# Safety Data Sheet
# OPTIVIS

## Safety Data Sheet dated 27/2/2020, version 2

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

**1.1. Product identifier**

Trade name: OPTIVIS

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

Recommended use:
Hydraulic oil

Uses advised against:
None unless specified elsewhere in this sheet.

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

OLEOTECNICA S.p.A.
Via Leonardo Da Vinci, 7
20090 - SEGRATE (MI)
Ph. +39 02 269011 (8 -12/13:30 -17:30)
Competent person responsible for the safety data sheet:
regulatory@oleotecnica.it

**1.4. Emergency telephone number**

Ph. +39 02 269011 (8 -12/13:30 -17:30)

## SECTION 2: Hazards identification

**2.1. Classification of the substance or mixture**

EC regulation criteria 1272/2008 (CLP)

Danger, Asp. Tox. 1, May be fatal if swallowed and enters airways.

Adverse physicochemical, human health and environmental effects:
No other hazards

**2.2. Label elements**

Hazard pictograms:

Danger
Hazard statements:
H304 May be fatal if swallowed and enters airways.
Precautionary statements:
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331 Do NOT induce vomiting.
P405 Store locked up.
P501 Dispose of contents/container in accordance with applicable regulations.
Special Provisions:
None
Contains
Severely refined mineral oils; Baseoil - unspecified

Special provisions according to Annex XVII of REACH and subsequent amendments:
None

**2.3. Other hazards**
vPvB Substances: None - PBT Substances: None
Other Hazards:
Physical / Chemical Hazards:
No significant hazards.
Health hazards: Subcutaneous injection at high pressure can cause serious damage.
Excessive exposure may cause eye, skin or respiratory irritation.
Environmental hazards: do not dispose of the product in the environment

## SECTION 3: Composition/information on ingredients

**3.1. Substances**
N.A.
**3.2. Mixtures**
Hazardous components within the meaning of the CLP regulation and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| >= 80%-<95% | Severely refined mineral oils | # |  3.10/1 Asp. Tox. 1 H304 DECLL (CLP)* |

*DECLL (CLP): Substance classified in accordance with Note L, Annex VI of EC Regulation (EC) 1272/2008. The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346 "Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions — Dimethyl sulphoxide extraction refractive index method", Institute of Petroleum, London. This note applies only to certain complex oil-derived substances in Part 3.

#The mineral oil contained can be described by one or more of the following substances: EC 265-158-7, REACH n. 01-2119487077-29, Distillates (petroleum), hydrotreated light paraffinic fraction; EC. 265-156-6, REACH n. 01-2119480375-34, Distillates (petroleum), light hydrotreated naphthenic; EC 934-956-3, REACH n.01-2119827000-58 Hydrocarbons, C15-C20, n-alkanes, isoalkanes, cyclic, <0.03% aromatics

More references at Section 16 for component regulation.

## SECTION 4: First aid measures

**4.1. Description of first aid measures**
In case of skin contact:
Wash contact areas with soap and water.
If the product is injected into or under the skin, or in any part of the body, immediately show the patient to a doctor as a surgical emergency. Although the initial symptoms of high-pressure injection may be minimal or absent, early surgical treatment within a few hours may reduce significantly the final extent of the lesion.
In case of eyes contact:
Rinse with large amount of water. If irritation occurs, seek medical attention.
In case of Ingestion:
Rise the mouth with water. Do not induce the vomiting, get medical attention if symptoms occur
In case of Inhalation:
Keep patient calm, remove to fresh air, seek medical attention.

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

Local necrosis, highlighted by principle of pain and damage to tissues delayed, which arise a few hours after injection.

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

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Treatment:
Treat symptomatic. If large quantities are ingested or inhaled, contact a poison control centre immediately.

## SECTION 5: Firefighting measures

**5.1. Extinguishing media**

Suitable extinguishing media:
Water spray. Foam. Multi-purpose powders. Carbon dioxide (CO2).
Extinguishing media which must not be used for safety reasons:
Avoid using direct jets of water on the burning product.

**5.2. Special hazards arising from the substance or mixture**

Incomplete combustion may generate a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide, H2S, SOx (sulfur oxides), sulfuric acid or unidentified organic and inorganic compounds.
Hazardous combustion products:
Incomplete combustion may generate a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide, H2S, SOx (sulfur oxides), sulfuric acid or unidentified organic and inorganic compounds.

**5.3. Advice for firefighters**

Use suitable breathing apparatus .
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Move undamaged containers from immediate hazard area if it can be done safely.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**

For non emergency personnel:
Avoid contact with spilled material. 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, H2S, 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.

**6.2. Environmental precautions**

Take measures to minimize the effects on groundwater.

**6.3. Methods and material for containment and cleaning up**

For containment:
For small amounts: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder). Dispose of absorbed material in accordance with regulations.
Large spills:
Reclaim liquid directly or in an adsorbent such as sand, earth, vermiculite, diatomite and collect it in containers.
For cleaning up:
Consult an expert to dispose of the recovered material in compliance with the regulations in force.

**6.4. Reference to other sections**

See also section 8 and 13

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
See also section 8 for recommended protective equipment.
Advice on general occupational hygiene:
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.

**7.2. Conditions for safe storage, including any incompatibilities**

Store in accordance with current legislation. Store in the original closed container. Keep the product in cool and ventilated areas, away from heat sources and direct sunlight. The electrical equipment used must comply with local fire prevention regulations for materials of this type.
Drinking, eating and smoking in areas where the product is handled, stored or processed is prohibited. Avoid leakage to prevent slipping.

LOADING / UNLOADING TEMPERATURE ° C: Ambient
STORAGE TEMPERATURE ° C: Room Temperature, protect from sunlight
STATIC ACCUMULATOR: This material is a static accumulator

Keep away from food, drink and feed.
Incompatible materials:
See subsection 10.5
Instructions as regards storage premises:
Adequately ventilated premises.

**7.3. Specific end use(s)**

The material can accumulate static energy charges which can cause sparks (source of ignition). When the material is managed in
bulk, a source of ignition can ignite flammable vapors or residues that may be present (eg during loading / unloading operations). Use appropriate storage and grounding procedures.
Section 1 Information on identified end use. No industry guidance available.

## SECTION 8: Exposure controls/personal protection

**8.1. Control parameters**

Severely refined mineral oils
ACGIH - TWA(8h): 5 mg/m3 - STEL(15 min): 10 mg/m3
DNEL Exposure Limit Values

Severely refined mineral oils
Worker Professional: 5.4 mg/m3 - Consumer: 1.2 mg/m3 - Exposure: Human Inhalation - Frequency: Long Term, local effects
PNEC Exposure Limit Values
N.A.

**8.2. Exposure controls**

8.2.1 SUITABLE TECHNICAL CONTROLS:
The level of protection and the types of controls required vary according to the conditions of potential exposure. Control measures to consider: No special requirements under normal conditions of use and with adequate ventilation.
Personal monitoring of the working environment may be required to determine the effectiveness of ventilation or other control measures and / or the need to use respiratory protective equipment. (Refer to EN 689 for the assessment of exposure by inhalation to chemical agents and national guidance documents on methods for the determination of hazardous substances)
In some cases, it will be necessary to flush the fumes, add filters or make technical changes to the process equipment to reduce the emission to acceptable levels.
8.2.2 INDIVIDUAL PROTECTION MEASURES, AS INDIVIDUAL EXPOSURE DEVICES.
Eye protection:
The use of protections according to the European standard EN166 is recommended.
If contact with the eyes is likely, wear glasses with side protection.
Protection for skin:
Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.
Protection for hands:
Protective gloves suitable for chemical agents (EN 374)
Gloves resistant to oils and solvents (neoprene, PVC, nitrile: 4-8 hours permeation time, CEN standard EN 420, 374, 388 have the general requirements and list the types of gloves).
Replace the gloves at the first signs of wear.
Respiratory protection:
For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode.
CEN EN 136,140,145 provide recommendations on masks, EN 149,143 on filters
Thermal Hazards:
None
Environmental exposure controls:
None
Appropriate engineering controls:
None

## SECTION 9: Physical and chemical properties

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

| Properties | Value | Method: | Notes: |
|---|---|---|---|
| Appearance and colour: | Clear liquid,red | -- | -- |
| Odour: | Slightly hydrocarbons | -- | -- |
| Odour threshold: | N.A. | -- | -- |
| pH: | N.A. | -- | -- |
| Melting point / freezing point: | - 50°C | ASTM D 97 | -- |
| Initial boiling point and boiling range: | >220°C | ASTM D 86 | -- |
| Flash point: | 155°C | ASTM D 92 | -- |
| Evaporation rate: | N.A. | -- | -- |

| | | | |
|---|---|---|---|
| Solid/gas flammability: | N.A. | -- | -- |
| Upper/lower flammability or explosive limits: | N.A. | -- | -- |
| Vapour pressure: | N.A. | -- | -- |
| Vapour density: | N.A. | -- | -- |
| Relative density: | 0.850 @15°C | ASTM D 4052 | -- |
| Solubility in water: | Insolubile | -- | -- |
| Solubility in oil: | Complete | -- | -- |
| Partition coefficient (n-octanol/water): | > 3.5 | Estimated | -- |
| Auto-ignition temperature: | N.A. | -- | -- |
| Decomposition temperature: | N.A. | -- | -- |
| Viscosity: | 10.5 mm2/s | -- | -- |
| Explosive properties: | None | -- | -- |
| Oxidizing properties: | None | -- | -- |

### 9.2. Other information

| Properties | Value | Method: | Notes: |
|---|---|---|---|
| Miscibility: | N.A. | -- | -- |
| Fat Solubility: | N.A. | -- | -- |
| Conductivity: | N.A. | -- | -- |
| Cone penetration: | -- | -- | -- |
| Drop point: | -- | -- | -- |
| Substance Groups relevant properties | N.A. | -- | -- |
| DMSO extract (IP364): | <3% | -- | -- |
| Pour point: | -48°C | ASTM D 97 | -- |
| Volumic mass: | 0.850 Kg/L | ASTM D 4052 | -- |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity
See the subsections below.

### 10.2. Chemical stability
Stable under normal conditions

### 10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

### 10.4. Conditions to avoid
Keep away from heat sources, open flames, direct sunlight and any other source of ignition.

### 10.5. Incompatible materials
Strong oxidizers

### 10.6. Hazardous decomposition products
None.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects
Toxicological information of the product:

OPTIVIS
a) acute toxicity
Not classified
Based on available data, the classification criteria are not met
b) skin corrosion/irritation
Not classified
Based on available data, the classification criteria are not met
c) serious eye damage/irritation
Not classified
Based on available data, the classification criteria are not met
d) respiratory or skin sensitisation
Not classified
Based on available data, the classification criteria are not met
e) germ cell mutagenicity
Not classified
Based on available data, the classification criteria are not met
f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met
g) reproductive toxicity
Not classified
Based on available data, the classification criteria are not met
h) STOT-single exposure
Not classified
Based on available data, the classification criteria are not met
i) STOT-repeated exposure
Not classified
Based on available data, the classification criteria are not met
j) aspiration hazard
The product is classified: Asp. Tox. 1 H304

Toxicological information of the main substances found in the product:
Severely refined mineral oils
a) acute toxicity:
Test: LC50 - Route: Oral - Species: Rat > 5000 mg/kg - Notes: similar materials - Based on the available data the classification criteria are not met.
Test: LD50 - Route: Skin - Species: Rabbit > 2000 mg/kg - Notes: similar materials - Based on the available data the classification criteria are not met.
Test: LD50 - Route: Inhalation Mist - Species: Rat > 5000 mg/m3 - Duration: 4h - Notes: similar materials - Based on the available data the classification criteria are not met.
f) carcinogenicity:
Negative - Notes: similar materials - Based on the available data the classification criteria are not met.
j) aspiration hazard:
Positive - Notes: similar materials - May be fatal in case of injestion and penetration into the respitatory tract.

## SECTION 12: Ecological information

**12.1. Toxicity**

Adopt good working practices, so that the product is not released into the environment.

OPTIVIS
Not classified for environmental hazards
Based on available data, the classification criteria are not met

Severely refined mineral oils
a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish > 100 mg/l
Endpoint: EC50 - Species: Daphnia > 100 mg/l
Endpoint: EC50 - Species: Algae > 100 mg/l - Duration h: 72

**12.2. Persistence and degradability**

Severely refined mineral oils

Biodegradability: Inherently biodegradable - Notes: by its nature

**12.3. Bioaccumulative potential**

Severely refined mineral oils

Bioaccumulation: Potentially bioaccumulative, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

**12.4. Mobility in soil**

Severely refined mineral oils

Mobility in soil: High mobility into soil is expected due to Log Kow value

**12.5. Results of PBT and vPvB assessment**

vPvB Substances: None - PBT Substances: None

**12.6. Other adverse effects**

None

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

Additional disposal information:

The waster producer is responsible to determiniate the toxicity and physical properties of the material generated for
identify the appropriate waste classification and methods of disposal in compliance with the regulations in force.
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.

## SECTION 14: Transport information

**14.1. UN number**

Not classified as dangerous in the meaning of transport regulations.

**14.2. UN proper shipping name**

N.A.

**14.3. Transport hazard class(es)**

N.A.

**14.4. Packing group**

N.A.

**14.5. Environmental hazards**

N.A.

**14.6. Special precautions for user**

N.A.

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

N.A.

## SECTION 15: Regulatory information

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

Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Regulation (EC) n. 1907/2006 (REACH)
Regulation (EC) n. 1272/2008 (CLP)
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013
Regulation (EU) 2015/830
Regulation (EU) n. 286/2011 (ATP 2 CLP)
Regulation (EU) n. 618/2012 (ATP 3 CLP)
Regulation (EU) n. 487/2013 (ATP 4 CLP)
Regulation (EU) n. 944/2013 (ATP 5 CLP)
Regulation (EU) n. 605/2014 (ATP 6 CLP)
Regulation (EU) n. 2015/1221 (ATP 7 CLP)
Regulation (EU) n. 2016/918 (ATP 8 CLP)
Regulation (EU) n. 2016/1179 (ATP 9 CLP)
Regulation (EU) n. 2017/776 (ATP 10 CLP)
Regulation (EU) n. 2018/699 (ATP 11 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

Restriction 3

Restrictions related to the substances contained:

No restriction.

Where applicable, refer to the following regulatory provisions :

Directive 2012/18/EU (Seveso III)
Regulation (EC) nr 648/2004 (detergents).
Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):

Seveso III category according to Annex 1, part 1

None

**15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out for the mixture.
However a chemical safety assessment was carried out for the dangerous substances contained.

## SECTION 16: Other information

Full text of phrases referred to in Section 3:

H304 May be fatal if swallowed and enters airways.

| Hazard class and hazard category | Code | Description |
|---|---|---|
| Asp. Tox. 1 | 3.10/1 | Aspiration hazard, Category 1 |

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

| Classification according to Regulation (EC) Nr. 1272/2008 | Classification procedure |
|---|---|
| Asp. Tox. 1, H304 | Calculation method |

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
ECHA

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This MSDS cancels and replaces any preceding release.
The sources of information used in the preparation of this MSDS include one or more of the following: results of toxicological studies of suppliers..
This information is updated to the best of the knowledge available at the date of the last revision.
However, no guarantee is given regarding the accuracy and completeness of the same. It is in fact the responsibility of the user to ensure the suitability and completeness of the information reported, in relation to the particular use that must be made of it.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| ATE: | Acute Toxicity Estimate |
| ATEmix: | Acute toxicity Estimate (Mixtures) |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWA: | Time-weighted average |
| WGK: | German Water Hazard Class. |

**ANNEX**

Exposure scenario: Mineral Base Oils, IP346<3%, H304 Asp. Tox. 1

| | |
|---|---|
| **Section 1 Exposure Scenario Title** | |
| **Title:** | |
| Distribution of substance | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3, SU8, SU9 |
| Process Categories | PROC1, PROC15, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC1, ERC2, ERC3, ERC4, ERC5, ERC6A, ERC6B, ERC6C, ERC6D, ERC7 |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| 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** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**Laboratory activities PROC15**<br>No other specific measures identified.<br>**Bulk transfers (closed systems) PROC8b**<br>No other specific measures identified.<br>**Bulk transfers (open systems) PROC8b**<br>No other specific measures identified.<br>**Drum and small package filling PROC9**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance. | |

| |
|---|
| **Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 1700 tons/yr<br>Continuous release.<br>Emission Days (days/year): 100 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 17000 kg / day<br>Regional use tonnage (tonnes/year): 850000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.0001<br>Release fraction to soil from process (initial release prior to RMM): 1e-005<br>Release fraction to wastewater from process (initial release prior to RMM): 0 |
| **Technical conditions and measures at process level (source) to prevent release** |
| Common practices vary across sites thus conservative process release estimates used. |
| **Technical 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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 90 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 110000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |

| |
|---|
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use as an intermediate | |
| **Use Descriptor** | |
| 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 1.1.v1 |
| **Processes, tasks, activities covered** | |
| 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 (ncluding marine vessel/barge, road/rail car and bulk container). | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**Laboratory activities PROC15**<br>No other specific measures identified.<br>**Bulk transfers (closed systems) PROC8b**<br>No other specific measures identified.<br>**Bulk transfers (open systems) PROC8b**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Bulk product storage PROC1**<br>Store substance within a closed system.<br>**Bulk product storage PROC2**<br>Store substance within a closed system. | |

| Section 2.2 Control of environmental exposure |
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| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 1500 tons/yr<br>Continuous release.<br>Emission Days (days/year): 100 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 15000 kg / day<br>Regional use tonnage (tonnes/year): 1500 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 1e-005<br>Release fraction to soil from process (initial release prior to RMM): 0.001<br>Release fraction to wastewater from process (initial release prior to RMM): 1e-005 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 80 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 66.2 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 98000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| Conditions and measures related to external treatment of waste for disposal |
| This substance is consumed during use and no waste of the substance is generated [ETW5] |
| Conditions and measures related to external recovery of waste |
| This substance is consumed during use and no waste of the substance is generated [ERW3] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] |

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| Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Formulation and (re)packing of substances and mixtures | |
| **Use Descriptor** | |
| 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 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenanance and associated laboratory activities. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Batch processes at elevated temperatures Use in contained batch processes PROC3**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**Laboratory activities PROC15**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Mixing operations (open systems) PROC5**<br>No other specific measures identified.<br>**Manual Transfer from/pouring from containers Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified. | |

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| **Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC14**<br>No other specific measures identified.<br>**Drum and small package filling PROC9**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 30000 tons/yr<br>Continuous release.<br>Emission Days (days/year): 300 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 100000 kg / day<br>Regional use tonnage (tonnes/year): 850000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements): [OOC11] 0.0025<br>Release fraction to soil from process (initial release prior to RMM): 0.0001<br>Release fraction to wastewater from process (initial release prior to RMM): 5e-006 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 69.5 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 570000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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] |

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| Conditions and measures related to external recovery of waste |
| External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in Coatings - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC10, PROC13, PROC14, PROC15, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.3a.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) with sample collection PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) with sample collection PROC2**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Film formation - force drying, stoving and other technologies Use in contained systems Elevated temperature PROC2**<br>No other specific measures identified.<br>**Film formation - air drying (open systems) PROC4**<br>No other specific measures identified.<br>**Preparation of material for application Mixing operations (closed systems) PROC3**<br>No other specific measures identified.<br>**Preparation of material for application Mixing operations (open systems) PROC5**<br>No other specific measures identified.<br>**Spraying (automatic/robotic) PROC7**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>**Spraying/fogging by manual application PROC7**<br>Wear a respirator conforming to EN140 with Type A filter or better. | |

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| **Material transfers Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**Material transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Roller, spreader, flow application PROC10**<br>No other specific measures identified.<br>**Dipping, immersion and pouring PROC13**<br>No other specific measures identified.<br>**Laboratory activities PROC15**<br>No other specific measures identified.<br>**Material transfers Drum/batch transfers Transfer from/pouring from containers PROC9**<br>No other specific measures identified.<br>**Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC14**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 10000 tons/yr<br>Continuous release.<br>Emission Days (days/year): 300 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 35000 kg / day<br>Regional use tonnage (tonnes/year): 10000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.98<br>Release fraction to soil from process (initial release prior to RMM): 0<br>Release fraction to wastewater from process (initial release prior to RMM): 2e-005 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 90 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 71.2 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day |

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| Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 100000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in Cleaning Agents - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC10, PROC13, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.4a.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Automated process with (semi) closed systems Use in contained systems PROC2**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Use in contained batch processes Automated process with (semi) closed systems Elevated temperature PROC3**<br>No other specific measures identified.<br>**Dipping, immersion and pouring PROC13**<br>No other specific measures identified.<br>**Cleaning with low-pressure washers PROC10**<br>No other specific measures identified.<br>**Cleaning with high pressure washers PROC7**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>**Manual Surfaces Cleaning No spraying PROC10**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1** | |

| |
|---|
| Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 100 tons/yr<br>Continuous release.<br>Emission Days (days/year): 20 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 5000 kg / day<br>Regional use tonnage (tonnes/year): 10000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 1<br>Release fraction to soil from process (initial release prior to RMM): 0<br>Release fraction to wastewater from process (initial release prior to RMM): 0 |
| **Technical conditions and measures at process level (source) to prevent release** |
| Common practices vary across sites thus conservative process release estimates used. |
| **Technical 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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 70 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 33000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |

| |
|---|
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in oil field drilling and production operations - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.5a.v1 |
| **Processes, tasks, activities covered** | |
| Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Assumes use at not more than 20°C above ambient temperature[G15] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Drilling mud (re-)formulation Use in contained batch processes PROC3**<br>No other specific measures identified.<br>**Drill floor operations PROC4**<br>No other specific measures identified.<br>**Operation of solids filtering equipment Elevated temperature PROC4**<br>Provide the operation with a properly sited receiving hood.<br>**Cleaning of solids filtering equipment Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**Treatment and disposal of filtered solids Use in contained batch processes PROC3**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**Pouring from small containers Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a** | |

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| Drain down system prior to equipment break-in or maintenance.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): Not Applicable<br>Emission Days (days/year): Not Applicable<br>Fraction of EU tonnage used in region: 1<br>Fraction of Regional tonnage used Locally: Not Applicable<br>Maximum daily site tonnage (kg/d): Not Applicable<br>Regional use tonnage (tonnes/year): 10 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] Not Applicable<br>Local marine water dilution factor: [EF2] Not Applicable |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from process (initial release prior to RMM): Not Applicable<br>Release fraction to wastewater from process (initial release prior to RMM): Not Applicable |
| **Technical conditions and measures at process level (source) to prevent release** |
| Discharge to aquatic environment is restricted (see Section 4.2) [TCS2] |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil** |
| If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: Not Applicable<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: Not Applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] Not Applicable<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: Not Applicable<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: Not Applicable |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.[G8] |
| **3.2. Environment** |
| Qualitative approach used to conclude safe use [EE8] |

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| Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment [EE7] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| Discharge to aquatic environment is restricted by law and industry prohibits release [DSU9] |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Lubricants - Industrial | |
| **Use Descriptor** | |
| 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 1.1.v1 ,ESVOC 4.6a.v1 |
| **Processes, tasks, activities covered** | |
| 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. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**Initial factory fill of equipment PROC9**<br>No other specific measures identified.<br>**Operation and lubrication of high energy open equipment PROC17**<br>Provide extract ventilation to points where emissions occur.<br>**Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Treatment by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Spraying PROC7** | |

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| Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>**Maintenance (of larger plant items) and machine set up Dedicated facility Elevated temperature PROC8b**<br>No other specific measures identified.<br>**Maintenance of small items Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**Remanufacture of reject articles PROC9**<br>No other specific measures identified.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 100 tons/yr<br>Continuous release.<br>Emission Days (days/year): 20 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 5000 kg / day<br>Regional use tonnage (tonnes/year): 310000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.0005<br>Release fraction to soil from process (initial release prior to RMM): 0.001<br>Release fraction to wastewater from process (initial release prior to RMM): 1e-006 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 70 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.5 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 33000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| Conditions and measures related to external treatment of waste for disposal |

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| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.<br>Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file - 'Site-Specific Production' worksheet. [DSU6] |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Metal working fluids / rolling oils - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC10, PROC13, PROC17, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.7a.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use in formulated MWFs (MWFs)/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC5**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC9**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**Metal machining operations PROC17**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. | |

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| **Treatment by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Spraying PROC7**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>**Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Automated metal rolling/forming Use in contained systems Elevated temperature PROC2**<br>No other specific measures identified.<br>**Semi-automated metal rolling/forming Elevated temperature PROC17**<br>Provide extract ventilation to points where emissions occur.<br>**Semi-automated metal rolling/forming PROC4**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance Dedicated facility PROC8b**<br>Drain down system prior to equipment break-in or maintenance.<br>**Equipment cleaning and maintenance Non-dedicated facility PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 100 tons/yr<br>Continuous release.<br>Emission Days (days/year): 20 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 5000 kg / day<br>Regional use tonnage (tonnes/year): 4200 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.02<br>Release fraction to soil from process (initial release prior to RMM): 0<br>Release fraction to wastewater from process (initial release prior to RMM): 1e-006 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 70 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.5 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |

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| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 33000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use as binders and release agents - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC10, PROC13, PROC14, PROC2, PROC3, PROC4, PROC6, PROC7, PROC8a, PROC8b |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.10a.v1 ,ESVOC 8.7c.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing) and handling of waste. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**(closed systems) Material transfers PROC1**<br>No other specific measures identified.<br>**Material transfers (closed systems) PROC2**<br>No other specific measures identified.<br>**Material transfers (closed systems) PROC3**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Mixing operations (closed systems) PROC3**<br>No other specific measures identified.<br>**Mixing operations (open systems) PROC4**<br>No other specific measures identified.<br>**Dipping, immersion and pouring PROC13**<br>No other specific measures identified.<br>**Mold forming PROC14**<br>No other specific measures identified.<br>**Casting operations (open systems) Elevated temperature PROC6**<br>No other specific measures identified.<br>**Spraying PROC7**<br>Carry out in a vented booth or extracted enclosure.<br>or<br>Wear a full face respirator conforming to EN140 with Type A filter or better. | |

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| **Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Treatment by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 2500 tons/yr<br>Continuous release.<br>Emission Days (days/year): 100 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 25000 kg / day<br>Regional use tonnage (tonnes/year): 3700 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 1<br>Release fraction to soil from process (initial release prior to RMM): 0<br>Release fraction to wastewater from process (initial release prior to RMM): 0 |
| **Technical conditions and measures at process level (source) to prevent release** |
| Common practices vary across sites thus conservative process release estimates used. |
| **Technical 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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 80 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 140000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 |

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| External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use as a fuel - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b |
| Environmental Release Categories | ERC7 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 7.12a.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**Use as a fuel (closed systems) PROC16**<br>No other specific measures identified.<br>**Use as a fuel (closed systems) PROC3**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |

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| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 46000 tons/yr<br>Continuous release.<br>Emission Days (days/year): 300 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 150000 kg / day<br>Regional use tonnage (tonnes/year): 46000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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<br>Release fraction to soil from process (initial release prior to RMM): 0<br>Release fraction to wastewater from process (initial release prior to RMM): 1e-005 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 95 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 76.5 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 670000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| Conditions and measures related to external treatment of waste for disposal |
| Combustion emissions considered in regional exposure assessment [ETW2]<br>Combustion emissions limited by required exhaust emission controls [ETW1]<br>External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3] |
| Conditions and measures related to external recovery of waste |
| This substance is consumed during use and no waste of the substance is generated [ERW3] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management |

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| Measures/Operational Conditions outlined in Section 2 are implemented. [G22]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Functional Fluids - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC7 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 7.13a.v1 |
| **Processes, tasks, activities covered** | |
| Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers (closed systems) PROC1**<br>No other specific measures identified.<br>**Bulk transfers (closed systems) PROC2**<br>No other specific measures identified.<br>**Bulk transfers (closed systems) PROC3**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling of articles/equipment (closed systems) PROC9**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Non-dedicated facility PROC8a**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (open systems) Elevated temperature PROC4**<br>Use dry break couplings for material transfer.<br>**Remanufacture of reject articles PROC9**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2** | |

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| Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 10 tons/yr<br>Continuous release.<br>Emission Days (days/year): 20 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 500 kg / day<br>Regional use tonnage (tonnes/year): 1200 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.0005<br>Release fraction to soil from process (initial release prior to RMM): 0.001<br>Release fraction to wastewater from process (initial release prior to RMM): 1e-006 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 3300 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |

| Section 4 Guidance to check compliance with the Exposure Scenario |
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| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

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| **Section 1 Exposure Scenario Title** | |
| **Title:** | |
| Use in laboratories - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC15 |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Use of the substance within laboratory settings, including material transfers and equipment cleaning. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Laboratory activities PROC15**<br>No other specific measures identified. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 2 tons/yr<br>Continuous release.<br>Emission Days (days/year): 20 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 100 kg / day<br>Regional use tonnage (tonnes/year): 1200 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>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): 0.025<br>Release fraction to soil from process (initial release prior to RMM): 0.001<br>Release fraction to wastewater from process (initial release prior to RMM): 0.02 | |
| **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** | |

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| **soil** |
| If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 78.7 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 400 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Rubber production and processing | |
| **Use Descriptor** | |
| Sector(s) of Use | SU10 |
| Process Categories | PROC1, PROC13, PROC14, PROC15, PROC2, PROC21, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC1, ERC4, ERC6D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.19.v1 |
| **Processes, tasks, activities covered** | |
| Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Assumes use at not more than 20°C above ambient temperature[G15]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**(closed systems) Bulk transfers PROC1**<br>No other specific measures identified.<br>**(closed systems) Bulk transfers PROC2**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Bulk weighing (closed systems) PROC1**<br>No other specific measures identified.<br>**Bulk weighing (closed systems) PROC2**<br>No other specific measures identified.<br>**Small scale weighing Dedicated facility PROC9**<br>No other specific measures identified.<br>**Additive premixing (open systems) PROC3**<br>No other specific measures identified.<br>**Additive premixing (open systems) PROC4**<br>No other specific measures identified.<br>**Additive premixing (open systems) PROC5**<br>No other specific measures identified.<br>**Material transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Material transfers Dedicated facility PROC9** | |

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| No other specific measures identified.<br>**Calendering (including Banburys) Operation is carried out at elevated temperature (> 20°C above ambient temperature). PROC6**<br>No other specific measures identified.<br>**Pressing uncured rubber blanks PROC14**<br>No other specific measures identified.<br>**Tyre build up Spraying PROC7**<br>Minimise exposure by extracted full enclosure for the operation or equipment.<br>**Vulcanisation Operation is carried out at elevated temperature (> 20°C above ambient temperature). PROC6**<br>Provide extract ventilation to material transfer points and other openings.<br>**Cooling cured articles Operation is carried out at elevated temperature (> 20°C above ambient temperature). PROC6**<br>Provide extract ventilation to points where emissions occur.<br>**Production of articles by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Finishing operations PROC21**<br>No other specific measures identified.<br>**Laboratory activities PROC15**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 30000 tons/yr<br>Continuous release.<br>Emission Days (days/year): 300 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 100000 kg / day<br>Regional use tonnage (tonnes/year): 44000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.01<br>Release fraction to soil from process (initial release prior to RMM): 0.0001<br>Release fraction to wastewater from process (initial release prior to RMM): 1e-005 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 73.4 % |

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| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Prevent discharge of undissolved substance to or recover from wastewater.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 500000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Polymer processing - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU10, SU3 |
| Process Categories | PROC1, PROC13, PROC14, PROC2, PROC21, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.21a.v1 |
| **Processes, tasks, activities covered** | |
| Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers (closed systems) PROC1**<br>No other specific measures identified.<br>**Bulk transfers (closed systems) PROC2**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Bulk weighing (closed systems) PROC1**<br>No other specific measures identified.<br>**Bulk weighing (closed systems) PROC2**<br>No other specific measures identified.<br>**Small scale weighing PROC9**<br>No other specific measures identified.<br>**Additive premixing PROC3**<br>No other specific measures identified.<br>**Additive premixing PROC4**<br>No other specific measures identified.<br>**Additive premixing PROC5**<br>No other specific measures identified.<br>**Calendering (including Banburys) Operation is carried out at elevated temperature (> 20°C above ambient temperature). PROC6**<br>Provide extract ventilation to material transfer points and other openings. | |

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| **Production of articles by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Extrusion and masterbatching PROC14**<br>No other specific measures identified.<br>**Injection moulding of articles PROC14**<br>No other specific measures identified.<br>**Finishing operations PROC21**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 13000 tons/yr<br>Continuous release.<br>Emission Days (days/year): 300 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 43000 kg / day<br>Regional use tonnage (tonnes/year): 13000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.1<br>Release fraction to soil from process (initial release prior to RMM): 1e-005<br>Release fraction to wastewater from process (initial release prior to RMM): 0 |
| **Technical conditions and measures at process level (source) to prevent release** |
| Common practices vary across sites thus conservative process release estimates used. |
| **Technical 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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 80 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 290000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| Conditions and measures related to external treatment of waste for disposal |

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| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Water treatment chemicals - Industrial | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC13, PROC2, PROC3, PROC4, PROC8a, PROC8b |
| Environmental Release Categories | ERC3, ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 3.22a.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Use in contained systems PROC2**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Pouring from small containers PROC13**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 30 tons/yr<br>Continuous release.<br>Emission Days (days/year): 300 days/yr<br>Fraction of EU tonnage used in region: 0.1 | |

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| Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 100 kg / day<br>Regional use tonnage (tonnes/year): 3300 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.05<br>Release fraction to soil from process (initial release prior to RMM): 0<br>Release fraction to wastewater from process (initial release prior to RMM): 0.95 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 79.1 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 98.9 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 100 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 98.9 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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 |

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| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Mining chemicals | |
| **Use Descriptor** | |
| Sector(s) of Use | SU3 |
| Process Categories | PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC4 |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.23.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use of the substance in extraction processes at mining operations, including material transfers, winning and separation activities, and substance recovery and disposal. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**(closed systems) Bulk transfers PROC2**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Pouring from small containers PROC9**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC5**<br>No other specific measures identified.<br>**phase separation PROC4**<br>No other specific measures identified.<br>**ion exchange processes (closed systems) PROC2**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**Mixing operations (closed systems) PROC1**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |

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| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 200 tons/yr<br>Continuous release.<br>Emission Days (days/year): 20 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 10000 kg / day<br>Regional use tonnage (tonnes/year): 1000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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): 0.25<br>Release fraction to soil from process (initial release prior to RMM): 0.05<br>Release fraction to wastewater from process (initial release prior to RMM): 0.5 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 82 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 80 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 99 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 10000 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 99 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36] |

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| 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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in Coatings - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC13, PROC15, PROC19, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 8.3b.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation) and equipment cleaning, maintenance and associated laboratory activities. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**Preparation of material for application Mixing operations (closed systems) PROC3**<br>No other specific measures identified.<br>**Film formation - air drying Outdoor. PROC4**<br>No other specific measures identified.<br>**Film formation - air drying Indoor PROC4**<br>No other specific measures identified.<br>**Preparation of material for application Indoor Mixing operations (open systems) Pouring from small containers PROC5**<br>No other specific measures identified.<br>**Preparation of material for application Outdoor. Mixing operations (open systems) Pouring from small containers PROC5**<br>No other specific measures identified.<br>**Material transfers Drum/batch transfers Non-dedicated facility PROC8a**<br>Use drum pumps. | |

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| **Roller, spreader, flow application Indoor PROC10**<br>No other specific measures identified.<br>**Roller, spreader, flow application Outdoor. PROC10**<br>No other specific measures identified.<br>**Spraying/fogging by manual application Indoor PROC11**<br>Carry out in a vented booth or extracted enclosure.<br>**Spraying/fogging by manual application Outdoor. PROC11**<br>Wear a respirator conforming to EN140 with Type A filter or better.<br>**Dipping, immersion and pouring Indoor PROC13**<br>No other specific measures identified.<br>**Dipping, immersion and pouring Outdoor. PROC13**<br>No other specific measures identified.<br>**Laboratory activities PROC15**<br>No other specific measures identified.<br>**Hand application - finger paints, pastels, adhesives Indoor PROC19**<br>No other specific measures identified.<br>**Hand application - finger paints, pastels, adhesives Outdoor. PROC19**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 2 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 5.4 kg / day<br>Regional use tonnage (tonnes/year): 3900 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.98<br>Release fraction to soil from wide dispersive use (regional only): 0.01<br>Release fraction to wastewater from wide dispersive use: 0.01 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 65 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |

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| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 35 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in Cleaning Agents - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC13, PROC19, PROC2, PROC3, PROC4, PROC8a, PROC8b |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.4a.v1 ,ESVOC 8.4b.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand). | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Filling / preparation of equipment from drums or containers PROC8a**<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>**Filling / preparation of equipment from drums or containers PROC8b**<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>**Automated process with (semi) closed systems Use in contained systems PROC2**<br>No other specific measures identified.<br>**Automated process with (semi) closed systems Use in contained systems PROC3**<br>No other specific measures identified.<br>**Semi-automated process (e.g.: Semi-automatic application of floor care and maintenance products) PROC4**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Non-dedicated facility Outdoor. PROC8a**<br>Use drum pumps.<br>**Manual Surfaces Cleaning Dipping, immersion and pouring PROC13**<br>No other specific measures identified.<br>**Cleaning with low-pressure washers Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Cleaning with high pressure washers Spraying Indoor PROC11**<br>No other specific measures identified.<br>**Cleaning with high pressure washers Spraying Outdoor. PROC11**<br>No other specific measures identified. | |

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| **Manual Surfaces Cleaning Wiping Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Degreasing small objects in cleaning station PROC10**<br>No other specific measures identified.<br>**Ad hoc manual application via trigger sprays, dipping, etc. PROC10**<br>No other specific measures identified.<br>**Cleaning of medical devices PROC4**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 2 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 5.3 kg / day<br>Regional use tonnage (tonnes/year): 3900 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.02<br>Release fraction to soil from wide dispersive use (regional only): 0<br>Release fraction to wastewater from wide dispersive use: 1e-006 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 36 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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] |

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| Conditions and measures related to external recovery of waste |
| External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in oil field drilling and production operations - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b |
| Environmental Release Categories | ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.5a.v1 |
| **Processes, tasks, activities covered** | |
| Oil field well drilling operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Assumes use at not more than 20°C above ambient temperature[G15] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Drilling mud (re-)formulation Use in contained batch processes PROC3**<br>No other specific measures identified.<br>**Drill floor operations PROC4**<br>No other specific measures identified.<br>**Elevated temperature Operation of solids filtering equipment - aerosol exposures PROC4**<br>Provide the operation with a properly sited receiving hood.<br>**Cleaning of solids filtering equipment Non-dedicated facility PROC8a**<br>Provide extract ventilation to points where emissions occur.<br>**Treatment and disposal of filtered solids Use in contained batch processes PROC3**<br>No other specific measures identified.<br>**Process sampling PROC3**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**Pouring from small containers Non-dedicated facility PROC8a**<br>Carefully pour from containers.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a** | |

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| Drain down system prior to equipment break-in or maintenance.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): Not Applicable<br>Emission Days (days/year): Not Applicable<br>Fraction of EU tonnage used in region: 1<br>Fraction of Regional tonnage used Locally: Not Applicable<br>Maximum daily site tonnage (kg/d): Not Applicable<br>Regional use tonnage (tonnes/year): 10 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] Not Applicable<br>Local marine water dilution factor: [EF2] Not Applicable |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): Not Applicable<br>Release fraction to wastewater from wide dispersive use: Not Applicable |
| **Technical conditions and measures at process level (source) to prevent release** |
| Discharge to aquatic environment is restricted (see Section 4.2) [TCS2] |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil** |
| If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: Not Applicable<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: Not Applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] Not Applicable<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: Not Applicable<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: Not Applicable |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.[G8] |
| **3.2. Environment** |
| Qualitative approach used to conclude safe use [EE8] |

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| Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment [EE7] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| Discharge to aquatic environment is restricted by law and industry prohibits release [DSU9] |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Lubricants - Professional (Low Release) | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC13, PROC17, PROC18, PROC2, PROC20, PROC3, PROC4, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC9A, ERC9B |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 8.6c.v1 ,ESVOC 9.6b.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**Operation of equipment containing engine oils and similar (closed systems) PROC20**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Non-dedicated facility PROC8a**<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>**Operation and lubrication of high energy open equipment Indoor PROC17**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>**Operation and lubrication of high energy open equipment Indoor PROC18**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. | |

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| **Operation and lubrication of high energy open equipment Outdoor. PROC17**<br>Ensure operation is undertaken outdoors.<br>Avoid carrying out operation for more than 4 hours.<br>Limit the substance content in the mixture to 25 %.<br>**Maintenance (of larger plant items) and machine set up Dedicated facility Elevated temperature PROC8b**<br>Drain down system prior to equipment break-in or maintenance.<br>Provide extract ventilation to emission points when contact with warm (> 50°C) lubricant is likely.<br>**Maintenance of small items Non-dedicated facility Elevated temperature PROC8a**<br>Drain or remove substance from equipment prior to break-in or maintenance.<br>provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).<br>**Engine lubricant service PROC9**<br>No other specific measures identified.<br>**Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Spraying PROC11**<br>Carry out in a vented booth or extracted enclosure.<br>or<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>OR<br>Wear a respirator conforming to EN140 with Type A filter or better.<br>**Treatment by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Storage PROC1**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 53 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 365 kg / day<br>Regional use tonnage (tonnes/year): 110000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.01<br>Release fraction to soil from wide dispersive use (regional only): 0.01<br>Release fraction to wastewater from wide dispersive use: 0.01 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) |

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| efficiency of =: >= 76.1 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 650 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Lubricants - Professional (High Release) | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC13, PROC17, PROC18, PROC2, PROC20, PROC3, PROC4, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.7a.v1 ,ESVOC 8.6c.v1 ,ESVOC 9.6b.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**Operation of equipment containing engine oils and similar (closed systems) PROC20**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Non-dedicated facility PROC8a**<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>**Operation and lubrication of high energy open equipment Indoor PROC17**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>**Operation and lubrication of high energy open equipment Indoor PROC18**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at | |

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| openings.<br>**Operation and lubrication of high energy open equipment Outdoor. PROC17**<br>Ensure operation is undertaken outdoors.<br>Avoid carrying out operation for more than 4 hours.<br>Limit the substance content in the mixture to 25 %.<br>**Maintenance (of larger plant items) and machine set up Dedicated facility Elevated temperature PROC8b**<br>Drain down system prior to equipment break-in or maintenance.<br>Provide extract ventilation to emission points when contact with warm (> 50°C) lubricant is likely.<br>**Maintenance of small items Non-dedicated facility Elevated temperature PROC8a**<br>Drain or remove substance from equipment prior to break-in or maintenance.<br>provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).<br>**Engine lubricant service PROC9**<br>No other specific measures identified.<br>**Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Spraying PROC11**<br>Carry out in a vented booth or extracted enclosure.<br>or<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>OR<br>Wear a respirator conforming to EN140 with Type A filter or better.<br>**Treatment by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Storage PROC1**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 40 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 110 kg / day<br>Regional use tonnage (tonnes/year): 81000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.005<br>Release fraction to soil from wide dispersive use (regional only): 0.05<br>Release fraction to wastewater from wide dispersive use: 0.05 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable |

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| Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 87.6 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 260 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Metal working fluids / rolling oils - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC13, PROC17, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.7a.v1 ,ESVOC 8.7c.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use in formulated MWFs (MWFs) including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers Non-dedicated facility PROC8a**<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>**Process sampling PROC8b**<br>No other specific measures identified.<br>**Metal machining operations PROC17**<br>provide a good standard of controlled ventilation (10 to 15 air changes per hour).<br>Avoid carrying out activities involving exposure for more than 4 hours.<br>Limit the substance content in the mixture to 25 %.<br>**Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Spraying PROC11** | |

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| Avoid carrying out activities involving exposure for more than 1 hour.<br>provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).<br>or<br>Wear a respirator conforming to EN140 with Type A/P2 filter or better.<br>**Treatment by dipping and pouring PROC13**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 0.45 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 1.2 kg / day<br>Regional use tonnage (tonnes/year): 900 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.005<br>Release fraction to soil from wide dispersive use (regional only): 0.05<br>Release fraction to wastewater from wide dispersive use: 0.05 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 65.1 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 8.1 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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] |

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| Conditions and measures related to external recovery of waste |
| External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use as binders and release agents - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC14, PROC2, PROC3, PROC4, PROC6, PROC8a, PROC8b |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 4.10a.v1 ,ESVOC 8.10b.v1 ,ESVOC 8.7c.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**(closed systems) Material transfers PROC1**<br>No other specific measures identified.<br>**Material transfers (closed systems) PROC2**<br>No other specific measures identified.<br>**Material transfers (closed systems) PROC3**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Drum/batch transfers Non-dedicated facility PROC8a**<br>Avoid carrying out activities involving exposure for more than 1 hour.<br>**Mixing operations (closed systems) PROC3**<br>No other specific measures identified.<br>**Mixing operations (open systems) PROC4**<br>No other specific measures identified.<br>**Mold forming PROC14**<br>No other specific measures identified.<br>**Casting operations (open systems) Elevated temperature PROC6**<br>Provide extract ventilation to points where emissions occur.<br>**Spraying Machine PROC11**<br>Avoid carrying out activities involving exposure for more than 4 hours.<br>**Spraying Manual PROC11**<br>provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). | |

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| Avoid carrying out activities involving exposure for more than 1 hour.<br>or<br>Wear a respirator conforming to EN140 with Type A filter or better.<br>**Manual Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 1.3 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 3.7 kg / day<br>Regional use tonnage (tonnes/year): 2700 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.95<br>Release fraction to soil from wide dispersive use (regional only): 0.025<br>Release fraction to wastewater from wide dispersive use: 0.025 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 65.5 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 24 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 |

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| External recovery an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Agrochemical uses - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC11, PROC13, PROC2, PROC4, PROC8a, PROC8b |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 8.11a.v1 |
| **Processes, tasks, activities covered** | |
| Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>**Transfer from/pouring from containers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Mixing operations (open systems) PROC4**<br>No other specific measures identified.<br>**Spraying/fogging by manual application PROC11**<br>Wear a respirator conforming to EN140 with Type A filter or better.<br>**Spraying/fogging by machine application PROC11**<br>Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.<br>**Ad hoc manual application via trigger sprays, dipping, etc. PROC13**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 15 tons/yr<br>Continuous release. | |

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| Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 41 kg / day<br>Regional use tonnage (tonnes/year): 7500 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.9<br>Release fraction to soil from wide dispersive use (regional only): 0.09<br>Release fraction to wastewater from wide dispersive use: 0.01 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 68.7 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 240 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may |

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| be necessary to define appropriate site-specific risk management measures.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use as a fuel - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC16, PROC2, PROC3, PROC8a, PROC8b |
| Environmental Release Categories | ERC9A, ERC9B |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 9.12b.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use as a fuel (or fuel additive), and includes activities associated with its transfer, use, equipment maintenance and handling of waste. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**refuelling PROC8b**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC1**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**Use as a fuel (closed systems) PROC16**<br>Limit the substance content in the mixture to 5 %.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 10 tons/yr | |

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| Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 27 kg / day<br>Regional use tonnage (tonnes/year): 20000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>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<br>Release fraction to soil from wide dispersive use (regional only): 1e-005<br>Release fraction to wastewater from wide dispersive use: 1e-005 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of:<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.4 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 180 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| Conditions and measures related to external treatment of waste for disposal |
| Combustion emissions considered in regional exposure assessment [ETW2]<br>Combustion emissions limited by required exhaust emission controls [ETW1]<br>External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3] |
| Conditions and measures related to external recovery of waste |
| This substance is consumed during use and no waste of the substance is generated [ERW3] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37] |

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| 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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Functional Fluids - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC2, PROC20, PROC3, PROC8a, PROC9 |
| Environmental Release Categories | ERC9A, ERC9B |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 9.13b.v1 |
| **Processes, tasks, activities covered** | |
| Use as functional fluids e.g. cable oils, transfer oils, insulators, refrigerants, hydraulic fluids in closed professional equipment including incidental exposures during maintenance and related material transfers. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Drum/batch transfers Non-dedicated facility PROC8a**<br>Use drum pumps.<br>**Transfer from/pouring from containers PROC9**<br>No other specific measures identified.<br>**Filling / preparation of equipment from drums or containers PROC9**<br>No other specific measures identified.<br>**Operation of equipment containing engine oils and similar (closed systems) PROC1**<br>No other specific measures identified.<br>**(closed systems) Operation of equipment containing engine oils and similar PROC2**<br>No other specific measures identified.<br>**(closed systems) Operation of equipment containing engine oils and similar PROC3**<br>No other specific measures identified.<br>**(closed systems) Operation of equipment containing engine oils and similar PROC20**<br>No other specific measures identified.<br>**(closed systems) Operation of equipment containing engine oils and similar Elevated temperature PROC20**<br>No other specific measures identified.<br>**Remanufacture of reject articles PROC9**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. | |

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| **Storage PROC2**<br>Store substance within a closed system. |
| **Section 2.2 Control of environmental exposure** |
| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 0.6 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 1.6 kg / day<br>Regional use tonnage (tonnes/year): 1200 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.05<br>Release fraction to soil from wide dispersive use (regional only): 0.025<br>Release fraction to wastewater from wide dispersive use: 0.025 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.9 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 11 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |

| Section 4 Guidance to check compliance with the Exposure Scenario |
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| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

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| **Section 1 Exposure Scenario Title** | |
| **Title:** | |
| Road and construction applications | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC10, PROC11, PROC13, PROC2, PROC8a, PROC8b, PROC9 |
| Environmental Release Categories | ERC8D, ERC8F |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 8.11a.v1 ,ESVOC 8.15.v1 |
| **Processes, tasks, activities covered** | |
| Bulk loading (including marine vessel/barge, rail/road car and IBC loading) | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Drum/batch transfers Non-dedicated facility PROC8a**<br>Use drum pumps.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Small scale weighing Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Rolling, Brushing PROC10**<br>No other specific measures identified.<br>**Spraying/fogging by machine application PROC11**<br>Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.<br>Ensure operation is undertaken outdoors.<br>or<br>Wear a respirator conforming to EN140 with Type A/P2 filter or better.<br>**Dipping, immersion and pouring PROC13**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |

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| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 1.4 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 3.8 kg / day<br>Regional use tonnage (tonnes/year): 2800 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.95<br>Release fraction to soil from wide dispersive use (regional only): 0.04<br>Release fraction to wastewater from wide dispersive use: 0.01 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.9 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 25 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] |

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| Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use in laboratories - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC15 |
| Environmental Release Categories | |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Use of small quantities within laboratory settings, including material transfers and equipment cleaning. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Laboratory activities PROC15**<br>No other specific measures identified. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 0.6 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 1.6 kg / day<br>Regional use tonnage (tonnes/year): 1200 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.5<br>Release fraction to soil from wide dispersive use (regional only): 0<br>Release fraction to wastewater from wide dispersive use: 0.5 | |
| **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** | |

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| **soil** |
| If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: 0 %<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 72.1 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 8.6 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Explosives manufacture & use | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b |
| Environmental Release Categories | ERC8E |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers exposures arising from the manufacture and use of slurry explosives (including materials transfer, mixing and charging) and equipment cleaning. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers Use in contained batch processes PROC3**<br>No other specific measures identified.<br>**Drum/batch transfers Non-dedicated facility PROC8a**<br>Use drum pumps.<br>**Mixing operations (closed systems) PROC3**<br>No other specific measures identified.<br>**Mixing operations (open systems) PROC5**<br>No other specific measures identified.<br>**Material transfers Non-dedicated facility PROC8a**<br>Ensure operation is undertaken outdoors.<br>Avoid carrying out activities involving exposure for more than 4 hours.<br>**Transfer from/pouring from containers Non-dedicated facility PROC8a**<br>Ensure operation is undertaken outdoors.<br>Avoid carrying out activities involving exposure for more than 4 hours.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Equipment cleaning and maintenance PROC8b**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |

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| **Product characteristics** |
| Predominantly hydrophobic.<br>Substance is complex UVCB. |
| **Duration, frequency and amount** |
| Annual site tonnage (tonnes/year): 0.84 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 2.3 kg / day<br>Regional use tonnage (tonnes/year): 1700 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.001<br>Release fraction to soil from wide dispersive use (regional only): 0.01<br>Release fraction to wastewater from wide dispersive use: 0.02 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 65 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 15 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32] |

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| Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Polymer processing - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC14, PROC2, PROC21, PROC6, PROC8a, PROC8b |
| Environmental Release Categories | ERC8A, ERC8D |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 8.21b.v1 |
| **Processes, tasks, activities covered** | |
| Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Bulk transfers (closed systems) PROC1**<br>No other specific measures identified.<br>**Bulk transfers (closed systems) PROC2**<br>No other specific measures identified.<br>**Material transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**Injection moulding of articles PROC14**<br>No other specific measures identified.<br>**Rework of articles PROC21**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system.<br>**Storage PROC2**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 1.5 tons/yr | |

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| Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 4.1 kg / day<br>Regional use tonnage (tonnes/year): 3000 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.98<br>Release fraction to soil from wide dispersive use (regional only): 0.01<br>Release fraction to wastewater from wide dispersive use: 0.01 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 64.9 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 27 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that |

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| risks are managed to at least equivalent levels.[G23] |
| **4.2. Environment** |
| Further details on scaling and control technologies are provided in factsheet<br>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.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Water treatment chemicals - Professional | |
| **Use Descriptor** | |
| Sector(s) of Use | SU22 |
| Process Categories | PROC1, PROC13, PROC2, PROC3, PROC4, PROC8a, PROC8b |
| Environmental Release Categories | ERC8F |
| Specific Environmental Release Category | ESVOC 1.1.v1 ,ESVOC 8.22b.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use of the substance for the treatment of water in open and closed systems. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting.<br>**Drum/batch transfers Dedicated facility PROC8b**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC2**<br>No other specific measures identified.<br>**General exposures (closed systems) PROC3**<br>No other specific measures identified.<br>**General exposures (open systems) PROC4**<br>No other specific measures identified.<br>**Pouring from small containers PROC13**<br>No other specific measures identified.<br>**Equipment cleaning and maintenance PROC8a**<br>Drain down system prior to equipment break-in or maintenance.<br>**Storage PROC1**<br>Store substance within a closed system. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 1.5 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1 | |

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| Fraction of Regional tonnage used Locally: 1<br>Maximum daily site tonnage (kg/d): 4 kg / day<br>Regional use tonnage (tonnes/year): 1700 tons/yr |
| **Environmental factors not influenced by risk management** |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 |
| **Other given operational conditions affecting environmental exposure** |
| Release fraction to air from wide dispersive use (regional only): 0.01<br>Release fraction to soil from wide dispersive use (regional only): 0<br>Release fraction to wastewater from wide dispersive use: 0.99 |
| **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.<br>If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of =: >= 0 %<br>Risk from environmental exposure is driven by<br>Treat air emissions to provide a typical removal (or abatement?) efficiency of: Not Applicable<br>Treat onsite wastewater (prior to receiving water discharge) to provide the required removal (or abatement) efficiency of =: >= 84.8 % |
| **Organisation measures to prevent/limit release from site** |
| Do not apply industrial sludge to natural soils.<br>Sludge should be incinerated, contained or reclaimed. |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 11 kg / day<br>Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs is: 94.7 % |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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 |

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| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.<br>Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.<br>Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. |

| | |
|---|---|
| **Section 1 Exposure Scenario Title** | |
| **Title:** | |
| Use in Coatings - Consumer | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | ERC8A |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 1 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 2.8 kg / day<br>Regional use tonnage (tonnes/year): 2000 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.985<br>Release fraction to soil from wide dispersive use (regional only): 0.005<br>Release fraction to wastewater from wide dispersive use: 0.01 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to** | |

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|---|
| **soil** |
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 18 kg / day |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |

| | |
|---|---|
| **Section 1 Exposure Scenario Title** | |
| **Title:** | |
| Use in Cleaning Agents - Consumer | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 1 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 2.7 kg / day<br>Regional use tonnage (tonnes/year): 2000 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.95<br>Release fraction to soil from wide dispersive use (regional only): 0.025<br>Release fraction to wastewater from wide dispersive use: 0.025 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases** | |

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|---|
| **to soil** |
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 18 kg / day |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Lubricants - Consumer (Low Release) | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | ERC9A |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 57 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 160 kg / day<br>Regional use tonnage (tonnes/year): 110000 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.01<br>Release fraction to soil from wide dispersive use (regional only): 0.01<br>Release fraction to wastewater from wide dispersive use: 0.01 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to** | |

| |
|---|
| **soil** |
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 690 kg / day |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Lubricants - Consumer (High Release) | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | ERC8A |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 14 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 39 kg / day<br>Regional use tonnage (tonnes/year): 29000 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.005<br>Release fraction to soil from wide dispersive use (regional only): 0.05<br>Release fraction to wastewater from wide dispersive use: 0.05 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to** | |

| |
|---|
| **soil** |
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 160 kg / day |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Agrochemical uses - Consumer | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | ERC8A |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers the consumer use of agrochemicals in liquid and solid forms. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 4.1 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 11 kg / day<br>Regional use tonnage (tonnes/year): 2000 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.9<br>Release fraction to soil from wide dispersive use (regional only): 0.09<br>Release fraction to wastewater from wide dispersive use: 0.01 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil** | |

| |
|---|
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 72 kg / day |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Use as a fuel - Consumer | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | ERC9A, ERC9B |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Covers consumer uses in liquid fuels. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 5 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 14 kg / day<br>Regional use tonnage (tonnes/year): 10000 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>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<br>Release fraction to soil from wide dispersive use (regional only): 1e-005<br>Release fraction to wastewater from wide dispersive use: 1e-005 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil** | |

| |
|---|
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 91 kg / day |
| Conditions and measures related to external treatment of waste for disposal |
| Combustion emissions considered in regional exposure assessment [ETW2]<br>Combustion emissions limited by required exhaust emission controls [ETW1]<br>External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3] |
| Conditions and measures related to external recovery of waste |
| This substance is consumed during use and no waste of the substance is generated [ERW3] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |

| Section 1 Exposure Scenario Title | |
|---|---|
| **Title:** | |
| Functional Fluids - Consumer | |
| **Use Descriptor** | |
| Sector(s) of Use | SU21 |
| Process Categories | PROCNA |
| Environmental Release Categories | ERC9A |
| Specific Environmental Release Category | ESVOC 1.1.v1 |
| **Processes, tasks, activities covered** | |
| Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants. | |
| **Section 2 Operational conditions and risk management measures** | |
| **Section 2.1 Control of worker exposure** | |
| **Product Characteristic** | |
| Liquid | |
| **Duration, frequency and amount** | |
| Covers daily exposures up to 8 hours (unless stated differently)[G2]<br>Covers percentage substance in the product up to 100 %[G13 ] | |
| **Other given operational conditions affecting workers exposure** | |
| Assumes a good basic standard of occupational hygiene is implemented [G1]<br>No exposure assessment presented for human health. [G39]<br>Operation is carried out at elevated temperature (>20 C above ambient temperature)[OC7] | |
| **Contributing Scenarios/Specific Risk Management Measures and Operating Conditions**<br>(only required controls to demonstrate safe use listed) | |
| **General measures (Aspiration Hazard)**<br>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.<br>For substances classified as H304, the following measures need to be implemented to control the aspiration hazard.<br>Do not ingest. If swallowed then seek immediate medical attention. Do NOT induce vomiting. | |
| **Section 2.2 Control of environmental exposure** | |
| **Product characteristics** | |
| Predominantly hydrophobic.<br>Substance is complex UVCB. | |
| **Duration, frequency and amount** | |
| Annual site tonnage (tonnes/year): 0.6 tons/yr<br>Continuous release.<br>Emission Days (days/year): 365 days/yr<br>Fraction of EU tonnage used in region: 0.1<br>Fraction of Regional tonnage used Locally: 0.0005<br>Maximum daily site tonnage (kg/d): 1.6 kg / day<br>Regional use tonnage (tonnes/year): 1200 tons/yr | |
| **Environmental factors not influenced by risk management** | |
| Local freshwater dilution factor [EF1] 10<br>Local marine water dilution factor: [EF2] 100 | |
| **Other given operational conditions affecting environmental exposure** | |
| Release fraction to air from wide dispersive use (regional only): 0.05<br>Release fraction to soil from wide dispersive use (regional only): 0.025<br>Release fraction to wastewater from wide dispersive use: 0.025 | |
| **Technical conditions and measures at process level (source) to prevent release** | |
| Not applicable | |
| **Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil** | |

| |
|---|
| Not applicable |
| **Organisation measures to prevent/limit release from site** |
| Not applicable |
| **Conditions and measures related to municipal sewage treatment plant** |
| Assumed domestic sewage treatment plant effluent flow is:[STP5] 2000 m3/day<br>Estimated substance removal from wastewater via domestic sewage treatment is: 94.7 %<br>Not applicable as there is no release to wastewater.<br>The maximum allowable site tonnage (MSafe) based on domestic sewage plant effluent release is: 11 kg / day |
| 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 an recycling of waste should comply with applicable local and/or national regulations [ERW1] |
| **Section 3 Exposure Estimation** |
| **3.1. Health** |
| The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated [G21] |
| **3.2. Environment** |
| The Hydrocarbon Block Method has been used to calculate environmental exposrue with the Petrorisk model.[EE2] |
| **Section 4 Guidance to check compliance with the Exposure Scenario** |
| **4.1. Health** |
| Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. [G32]<br>Available hazard data do not support the need for a DNEL to be established for other health effects.[G36]<br>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]<br>Risk Management Measures are based on qualitative risk characterisation. [G37]<br>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** |
| 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. |