatment** Not available.

**Treatment effectiveness** Not available.

**Remarks** Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

#### Conditions and measures related to external recovery of waste

##### Fraction of used amount transferred to external waste treatment

**Suitable recover operations** This substance is consumed during use and no waste of the substance is generated.

**Additional good practice advice beyond the REACH CSA** Additional information on the basis for the allocation of the identified OCs and RMMs is contained in the PETRORISK file.

### 2.2.1. Contributing scenario controlling worker exposure for Use in closed process, no likelihood of exposure.

#### Product characteristics

**Concentration of the substance in a mixture** Covers percentage substance in the product up to 100 % (unless stated differently).

**Physical form of the product** Liquid.

**vapour pressure** Liquid, vapour pressure 0,5 - 10 kPa at STP.

**Dustiness** Not applicable.

**Process temperature** Assumes use at not more than 20°C above ambient temperature, unless stated differently.

#### Amounts used

Not available.

#### Frequency and duration of use

|   | Duration | Frequency of use | Remarks   |
|---|----------|------------------|---|
| Covers daily exposures up to 8 hours (unless stated differently). | 8        | 1 hours per day  | Assumes a good basic standard of occupational hygiene is implemented. |

#### Human factors not influenced by risk management

**Exposed skin areas** Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

#### Other given operational conditions affecting workers exposure

Not available.

## Other relevant operational conditions

Not available.

## Risk management measures (RMM)

**Technical conditions and measures to control dispersion from source towards the worker** Not available.

**Organizational measures to prevent/limit releases, dispersion and exposure** Not available.

**Conditions and measures related to personal protection, hygiene and health evaluations** 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.

## 3. Exposure Estimation

### Environment

See PETRORISK file in IUCLID Section 13 - "LocalCSR" worksheet.

### Health

|                                    | Exposure level | RCR   | Method | Remarks             |
|------------------------------------|----------------|-------|--------|---------------------|
| General exposures (closed systems) | 10 ppm         | 0.250 | **     | Inhalation Exposure |
| General exposures (closed systems) | 25 ppm         | 0.625 | **     | Inhalation Exposure |
| Transport                          | 5 ppm          | 0.125 | **     | Inhalation Exposure |
| Bulk transfers                     | 50 ppm         | 0.875 | **     | Inhalation Exposure |
| Drum/batch transfers               | 50 ppm         | 0.875 | **     | Inhalation Exposure |
| Equipment cleaning and maintenance | 50 ppm         | 0.250 | **     | Inhalation Exposure |
| Vessel and container cleaning      | 50 ppm         | 0.125 | **     | Inhalation Exposure |
| Bulk product storage               | 10 ppm         | 0.250 | **     | Inhalation Exposure |

\*\* - The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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