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

1.1 Product identifier

Trade name : NEODOL 5
Product code : V2369

Registration number EU : 01-2119488021-45-0000 Synonyms : C15 Alcohol, pentadecanol

CAS-No. : 90480-71-0

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

Use of the Sub- : Use as an intermediate in industrial chemicals manufacture.

stance/Mixture

Uses advised against : This product must not be used in applications other than the

above without first seeking the advice of the supplier.

This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the sup-

plier.

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 : sccmsds@shell.com

Sheet

1.4 Emergency telephone number

+44 (0) 1235 239 670

National Poison Information Centre (NVIC): Tel. nr. +31(0)88 755 8000 (24 hrs a day and 7

days a week).

Only for the purpose of informing medical personnel.

Other information : NEODOL is a trademark owned by Shell Trademark Man-

agement B.V. and Shell Brands Inc. and used by affiliates of

Royal Dutch Shell plc.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Long-term (chronic) aquatic hazard, Cat- H410: Very toxic to aquatic life with long lasting

egory 1 effects.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

**

Signal word : Warning

Hazard statements : PHYSICAL HAZARDS:

Not classified as a physical hazard according to CLP

criteria.

HEALTH HAZARDS:

Not classified as a health hazard under CLP criteria.

ENVIRONMENTAL HAZARDS:

H410 Very toxic to aquatic life with long lasting effects.

Supplemental Hazard

Statements

EUH066

Repeated exposure may cause skin dryness or

cracking.

Precautionary statements : Prevention:

P273 Avoid release to the environment.

Response:

P391 Collect spillage.

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.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

| Chemical name | CAS-No. | Concentration (% w/w) |
|---------------|---------|-----------------------|
| | EC-No. | |

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 Pentadecanol, branched and linear
 90480-71-0 291-807-9
 <= 100</td>

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. Flush exposed area with wa-

ter and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

In case of eye contact : Flush eye with copious quantities of water.

Remove contact lenses, if present and easy to do. Continue

rinsina.

If persistent irritation occurs, obtain medical attention.

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 con-

ditions of use.

Possible respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, cough-

ing, and/or difficulty breathing.

Defatting dermatitis signs and symptoms may include a burn-

ing sensation and/or a dried/cracked appearance.

No specific hazards under normal use conditions.

Eye irritation signs and symptoms may include a burning sen-

sation, redness, swelling, and/or blurred vision.

No specific hazards under normal use conditions.

Ingestion may result in nausea, vomiting and/or diarrhoea.

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4.3 Indication of any immediate medical attention and special treatment needed

Treatment : 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 pow-

der, 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

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 meth-

ods

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

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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 riv-

ers by using sand, earth, or other appropriate barriers.

Use appropriate containment to avoid environmental contami-

nation.

Ventilate contaminated area thoroughly.

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 stor-

age facilities are followed.

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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 com-

pressed 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 cov-

ering the packaging and storage of this product.

Further information on stor-

age 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

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 stor-

age facilities are followed.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Biological occupational exposure limits

No biological limit allocated.

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

| Remarks: | No DNEL value has been established. |
|--------------|--|
| i ittiiaits. | I NO DINEE VAIGO HAS DOCH OSTADIISHOU. |

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

| Substance name Environmental Compartment Value |
|--|
|--|

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| Remarks: | Exposure assessments have not been presented for the environment |
|----------|--|
| | therefore PNEC values not required. |

8.2 Exposure controls

Engineering measures

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:

Adequate ventilation to control airborne concentrations.

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.

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 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.

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 : If material is handled such that it could be splashed into eyes,

protective eyewear is recommended. 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

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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 ordinarily required beyond standard

work clothes.

It is good practice to wear chemical resistant gloves. Protective clothing approved to EU Standard EN14605.

Respiratory protection : If engineering controls do not maintain airborne concentra-

tions 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 appa-

ratus.

Where air-filtering respirators are suitable, select an appro-

priate 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].

Thermal hazards : Not applicable

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : Solid

Colour : Water white

Odour : mild

Odour Threshold : Data not available

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pour point : 38 °C

Melting point/freezing point Data not available

Boiling point/boiling range : 317,8 °C

Flammability

Flammability (solid, gas) : Not applicable

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit / upper flammability limit

: Data not available

Lower explosion limit / Lower flammability limit : Data not available

Flash point : 149 °C

Auto-ignition temperature : Data not available

Decomposition temperature

Decomposition tempera:

ture

Data not available

pH : Data not available

Viscosity

Viscosity, dynamic : 10 mPa.s (50 °C)

Method: ASTM D445

Viscosity, kinematic : Data not available

Solubility(ies)

Water solubility : 0,103 mg/l (25 °C)

Partition coefficient: n-

octanol/water

: Data not available

Vapour pressure : < 0,00005 hPa (25 °C)

Relative density : Data not available

Density : 0,842 g/cm3 (60 °F)

Method: ASTM D4052

Relative vapour density : 7,6

Particle characteristics

Particle size : Data not available

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Data not available

9.2 Other information

Explosive properties : Not applicable

Oxidizing properties : Data not available

Evaporation rate : Data not available

Conductivity: > 10,000 pS/m, A number of factors,

for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid, This material is not expected to be a static accumu-

lator.

Surface tension : Data not available

Molecular weight : 219 - 238 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

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Information on likely routes of : Exposure may occur via inhalation, ingestion, skin absorption,

exposure skin or eye contact, and accidental ingestion.

Acute toxicity

Components:

Pentadecanol, branched and linear:

Acute oral toxicity : Remarks: no data available

Acute inhalation toxicity : Remarks: no data available

Acute dermal toxicity : Remarks: no data available

Skin corrosion/irritation

Components:

Pentadecanol, branched and linear:

Remarks : no data available

Serious eye damage/eye irritation

Components:

Pentadecanol, branched and linear:

Remarks : no data available

Respiratory or skin sensitisation

Components:

Pentadecanol, branched and linear:

Remarks : no data available

Germ cell mutagenicity

Components:

Pentadecanol, branched and linear:

Genotoxicity in vivo : Remarks: no data available

Germ cell mutagenicity- As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

Carcinogenicity

Components:

Pentadecanol, branched and linear:

Remarks : no data available

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Carcinogenicity - Assess-

ment

This product does not meet the criteria for classification in

categories 1A/1B.

| Material | GHS/CLP Carcinogenicity Classification |
|-----------------------------------|--|
| Pentadecanol, branched and linear | No carcinogenicity classification. |

Reproductive toxicity

Components:

Pentadecanol, branched and linear:

Effects on fertility

Remarks: Data not available

Reproductive toxicity - As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

STOT - single exposure

Components:

Pentadecanol, branched and linear:

Remarks : no data available

STOT - repeated exposure

Components:

Pentadecanol, branched and linear:

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

Aspiration toxicity

Components:

Pentadecanol, branched and linear:

Not an aspiration hazard., Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components consid-

ered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation

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(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 representa-

tive of the product as a whole, rather than for individual com-

ponent(s).

Components:

Pentadecanol, branched and linear:

Remarks : Classifications by other authorities under varying regulatory

frameworks may exist.

SECTION 12: Ecological information

12.1 Toxicity

no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

Not relevant

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 infor-

mation

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

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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 meth-

ods in compliance with applicable regulations.

Do not dispose into the environment, in drains or in water

courses.

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 na-

tional 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.

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.

(pentadecan-1-ol)

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(pentadecan-1-ol)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(pentadecan-1-ol)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(pentadecan-1-ol)

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IATA : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(pentadecan-1-ol)

14.3 Transport hazard class(es)

ADN : 9
ADR : 9
RID : 9
IMDG : 9
IATA : 9

14.4 Packing group

ADN

Packing group : III
Classification Code : M6
Labels : 9 (N1, F)

CDNI Inland Water Waste : NST 8969 Chemicals

Agreement

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,

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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 : Y Ship type : 2

Product name : Alcohols (C13+)

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

SECTION 15: Regulatory information

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

E1

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

ENVIRONMENTAL HAZARDS

Other regulations:

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

Product is subject to Major accident risk decision 2015 (BRZO+) based on Seveso III directive (2012/18/EU).

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

AIIC : Listed

NDSL : Listed

ENCS : Listed

KECI : Listed

PICCS : Listed

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TSCA : Listed

NZIoC : Listed

TCSI : Listed

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

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 op-

erators.

Other information : A vertical bar (|) in the left margin indicates an amendment

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from the previous version.

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 date 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 : Uses in Coatings

- Professional

Uses - Worker

Title : Metal working fluids / rolling oils

- Industrial

Uses - Worker

Title : Metal working fluids / rolling oils

- Professional

Identified Uses according to the Use Descriptor System

Uses - Consumer

Title : Uses in Coatings

- Consumer

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Uses - Consumer

Title : Use in Cleaning Agents

- Consumer

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

| 30000000571 | |
|------------------|---|
| 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 RIS MEASURES | K MANAGEMENT |
|--|---|--------------------|
| Section 2.1 | Control of Worker Exposure | |
| Product Characteristics | | |
| Physical form of product | Liquid | |
| Concentration of the Sub- | Covers use of substance/product up to 10 | 00% (unless stated |
| stance in Mixture/Article | differently)., | |
| Frequency and Duration of | | |
| | 8 hours (unless stated differently). | |
| Other Operational Conditio | | |
| Assumes a good basic stand | ard of occupational hygiene is implemented | d. |
| Contributing Scenarios | Risk Management Measures | |
| General measures (eye | Use suitable eye protection. | |
| irritants). | Avoid direct eye contact with product, also via contamination | |
| | on hands. | |
| | No other specific measures identified. | |
| Section 2.2 | Section 2.2 Control of Environmental Exposure | |
| Substance is a unique structu | ıre. | |
| Alcohol. | | |
| Readily biodegradable. | 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 | | 563 |
| Frequency and Duration of | Use | |
| Continuous release. | Continuous release. | |
| Emission Days (days/year): 300 | | |

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| Environmental factors not influenced by risk management | |
|---|------------------|
| Local freshwater dilution factor: | 10 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | 100 |
| 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 pro- | event release |
| Common practices vary across sites thus conservative process re- | |
| lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit discharge | arges, air emis- |
| sions 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 | 99 |
| the required removal efficiency of >= (%) | |
| If discharging to domestic sewage treatment plant, no secondary | 0 |
| wastewater treatment required. | |
| Organisational measures to prevent/limit release from site | |
| Do not apply industrial sludge to natural soils. | |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment p | lant |
| Estimated substance removal from wastewater via domestic sewage | 99 |
| treatment (%) | |
| Total efficiency of removal from wastewater after onsite and offsite | 99 |
| (domestic treatment plant) RMMs (%) | |
| 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 | r 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. | |
| J | |

| SECTION 3 | EXPOSURE ESTIMATION |
|----------------------|---|
| Section 3.1 - Health | |
| | enable the derivation of a DNEL for eye irritant effects. 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 |
| Coeffor 4.4 Hoolth | |

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

| 30000000572 | |
|------------------|--|
| 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 RIS MEASURES | K MANAGEMENT |
|---|---|--------------------|
| 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 10 differently)., | 00% (unless stated |
| Frequency and Duration of | | |
| Covers daily exposures up to | 8 hours (unless stated differently). | |
| Other Operational Conditio | ns affecting Exposure | |
| Assumes a good basic stand | ard of occupational hygiene is implemented | d. |
| 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 structu | | |
| Alcohol. | | |
| Readily biodegradable. | | |
| Amounts Used | | |
| Fraction of EU tonnage used | in region: | |
| Regional use tonnage (tonnes/year): | | |
| Fraction of Regional tonnage used locally: | | |
| | | 163 |
| Maximum daily site tonnage (kg/day): 543 | | 543 |
| Frequency and Duration of | Use | |
| Continuous release. | | |
| Emission Days (days/year): | | 300 |

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| 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 | 0,007 |
| RMM): | |
| Release fraction to soil from process (initial release prior to RMM): | |
| Technical conditions and measures at process level (source) to pr | event release |
| Common practices vary across sites thus conservative process re- | |
| lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit disch | arges, air emis- |
| sions 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 | 99 |
| the required removal efficiency of >= (%) | |
| If discharging to domestic sewage treatment plant, no secondary | 0 |
| wastewater treatment required. | |
| Organisational measures to prevent/limit release from site | |
| Do not apply industrial sludge to natural soils. | |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment p | nlant |
| Estimated substance removal from wastewater via domestic sewage | 99 |
| treatment (%) | |
| Total efficiency of removal from wastewater after onsite and offsite | 99 |
| (domestic treatment plant) RMMs (%) | |
| 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 fo | r disposal |
| External treatment and disposal of waste should comply with applicable | |
| regulations. | ŭ |
| This substance is consumed during use and no waste of substance is g | generated. |
| Conditions and measures related to external recovery of waste | |
| External recovery and recycling of waste should comply with applicable | local and/or regiona |
| regulations. | |
| This substance is consumed during use and no waste of substance is generated. | |

| SECTION 3 | EXPOSURE ESTIMATION |
|--|---------------------|
| Section 3.1 - Health | |
| Available beyond date do not enable the devication of a DNICL for available offers | |

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

| Exposure Scenario - Worker | |
|----------------------------|--|
| 30000000574 | |
| 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, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities. |

| SECTION 2 | OPERATIONAL CONDITIONS AND RIS | SK MANAGEMENT |
|--|---|--------------------|
| Section 2.1 | Control of Worker Exposure | |
| Product Characteristics | • | |
| Physical form of product | Liquid | |
| | | |
| Concentration of the Sub- | Covers use of substance/product up to 1 | 00% (unless stated |
| stance in Mixture/Article | differently)., | |
| Frequency and Duration of | | |
| | 8 hours (unless stated differently). | |
| Other Operational Condition | | |
| Assumes a good basic stand | lard of occupational hygiene is implemente | d. |
| Contributing Scenarios | Risk Management Measures | |
| General measures (eye | Use suitable eye protection. | |
| irritants). | 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 struct | | |
| 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): | | 41 |
| Maximum daily site tonnage (kg/day): 137 | | 137 |
| Frequency and Duration of | | |
| Continuous release. | | |
| Emission Days (days/year): 300 | | 300 |

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| 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 | 2,0E-05 |
| RMM): | |
| Release fraction to soil from process (initial release prior to RMM): | |
| Technical conditions and measures at process level (source) to pro- | event release |
| Common practices vary across sites thus conservative process re- | |
| lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit discharge | arges, air emis- |
| sions 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 | 99 |
| the required removal efficiency of >= (%) | |
| If discharging to domestic sewage treatment plant, no secondary | 0 |
| wastewater treatment required. | |
| Organisational measures to prevent/limit release from site | |
| Sludge should be incinerated, contained or reclaimed. | |
| On ditions and Management and to discuss in all access to a transfer out of | lant |
| Conditions and Measures related to municipal sewage treatment p | |
| Estimated substance removal from wastewater via domestic sewage | 99 |
| treatment (%) | 00 |
| Total efficiency of removal from wastewater after onsite and offsite | 99 |
| (domestic treatment plant) RMMs (%) Assumed domestic sewage treatment plant flow (m3/d) | 10.000 |
| Maximum allowable site tonnage (MSafe) based on release following | 10.000 |
| total wastewater treatment removal (kg/d) | |
| Conditions and Measures related to external treatment of waste for | r disposal |
| External treatment and disposal of waste should comply with applicable | |
| regulations. | local allu/ol 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. | |
| Togalationo. | |
| | |

| 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 |

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

| Exposure Scenario - Worker | |
|----------------------------|--|
| 30000000575 | |
| 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. |

| MEASUR Section 2.1 Control of Product Characteristics Physical form of product Liquid Concentration of the Substance in Mixture/Article differently Frequency and Duration of Use Covers daily exposures up to 8 hours (un Other Operational Conditions affectin | of Worker Exposure se of substance/product up to 100% (unless stated |
|--|--|
| Product Characteristics Physical form of product Concentration of the Substance in Mixture/Article Frequency and Duration of Use Covers daily exposures up to 8 hours (under the Coveration of Use) Other Operational Conditions affecting | se of substance/product up to 100% (unless stated |
| Physical form of product Concentration of the Substance in Mixture/Article Frequency and Duration of Use Covers daily exposures up to 8 hours (un Other Operational Conditions affectin | |
| Concentration of the Substance in Mixture/Article differently Frequency and Duration of Use Covers daily exposures up to 8 hours (under the Covers) Other Operational Conditions affecting | |
| stance in Mixture/Article differently Frequency and Duration of Use Covers daily exposures up to 8 hours (un Other Operational Conditions affectin | |
| Frequency and Duration of Use Covers daily exposures up to 8 hours (ur Other Operational Conditions affectin | /)., |
| Covers daily exposures up to 8 hours (ur Other Operational Conditions affectin | |
| Other Operational Conditions affecting | |
| | nless stated differently). |
| | ng Exposure |
| Assumes a good basic standard of occup | pational hygiene is implemented. |
| Contributing Scenarios Risk Man | nagement Measures |
| | ble eye protection. |
| rritants). Avoid dire | ect eye contact with product, also via contamination |
| on hands. | • |
| No other s | specific measures identified. |
| Section 2.2 Control o | 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 |
| Maximum daily site tonnage (kg/day): 0,017 | |
| Frequency and Duration of Use | |
| Continuous release. | |

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| Emission Days (days/year): | 300 |
|---|-----------------------|
| Environmental factors not influenced by risk management | 1 000 |
| Local freshwater dilution factor: | 10 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | 1 |
| 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 pr | event release |
| Common practices vary across sites thus conservative process re- | |
| lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit disch | arges, air emis- |
| sions 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 p | lant |
| 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 fo | r disposal |
| External treatment and disposal of waste should comply with applicable local and/or region regulations. | |
| Conditions and measures related to external recovery of waste | |
| External recovery and recycling of waste should comply with applicable regulations. | local and/or regional |

| 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 |
|----------------------|---|
| Section 4.1 - Health | |

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

| 30000000579 | 0000000579 | |
|------------------|---|--|
| 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 RIS | K MANAGEMENT |
|---|--|---------------------|
| 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 10 differently)., | 00% (unless stated |
| Frequency and Duration of | | |
| Covers daily exposures up to | 8 hours (unless stated differently). | |
| Other Operational Conditio | ns affecting Exposure | |
| Assumes a good basic stand | ard of occupational hygiene is implemented | d. |
| Contributing Scenarios | Risk Management Measures | |
| General measures (eye irritants). | Use suitable eye protection. Avoid direct eye contact with product, als on hands. No other specific measures identified. | o via contamination |
| Section 2.2 Control of Environmental Exposure | | |
| Substance is a unique structu | | |
| Alcohol. | | |
| Readily biodegradable. | | |
| Amounts Used | | |
| Fraction of EU tonnage used | Fraction of EU tonnage used in region: | |
| Regional use tonnage (tonne | s/year): | |
| Fraction of Regional tonnage used locally: | | |
| | | 0,13 |
| | Maximum daily site tonnage (kg/day): 0,36 | |
| Frequency and Duration of Use | | |
| Continuous release. | | |
| Emission Days (days/year): | | 365 |

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| Environmental factors not influenced by risk management | 140 | |
|---|----------------------|--|
| Local freshwater dilution factor: | 10 | |
| Local marine water dilution factor: | 100 | |
| Other Operational Conditions affecting Environmental Exposure | Т - | |
| 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 pr | event release | |
| Common practices vary across sites thus conservative process release estimates used. | | |
| Technical onsite conditions and measures to reduce or limit disch sions and releases to soil | arges, air emis- | |
| 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 | 1 | |
| 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 fo | r disposal | |
| External treatment and disposal of waste should comply with applicable regulations. | - | |
| Conditions and measures related to external recovery of waste | | |
| External recovery and recycling of waste should comply with applicable regulations. | local and/or regiona | |

| | 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 |
|----------------------|---|
| 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

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 sitespecific chemical safety assessment is required.

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Exposure Scenario - Worker

| Exposure Scenario - Worker | | |
|----------------------------|--|--|
| 30000000576 | | |
| 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. | |

| MEASURES | | 1 | |
|--|---|---|----------------------|
| Product Characteristics Physical form of product Concentration of the Substance in Mixture/Article 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 General measures (eye irritants). Risk Management Measures 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): Fraction of Regional tonnage (kg/day): O,53 Frequency and Duration of Use | SECTION 2 | OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES | |
| Physical form of product Concentration of the Substance in Mixture/Article 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 General measures (eye irritants). Risk Management Measures General measures (eye irritants). 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): Fraction of Regional tonnage used locally: Annual site tonnage (kg/day): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | Section 2.1 | Control of Worker Exposure | |
| Concentration of the Substance in Mixture/Article 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 General measures (eye irritants). Risk Management Measures 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): Frequency and Duration of Use | Product Characteristics | | |
| stance in Mixture/Article 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 General measures (eye irritants). Risk Management Measures 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): Frequency and Duration of Use | Physical form of product | Liquid | |
| 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 General measures (eye irritants). Risk Management Measures 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): O,16 Maximum daily site tonnage (kg/day): Oortrol of Use | Concentration of the Sub- | Covers use of substance/product up to 1 | 00% (unless stated |
| 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 General measures (eye irritants). 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): Anximum daily site tonnage (kg/day): Frequency and Duration of Use | stance in Mixture/Article | 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: 0,16 Annual site tonnage (tonnes/year): 0,53 Frequency and Duration of Use | Frequency and Duration of | Use | |
| Assumes a good basic standard of occupational hygiene is implemented. Contributing Scenarios Risk Management Measures General measures (eye irritants). | Covers daily exposures up to | 8 hours (unless stated differently). | |
| Contributing Scenarios General measures (eye irritants). 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): Frequency and Duration of Use | Other Operational Condition | ons affecting Exposure | |
| General measures (eye irritants). 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): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | Assumes a good basic stand | lard of occupational hygiene is implemente | ed. |
| 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): O,16 Maximum daily site tonnage (kg/day): O,53 Frequency and Duration of Use | Contributing Scenarios | Risk Management Measures | |
| 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): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | General measures (eye | | |
| 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): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | irritants). | Avoid direct eye contact with product, als | so via contamination |
| 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): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | | | |
| 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): O,16 Maximum daily site tonnage (kg/day): O,53 Frequency and Duration of Use | | No other specific measures identified. | |
| 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): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | Section 2.2 | Control of Environmental Exposure | |
| 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): O,16 Maximum daily site tonnage (kg/day): Frequency and Duration of Use | Substance is a unique struct | ure. | |
| 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 | Alcohol. | | |
| 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): O,16 Maximum daily site tonnage (kg/day): O,53 Frequency and Duration of Use | Readily biodegradable. | | |
| Regional use tonnage (tonnes/year): Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): Maximum daily site tonnage (kg/day): O,16 Maximum daily site tonnage (kg/day): O,53 Frequency and Duration of Use | Amounts Used | | |
| Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): Maximum daily site tonnage (kg/day): 7,53 Frequency and Duration of Use | Fraction of EU tonnage used | · | |
| Annual site tonnage (tonnes/year): Maximum daily site tonnage (kg/day): 7,53 Frequency and Duration of Use | | | |
| Maximum daily site tonnage (kg/day): 0,53 Frequency and Duration of Use | Fraction of Regional tonnage | used locally: | |
| Frequency and Duration of Use | | | 0,16 |
| Frequency and Duration of Use | Maximum daily site tonnage (kg/day): 0,53 | | 0,53 |
| | | | |
| Continuous release. | Continuous release. | | |

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| Fininging Davis (davis) | 1 200 | |
|---|-----------------------|--|
| Emission Days (days/year): | 300 | |
| Environmental factors not influenced by risk management | T 40 | |
| Local freshwater dilution factor: | 10 | |
| Local marine water dilution factor: | 100 | |
| Other Operational Conditions affecting Environmental Exposure | T | |
| 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 pro | event release | |
| Common practices vary across sites thus conservative process re- | | |
| lease estimates used. | | |
| Technical onsite conditions and measures to reduce or limit discha- | arges, air emis- | |
| sions and releases to soil | 5 , | |
| 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 | 99 | |
| the required removal efficiency of >= (%) | | |
| If discharging to domestic sewage treatment plant, no secondary | 0 | |
| 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 p | lant | |
| Estimated substance removal from wastewater via domestic sewage | 99 | |
| treatment (%) | | |
| Total efficiency of removal from wastewater after onsite and offsite | 99 | |
| (domestic treatment plant) RMMs (%) | | |
| 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 | r 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 |
|----------------------|---|
| 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 sitespecific 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 I | RISK MANAGEMENT |
|---|--|-----------------------|
| 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 differently)., | o 100% (unless stated |
| Frequency and Duration of | f Use | |
| Covers daily exposures up t | o 8 hours (unless stated differently). | |
| Other Operational Conditi | | |
| Assumes a good basic stan | dard of occupational hygiene is implemen | nted. |
| Contributing Scenarios | Risk Management Measures | |
| General measures (eye irritants). | Use suitable eye protection. Avoid direct eye contact with product, on hands. No other specific measures identified. | |
| Section 2.2 | Control of Environmental Exposure | ļ |
| Substance is a unique struc | ture. | |
| Alcohol. | | |
| Readily biodegradable. | | |
| Amounts Used | | • |
| Fraction of EU tonnage use | d in region: | |
| Regional use tonnage (tonn | es/year): | |
| Fraction of Regional tonnag | e used locally: | |
| Annual site tonnage (tonnes/year): | | 7,1 |
| Maximum daily site tonnage (kg/day): 23,7 | | 23,7 |
| Frequency and Duration of | f Use | |
| Continuous release. | | |
| Emission Days (days/year): 300 | | 300 |

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| Environmental factors not influenced by risk management Local freshwater dilution factor: | 10 |
|---|----------------------|
| Local marine water dilution factor: | 100 |
| | 100 |
| Other Operational Conditions affecting Environmental Exposure | L 0 00E 0E |
| 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 pr | event release |
| Common practices vary across sites thus conservative process re- lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit disch | arges, air emis- |
| sions 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 | II. |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment p | lant |
| 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 fo | r disposal |
| External treatment and disposal of waste should comply with applicable regulations. | • |
| Conditions and measures related to external recovery of waste | |
| External recovery and recycling of waste should comply with applicable regulations. | local and/or regiona |
| POUISIONS | |

| 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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| 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

| 30000000584 | , not |
|------------------|---|
| 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 RIS | SK MANAGEMENT |
|---|--|----------------------|
| 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 | | |
| | 8 hours (unless stated differently). | |
| Other Operational Conditio | | |
| 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, als on hands. No other specific measures identified. | so via contamination |
| Section 2.2 | Control of Environmental Exposure | |
| Substance is a unique structu | 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 | | 7,1 |
| Maximum daily site tonnage (kg/day): 23,7 | | 23,7 |
| Frequency and Duration of Use | | |
| Continuous release. | | |

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| Emission Days (days/year): | 365 |
|---|------------------|
| Environmental factors not influenced by risk management | 1000 |
| Local freshwater dilution factor: | 10 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | 1 |
| 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 pr | event release |
| Common practices vary across sites thus conservative process re- | |
| lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit disch | arges, air emis- |
| sions 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 | 1 |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment p | lant |
| 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 fo | r disposal |
| External treatment and disposal of waste should comply with applicable 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 |
|----------------------|---|
| 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

| Exposure Scenario - Consumer | |
|------------------------------|---|
| 30000001072 | |
| 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 |
|--|---|
| 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): 0,10 | | 0,16 |
| Maximum daily site tonnage (kg/day): | | 0,53 |
| Frequency and Duration of Use | | |
| Continuous release. | | |
| Emission Days (days/year): 300 | | 300 |
| Environmental factors not influenced by risk management | | |
| Local freshwater dilution factor: 10 | | 10 |
| | | 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 | | 0,01 |
| Release fraction to soil from process (initial release prior to RMM): | | |

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| 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

| 30000001074 | |
|------------------|---|
| 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 |
|--|---|
| 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 RMM): | | 1 |
| Release fraction to soil from process (initial release prior to RMM): | | |

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| 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.