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

1.1 Product identifier

Trade name : Ethyl PROXITOL

Product code : U5129

Registration number EU : 01-2119462792-32-0001

Synonyms : EP, PGEE CAS-No. : 1569-02-4

EC-No. : 216-374-5

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

Use of the Sub- : Solvent.

stance/Mixture Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

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

above without first seeking the advice of the supplier.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier : Shell Chemicals Europe B.V.

PO Box 2334 3000 CH Rotterdam

Netherlands

Telephone : +31 (0)10 441 5137 / +31 (0)10 441 5191 Telefax : +31 (0)20 716 8316 / +31 (0)20 713 9230

Contact for Safety Data : sccmsds@shell.com

Sheet

1.4 Emergency telephone number

+44 (0) 1235 239 670 (This telephone number is available 24 hours per day, 7 days per

week)

Numéro ORFILA (INRS): + 33 (0)1 45 42 59 59

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

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

Shell plc.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 3 H226: Flammable liquid and vapour.

Eye irritation, Category 2 H319: Causes serious eye irritation.

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Specific target organ toxicity - single exposure, Category 3, Narcotic effects

H336: May cause drowsiness or dizziness.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms





Signal word : Warning

Hazard statements : PHYSICAL HAZARDS:

H226 Flammable liquid and vapour.

HEALTH HAZARDS:

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

ENVIRONMENTAL HAZARDS:

Not classified as environmental hazard according to

CLP criteria.

Precautionary statements : Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfac-

es. No smoking.

P243 Take precautionary measures against static discharge.

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protec-

tion/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and

easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/

attention.

Storage:

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

tightly closed.

Disposal:

P501 Dispose of contents/ container to an approved waste

disposal plant.

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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.

Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
1-ethoxypropan-2-ol	1569-02-4	98 - 100
	216-374-5	

Stabilized with 25 ppm BHT.

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 : Remove to fresh air. If rapid recovery does not occur,

transport to nearest medical facility for additional treatment.

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 : Immediately flush eye(s) with plenty of water.

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

rinsing.

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Transport to the nearest medical facility for additional treat-

ment.

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 : Breathing of high vapour concentrations may cause central

nervous system (CNS) depression resulting in dizziness, lightheadedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and

death.

No specific hazards under normal use conditions.

Skin irritation signs and symptoms may include a burning sen-

sation, redness, or swelling.

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.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

Call a doctor or poison control center for guidance.

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog. Dry chemical pow-

der, carbon dioxide, sand or earth may be used for small fires

only.

Unsuitable extinguishing

media

None

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-

fighting

: The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Carbon monoxide may be evolved if incomplete combustion

occurs.

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

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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 the 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.

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Vapour may form an explosive mixture with air.

6.1.1 For non emergency personnel: Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Stay upwind and keep out of low areas. 6.1.2 For emergency responders:

Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Stay upwind and keep out of low areas.

6.2 Environmental precautions

Environmental precautions : Shut off leaks, if possible without personal risks. Remove all

possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bond-

ing and grounding (earthing) all equipment. Ventilate contaminated area thoroughly. Monitor area with combustible gas indicator.

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

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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.

Advice on safe handling : Avoid contact with skin, eyes and clothing.

Use local exhaust ventilation if there is risk of inhalation of

vapours, mists or aerosols.

Bulk storage tanks should be diked (bunded).

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to

reduce the risk.

The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flamma-

ble.

Properly dispose of any contaminated rags or cleaning mate-

rials in order to prevent fires.

Do NOT use compressed air for filling, discharging, or han-

dling operations.

Glycol ethers can be peroxide formers.

Product Transfer : Refer to guidance under Handling section.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Refer to section 15 for any additional

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specific legislation covering the packaging and storage of this

product.

Packaging material : Suitable material: For containers, or container linings use mild

steel, stainless steel.

Unsuitable material: Natural, butyl, neoprene or nitrile rubbers.

Unsuitable material: Aluminum, Most plastics.

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) : Please refer to Ch16 for the registered uses under REACH.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

See additional references that provide safe handling practices: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices

on Static Electricity).

IEC/TS 60079-32-1: Electrostatic hazards, guidance

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:

Substance name	End Use	Exposure routes	Potential health effects	Value
1-ethoxypropan-2-ol	Workers	Inhalation	Acute systemic ef- fects	466 mg/m3
1-ethoxypropan-2-ol	Workers	Inhalation	Acute systemic ef- fects	466 mg/m3
1-ethoxypropan-2-ol	Workers	Dermal	Long-term systemic effects	74 mg/kg bw/day
1-ethoxypropan-2-ol	Consumers	Inhalation	Acute systemic effects	300 mg/m3
1-ethoxypropan-2-ol	Workers	Inhalation	Long-term systemic effects	211 mg/m3
1-ethoxypropan-2-ol	Consumers	Inhalation	Acute systemic ef- fects	300 mg/m3
1-ethoxypropan-2-ol	Consumers	Dermal	Long-term systemic effects	44,3 mg/kg bw/day
1-ethoxypropan-2-ol	Consumers	Inhalation	Long-term systemic	127 mg/m3

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			effects	
1-ethoxypropan-2-ol	Consumers	Oral	Long-term systemic	14 mg/kg
			effects	bw/day

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

Substance name	Environmental Compartment	Value
1-ethoxypropan-2-ol	Water	10 mg/l
1-ethoxypropan-2-ol	Water	10 mg/l
1-ethoxypropan-2-ol	Sediment	37,6 mg/kg
1-ethoxypropan-2-ol	Sediment	37,6 mg/l
1-ethoxypropan-2-ol	Soil	2,4 mg/kg
1-ethoxypropan-2-ol	Soil	2,4 mg/l
1-ethoxypropan-2-ol	Sewage treatment plant	1250 mg/l
1-ethoxypropan-2-ol	Sewage treatment plant	1250 mg/l

8.2 Exposure controls

Engineering measures

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. Use sealed systems as far as possible.

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Local exhaust ventilation is recommended.

Firewater monitors and deluge systems are recommended.

Eye washes and showers for emergency use.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective 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 : Wear goggles for use against liquids and gas.

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Wear full face shield if splashes are likely to occur. Approved to EU Standard EN166.

Hand protection

Remarks

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

Skin and body protection

Wear antistatic and flame-retardant clothing, if a local risk assessment deems it so.

Skin protection is not required under normal conditions of

For prolonged or repeated exposures use impervious clothing over parts of the body subject to exposure.

If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to relevant Standard, and provide employee skin care programmes.

Protective clothing approved to EU Standard EN14605.

Respiratory protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus

Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.

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If air-filtering respirators are suitable for conditions of use: Select a filter suitable for organic gases and vapours [Type A

boiling point > 65°C (149°F)] meeting EN14387.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : Liquid.

Colour : clear

Odour : Ethereal

Odour Threshold : Data not available

Melting / freezing point : < -70 °C

Boiling point/boiling range : 129 - 136 °C

Flammability

Flammability (solid, gas) : Data not available

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit /

upper flammability limit

: 12 %(V)

Lower explosion limit /
Lower flammability limit

: 1,3 %(V)

Flash point : 40 °C

Method: PMCC / ASTM D3278

Auto-ignition temperature : 255 °C

Decomposition temperature

Decomposition tempera-

Data not available

ture

pH : Data not available

Viscosity

Viscosity, dynamic : 2,21 mPa.s (20 °C)

Method: ASTM D445

Viscosity, kinematic : Data not available

Solubility(ies)

Water solubility : Completely miscible. (20 °C)

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Partition coefficient: n-

octanol/water

: log Pow: < 1

Vapour pressure : 1.200 Pa (20 °C)

Relative density : 0,91 (20 °C)

Method: ASTM D4052

Density : ca. 897 kg/m3 (20 °C)

Method: ASTM D4052

Relative vapour density : 3,5

Particle characteristics

Particle size : Data not available

9.2 Other information

Explosives : Not applicable

Oxidizing properties : Data not available

Evaporation rate : 0,5

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 : 41,5 mN/m

Molecular weight : 104,1 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions

10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with strong oxidising agents.

10.4 Conditions to avoid

Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.

Prevent vapour accumulation.

In certain circumstances product can ignite due to static elec-

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tricity.

Exposure to air or moisture over prolonged periods.

10.5 Incompatible materials

Materials to avoid : Strong oxidising agents.

10.6 Hazardous decomposition products

Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

SECTION 11: Toxicological information

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

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

exposure

skin or eye contact, and accidental ingestion.

Acute toxicity

Components:

1-ethoxypropan-2-ol:

Acute oral toxicity : LD 50: > 5.000 mg/kg

Remarks: Low toxicity

Acute inhalation toxicity : Remarks: Low toxicity if inhaled.

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

Acute dermal toxicity : LD 50: > 5.000 mg/kg

Remarks: Low toxicity

Skin corrosion/irritation

Components:

1-ethoxypropan-2-ol:

Remarks : Slightly irritating to skin.

Serious eye damage/eye irritation

Components:

1-ethoxypropan-2-ol:

Remarks : Causes serious eye irritation.

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Respiratory or skin sensitisation

Components:

1-ethoxypropan-2-ol:

Remarks : Not a sensitiser.

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

Germ cell mutagenicity

Components:

1-ethoxypropan-2-ol:

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

Germ cell mutagenicity- As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

Carcinogenicity

Components:

1-ethoxypropan-2-ol:

Remarks : Not a carcinogen.

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

Carcinogenicity - Assess-

ment

This product does not meet the criteria for classification in

categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification
1-ethoxypropan-2-ol	No carcinogenicity classification.

Reproductive toxicity

Components:

1-ethoxypropan-2-ol:

Effects on fertility

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

not met.

Reproductive toxicity - As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

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STOT - single exposure

Components:

1-ethoxypropan-2-ol:

Remarks : May cause drowsiness or dizziness.

High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; con-

tinued inhalation may result in unconsciousness.

Inhalation of vapours or mists may cause irritation to the res-

piratory system.

STOT - repeated exposure

Components:

1-ethoxypropan-2-ol:

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

Aspiration toxicity

Components:

1-ethoxypropan-2-ol:

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 (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:

1-ethoxypropan-2-ol:

Remarks : Classifications by other authorities under varying regulatory

frameworks may exist.

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SECTION 12: Ecological information

12.1 Toxicity

Components:

1-ethoxypropan-2-ol:

Toxicity to fish : LC50 : > 100 mg/l

Remarks: Practically non toxic:

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

Toxicity to daphnia and other :

aquatic invertebrates

EC50: > 100 mg/l

Remarks: Practically non toxic:

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

Toxicity to algae/aquatic plants : EC50 : > 100 mg/l

Remarks: Practically non toxic:

IC50 : > 100 mg/lToxicity to microorganisms

Remarks: Practically non toxic:

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

Toxicity to fish (Chronic tox-

icity)

Remarks: NOEC/NOEL > 100 mg/l

aquatic invertebrates (Chron-

ic toxicity)

Toxicity to daphnia and other : Remarks: NOEC/NOEL > 100 mg/l

12.2 Persistence and degradability

Components:

1-ethoxypropan-2-ol:

: Remarks: Readily biodegradable. Biodegradability

12.3 Bioaccumulative potential

Components:

1-ethoxypropan-2-ol:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

12.4 Mobility in soil

Components:

1-ethoxypropan-2-ol:

Mobility Remarks: If product enters soil, it will be highly mobile and

may contaminate groundwater., Dissolves in water.

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12.5 Results of PBT and vPvB assessment

Components:

1-ethoxypropan-2-ol:

Assessment : The substance does not fulfill all screening criteria for persis-

tence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to

have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological infor-

mation

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Recover or recycle if possible.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal 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 ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste.

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.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides tech-

nical aspects at controlling pollutions from ships.

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.

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Send to drum recoverer or metal reclaimer.

Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

SECTION 14: Transport information

14.1 UN number or ID number

ADN : 3271
ADR : 3271
RID : 3271
IMDG : 3271
IATA : 3271

14.2 UN proper shipping name

ADN : ETHERS, N.O.S.

(1-ethoxypropan-2-ol)

ADR : ETHERS, N.O.S.

(1-ethoxypropan-2-ol)

RID : ETHERS, N.O.S.

(1-ethoxypropan-2-ol)

IMDG : ETHERS, N.O.S.

(1-ethoxypropan-2-ol)

IATA : ETHERS, N.O.S.

(1-ethoxypropan-2-ol)

14.3 Transport hazard class(es)

ADN : 3
ADR : 3
RID : 3
IMDG : 3
IATA : 3

14.4 Packing group

ADN

Packing group : III
Classification Code : F1
Labels : 3 (F)

CDNI Inland Water Waste

Agreement

: NST 8963 Solvent

ADR

Packing group : III Classification Code : F1

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Hazard Identification Number : 30 Labels : 3

RID

Packing group : III
Classification Code : F1
Hazard Identification Number : 30
Labels : 3

IMDG

Packing group : III Labels : 3

IATA

Packing group : III Labels : 3

14.5 Environmental hazards

ADN

Environmentally hazardous : no

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage,

for special precautions which a user needs to be aware of or

needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category : Z Ship type : 3

Product name : Propylene glycol monoalkyl ether

Additional Information: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space

entry.

Transport in bulk according to Annex II of Marpol and the IBC

Code

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SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation : Product is not subject to Authorisa-

(Annex XIV) tion under REACH.

REACH - Candidate List of Substances of Very High
Concern for Authorisation (Article 59).

This product does not contain substances of very high concern (Regu-

lation (EC) No 1907/2006 (REACH),

Article 57).

Occupational Illnesses (R- : 1

461-3, France)

: Not applicable

Other regulations:

The following regulatory information is not intended to be comprehensive and does not exempt the end user of the product to refer to all official documents to determine its obligations. Labour code: Exposure forbidden to certain works/products to:

- Young people at least 15 years old and under 18 years old: art. D4153-17
- Pregnant or breast-feeding women : art. D4152-10, D4152-11

Social security code - Article L.461-6, Appendix A, no. 601-15. Labour code - Intensified medical supervision: Articles R.4624-18 and R.4624-19, decree 2012-135 of 30.01.2012.

The product is subject to the DDADUE (Provisions for Adaptation of Legislation to European Union Law in the Field of Sustainable Development) from 16 July 2013 of Articles 10 and 11, the transposition of the Seveso III directive (2012/18/EU).

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

AIIC : Listed

DSL : Listed

IECSC : Listed

ENCS : Listed

KECI : Listed

NZIoC : Listed

PICCS : Listed

TCSI : Listed

TSCA : Listed

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15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of other abbreviations

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

Further information

Training advice : Provide adequate information, instruction and training for op-

erators.

Other information : For Industry guidance and tools on REACH please visit the

CEFIC website at http://cefic.org/Industry-support.

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

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).

Classification of the mixture: Classification procedure:

Flam. Liq. 3 H226 On basis of test data.

Eye Irrit. 2 H319 Expert judgement and weight of evi-

dence determination.

STOT SE 3 H336 Expert judgement and weight of evi-

dence determination.

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- Indus-

tria

Uses - Worker

Title : Uses in Coatings- Industrial Solvent-based process.

Uses - Worker

Title : Uses in Coatings- IndustrialWater-based process.

Uses - Worker

Title : Uses in Coatings- ProfessionalSolvent-based process.

Uses - Worker

Title : Uses in Coatings- ProfessionalWater-based process.

Identified Uses according to the Use Descriptor System

Uses - Consumer

Title : Use in coatings

- Consumer

Water-based process.

Uses - Consumer

Title : Uses in Coatings

- Consumer

Solvent-based process.

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

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Exposure Scenario - Worker

30000000452	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance- Industrial
Use Descriptor	Sector of Use: SU3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC1, ESVOC SpERC 1.1.v1
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.

1	
OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Control of Worker Exposure	
Liquid, vapour pressure 0.5 - 10 kPa at STP	
Covers percentage substance in the product up to 100%.,	
Unless stated otherwise.,	
Use	
8 hours (unless stated differently).	
ns affecting Exposure	
an 20°C above ambient temperature (unless stated differently).	
ard of occupational hygiene is implemented.	
Risk Management Measures	
Use suitable eye protection.	
Avoid direct eye contact with product, also via contamination	
on hands.	
No other specific measures identified.	
No other specific measures identified.	
•	
No other specific measures identified.	
No other specific measures identified.	
No other specific measures identified. No other specific measures identified.	

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Process sampling(closed systems)PROC2	No other specific measures identified.		
Equipment cleaning and			
maintenancePROC8a			
	Retain drain downs in sealed storage per	nding disposal or for	
	subsequent recycle.		
Bulk transfersDedicated	Clear transfer lines prior to de-coupling.		
facilityPROC8b	Provide a good standard of general venti	lation (not less than	
	3 to 5 air changes per hour).		
	Ensure operation is undertaken outdoors	i.	
Dully and direct atoms and also and	No other constitues as a side office of		
Bulk product storage(closed	No other specific measures identified.		
systems)PROC2 Laboratory activi-	No other engoific managers identified		
tiesPROC15	No other specific measures identified.		
Section 2.2	Control of Environmental Exposure		
Substance is a unique structu			
Liquid, vapour pressure 0.5 -			
Miscible in water.	TO KE a at STE		
	in appoint		
Practically non-toxic to aquati Low bioaccumulation potentia			
	41.		
Readily biodegradable.			
Amounts Used	in venion.	T 4	
Fraction of EU tonnage used		1	
Regional use tonnage (tonnes/year):		3,0E+04	
Fraction of Regional tonnage used locally:		1 2.05.04	
Annual site tonnage (tonnes/year):		3,0E+04 1,0E+05	
Maximum daily site tonnage (kg/day): Frequency and Duration of Use		1,00403	
	USE		
Continuous release. Emission Days (days/year):		300	
	nfluenced by risk management	300	
Local freshwater dilution factor		10	
Local marine water dilution factor:		100	
		100	
Other Operational Conditions affecting Environmental Exposure Release fraction to air from process (initial release prior to RMM): 5,00E-03			
RMM):	Release fraction to wastewater from process (initial release prior to PMM):		
Release fraction to soil from process (initial release prior to RMM): 1,00E-04			
Technical conditions and measures at process level (source) to prevent release			
	ss sites thus conservative process re-		
lease estimates used.			
	s and measures to reduce or limit disch	arges, air emis-	
sions and releases to soil		<u> </u>	
Treatment of air emissions is	not required for the purposes of REACH		
	ed to comply with other environmental		
legislation.			
Soil emission controls are not applicable as there is no direct release			
to soil.			
Onsite waste water treatment	required.		

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Treat onsite wastewater (prior to receiving water discharge) to provide	87,35
the required removal efficiency of >= (%)	
Assumed industrial waste water treatment plant flow (m3/d)	2.000
Organisational measures to prevent/limit release from site	
Site should have a spill plan to ensure that adequate safeguards are in place to minimize	
the impact of enisodic releases	-

the impact of episodic releases.

Bund storage facilities to prevent soil and water pollution in the event of spillage.

A leak prevention plan is needed to prevent low level continual releases.

Prevent environmental discharge consistent with regulatory requirements.

Conditions and Measures related to municipal sewage treatment plant Do not discharge to sewers or drains. Maximum allowable site tonnage (MSafe) based on release following 1,98E+06 total wastewater treatment removal (kg/d)

Conditions and Measures related to external treatment of waste for disposal

Estimated amount entering waste treatment no greater than: 5%.

Type of treatment suitable for waste: approved landfill.

Type of treatment suitable for waste: incineration.

Removal efficiency (%): 99.98.

Dispose of waste product or used containers according to local regulations.

Treat as hazardous waste.

Conditions and measures related to external recovery of waste

Estimated amount entering waste treatment no greater than: 5%.

Type of treatment suitable for waste: redistillation.

External treatment and disposal of waste should comply with applicable local and/or regional regulations.

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 -Environment	
Used ECETOC TRA model.	

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO

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Section 4.1 - Health

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

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.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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Exposure Scenario - Worker

Exposure Scenario - Worker	
3000000453	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate- Industrial
Use Descriptor	Sector of Use: SU3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC6a, ESVOC SpERC 6.1a.v1
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Sub-	Covers percentage substance in the product up to 100%.,	
stance in Mixture/Article	Unless stated otherwise.,	
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Conditio		
Assumes use at not more than 20°C above ambient temperature (unless stated differently). 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.	
General expo- sures.Continuous pro- cess(closed sys- tems)PROC1	No other specific measures identified.	
General expo- sures.Continuous process- with sample collec- tion(closed sys- tems)PROC2	No other specific measures identified.	
Use in contained batch processesPROC3	No other specific measures identified.	
General exposures (open systems)PROC4	No other specific measures identified.	

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Process sampling(closed systems)PROC2	No other specific measures identified.		
Equipment cleaning and	Drain down system prior to equipment opening or mainte-		
maintenancePROC8a	nance.	•	
	Retain drain downs in sealed storage per	nding disposal or for	
	subsequent recycle.		
Bulk transfersDedicated Clear transfer lines prior to de-coupling.			
facilityPROC8b	Provide a good standard of general venti	lation (not less than	
	3 to 5 air changes per hour).		
	<u>, or:</u>		
	Ensure operation is undertaken outdoors		
D. II. and a factor of a factor of	Night of the Control of the Control		
Bulk product storage(closed	No other specific measures identified.		
systems)PROC2	No other execitions accuracy identified		
Laboratory activi- tiesPROC15	No other specific measures identified.		
Section 2.2	Control of Environmental Evacuus		
	Control of Environmental Exposure	<u> </u>	
Substance is a unique structu			
Liquid, vapour pressure 0.5 -	10 KPa at STP		
Miscible in water.			
Practically non-toxic to aquat			
Low bioaccumulation potentia	al.		
Readily biodegradable.			
Amounts Used		Т	
Fraction of EU tonnage used in region:		1	
Regional use tonnage (tonnes/year):		3,0E+03	
Fraction of Regional tonnage		1	
Annual site tonnage (tonnes/		3,0E+03	
Maximum daily site tonnage (kg/day): 1,0E+04		1,0E+04	
Frequency and Duration of	Use	T	
Continuous release.			
Emission Days (days/year): 300		300	
Environmental factors not influenced by risk management			
Local freshwater dilution factor:		10	
	Local marine water dilution factor: 100 Other Operational Conditions affecting Environmental Exposure		
		2.00E.03	
	rocess (initial release prior to RMM):	2,00E-03	
Release fraction to wastewater from process (initial release prior to		1,000-02	
	RMM): Poleogo fraction to sail from process (initial release prior to PMM): 1 00E 03		
Release fraction to soil from process (initial release prior to RMM): 1,00E-03 Technical conditions and measures at process level (source) to prevent release			
	Common practices vary across sites thus conservative process re-		
lease estimates used.			
	s and measures to reduce or limit discha	arges, air emis-	
sions and releases to soil		a. 500, an onno	
	not required for the purposes of REACH		
compliance but may be needed to comply with other environmental			
legislation.			
		87,35	
	the required removal efficiency of >= (%)		
	· /	1	

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Assumed industrial waste water treatment plant flow (m3/d) 2.000

Organisational measures to prevent/limit release from site

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

Bund storage facilities to prevent soil and water pollution in the event of spillage.

A leak prevention plan is needed to prevent low level continual releases.

Prevent environmental discharge consistent with regulatory requirements.

Conditions and Measures related to municipal sewage treatment plant

Do not discharge to sewers or drains.

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) 1,98E+06

Conditions and Measures related to external treatment of waste for disposal

Estimated amount entering waste treatment no greater than: 2%.

Type of treatment suitable for waste: incineration.

Removal efficiency (%): 99.98.

Dispose of waste product or used containers according to local regulations.

Treat as hazardous waste.

Conditions and measures related to external recovery of waste

Estimated amount entering waste treatment no greater than: 2%.

Type of treatment suitable for waste: redistillation.

External treatment and disposal of waste should comply with applicable local and/or regional regulations.

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

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

Section 3.2 - Environment

Used ECETOC TRA model.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO

Section 4.1 - Health

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

Where other Risk Management Measures/Operational Conditions are adopted, then users

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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.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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Exposure Scenario - Worker

30000000454	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (re)packing of substances and mixtures- Industrial
Use Descriptor	Sector of Use: SU3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15 Environmental Release Categories: ERC2, ESVOC SpERC 2.2.v1
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 RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,	
Frequency and Duration of Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes use at not more than 20°C above ambient temperature (unless stated differently).		

Assumes use at not more than 20°C above ambient temperature (unless stated differently). 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.
General exposures.Continuous processon sampling(closed systems)PROC1	No other specific measures identified.
General exposures.Continuous processwith sample collection(closed systems)PROC2	No other specific measures identified.
General exposures.Use in contained batch processeswith sample collec-	No other specific measures identified.

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tionPROC3		
General exposures (open	Provide a good standard of general venti	lation (not loss than
systems)PROC4	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Batch processes at elevat-	Operating temperature: Up to 20°C above	e ambient maximum.
ed temperatures(closed	Fugacity band at operating temperature:	
systems)PROC3	Liquid, vapour pressure 0.5 - 10 kPa	
Process sampling(closed systems)PROC2	No other specific measures identified.	
Bulk transfersDedicated facilityPROC8b	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
	, or: Ensure operation is undertaken outdoors	
Mixing operations (open	Provide extraction ventilation at points when	nere emissions oc-
systems)PROC5	cur.	
Transfer from/pouring from	Provide extract ventilation to material train	nefer points and oth-
containersManualPROC8a	Provide extract ventilation to material transfer points and other openings.	
Equipment cleaning and	Drain down system prior to equipment op	ening or mainte-
maintenancePROC8a	nance.	· ·
	Retain drain downs in sealed storage per	nding disposal or for
	subsequent recycle.	
Drum/batch transfersDedi-	Provide a good standard of general venti	lation (not less than
cated facilityPROC8b	3 to 5 air changes per hour).	•
	, or:	
	Ensure operation is undertaken outdoors	
Drum and small package	Fill containers/cans at dedicated filling po	nints supplied with
fillingDedicated facili-	local extract ventilation.	mic supplied with
tyPROC9		
Bulk product storage(closed	No other specific measures identified.	
systems)PROC2	·	
Laboratory activi- tiesPROC15	No other specific measures identified.	
Section 2.2		
Substance is a unique structu	Substance is a unique structure.	
Liquid, vapour pressure 0.5 -	10 kPa at STP	
Miscible in water.		
Practically non-toxic to aquatic species.		
Low bioaccumulation potential.		
Readily biodegradable.		
Amounts Used		
Fraction of EU tonnage used in region:		1
Regional use tonnage (tonnes/year): 3,0E+04		3,0E+04
Fraction of Regional tonnage used locally: 1		1
Annual site tonnage (tonnes/year): 3,0E+04		
Maximum daily site tonnage (kg/day): 1,0E+05		1,0E+05

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Frequency and Duration of Use	
Continuous release.	
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	
Release fraction to air from process (initial release prior to RMM):	2,50E-02
Release fraction to wastewater from process (initial release prior to	5,00E-03
RMM):	,
Release fraction to soil from process (initial release prior to RMM):	1,00E-04
Technical conditions and measures at process level (source) to pr	event release
Common practices vary across sites thus conservative process re-	
ease estimates used.	
Technical onsite conditions and measures to reduce or limit disch sions and releases to soil	arges, air emis-
Treatment of air emissions is not required for the purposes of REACH	
compliance but may be needed to comply with other environmental	
legislation.	
Soil emission controls are not applicable as there is no direct release	
to soil.	
Treat onsite wastewater (prior to receiving water discharge) to provide	87,35
the required removal efficiency of >= (%)	
Assumed industrial waste water treatment plant flow (m3/d) Organisational measures to prevent/limit release from site	2.000
Site should have a spill plan to ensure that adequate safeguards are in the impact of episodic releases.	•
Bund storage facilities to prevent soil and water pollution in the event of	spillage.
A leak prevention plan is needed to prevent low level continual releases	S.
Prevent environmental discharge consistent with regulatory requiremen	ts.
Conditions and Measures related to municipal sewage treatment p	lant
Estimated substance removal from wastewater via domestic sewage	87,35
treatment (%)	
Maximum allowable site tonnage (MSafe) based on release following	1,98E+06
total wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste fo	r disposal
Estimated amount entering waste treatment no greater than: 5%.	
Type of treatment suitable for waste: approved landfill.	
Type of treatment suitable for waste: incineration.	
Removal efficiency (%): 99.98.	
Dispose of waste product or used containers according to local regulation	ons.

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Treat as hazardous waste.

External treatment and disposal of waste should comply with applicable local and/or regional regulations.

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

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

Section 3.2 - Environment

Used ECETOC TRA model.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO

Section 4.1 - Health

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

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.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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Exposure Scenario - Worker

Exposure Scenario - W	OI NCI
30000000455	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- IndustrialSolvent-based process.
Use Descriptor	Sector of Use: SU3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15 Environmental Release Categories: ERC4, ESVOC SpERC 4.3a.v1
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,	
Frequency and Duration of		
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Conditio	ns affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). 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.	
General exposures (closed systems)PROC1	No other specific measures identified.	
General exposures (closed systems) with sample collection PROC2	No other specific measures identified.	
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curingPROC2	Handle substance within a predominantly closed system provided with extract ventilation.	
Mixing operations (closed systems)General expo-	No other specific measures identified.	

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sures (closed sys-		
tems)PROC3		
Film formation - air dry- ingPROC4	No other specific measures identified.	
Preparation of material for applicationMixing operations (open systems)PROC5	Provide extraction ventilation at points where emissions occur.	
Spraying (automat- ic/robotic)PROC7	Carry out in a vented booth or extracted enclosure.	
SprayingManualDedicated facilityPROC7	Carry out in a vented booth or extracted enclosure. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Avoid carrying out operation for more than 4 hours. The ART tool has been used to calculate exposure	
SprayingManualNon- dedicated facilityPROC7	Wear a full face respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Avoid carrying out operation for more than 4 hours.	
Material transfersNon- dedicated facilityPROC8a	Provide extract ventilation to material transfer points and other openings.	
Material transfersDedicated facilityPROC8b	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). , or: Ensure operation is undertaken outdoors.	
Roller, spreader, flow applicationPROC10	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).	
Dipping, immersion and pouringPROC13	Provide extraction ventilation at points where emissions occur.	
Laboratory activi- tiesPROC15	No other specific measures identified.	
Material trans- fersDrum/batch transfer- sTransfer from/pouring from containersDedicated facili- tyPROC8b	Fill containers/cans at dedicated filling points supplied with local extract ventilation.	
Section 2.2	Control of Environmental Exposure	
Substance is a unique structu		
Liquid, vapour pressure 0.5 -	10 kPa at STP	
Miscible in water.		
Practically non-toxic to aquati		
Low bioaccumulation potentia	di.	
Readily biodegradable. Amounts Used		
Amounts Useu		

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	Τ :
Fraction of EU tonnage used in region:	1
Regional use tonnage (tonnes/year):	3,0E+04
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	3,0E+04
Maximum daily site tonnage (kg/day):	5,0E+04
Frequency and Duration of Use	<u> </u>
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	9,80E-01
Release fraction to wastewater from process (initial release prior to RMM):	2,00E-02
Release fraction to soil from process (initial release prior to RMM):	0
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	
Treatment of air emissions is not required for the purposes of REACH	
compliance but may be needed to comply with other environmental	
legislation.	
Soil emission controls are not applicable as there is no direct release	
to soil.	
Use a wet scrubber or dry filtration system to control air emissions of	
aerosols.	
Treat onsite wastewater (prior to receiving water discharge) to provide	87,35
the required removal efficiency of >= (%)	
If discharging to domestic sewage treatment plant, provide the re-	0
quired onsite wastewater removal efficiency of (%)	
Organisational measures to prevent/limit release from site	
Prevent environmental discharge consistent with regulatory requirement	ts.
Conditions and Measures related to municipal sewage treatment p	
Estimated substance removal from wastewater via domestic sewage treatment (%)	87,355
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	87,35
Maximum allowable site tonnage (MSafe) based on release following	9,88E+05
total wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for	r disposal
Dispose of waste product or used containers according to local regulation	
Treat as hazardous waste.	
Dispose of waste water from wet scrubbers using a waste disposal cont	ractor only.
External treatment and disposal of waste should comply with applicable	local and/or regional

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regulations.

Conditions and measures related to external recovery of waste

Not applicable.

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

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

Section 3.2 - Environment

Used ECETOC TRA model.

SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

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.

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Exposure Scenario - Worker

systems)General expo-

30000000456		
SECTION 1	EXPOSURE SCENARIO TITLE	
Title	Uses in Coatings- IndustrialWater-based process.	
Use Descriptor	Sector of Use: SU3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15 Environmental Release Categories: ERC4, ESVOC SpERC 4.3a.v1	
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.	

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP	
Concentration of the Substance in Mixture/Article	Covers concentrations up to, 15 %	
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Conditio	ns affecting Exposure	
Assumes use at not more that	an 20°C above ambient temperature (unless stated differently).	
Assumes a good basic stand	ard 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.	
General exposures (closed systems)PROC1	No other specific measures identified.	
General exposures (closed systems)with sample collectionPROC2	No other specific measures identified.	
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curingPROC3	No other specific measures identified.	
Mixing operations (closed	No other specific measures identified.	

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sures (closed systems)PROC3 Film formation - air dryingPROC4 Preparation of material for applicationMixing operations (open systems)PROC5 Spraying (automatic/robotic)PROC7 SprayingManualDedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow application Mo other specific measures identified. No other specific measures identified. No other specific measures identified.		
Film formation - air dry- ingPROC4 Preparation of material for applicationMixing opera- tions (open sys- tems)PROC5 Spraying (automat- ic/robotic)PROC7 SprayingManualDedicated facilityPROC7 SprayingManualNon- dedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. Material transfersDedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified.		
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applicationMixing operations (open systems)PROC5 Spraying (automatic/robotic)PROC7 SprayingManualDedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified.		
tions (open systems)PROC5 Spraying (automatic/robotic)PROC7 SprayingManualDedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified.		
Spraying (automatic/robotic)PROC7		
Spraying (automatic/robotic)PROC7 Carry out in a vented booth or extracted enclosure. Wear suitable gloves tested to EN374. SprayingManualDedicated facilityPROC7 Carry out in a vented booth or extracted enclosure. Wear suitable gloves tested to EN374. SprayingManualNondedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified.		
ic/robotic)PROC7 Wear suitable gloves tested to EN374. SprayingManualDedicated facilityPROC7 SprayingManualNondedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified.		
SprayingManualDedicated facilityPROC7 Carry out in a vented booth or extracted enclosure. Wear suitable gloves tested to EN374. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified.		
SprayingManualNon- dedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNon- dedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified. No other specific measures identified.		
SprayingManualNon- dedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNon- dedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified. No other specific measures identified.		
SprayingManualNon- dedicated facilityPROC7 Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNon- dedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified.		
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Wear suitable gloves tested to EN374. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying. Material transfersNondedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow applivation. No other specific measures identified. No other specific measures identified.		
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Material transfersNon- dedicated facilityPROC8a Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified.		
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Material transfersDedicated facilityPROC8b Roller, spreader, flow appli- No other specific measures identified. No other specific measures identified.		
facilityPROC8b Roller, spreader, flow appli- No other specific measures identified.		
Roller, spreader, flow appli- No other specific measures identified.		
04.10111 1.0010		
Dipping, immersion and No other specific measures identified.		
pouringPROC13		
Laboratory activi- No other specific measures identified.		
tiesPROC15		
Material trans- No other specific measures identified.		
fersDrum/batch transfer-		
sTransfer from/pouring from containersDedicated facili-		
tvPROC9		
Section 2.2 Control of Environmental Exposure		
Substance is a unique structure.		
Liquid, vapour pressure 0.5 - 10 kPa at STP		
Miscible in water.		
Practically non-toxic to aquatic species.		
Low bioaccumulation potential.		
Readily biodegradable.		
Amounts Used		
Fraction of EU tonnage used in region:		
Regional use tonnage (tonnes/year): 3,0E+03		
Fraction of Regional tonnage used locally:		
Annual site tonnage (tonnes/year): 3,0E+03		
Maximum daily site tonnage (kg/day): 1,0E+04		

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Frequency and Duration of Use	
· · ·	1
Continuous release.	000
Emission Days (days/year):	300
Environmental factors not influenced by risk management	T
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):	9,80E-01
Release fraction to wastewater from process (initial release prior to RMM):	2,00E-02
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to pro	event release
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit dischasions and releases to soil	arges, air emis-
Treatment of air emissions is not required for the purposes of REACH	
compliance but may be needed to comply with other environmental legislation.	
Soil emission controls are not applicable as there is no direct release to soil.	
Use a wet scrubber or dry filtration system to control air emissions of aerosols.	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	87,35
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Organisational measures to prevent/limit release from site	
Prevent environmental discharge consistent with regulatory requirement	te
Trevent environmental disentinge consistent with regulatory requirement	
Conditions and Measures related to municipal sewage treatment p	lant
Estimated substance removal from wastewater via domestic sewage treatment (%)	87,35
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	87,35
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	9,88E+05
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for	
Dispose of waste product or used containers according to local regulation	-
Treat as hazardous waste.	
Dispose of waste water from wet scrubbers using a waste disposal cont	ractor only.
External treatment and disposal of waste should comply with applicable regulations.	local and/or regional
Conditions and measures related to external recovery of waste	
Not applicable.	

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SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has b	peen used to estimate workplace exposures unless otherwise

indicated.

Section 3.2 - Environment Used ECETOC TRA model.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO	
Section 4.1 - Health		
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management		

Measures/Operational Conditions outlined in Section 2 are implemented.

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.

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Exposure Scenario - Worker

Exposure Scenario - Worke	51
30000000457	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- ProfessionalSolvent-based process.
Use Descriptor	Sector of Use: SU22 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19 Environmental Release Categories: ERC8a, ERC8d, ESVOC SpERC 8.3b.v1
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES		
Section 2.1	Control of Worker Exposure		
Product Characteristics			
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP		
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,		
Frequency and Duration o	f Use		
Covers daily exposures up to	o 8 hours (unless stated differently).		
Other Operational Condition	ons affecting Exposure		
Assumes use at not more th	an 20°C above ambient temperature (unless stated differently).		

Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios	Risk	k Management Measures	
General measures (eye irritar	nts).	Use suitable eye protection. Avoid direct eye contact with product, also via contamination hands.	on
General exposures (closed sy tems)PROC1	/S-	No other specific measures identified.	
Filling/ preparation of equipment from drums or containers.PR		No other specific measures identified.	
General exposures (closed sy tems)Use in contained systemsPROC2	/S-	No other specific measures identified.	
Preparation of material for ap cationPROC3	pli-	No other specific measures identified.	
Film formation - air dry- ingOutdoorPROC4		Ensure operation is undertaken outdoors.	

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Film formation - air dryingln-doorPROC4	Provide extraction ventilation at points where emissions occur.
Preparation of material for applicationIndoorPROC5	Provide extraction ventilation at points where emissions occur.
Preparation of material for applicationOutdoorPROC5	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily.
Material transfersDrum/batch transfersNon-dedicated facilityPROC8a	Provide extraction ventilation at points where emissions occur.
Material transfersDedicated facili- tyDrum/batch transfersPROC8b	Ensure material transfers are under containment or extract ventilation.
Roller, spreader, flow application- IndoorPROC10	Provide extraction ventilation at points where emissions occur.
Roller, spreader, flow applicationOutdoorPROC10	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily.
SprayingManualIndoorPROC11	Carry out in a vented booth or extracted enclosure. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Wear suitable coveralls to prevent exposure to the skin.
SprayingManualOutdoorPROC11	Ensure operation is undertaken outdoors. Wear a full face respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily. Wear suitable gloves tested to EN374. Wear suitable coveralls to prevent exposure to the skin.
Dipping, immersion and pouringIndoorPROC13	Provide extraction ventilation at points where emissions occur.
Dipping, immersion and pouringOutdoorPROC13	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily.
Laboratory activitiesPROC15	No other specific measures identified.
Hand application - fingerpaints, pastels, adhesivesIn-doorPROC19	Limit the substance content in the product to 25 %. Wear a respirator conforming to EN140 with Type A filter or better.

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	Change filter cartridge on respirator Wear suitable gloves tested to EN3 Avoid carrying out operation for mo	74.
0(
Section 2.2	Control of Environmental Exposure	
Substance is a unique structu		
Liquid, vapour pressure 0.5 -	10 kPa at STP	
Miscible in water.		
Practically non-toxic to aquati	·	
Low bioaccumulation potentia	ll.	
Readily biodegradable.		
Amounts Used		T
Fraction of EU tonnage used		0,1
Regional use tonnage (tonnes		3,0E+03
Fraction of Regional tonnage		0,0005
Annual site tonnage (tonnes/y		1,5
Maximum daily site tonnage (4,11
Frequency and Duration of	Use	
Continuous release.		
Emission Days (days/year):		365
	nfluenced by risk management	1
Local freshwater dilution factor		10
Local marine water dilution fa		100
	ns affecting Environmental Exposure	1
Dispersive use.		
	rocess (initial release prior to RMM):	9,8E-01
Release fraction to wastewate RMM):	er from process (initial release prior to	1,0E-02
	process (initial release prior to RMM):	1,0E-02
	easures at process level (source) to pr	event release
Common practices vary acros lease estimates used.	ss sites thus conservative process re-	
Technical onsite conditions sions and releases to soil	and measures to reduce or limit disch	arges, air emis-
Treatment of air emissions is	not required for the purposes of REACH	
compliance but may be neede legislation.	ed to comply with other environmental	
Treat onsite wastewater (prior the required removal efficience	r to receiving water discharge) to provide by of >= (%)	87,35
	vage treatment plant, provide the re-	0
	prevent/limit release from site	1
	o ensure that adequate safeguards are in	place to minimize
the impact of episodic release		•
A leak prevention plan is need	ded to prevent low level continual releases	S.
Prevent environmental discha	arge consistent with regulatory requiremen	ts.
Conditions and Measures re	elated to municipal sewage treatment p	lant
	from wastewater via domestic sewage	87,35

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treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite	87,35
(domestic treatment plant) RMMs (%)	
Maximum allowable site tonnage (MSafe) based on release following	1,1E+03
total wastewater treatment removal (kg/d)	
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for	or disposal
Estimated amount entering waste treatment no greater than: 10%.	
Type of treatment suitable for waste: approved landfill.	
Type of treatment suitable for waste: incineration.	
Removal efficiency (%): 99.98.	
Dispose of waste product or used containers according to local regulation	ions.
Treat as hazardous waste.	
Dispose of waste water from wet scrubbers using a waste disposal con	tractor only.
Conditions and measures related to external recovery of waste	
Not applicable.	

SE	CTI	ON 3		EXPOSURE ESTIMATION	

Section 3.1 - Health

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

Section 3.2 - Environment

Used ECETOC TRA model.

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

Section 4.1 - Health

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

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

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or in combination.

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Exposure Scenario - Worker

Exposure Scenario - Worker		
30000000458		
SECTION 1	EXPOSURE SCENARIO TITLE	
Title	Uses in Coatings- ProfessionalWater-based process.	
Use Descriptor	Sector of Use: SU22 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19 Environmental Release Categories: ERC8a, ERC8d, ESVOC SpERC 8.3b.v1	
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.	

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES		
Section 2.1	Control of Worker Exposure		
Product Characteristics			
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP		
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.,		
Frequency and Duration o	f Use		
Covers daily exposures up to 8 hours (unless stated differently).			
Other Operational Conditi	ons affecting Exposure		
Assumes use at not more than 20°C above ambient temperature (unless stated differently).			

Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios Risk		Management Measures	Ì
General measures (eye irritants).		Use suitable eye protection. Avoid direct eye contact with product, also via contaminati on hands.	on
General exposures (closed sy tems)PROC1	/S-	No other specific measures identified.	
Filling/ preparation of equipment from drums or containers.PROC2		No other specific measures identified.	
General exposures (closed systems)Use in contained systemsPROC2		No other specific measures identified.	
Preparation of material for ap cationPROC3	pli-	No other specific measures identified.	
Film formation - air dry- ingOutdoorPROC4		Ensure operation is undertaken outdoors.	

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Film formation - air dryingln- doorPROC4	No other specific measures identified.
Preparation of material for applicationIndoorPROC5	No other specific measures identified.
Preparation of material for applicationOutdoorPROC5	Ensure operation is undertaken outdoors.
Material transfersDrum/batch transfersNon-dedicated facilityPROC8a	No other specific measures identified.
Material transfersDedicated facili- tyDrum/batch transfersPROC8b	No other specific measures identified.
Roller, spreader, flow application- IndoorPROC10	No other specific measures identified.
Roller, spreader, flow applicationOutdoorPROC10	Ensure operation is undertaken outdoors.
SprayingManualIndoorPROC11	Carry out in a vented booth or extracted enclosure.
SprayingManualOutdoorPROC11	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better. Change filter cartridge on respirator daily.
Dipping, immersion and pouringIndoorPROC13	No other specific measures identified.
Dipping, immersion and pouringOutdoorPROC13	Ensure operation is undertaken outdoors.
Laboratory activitiesPROC15	No other specific measures identified.
Hand application - fingerpaints, pastels, adhesivesIndoorPROC19	Avoid carrying out activities involving exposure for more than 4 hours
Hand application - fingerpaints, pastels, adhesivesOut-doorPROC19	Ensure operation is undertaken outdoors. Avoid carrying out operation for more than 4 hours.
Section 2.2 Co	ntrol of Environmental Exposure

Section 2.2 Control of Environmental Exposure			
Substance is a unique structu	Substance is a unique structure.		
Liquid, vapour pressure 0.5 -	10 kPa at STP		
Miscible in water.			
Practically non-toxic to aquati	c species.		
Low bioaccumulation potentia	ıl.		
Readily biodegradable.			
Amounts Used			
Fraction of EU tonnage used in region: 0,1			
Regional use tonnage (tonnes/year): 3,0E+02			
Fraction of Regional tonnage used locally: 0,005			
Annual site tonnage (tonnes/year): 0,15			
Maximum daily site tonnage (kg/day): 0,41			
Frequency and Duration of Use			
Continuous release.			
Emission Days (days/year): 365			
Environmental factors not influenced by risk management			

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Local freehwater dilution factors	10
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Dispersive use.	0.00.04
Release fraction to air from process (initial release prior to RMM):	9,8E-01
Release fraction to wastewater from process (initial release prior to RMM):	1,0E-02
Release fraction to soil from process (initial release prior to RMM):	1,0E-02
Technical conditions and measures at process level (source) to pre	event release
Common practices vary across sites thus conservative process re-	
lease estimates used.	
Technical onsite conditions and measures to reduce or limit dischasions and releases to soil	arges, air emis-
No specific measures required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide	87,4
the required removal efficiency of >= (%)	,
If discharging to domestic sewage treatment plant, provide the re-	0
quired onsite wastewater removal efficiency of (%)	
Organisational measures to prevent/limit release from site	
Site should have a spill plan to ensure that adequate safeguards are in	place to minimize
the impact of episodic releases.	
Bund storage facilities to prevent soil and water pollution in the event of	spillage.
	. 0
A leak prevention plan is needed to prevent low level continual releases	
Prevent environmental discharge consistent with regulatory requirement	ts.
Conditions and Measures related to municipal sewage treatment pl	ant
Estimated substance removal from wastewater via domestic sewage	87,4
treatment (%)	,
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	87,4
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	331
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for	
Estimated amount entering waste treatment no greater than: 10%.	ulopodul
Type of treatment suitable for waste: approved landfill.	
Type of treatment suitable for waste: incineration.	
D (%) 00 00	
Removal efficiency (%): 99.98.	
Dispose of waste product or used containers according to local regulation	ons.
Treat as hazardous waste.	
Dispose of waste water from wet scrubbers using a waste disposal cont	ractor only.

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Conditions and measures related to external recovery of waste

Not applicable.

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

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

Section 3.2 - Environment

Used ECETOC TRA model.

SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

Section 4.1 - Health

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

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.

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Exposure Scenario - Consumer

Exposure Containe Contain	
30000001046	
	-
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in coatings - Consumer Water-based process.
Use Descriptor	Sector of Use: SU21
	Product Categories: PC9a, PC9c
	Environmental Release Categories: ERC8a, ERC8d,
	ESVOC SpERC 8.3c.v1
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		
Physical form of product	Liquid, vapour pressure > 10 Pa at STP	
Concentration of the Sub-	See specific operational conditions below.	
stance in Mixture/Article		
Amounts Used		
See specific operational cond		
Frequency and Duration of		
See specific operational cond		
Other Operational Conditio		
See specific operational cond	ditions below.	
Product Categories OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES		
Coatings and paints, thin- ners, paint removers Wa- terborne latex wall paint.	Covers concentrations up to 1,5 %	
	covers use up to 4 day/year	
	Covers use up to 1 times/day of use	
	covers skin contact area up to (cm2): 428	
	For each use event, covers amount up to 2.760 g	
	Covers use in room size of 20m3	
	for each use event Covers exposure up to 2,20 hours/event	
	Avoid using at a product concentration greater than 1,5 %	
	For each use event, avoid using a product amount greater	
	than 2.760 g	
	Avoid using in room with closed doors.	
	Avoid using when windows closed.	
Finger paints Finger paints	Covers concentrations up to 10 %	
	Covers use up to 1 times/day of use	
	For each use event, covers amount up to 100 g	

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covers skin contact area up to (cm2): 254
Covers use in room size of 20m3
Covers use under typical household ventilation.
Covers exposure up to 2,2 hours/event
For each use event, assumes swallowed amount of 0,5 g
Avoid using at a product concentration greater than 10 %
For each use event, avoid using a product amount greater than 100 g
For each use, avoid using for more than 2,2 hours/event
Avoid using in room with closed doors.
Avoid using when windows closed.
For each use event, avoid swallowing amounts more than 0,5 g

Section 2.2	Control of Environmental Exposure	
Substance is a unique structure).	
Miscible in water.		
Practically non-toxic to aquatic	species.	
Readily biodegradable.		
Low bioaccumulation potential.		
Amounts Used		
Fraction of EU tonnage used in	region:	0,1
Regional use tonnage (tonnes/y	/ear):	3,0E+02
Fraction of Regional tonnage us	sed locally:	5,0E-04
Annual site tonnage (tonnes/ye	ar):	1,65
Maximum daily site tonnage (kg	g/day):	4,1E-01
Frequency and Duration of U	se	
Continuous release.		
Emission Days (days/year):		365
Environmental factors not influenced by risk management		
Local freshwater dilution factor:		10
Local marine water dilution fact		100
Other Operational Conditions affecting Environmental Exposure		
	cess (initial release prior to RMM):	0,985
Release fraction to wastewater RMM):	from process (initial release prior to	0,01
Release fraction to soil from pro	ocess (initial release prior to RMM):	0,005
Conditions and Measures related to municipal sewage treatment plant		
Estimated substance removal fit treatment (%)	rom wastewater via domestic sewage	78,4
Total efficiency of removal from (domestic treatment plant) RMM	wastewater after onsite and offsite ## (%)	78,4
Maximum allowable site tonnag total wastewater treatment rem	e (MSafe) based on release following oval (kg/d)	331
Assumed domestic sewage trea	, ,	2.000
	ated to external treatment of waste fo	r disposal
	te treatment no greater than: 10%.	•
Dispose of empty containers ar	d wastes safely.	

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Dispose of waste in accordance with environmental legislation.

Conditions and measures related to external recovery of waste

Not applicable.

SECTION 3 EXPOSURE ESTIMATION

Section 3.1 - Health

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

The Consexpo model has been used to estimate consumer exposures unless otherwise indicated.

Section 3.2 - Environment

Used ECETOC TRA model.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO

Section 4.1 - Health

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

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.

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Exposure Scenario - Consumer

30000001047	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings - Consumer Solvent-based process.
Use Descriptor	Sector of Use: SU21 Product Categories: PC9a, PC9c, PC18 Environmental Release Categories: ERC8a, ERC8d, ESVOC SpERC 8.3c.v1
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		
Physical form of product	Liquid, vapour pressure > 10 Pa at STP	
Concentration of the Substance in Mixture/Article	See specific operational conditions below.	
Amounts Used		
See specific operational conditions below.		
Frequency and Duration of Use		
See specific operational conditions below.		
Other Operational Conditions affecting Exposure		
Assumes activities are at ambient temperature (unless stated differently).		

Assumes activities are at ambient temperature (unless stated differently). Unless otherwise indicated, assumes use with typical ventilation.

Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Coatings and paints, thin- ners, paint removers Sol- vent rich, high solid, water borne paint.	Covers concentrations up to 10 %
	covers use up to 6 day/year
	For each use event, covers amount up to 750 g
	covers skin contact area up to (cm2): 428
	Covers use in room size of 20m3
	Covers exposure up to 2,2 hours/event
	Avoid using at a product concentration greater than 10 %
	For each use event, avoid using a product amount greater than 750 g
	Avoid using in room with closed doors.
	Avoid using when windows closed.
Coatings and paints, thin- ners, paint removers Aero-	Covers concentrations up to 50 %

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sol spray can.	
	covers use up to 2 day/year
	For each use event, covers amount up to 215 g
	covers skin contact area up to (cm2): 254
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers exposure up to 0,3 hours/event
	Avoid using at a product concentration greater than 50 %
	. or:
	For each use event, avoid using a product amount greater
	than 215 g
	Avoid skin contact area greater than 254 cm2
	Avoid using in rooms smaller than a garage - room volume of
	at least 35 m3
	For each use, avoid using for more than 0,3 hours/event
Finger paints Finger paints	Covers concentrations up to 10 %
	Covers use up to 1 times/day of use
	For each use event, covers amount up to 100 g
	covers skin contact area up to (cm2): 254 cm2
	Covers use in room size of 20m3
	Covers use under typical household ventilation.
	Covers exposure up to 2,2 hours/event
	For each use event, assumes swallowed amount of 0,5 g
	Avoid using at a product concentration greater than 10 %
	For each use event, avoid using a product amount greater
	than 100 g
	For each use, avoid using for more than 2,2 hours/event
	For each use event, avoid swallowing amounts more than
	0,5 g
Ink and toners Inks and	Covers concentrations up to 10 %
toners.	·
	Covers use up to 1 times/day of use
	For each use event, covers amount up to 40 g
	covers skin contact area up to (cm2): 71
	Covers use in room size of 20m3
	Covers use under typical household ventilation.
	Covers exposure up to 2,2 hours/event
	Avoid using at a product concentration greater than 10 %
	For each use event, avoid using a product amount greater
	than 40 g
	covers skin contact area up to (cm2): 71 cm2
	For each use, avoid using for more than 2,2 hours/event

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Miscible in water.	
Practically non-toxic to aquatic species.	
Readily biodegradable.	
Low bioaccumulation potential.	
Amounts Used	

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Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	3,0E+03
Fraction of Regional tonnage used locally:	5,0E-04
Annual site tonnage (tonnes/year):	1,5
Maximum daily site tonnage (kg/day):	16,44
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):	9,8E-01
Release fraction to wastewater from process (initial release prior to RMM):	1,0E-02
Release fraction to soil from process (initial release prior to RMM):	1,0E-02
Conditions and Measures related to municipal sewage treatment p	olant
Domestic sewage treatment is not assumed.	
Estimated substance removal from wastewater via domestic sewage	87,35
treatment (%)	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	87,35
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1,1E+03
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste fo	r disposal
Estimated amount entering waste treatment no greater than: 10%.	
Dispose of empty containers and wastes safely.	
Dispose of waste in accordance with environmental legislation.	
Conditions and measures related to external recovery of waste	
Not applicable.	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated

The Consexpo model has been used to estimate consumer exposures unless otherwise indicated.

Section 3.2 -Environment	
Used ECETOC TRA model.	

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

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

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.