

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

Revision date: 21.07.2022

Version: 1.1

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

1.1 Product identifier

| | |
|--------------------------------|--|
| Trade name/designation: | Ethanol 96 % vol GPR RECTAPUR® |
| Product No.: | 20824 |
| CAS No.: | 64-17-5 |
| Index No.: | 603-002-00-5 |
| EU REACH No.: | 01-2119457610-43-XXXX |
| Other means of identification: | Ethyl alcohol, Hydroxy ethane, Methyl carbinol, Spirit |

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

| | |
|---------------------------|---|
| Relevant identified uses: | General chemical reagent In compliance with the conditions described in the annex to this safety data sheet. |
|---------------------------|---|

1.3 Details of the supplier of the safety data sheet

United Kingdom

VWR International Ltd.

| | |
|---------------------------|------------------------------|
| Street | Hunter Boulevard, Magna Park |
| Postal code/City | Lutterworth, LE17 4XN |
| Telephone | 0800 22 33 44 |
| Telefax | 01455 55 85 86 |
| E-mail (competent person) | SDS@avantorsciences.com |

1.4 Emergency phone number

| | |
|-----------|----------------------------------|
| Telephone | +44 (0) 1270 502894 (CareChem24) |
|-----------|----------------------------------|

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

| Hazard classes and hazard categories | Hazard statements |
|--------------------------------------|-------------------|
| Flammable liquid, category 2 | H225 |
| Eye irritation, category 2 | H319 |

2.2 Label elements

2.2.1 Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms



Signal word: Danger

| Hazard statements | |
|-------------------|-------------------------------------|
| H225 | Highly flammable liquid and vapour. |
| H319 | Causes serious eye irritation. |

| Precautionary statements | |
|--------------------------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P243 | Take precautionary measures against static discharge. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P403+P235 | Store in a well-ventilated place. Keep cool. |

2.3 Other hazards

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

SECTION 3: Composition / information on ingredients

3.1 Substances

| | |
|----------------------------|------------------------------------|
| Substance name: | Ethanol absolute |
| Molecular formula: | H ₃ CCH ₂ OH |
| Molecular weight: | 46.07 g/mol |
| CAS No.: | 64-17-5 |
| EU REACH registration No.: | 01-2119457610-43-XXXX |

EC No.: 200-578-6
ATE, SCL and/or M-factor: none

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

IF exposed or if you feel unwell: Call a POISON CENTRE or doctor/physician. If unconscious but breathing normally, place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person or a person with cramps. Change contaminated, saturated clothing. Do not leave affected person unattended.

After inhalation

Call a POISON CENTRE/doctor. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact

After contact with skin, wash immediately with plenty of water and soap. Remove contaminated, saturated clothing immediately. In case of skin reactions, consult a physician.

After eye contact:

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing.

In case of ingestion

If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Do NOT induce vomiting. Give nothing to eat or drink.

Self-protection of the first aider

First aider: Pay attention to self-protection!

4.2 Most important symptoms and effects, both acute and delayed

Irritation. Vomiting. Nausea. Dizziness. Drowsiness.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Symptoms can occur only after several hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray
ABC-powder
Carbon dioxide (CO₂)
Alcohol resistant foam

Extinguishing media which must not be used for safety reasons

Avoid water in straight hose stream; will scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

In case of fire may be liberated:

Carbon monoxide

Carbon dioxide (CO₂)

5.3 Advice for firefighters

DO NOT fight fire when fire reaches explosives.

Special protective equipment for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information

Do not inhale explosion and combustion gases.

Vapour can form explosive mixtures with air.

Use caution when applying carbon dioxide in confined spaces. Carbon dioxide can displace oxygen.

Use water spray jet to protect personnel and to cool endangered containers.

Do not allow run-off from fire-fighting to enter drains or water courses.

In case of fire: Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

In case of major fire and large quantities: Remove persons to safety. Remove all sources of ignition. Wear suitable protective clothing. Avoid breathing vapours. Stop leak if safe to do so.

6.2 Environmental precautions

Try to prevent the material from entering drains or water courses. Discharge into the environment must be avoided. Advise Authorities if spillage has entered water course or sewer or has contaminated soil or vegetation.

6.3 Methods and material for containment and cleaning up

Spilled product must never be returned to the original container for recycling. Collect in closed and suitable containers for disposal.

6.4 Additional information

Small spills: Allow to evaporate if it is safe to do so or contain and absorb using earth, sand or other inert material then transfer into suitable containers for recovery or disposal. Ventilate affected area. Large spills: Dike or dam to contain for later disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

All work processes must always be designed so that the following is as low as possible:

Inhalation

skin contact

Eye contact

Keep away from sources of ignition - No smoking.

Usual measures for fire prevention.

Take precautionary measures against static discharges.

Protect from moisture.

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: 15-25°C

Storage class: 3

Keep in a cool, well-ventilated place. Keep/Store away from combustible materials. Avoid high temperatures or direct sunlight.

Keep away from sources of ignition - No smoking. Keep/Store only in original container. Incompatible materials: PVC (polyvinyl chloride) Brass plastic and rubber Compatible materials: Stainless steel Titanium PP (Polypropylene) Ceramic

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

| Ingredient (Designation) | Regulatory information | Country | Limit value type (country of origin) | Limit value | Remark |
|--------------------------|---------------------------------|---------|---|-----------------------------------|-------------------------|
| Ethanol absolute | DNEL | EU | Worker, Dermal, long-term, systemic | 343 mg/kg bw/day | |
| Ethanol absolute | DNEL | EU | Worker, Inhalation, long-term, systemic | 950 mg/m ³ | |
| Ethanol absolute | PNEC | EU | aquatic, freshwater | 0.96 mg/l | Assessment factor: 10 |
| Ethanol absolute | PNEC | EU | aquatic, marine water | 0.79 mg/l | Assessment factor: 100 |
| Ethanol absolute | PNEC | EU | predators, secondary poisoning | 0.38 mg/kg food | Assessment factor: 90 |
| Ethanol absolute | PNEC | EU | sediment, freshwater | 3.6 mg/kg | sediment dw |
| Ethanol absolute | PNEC | EU | sediment, marine water | 2.9 mg/kg | sediment dw |
| Ethanol absolute | PNEC | EU | Sewage treatment plant | 580 mg/l | Assessment factor: 10 |
| Ethanol absolute | PNEC | EU | soil | 0.63 mg/kg | Assessment factor: 1000 |
| Ethanol absolute | EH40/2005 - Fourth Edition 2020 | UK | LTV | 1920 mg/m ³ - 1000 ppm | |

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment. If handled uncovered, arrangements with local exhaust ventilation have to be used.

8.2.2 Personal protection equipment

Wear suitable protective clothing. When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.

Eye/face protection

Eye glasses with side protection DIN-/EN-Norms DIN EN 166

Recommendation: VWR 111-0432

Skin protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. Recommended glove articles DIN-/EN-Norms EN ISO 374 In the case of wanting to use the gloves again, clean them before taking off and air them well.

By short-term hand contact

| | |
|----------------------------------|-------------------------|
| Suitable material: | NBR (Nitrile rubber) |
| Thickness of the glove material: | - |
| Breakthrough time:: | 240-480 min |
| Recommended glove articles: | VWR 112-3717 / 112-1381 |

By long-term hand contact

| | |
|----------------------------------|----------------------|
| Suitable material: | NBR (Nitrile rubber) |
| Thickness of the glove material: | 0,425 mm |
| Breakthrough time:: | > 480 min |
| Recommended glove articles: | VWR 112-0971 |

Respiratory protection

Respiratory protection necessary at: aerosol or mist formation

| | |
|--|---|
| Suitable respiratory protection apparatus: | Full-/half-/quarter-face masks (DIN EN 136/140) |
| Recommendation: | VWR 111-0206 |
| Suitable material: | ABEK2P3 |
| Recommendation: | VWR 111-0059 |

Additional information

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

8.2.3 *Environmental exposure controls*
no data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|----------------------|-------------------|
| (a) Appearance | |
| Physical state: | liquid |
| Colour: | colourless |
| (b) Odour: | no data available |
| (c) Odour threshold: | no data available |

Safety relevant basic data

| | |
|--|-------------------------------------|
| (d) pH: | 7 (20 °C) |
| (e) Melting point/freezing point: | -117 °C |
| (f) Initial boiling point and boiling range: | 78.3 °C (1013 hPa) |
| (g) Flash point: | 12 °C (closed cup) |
| (h) Evaporation rate: | no data available |
| (i) Flammability (solid, gas): | Highly flammable liquid and vapour. |
| (j) Flammability or explosive limits | |
| Lower explosion limit: | 3.3 % (v/v) |
| Upper explosion limit: | 19 % (v/v) |
| (k) Vapour pressure: | 59 hPa (20 °C) |
| (l) Vapour density: | 1.59 (20 °C) |
| (m) Density: | 0.81 g/cm ³ (20 °C) |
| (n) Solubility(ies) | |
| Water solubility: | soluble (20 °C) |
| (o) Partition coefficient: n-octanol/water: | -0.31 (20 °C) |
| (p) Auto-ignition temperature: | 425 °C |
| (q) Decomposition temperature: | not applicable |
| (r) Viscosity | |
| Kinematic viscosity: | no data available |
| Dynamic viscosity: | 1.2 mPa*s (20 °C) |
| (s) Explosive properties: | not applicable |
| (t) Oxidising properties: | not applicable |
| (u) Particle characteristics: | does not apply to liquids |

9.2 Other information

| | |
|------------------------|------------------------|
| Bulk density: | no data available |
| Refraction index: | 1.3629 (589 nm; 20 °C) |
| Dissociation constant: | no data available |
| Surface tension: | no data available |
| Henry's Law Constant: | no data available |

SECTION 10: Stability and reactivity

10.1 Reactivity

- Reactive substance.
- Vapours can form explosive mixtures with air.
- Risk of ignition.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Violent reaction with:

Alkali metals
Acetic anhydride
Peroxides
Nitric acid
Phosphorus oxides (e.g. P₂O₅)
Perchlorates
Halogenated compounds

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible materials

Oxidising agent
Peroxides
Strong acid
Hydrogen
arsenic
antimony
Organometallic compounds
Metallic oxides

10.6 Hazardous decomposition products

Decomposition products in case of fire: see section 5.

10.7 Additional information

no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute effects

Acute oral toxicity:

LD₅₀: > 6200 mg/kg - Rat - (Merck KGaA)

Acute dermal toxicity:

LD50: < 20000 mg/kg - Rabbit - (CHP)

Acute inhalation toxicity:

LC50: < 8000 mg/l (4 h) - Rat - (CHP)

Irritant and corrosive effects

Primary irritation to the skin:

not applicable

Irritation to eyes:

Causes serious eye irritation.

Irritation to respiratory tract:

not applicable

Respiratory or skin sensitisation

In case of skin contact: not sensitising

After inhalation: not sensitising

STOT-single exposure

not applicable

STOT-repeated exposure

not applicable

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

Carcinogenicity

No indication of human carcinogenicity.

Germ cell mutagenicity

No indications of human germ cell mutagenicity exist.

Reproductive toxicity

No indications of human reproductive toxicity exist.

Aspiration hazard

not applicable

Other adverse effects

no data available

Additional information

no data available

SECTION 12: Ecological information

12.1 Ecotoxicity

Fish toxicity:

LC50: 11200 mg/l (96 h) *Salmo gairdneri* - ECHA

Daphnia toxicity:

LC50: 5012 mg/l (48 h) *Ceriodaphnia dubia* - ECHA

NOEC: 9.6 mg/l (10 d) *Daphnia magna* - ECHA

Algae toxicity:

EC50: 275 mg/l (72 h) *Chlorella vulgaris* - ECHA

Bacteria toxicity:

no data available

12.2 Persistence and degradability

Biodegradable.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water: -0.31 (20 °C)

12.4 Mobility in soil:

no data available

12.5 Results of PBT/vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

12.6 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Appropriate disposal / Product

Dispose according to local legislation. Consult the appropriate local waste disposal expert about waste disposal.

Waste code product: 070104

Appropriate disposal / Package

Dispose according to local legislation. Handle contaminated packages in the same way as the substance itself.

Additional information

no data available

SECTION 14: Transport information

Land transport (ADR/RID)

| | | |
|------|--|--|
| 14.1 | UN-No.: | 1170 |
| 14.2 | Proper Shipping Name: | ETHANOL |
| 14.3 | Class(es): | 3 |
| | Classification code: | F1 |
| | Hazard label(s): | 3 |
| 14.4 | Packing group: | II |
| 14.5 | Environmental hazards: | No |
| 14.6 | Special precautions for user: | |
| | Hazard identification number (Kemler No.): | 33 |
| | tunnel restriction code: | D/E |
| | | (Passage forbidden through tunnels of category D when carried in bulk or in tanks. Passage forbidden through tunnels of category E.) |

Sea transport (IMDG)

| | | |
|------|--|---------|
| 14.1 | UN-No.: | 1170 |
| 14.2 | Proper Shipping Name: | ETHANOL |
| 14.3 | Class(es): | 3 |
| | Classification code: | |
| | Hazard label(s): | 3 |
| 14.4 | Packing group: | II |
| 14.5 | Environmental hazards: | No |
| | Marine pollutant: | No |
| 14.6 | Special precautions for user: | |
| | Segregation group: | - |
| | EmS-No. | F-E S-D |
| 14.7 | Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | |
| | not relevant | |

Air transport (ICAO-TI / IATA-DGR)

| | | |
|------|-------------------------------|---------|
| 14.1 | UN-No.: | 1170 |
| 14.2 | Proper Shipping Name: | ETHANOL |
| 14.3 | Class(es): | 3 |
| | Classification code: | |
| | Hazard label(s): | 3 |
| 14.4 | Packing group: | II |
| 14.5 | Special precautions for user: | |

SECTION 15: Regulatory information

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

EU legislation

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (Text with EEA relevance)
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (Text with EEA relevance)
- Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Text with EEA relevance)
- Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

National regulations

-

Water hazard class: slightly hazardous to water

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS - Committee on Hazardous Substances (Ausschuss für Gefahrstoffe)
CLP - Regulation on Classification, Labelling and Packaging of Substances and Mixtures
DFG - German Research Foundation (Deutsche Forschungsgemeinschaft)
DNEL - Derived No Effect Level
Gestis - Information system on hazardous substances of the German Social Accident Insurance (Gefahrstoffinformationssystem der Deutschen Gesetzlichen Unfallversicherung)
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
KOSHA - Korea Occupational Safety and Health Agency
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PNEC - Predicted No Effect Concentration
RID - Regulation concerning the International Carriage of Dangerous Goods by Rail
STV - Short Term Value
SVHC - Substances of Very High Concern
vPvB - very Persistent, very Bioaccumulative

Training advice: Provide adequate information, instruction and training for operators.

Key literature references and sources for data

This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

Additional information

Indication of changes none

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Exposure Scenario

Table of content

| Number | Overview on the exposure scenarios | Products Category [PC] | Sectors of use [SU] | Process categories [PROC] | Article categories [AC] | Environmental release categories [ERC] |
|--------|---|------------------------|---------------------|--|-------------------------|--|
| 1 | Industrial use: Use at industrial sites | | | PROC1 PROC15 PROC2 PROC3 PROC4 PROC8a PROC8b | | ERC4 ERC6a |
| 2 | Professional use: Use in laboratories | | | PROC10 PROC15 | | ERC8a |

1. Short title of the exposure scenario: ES 1: Industrial use: Use at industrial sites

| | |
|---|---|
| Sector(s) of use | |
| Process categories [PROC] | <p>PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC15: Use as laboratory reagent</p> <p>PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</p> <p>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4: Chemical production where opportunity for exposure arises</p> <p>PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities</p> |
| Products Category [PC] | |
| Article categories [AC] | |
| Environmental release categories [ERC] | <p>ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)</p> <p>ERC6a: Use of intermediate</p> |

1.1. ES 1: Industrial use: Use at industrial sites

Environment Contributing Scenario

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

ERC6a: Use of intermediate

Worker Contributing Scenario

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC15: Use as laboratory reagent

PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4: Chemical production where opportunity for exposure arises

PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities

1.2. Conditions of use affecting exposure

1.2.1. Contributing exposure scenario controlling environmental exposure: ERC4

| |
|--|
| Amount used, frequency and duration of use (or from service life) Daily amount per site: Annual amount per site: 12 500 t |
| Technical and organisational conditions and measures Onsite wastewater treatment required. |
| Conditions and measures related to sewage treatment plant Estimated substance removal from wastewater via domestic sewage treatment: 87% |
| Conditions and measures related to treatment of waste (including article waste) Disposal methods: Incineration (Effectiveness: 99,98 %). Recovery Methods : redistillation. External treatment and disposal of waste should comply with applicable regulation. |
| Other conditions affecting environmental exposure If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. |

1.2.2. Contributing exposure scenario controlling environmental exposure: ERC6a

| |
|--|
| Amount used, frequency and duration of use (or from service life) Daily amount per site: Annual amount per site: 12 500 t |
| Technical and organisational conditions and measures Onsite wastewater treatment required. |
| Conditions and measures related to sewage treatment plant Estimated substance removal from wastewater via domestic sewage treatment: 87% |
| Conditions and measures related to treatment of waste (including article waste) Disposal methods: Incineration (Effectiveness: 99,98 %). Recovery Methods : redistillation. External treatment and disposal of waste should comply with applicable regulation. |
| Other conditions affecting environmental exposure If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. |

1.2.3. Contributing exposure scenario controlling worker exposure:

| |
|--|
| Product characteristics Physical state: liquid Covers concentrations up to: 100 % |
|--|

| |
|---|
| Amount used (or contained in articles), frequency and duration of use/exposure Covers use up to: Covers daily exposures up to 8 hours Use frequency: |
| Technical and organisational conditions and measures Handle substance within a closed system. |
| Conditions and measures related to personal protection, hygiene and health evaluation Use suitable eye protection. |
| Other conditions affecting worker exposure Assumes a good basic standard of occupational hygiene is implemented. |

| Worker Contributing Scenario | Specific requirements or handling rules |
|--|--|
| Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |
| Use as laboratory reagent (PROC15) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |
| Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |
| Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |
| Chemical production where opportunity for exposure arises (PROC4) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |
| Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |
| Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) | Keep container tightly closed. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. Covers use at ambient temperatures. |

1.3. Exposure estimation and reference to its source

1.3.1. Environment: ERC4

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 0.003 | |
| Air | 0.002 | |
| Soil | 0.001 | |

| protection target | Exposure estimation | Risk Characterization Ratio (RCR) |
|----------------------------------|---------------------|-----------------------------------|
| freshwater | 0.72 mg/l | 7.50E-01 |
| freshwater sediment | 2.76 mg/kgdw | 7.50E-01 |
| marine water | 0.0793 mg/l | 1.00E-01 |
| marine sediment | 0.304 mg/kgdw | 1.00E-01 |
| Sewage treatment plant | 7.9 mg/l | 1.36E-02 |
| Agricultural soil | 0.00405 mg/kgdw | 2.38E-02 |
| Man via environment - Inhalation | | / |
| Man via environment - Oral | | / |

1.3.2. Environment: ERC6a

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 0.003 | ESVOC SPERC 6.1a.v1 |
| Air | 0.002 | ESVOC SPERC 6.1a.v1 |
| Soil | 0.001 | ESVOC SPERC 6.1a.v1 |

| protection target | Exposure estimation | Risk Characterization Ratio (RCR) |
|----------------------------------|---------------------|-----------------------------------|
| freshwater | 0.72 mg/l | 7.50E-01 |
| freshwater sediment | 2.76 mg/kgdw | 7.50E-01 |
| marine water | 0.0793 mg/l | 1.00E-01 |
| marine sediment | 0.304 mg/kgdw | 1.00E-01 |
| Sewage treatment plant | 7.9 mg/l | 1.36E-02 |
| Agricultural soil | 0.00405 mg/kgdw | 2.38E-02 |
| Man via environment - Inhalation | / | |
| Man via environment - Oral | / | |

1.3.3. Workers Exposure estimation: PROC1

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|-------------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 0.019 mg/m ³ | < 0.001 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 0.03 mg/kg/day | < 0.001 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | / | < 0.001 |
| combined routes, systemic, acute | / | / |

1.3.4. Workers Exposure estimation: PROC15

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|---------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 0.34 mg/kg/day | 0.02 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 0.34 mg/kg/day | < 0.001 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | / | 0.0212 |
| combined routes, systemic, acute | / | / |

1.3.5. Workers Exposure estimation: PROC2

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|-----------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 9.6 mg/m ³ | 0.01 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |

| | | |
|--------------------------------------|---------------|--------|
| Long-term - dermal, systemic effects | 1.4 mg/kg/day | 0.004 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | 0.0141 | 0.0141 |
| combined routes, systemic, acute | / | / |

1.3.6. Workers Exposure estimation: PROC3

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|---------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 19 mg/m3 | 0.02 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 0.69 mg/kg/day. | 0.002 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | / | 0.0222 |
| combined routes, systemic, acute | | / |

1.3.7. Workers Exposure estimation: PROC4

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|---------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 38 mg/m3 | 0.04 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 6.9 mg/kg/day | 0.02 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | 0.0603 | 0.0603 |
| combined routes, systemic, acute | / | / |

1.3.8. Workers Exposure estimation: PROC8a

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|----------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 96 mg/m ³ | 0.101 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 14 mg/kg/day | 0.04 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | 0.141 | 0.141 |
| combined routes, systemic, acute | | / |

1.3.9. Workers Exposure estimation: PROC8b

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|----------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 48 mg/m ³ | 0.05 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 14 mg/kg/day | 0.04 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | 0.0904 | 0.0904 |
| combined routes, systemic, acute | / | / |

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

ECHA link: <https://echa.europa.eu/regulations/reach/downstream-users>

Part D: Framework for exposure assessment, Part E: Characterisation:

<https://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment>

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.

Further details on scaling and control technologies are provided in SpERC factsheet.

<http://www.cefic.org/Industry-support/Implementing-reach/Guidances-and-Tools1/>

2. Short title of the exposure scenario: ES 2: Professional use: Use in laboratories

| | |
|--|--|
| Sector(s) of use | |
| Process categories [PROC] | PROC10: Roller application or brushing PROC15: Use as laboratory reagent |
| Products Category [PC] | |
| Article categories [AC] | |
| Environmental release categories [ERC] | ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) |

2.1. ES 2: Professional use: Use in laboratories

Environment Contributing Scenario

ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Worker Contributing Scenario

PROC10: Roller application or brushing

PROC15: Use as laboratory reagent

2.2. Conditions of use affecting exposure

2.2.1. Contributing exposure scenario controlling environmental exposure: ERC8a

| |
|--|
| Amount used, frequency and duration of use (or from service life) Daily amount per site: Annual amount per site: 0.01 t |
| Technical and organisational conditions and measures Do not release wastewater directly into the environment. Onsite wastewater treatment plant is not assumed. |
| Conditions and measures related to sewage treatment plant |

| |
|---|
| Disposal methods : Incineration (Effectiveness: 99,98 %). |
| Conditions and measures related to treatment of waste (including article waste) Dispose of waste product or used containers according to local regulations. |
| Other conditions affecting environmental exposure |

2.2.2. Contributing exposure scenario controlling worker exposure:

| |
|---|
| Product characteristics Physical state: liquid Covers concentrations up to: 100 % |
| Amount used (or contained in articles), frequency and duration of use/exposure Covers use up to: Covers daily exposures up to 8 hours Use frequency: |
| Technical and organisational conditions and measures Keep container tightly closed. |
| Conditions and measures related to personal protection, hygiene and health evaluation Use suitable eye protection. |
| Other conditions affecting worker exposure Assumes a good basic standard of occupational hygiene is implemented. |

| Worker Contributing Scenario | Specific requirements or handling rules |
|---|---|
| Roller application or brushing (PROC10) | Covers use at ambient temperatures. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. |
| Use as laboratory reagent (PROC15) | Covers use at ambient temperatures. Avoid direct eye contact with product, also via contamination on hands. Ensure no splashing occurs during transfer. |

2.3. Exposure estimation and reference to its source

2.3.1. Environment: ERC8a

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 0.5 | ESVOC SPERC 8.17.v1 |
| Air | 0.5 | ESVOC SPERC 8.17.v1 |
| Soil | 0 | ESVOC SPERC 8.17.v1 |

| protection target | Exposure estimation | Risk Characterization Ratio (RCR) |
|----------------------------------|---------------------|-----------------------------------|
| freshwater | 2.40E-03 mg/l | 2.50E-03 |
| freshwater sediment | 9.22E-03 mg/kgdw | 2.51E-03 |
| marine water | 3.05E-04 mg/l | 3.86E-04 |
| marine sediment | 1.17E-03 mg/kgdw | 3.86E-04 |
| Sewage treatment plant | 4.33E-04 mg/l | 7.47E-07 |
| Agricultural soil | 1.16E-03 mg/kgdw | 6.82E-03 |
| Man via environment - Inhalation | / | |
| Man via environment - Oral | / | |

2.3.2. Workers Exposure estimation: PROC10

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|---------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 190 mg/m3 | 0.202 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 27 mg/kg/day | 0.08 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |
| combined routes, systemic, long-term | / | 0.282 |
| combined routes, systemic, acute | / | / |

2.3.3. Workers Exposure estimation: PROC15

| Exposure route | Exposure estimation | Risk Characterization Ratio (RCR) |
|--|---------------------|-----------------------------------|
| Long-term – inhalation, systemic effects | 19 mg/m3 | 0.02 |
| Acute - inhalation, systemic effects | / | / |
| Long-term – inhalation, local effects | / | / |
| Acute - inhalation, local effects | / | / |
| Long-term - dermal, systemic effects | 0.34 mg/kg/day | < 0.001 |
| Acute - dermal, local effects | / | / |
| Long-term - dermal, local effects | / | / |
| eye, local | / | / |

| | | |
|--------------------------------------|---|--------|
| combined routes, systemic, long-term | / | 0.0212 |
| combined routes, systemic, acute | / | / |

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to check compliance with the exposure scenario:

ECHA link: <https://echa.europa.eu/regulations/reach/downstream-users>

Part D: Framework for exposure assessment, Part E: Characterisation:

<https://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment>

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