

SAFETY DATA SHEET

According to EC No 1907/2006 as amended as at the date of this SDS

LINEVOL 11

Version	Revision Date:	SDS Number:	Date of last issue: 24.08.2023
3.1	24.08.2023	800001011474	Print Date 31.08.2023

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

1.1 Product identifier

Trade name	: LINEVOL 11
Product code	: V9335
Registration number EU	: 01-2119485847-18-0001
Synonyms	: Undecanol, 1-
CAS-No.	: 112-42-5

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

Use of the Sub- stance/Mixture	: Feedstock for plasticiser or other alcohol derivative. Please refer to section 16 and/or the annexes for the registered uses under REACH.
Uses advised against	: This product must not be used in applications other than the above without first seeking the advice of the supplier.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier	: Shell Chemicals Europe B.V. PO Box 2334 3000 CH Rotterdam Netherlands
Telephone	: +31 (0)10 441 5137 / +31 (0)10 441 5191
Telefax	: +31 (0)20 716 8316 / +31 (0)20 713 9230
Contact for Safety Data Sheet	: sccmsds@shell.com

1.4 Emergency telephone number

SHELL +44 (0) 1235 239 670 (This telephone number is available 24 hours per day, 7 days per week)
Poison Centers (CAV) eligible for access to information for health emergency response:
CAV Osp. Bambin Gesù Roma 06 68593726; CAV Policlinico "Umberto I" Roma 06-49978000;
CAV Policlinico "A. Gemelli" Roma 06 3054343; CAV Milano 02 66101029; CAV Bergamo 800883300;
CAV Pavia 0382 24444; CAV Verona 800011858; CAV Firenze 055 7947819; CAV Napoli 081 5453333;
CAV Foggia 800183459.

Other information	: LINEVOL is a trademark owned by Shell Trademark Management B.V. and Shell Brands Inc. and used by affiliates of Royal Dutch Shell plc.
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SECTION 2: Hazards identification



2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Eye irritation, Category 2	H319: Causes serious eye irritation.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.
Supplemental Hazard Statements	EUH066: Repeated exposure may cause skin dryness or cracking.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms	:	 
Signal word	:	Warning
Hazard statements	:	<p>PHYSICAL HAZARDS: Not classified as a physical hazard according to CLP criteria.</p> <p>HEALTH HAZARDS: H319 Causes serious eye irritation.</p> <p>ENVIRONMENTAL HAZARDS: H400 Very toxic to aquatic life. H411 Toxic to aquatic life with long lasting effects.</p>
Supplemental Hazard Statements	:	EUH066 Repeated exposure may cause skin dryness or cracking.
Precautionary statements	:	<p>Prevention: P264 Wash hands thoroughly after handling. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P273 Avoid release to the environment.</p> <p>Response: P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 If eye irritation persists: Get medical advice/ attention.</p>

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Storage:

No precautionary phrases.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated exposure may cause skin dryness or cracking.

Harmful: May cause lung damage if swallowed.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
Undecan-1-ol	112-42-5 203-970-5	<= 100

SECTION 4: First aid measures

4.1 Description of first aid measures

- | | |
|----------------------------|--|
| General advice | : Not expected to be a health hazard when used under normal conditions. |
| Protection of first-aiders | : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings. |
| If inhaled | : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice. |
| In case of skin contact | : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical |

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facility for additional treatment.

- | | | |
|------------------------|---|--|
| In case of eye contact | : | Immediately flush eye(s) with plenty of water.
Remove contact lenses, if present and easy to do. Continue rinsing.
Transport to the nearest medical facility for additional treatment. |
| If swallowed | : | In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. |

4.2 Most important symptoms and effects, both acute and delayed

- | | | |
|----------|---|---|
| Symptoms | : | Not considered to be an inhalation hazard under normal conditions of use.
Possible respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

Skin irritation signs and symptoms may include a burning sensation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.

No specific hazards under normal use conditions.
Ingestion may result in nausea, vomiting and/or diarrhoea.

Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. |
|----------|---|---|

4.3 Indication of any immediate medical attention and special treatment needed

- | | | |
|-----------|---|---|
| Treatment | : | IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!
Call a doctor or poison control center for guidance.
Treat symptomatically. |
|-----------|---|---|

SECTION 5: Firefighting measures

5.1 Extinguishing media

- | | | |
|--------------------------------|---|--|
| Suitable extinguishing media | : | Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. |
| Unsuitable extinguishing media | : | Do not use water in a jet. |

5.2 Special hazards arising from the substance or mixture

- | | | |
|---------------------------------------|---|--|
| Specific hazards during fire-fighting | : | Carbon monoxide may be evolved if incomplete combustion occurs.
Will float and can be reignited on surface water.
The vapour is heavier than air, spreads along the ground and |
|---------------------------------------|---|--|

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distant ignition is possible.

5.3 Advice for firefighters

- Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).
- Specific extinguishing methods : Standard procedure for chemical fires.
- Further information : Clear fire area of all non-emergency personnel. Keep adjacent containers cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal precautions : Observe all relevant local and international regulations. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.
- 6.1.1 For non emergency personnel:
Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.
Stay upwind and keep out of low areas.
Be ready for fire or possible exposure.
- 6.1.2 For emergency responders:
Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.
Stay upwind and keep out of low areas.
Be ready for fire or possible exposure.

6.2 Environmental precautions

- Environmental precautions : Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Use appropriate containment to avoid environmental contamination. Ventilate contaminated area thoroughly.

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6.3 Methods and material for containment and cleaning up

Methods for cleaning up : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.,
For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures	: Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Ensure that all local regulations regarding handling and storage facilities are followed.
Advice on safe handling	: Avoid contact with skin, eyes and clothing. Do not empty into drains. Sudden Release of Pressure Hazard
Product Transfer	: Keep containers closed when not in use. Do not use compressed air for filling discharge or handling.
Hygiene measures	: Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	: Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
Further information on storage stability	: Bulk storage tanks should be diked (bunded). Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Nitrogen blanket recommended for large tanks (capacity 100

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m3 or higher).
Insulation (lagging) will minimize heat loss in areas of low ambient temperature.
Tanks should be fitted with heating coils in areas where ambient conditions can result in handling temperatures below the freezing point/pour point of the product.

Packaging material : Suitable material: Stainless steel., Epoxy resins, Polyester.
Unsuitable material: Aluminum, Copper., Copper alloys.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

7.3 Specific end use(s)

Specific use(s) : Ensure that all local regulations regarding handling and storage facilities are followed.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Remarks:	Not applicable
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Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
LINEVOL 11, 112-42-5	Fresh water	0,0088 mg/l
LINEVOL 11, 112-42-5	Fresh water sediment	1,612 mg/kg
LINEVOL 11, 112-42-5	Soil	1,606 mg/kg
LINEVOL 11, 112-42-5	Sewage treatment plant	> 0,086 mg/l

8.2 Exposure controls

Engineering measures

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.
Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
Eye washes and showers for emergency use.
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective

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equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

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

Retain drain downs in sealed storage pending disposal or subsequent recycle.

Do not ingest. If swallowed, then seek immediate medical assistance.

Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection : Wear goggles for use against liquids and gas.
Wear full face shield if splashes are likely to occur.
Approved to EU Standard EN166.

Hand protection

Remarks : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Nitrile rubber gloves. Incidental contact/Splash protection: PVC or neoprene rubber gloves. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Skin and body protection : Skin protection is not required under normal conditions of use.

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For prolonged or repeated exposures use impervious clothing over parts of the body subject to exposure.
If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to relevant Standard, and provide employee skin care programmes.
Protective clothing approved to EU Standard EN14605.

Respiratory protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. If air-filtering respirators are suitable for conditions of use: Select a filter suitable for the combination of organic gases and vapours and particles meeting EN14387 and EN143 [Filter type A/P for use against certain organic gases and vapours with a boiling point >65°C (149°F) and for use against particles].

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: Liquid.
Colour	: Water white
Odour	: mild
Odour Threshold	: Data not available
Melting / freezing point	: 15,6 °C
pour point	11,1 °C
Boiling point/boiling range	: 473,0 °F
Flammability	
Flammability (solid, gas)	: Not classified as a flammability hazard
Lower explosion limit and upper explosion limit / flammability limit	
Upper explosion limit / upper flammability limit	: Data not available

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Lower explosion limit / Lower flammability limit	:	Data not available
Flash point	:	250,0 °F
Auto-ignition temperature	:	Data not available
Decomposition temperature Decomposition temperature	:	Data not available
pH	:	Not applicable
Viscosity Viscosity, dynamic	:	Data not available
Viscosity, kinematic	:	18,0 mm ² /s (77,0 °F) Method: ASTM D445 11,0 mm ² /s (100,0 °F) Method: ASTM D445
Solubility(ies) Water solubility	:	19,1 mg/l (25 °C)
Partition coefficient: n- octanol/water	:	Data not available
Vapour pressure	:	0,4137 Pa (25 °C)
Relative density	:	0,831 (77,0 °F) Method: ASTM D4052
Density	:	0,831 g/cm ³ Method: ASTM D4052
Relative vapour density	:	4,5
Particle characteristics Particle size	:	Data not available

9.2 Other information

Oxidizing properties	:	Not applicable
Evaporation rate	:	Data not available
Conductivity	:	Electrical conductivity: > 10,000 pS/m, This material is not expected to be a static accumulator.
Surface tension	:	Data not available

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Molecular weight : 172 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable at normal ambient temperature and pressure.
May oxidise in the presence of air.

10.2 Chemical stability

The product is chemically stable.
Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : None known.

10.4 Conditions to avoid

Conditions to avoid : Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Materials to avoid : Copper.
Copper alloys.
Strong oxidising agents.
Aluminum

10.6 Hazardous decomposition products

None expected under normal use conditions.

SECTION 11: Toxicological information

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

Information on likely routes of exposure : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Acute toxicity

Components:

Undecan-1-ol:

Acute oral toxicity : LD50 (Rat): > 5000 mg/kg
Remarks: Low toxicity

Acute inhalation toxicity : Remarks: Low toxicity
Based on available data, the classification criteria are not met.

Acute dermal toxicity : LD50 (Rabbit): > 5000 mg/kg
Remarks: Low toxicity

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Skin corrosion/irritation

Components:

Undecan-1-ol:

Remarks : Causes mild skin irritation.

Serious eye damage/eye irritation

Components:

Undecan-1-ol:

Remarks : Causes serious eye irritation.

Respiratory or skin sensitisation

Components:

Undecan-1-ol:

Remarks : Not a sensitiser.
Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Components:

Undecan-1-ol:

Genotoxicity in vivo : Remarks: No evidence of mutagenic activity.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Components:

Undecan-1-ol:

Remarks : Not a carcinogen.
Based on available data, the classification criteria are not met.

Carcinogenicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification
Undecan-1-ol	No carcinogenicity classification.

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Reproductive toxicity

Components:

Undecan-1-ol:

Effects on fertility : Remarks: Not a developmental toxicant., Based on available data, the classification criteria are not met., Does not impair fertility.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

STOT - single exposure

Components:

Undecan-1-ol:

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

STOT - repeated exposure

Components:

Undecan-1-ol:

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

Aspiration toxicity

Components:

Undecan-1-ol:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

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ponent(s).

Components:

Undecan-1-ol:

Remarks : Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Undecan-1-ol:

Toxicity to fish	:	Remarks: LC/EC/IC50 >1 - <=10 mg/l Toxic
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: Very toxic. LC/EC/IC50 < 1 mg/l
Toxicity to algae/aquatic plants	:	Remarks: LC/EC/IC50 >1 - <=10 mg/l Toxic
M-Factor (Acute aquatic toxicity)	:	1
Toxicity to microorganisms	:	Remarks: LC/EC/IC50 > 100 mg/l Practically non toxic: Based on available data, the classification criteria are not met.
Toxicity to fish (Chronic toxicity)	:	Remarks: Data not available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: NOEC/NOEL > 0.01 - <=0.1 mg/l

12.2 Persistence and degradability

Components:

Undecan-1-ol:

Biodegradability : Remarks: Readily biodegradable.
Oxidises rapidly by photo-chemical reactions in air.

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12.3 Bioaccumulative potential

Components:

Undecan-1-ol:

Bioaccumulation : Remarks: Bioaccumulation is unlikely to occur due to metabolism and excretion.

12.4 Mobility in soil

Components:

Undecan-1-ol:

Mobility : Remarks: Floats on water., If product enters soil, it will be highly mobile and may contaminate groundwater.

12.5 Results of PBT and vPvB assessment

Components:

Undecan-1-ol:

Assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses.

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Waste product should not be allowed to contaminate soil or water.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

Contaminated packaging : Drain container thoroughly.
After draining, vent in a safe place away from sparks and fire.
Residues may cause an explosion hazard.
Do not puncture, cut, or weld uncleaned drums.
Send to drum recoverer or metal reclaimer.

Local legislation
Remarks : For the disposal of waste arising from the product, including empty containers not cleared, follow the Legislative Decree 152/06 and subsequent amendments.

SECTION 14: Transport information

14.1 UN number or ID number

ADN	: 3082
ADR	: 3082
RID	: 3082
IMDG	: 3082
IATA	: 3082

14.2 UN proper shipping name

ADN	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Undecan-1-ol)
ADR	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Undecan-1-ol)
RID	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Undecan-1-ol)
IMDG	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Undecan-1-ol)
IATA	: Environmentally hazardous substances, liquid, n.o.s. (Undecan-1-ol)

14.3 Transport hazard class(es)

ADN	: 9
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ADR : 9

RID : 9

IMDG : 9

IATA : 9

14.4 Packing group

ADN

Packing group : III

Classification Code : M6

Labels : 9 (N1, F)

ADR

Packing group : III

Classification Code : M6

Hazard Identification Number : 90

Labels : 9

RID

Packing group : III

Classification Code : M6

Hazard Identification Number : 90

Labels : 9

IMDG

Packing group : III

Labels : 9

IATA

Packing group : III

Labels : 9

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

ADR

Environmentally hazardous : yes

RID

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category : X

Ship type : 2

Product name : Undecyl alcohol

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Additional Information	: This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry. Transport in bulk according to Annex II of Marpol and the IBC Code
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SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV)	: Product is not subject to Authorisation under REACH.
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	: This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Safeguard of health and safety in the workplaces refer to D.Lgs.81/2008 and subsequent amendments.

For waste disposal refer to D.Lgs.152/2006 and subsequent amendments.

The components of this product are reported in the following inventories:

AIIC	: Listed
DSL	: Listed
IECSC	: Listed
ENCS	: Listed
KECI	: Listed
NZIoC	: Listed
PICCS	: Listed
TSCA	: Listed
TCSI	: Listed

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15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

- | | | |
|-------------------|---|--|
| Training advice | : | Provide adequate information, instruction and training for operators. |
| Other information | : | For Industry guidance and tools on REACH please visit the CEFIC website at http://cefic.org/Industry-support .
The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB. |

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A vertical bar (|) in the left margin indicates an amendment from the previous version.

This product is classified as R66 / EUH066 (Repeated exposure may cause skin dryness or cracking). The risk relates to the potential for repeated or prolonged dermal contact. The risk arising from contact is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific hazard and included within Section 8 of the SDS. An exposure scenario is not presented.

Sources of key data used to compile the Safety Data Sheet : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID data base, EC 1272 regulation, etc).

Identified Uses according to the Use Descriptor System

Uses - Worker

Title : Manufacture of substance- Industrial

Uses - Worker

Title : Use as an intermediate- Industrial

Uses - Worker

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

Uses - Worker

Title : Uses in Coatings- Industrial

Uses - Worker

Title : Use in Cleaning Agents- Professional

Uses - Worker

Title : Metal working fluids / rolling oils- Industrial

Uses - Worker

Title : Metal working fluids / rolling oils- Professional

Uses - Worker

Title : Uses in Coatings- Professional

Identified Uses according to the Use Descriptor System

Uses - Consumer

Title : Uses in Coatings
- Consumer

Uses - Consumer

Title : Use in Cleaning Agents
- Consumer

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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Exposure Scenario - Worker

300000000571	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance- Industrial
Use Descriptor	Sector of Use: SU3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC1
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
------------------	--

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	300
Maximum daily site tonnage (kg/day):	563
Frequency and Duration of Use	

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Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	
Release fraction to wastewater from process (initial release prior to RMM):	
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by soil.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of \geq (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m ³ /d)	10.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	

SECTION 3

EXPOSURE ESTIMATION

Section 3.1 - Health

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

Section 3.2 -Environment

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Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000572	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate- Industrial
Use Descriptor	Sector of Use: SU3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC6a
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including 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 Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	163
Maximum daily site tonnage (kg/day):	543
Frequency and Duration of Use	

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Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,05
Release fraction to wastewater from process (initial release prior to RMM):	0,007
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by marine water.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	10.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations. This substance is consumed during use and no waste of substance is generated.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations. This substance is consumed during use and no waste of substance is generated.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects.	

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Risk Management Measures are based on qualitative risk characterisation.

Section 3.2 -Environment

Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000574	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (re)packing of substances and mixtures- Industrial
Use Descriptor	Sector of Use: SU3, SU10 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 14, PROC 15 Environmental Release Categories: ERC2
Scope of process	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
------------------	--

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	
Maximum daily site tonnage (kg/day):	
	41
	137

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Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1,75E-03
Release fraction to wastewater from process (initial release prior to RMM):	2,0E-05
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by marine water.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	10.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

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Section 3.2 -Environment

Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000575	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- Industrial
Use Descriptor	Sector of Use: SU3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 10, PROC 13, PROC 15 Environmental Release Categories: ERC4
Scope of process	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
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Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	7,500
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	5,20E-03

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Maximum daily site tonnage (kg/day):	0,017
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,03
Release fraction to wastewater from process (initial release prior to RMM):	0,03
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by marine water.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Organisational measures to prevent/limit release from site	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

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Section 3.2 -Environment

Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000579	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents- Professional
Use Descriptor	Sector of Use: SU22 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 13 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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
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Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	0,13
Maximum daily site tonnage (kg/day):	0,36
Frequency and Duration of Use	

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Continuous release.	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to RMM):	1
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by freshwater.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	
Section 3.2 -Environment	
Used EUSES model.	

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SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
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Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000581	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Metal working fluids / rolling oils- Industrial
Use Descriptor	Sector of Use: SU3 Process Categories: PROC 1, PROC 2, PROC 3, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 13, PROC 17 Environmental Release Categories: ERC4
Scope of process	Covers the use in formulated 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 Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	7,1
Maximum daily site tonnage (kg/day):	23,7

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Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	6,00E-05
Release fraction to wastewater from process (initial release prior to RMM):	2,10E-07
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by marine water.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

Section 3.2 -Environment

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Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000584	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Metal working fluids / rolling oils- Professional
Use Descriptor	Sector of Use: SU22 Process Categories: PROC 1, PROC 2, PROC 3, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 11, PROC 13, PROC 17 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Covers the use in formulated 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
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Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	7,1

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Maximum daily site tonnage (kg/day):	23,7
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	6,00E-05
Release fraction to wastewater from process (initial release prior to RMM):	2,10E-07
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by marine water.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

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Section 3.2 -Environment

Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

300000000576	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- Professional
Use Descriptor	Sector of Use: SU22 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 13, PROC 15, PROC 19 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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
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Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid
Concentration of the Substance in Mixture/Article	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.	

Contributing Scenarios	Risk Management Measures
General measures (eye irritants).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	
0,16	

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Maximum daily site tonnage (kg/day):	0,53
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,01
Release fraction to wastewater from process (initial release prior to RMM):	0,01
Release fraction to soil from process (initial release prior to RMM):	
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process re-release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Risk from environmental exposure is driven by marine water.	
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	99
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	0
Organisational measures to prevent/limit release from site	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

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Section 3.2 -Environment

Used EUSES model.

SECTION 4

GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

Section 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.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Consumer

300000001072	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings - Consumer
Use Descriptor	Sector of Use: SU21 Product Categories: PC1, PC4, PC8 (excipient only), PC9a, PC9b, PC9c, PC15, PC18, PC23, PC24, PC31, PC34 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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
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Section 2.1	Control of Consumer Exposure
Product Characteristics	

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
General measures applicable to all Product Categories.	No risk management measures required if the substance in the mixture is below the classification threshold.
General measures (eye irritants).	Avoid direct eye contact with product, also via contamination on hands.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	0,16
Maximum daily site tonnage (kg/day):	0,53
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,01
Release fraction to wastewater from process (initial release prior to	0,01

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RMM):	
Release fraction to soil from process (initial release prior to RMM):	
Conditions and Measures related to municipal sewage treatment plant	
Risk from environmental exposure is driven by marine water.	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

Section 3.2 -Environment	
Used EUSES model.	

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 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.	

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Exposure Scenario - Consumer

300000001074	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents - Consumer
Use Descriptor	Sector of Use: SU21 Product Categories: PC3, PC4, PC8 (excipient only), PC9a, PC24, PC35, PC38 Environmental Release Categories: ERC8a, ERC8d
Scope of process	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
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Section 2.1	Control of Consumer Exposure
Product Characteristics	

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
General measures applicable to all Product Categories.	No risk management measures required if the substance in the mixture is below the classification threshold.
General measures (eye irritants).	Avoid direct eye contact with product, also via contamination on hands.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Alcohol.	
Readily biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	
Regional use tonnage (tonnes/year):	
Fraction of Regional tonnage used locally:	
Annual site tonnage (tonnes/year):	0,069
Maximum daily site tonnage (kg/day):	0,19
Frequency and Duration of Use	
Continuous release.	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0
Release fraction to wastewater from process (initial release prior to	1

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RMM):	
Release fraction to soil from process (initial release prior to RMM):	
Conditions and Measures related to municipal sewage treatment plant	
Risk from environmental exposure is driven by freshwater.	
Estimated substance removal from wastewater via domestic sewage treatment (%)	99
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
Available hazard data do not enable the derivation of a DNEL for eye irritant effects. Risk Management Measures are based on qualitative risk characterisation.	

Section 3.2 -Environment	
Used EUSES model.	

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
Risk Management Measures are based on qualitative risk characterisation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 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.	