

Safety Data Sheet

AMMONIUM BICARBONATE

Safety Data Sheet dated 04/11/2022 version 8



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

1.1. Product identifier

Identification of the substance:

Trade name: AMMONIUM BICARBONATE, PURE, FFQ, FFQ 035, FFQ COATED

Chemical name: AMMONIUM HYDROGENCARBONATE

CAS number: 1066-33-7

EC number: 213-911-5

Registration Number 01-2119486970-26-0010

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

Recommended use: FOOD ADDITIVE

FOR PROFESSIONAL USE

FOR INDUSTRIAL USE

Uses advised against: N.A.

1.3. Details of the supplier of the safety data sheet

Company:

ESSECO S.r.l. Via San Cassiano 99

28069 - Trecate (NO)

Italy

Phone: +39-0321-7901

Competent person responsible for the safety data sheet: sds@esseco.it

1.4. Emergency telephone number

Esseco - Phone n. +39-0321-7901

Malta: 112

SECTION 2: Hazards identification



2.1. Classification of the substance or mixture

Regulation (EC) n. 1272/2008 (CLP)

Acute Tox. 4 Harmful if swallowed.

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

Regulation (EC) No 1272/2008 (CLP):

Pictograms and Signal Words



Warning

Hazard statements

H302 Harmful if swallowed.

Precautionary statements

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P301+P312 IF SWALLOWED: Call a doctor if you feel unwell.

P330 Rinse mouth.

Special provisions according to Annex XVII of REACH and subsequent amendments:

None.

2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration $\geq 0.1\%$

Other Hazards: No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances

Hazardous components within the meaning of the CLP regulation and related classification:

| Qty | Name | Ident. Numb. | Classification | Registration Number |
|----------------|----------------------------|--------------------------------|--------------------|-----------------------|
| ≥ 90 - < 100 % | AMMONIUM HYDROGENCARBONATE | CAS:1066-33-7 EC:213-911-5 | Acute Tox. 4, H302 | 01-2119486970-26-0010 |
| ≥ 0.5 - < 1 % | MAGNESIUM CARBONATE | CAS:12125-28-9 EC:235-192-7 | | 01-2119523999-20-XXXX |

3.2. Mixtures

N.A.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

- Remove contaminated clothing immediately and dispose off safely.
- After contact with skin, wash immediately with soap and plenty of water.
- In case of persistent skin irritation consult a doctor.

In case of eyes contact:

- Wash immediately with water.
- Obtain medical attention if symptoms occur.

In case of Ingestion:

- Induce vomiting. SEEK A MEDICAL EXAMINATION IMMEDIATELY and present the safety-data sheet.
- Give nothing to eat or drink.

In case of Inhalation:

- Remove casualty to fresh air and keep warm and at rest.
- Obtain medical attention if symptoms occur.

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

N.A.

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

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

- Foam, extinguishing powder, sprinkling water jet, carbon dioxide.
- According to the materials involved in the fire.

Extinguishing media which must not be used for safety reasons:

None in particular.

5.2. Special hazards arising from the substance or mixture

- Product itself is non-combustible.
- Hazardous combustion products:
 - In case of fire, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide.
- Ammonia
- Nitrogen oxides (NOx)

5.3. Advice for firefighters

- Wear suitable protective clothing (helmet, protective clothings, goggles, fire resistant gloves, boots) and protect respiratory organs (self contained breathing apparatus).
- Use suitable breathing apparatus .
- Keep containers cool with water spray.
- Move undamaged containers from immediate hazard area if it can be done safely.
- Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
- Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- Wear personal protection equipment.
- Remove persons to safety.

See protective measures under point 7 and 8.

6.2. Environmental precautions

If the product has escaped into a water course, into the drainage system, or has contaminated the ground or vegetation, notify the competent authorities.

6.3. Methods and material for containment and cleaning up

Collect free product with suitable mechanical means.

Dispose of the collected material in accordance with the current regulations.

Retain contaminated washing water and dispose it.

6.4. Reference to other sections

See also section 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes

Do not breathe dust. See, too, paragraph 8 below.

Don't use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.

Advice on general occupational hygiene:

Contaminated clothing should be changed before entering eating areas.

Do not eat or drink while working.

See also section 8 for recommended protective equipment.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from food, drink and feed.

Incompatible materials:

Keep away from alkalis, acids, nitrates and nitrites

See subsection 10

Instructions as regards storage premises:

Store at temperatures not exceeding 30 °C

Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.

Keep this product in a dry place.

Adequately ventilated premises.

Packaging materials:

Keep containers tightly closed and properly labelled.

Keep only in original container.

7.3. Specific end use(s)

Recommendation(s)

None in particular

Industrial sector specific solutions:

None in particular

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Community Occupational Exposure Limits (OEL)

| | OEL Type | Long Term mg/m3 | Long Term ppm | Short Term mg/m3 | Short Term ppm | Notes |
|--|----------|-----------------|---------------|------------------|----------------|---------|
| AMMONIUM HYDROGENCARBONATE CAS: 1066-33-7 | ACGIH | | 25.000 | | 35.000 | Ammonia |
| | EU | | 20.000 | | 50.000 | Ammonia |

Predicted No Effect Concentration (PNEC) values

| | PNEC Limit | Exposure Route | Exposure Frequency | Remark |
|--|-------------|----------------------|--------------------|--------|
| AMMONIUM HYDROGENCARBONATE CAS: 1066-33-7 | 0.37 mg/l | Fresh Water | | |
| | 0.037 mg/l | Marine water | | |
| | 0.133 mg/kg | Freshwater sediments | | |
| | 0.013 mg/kg | Marine water | | |

sediments
 1347 mg/l STP
 74.9 mg/kg Soil (agricultural)

Derived No Effect Level (DNEL) values

| | Worker Industry | Worker Professional | Consumer | Exposure Route | Exposure Frequency | Remark |
|--|-------------------------|---------------------|--------------------------|------------------|------------------------------|--------|
| AMMONIUM HYDROGENCARBONATE CAS: 1066-33-7 | 62.5 mg/m ³ | | 13.33 mg/m ³ | Human Inhalation | Long Term, local effects | |
| | 62.5 mg/m ³ | | 13.33 mg/m ³ | Human Inhalation | Long Term, systemic effects | |
| | 57 mg/kg | | 34.2 mg/kg | Human Dermal | Long Term, local effects | |
| | 160.7 mg/m ³ | | 143.91 mg/m ³ | Human Inhalation | Short Term, systemic effects | |
| | | | 17.1 mg/kg bw/d | Human Oral | Long Term, systemic effects | |
| | 160.7 mg/m ³ | | 143.91 mg/m ³ | Human Inhalation | Short Term, local effects | |

8.2. Exposure controls

Individual protection measures:

Personal protective equipment selections vary based on potential exposure conditions and working conditions. The final choice of protective equipment will depend upon a risk assessment. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. Please see both sections 5 and 6 for information about personal protective equipment to be worn in an emergency (e.g.: fire or unintentional release of the substance).

Eye protection:

Safety goggles with side protection.
 Technical reference standard: UNI EN 166

Protection for skin:

Wear chemical resistant clothing.
 Technical reference standard: UNI EN 13034
 Wear chemical resistant safety shoes.
 Technical reference standard: UNI EN 20345

Protection for hands:

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Wear suitable gloves tested to EN374. Suitable material:
 NBR (nitrile rubber) (Recommended thickness of the material: 0.4 mm; Permeation time: > 480 min)

Respiratory protection:

Depending on the potential for exposure, select respiratory protective equipment suitable for the specific conditions of use and in compliance with current legislation.
 Half-face mask with combined filter
 Technical reference standard for filters to be used in the presence of gases and vapours: UNI EN 14387
 Combined filter: B/K-P2 (grey-green-white colour)
 Filter mask FFP2/FFP3 for solid particles
 Technical reference standard: UNI EN 149

Thermal Hazards:

N.A.

Environmental exposure controls:

Comply with the applicable environmental regulations limiting discharge to air, water and soil.

Hygienic and Technical measures

N.A.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Solid
Color: White
Odour: Like: Ammonia
Odour threshold: 3 ppm (ammonia)
pH: ±8 (sol 5%)
Kinematic viscosity: N.A. (Does not apply to solid.)
Melting point / freezing point: N.A. (It is not technically possible to determine)
Initial boiling point and boiling range: N.A. (It is not technically possible to determine)
Flash point: Not Relevant (Does not apply to solid.)
Upper/lower flammability or explosive limits: Not Relevant (Does not apply to solid.)
Vapour density: N.A.
Vapour pressure: 79 mbar (25°C), 526 mbar (50°C), 1086 mbar (59°C)
Relative density: 1.58
Solubility in water: 18% w/w (20°C)
Solubility in oil: N.A.
Partition coefficient (n-octanol/water): Not Relevant (Does not apply to inorganic products.)
Auto-ignition temperature: Not Relevant
Decomposition temperature: >35°C
Flammability: N.A.
Volatile Organic compounds - VOCs = N.A.

Particle characteristics:

Particle size: 220 – 250 µm (Method of calculation of the diameter: volume-based)

9.2. Other information

Miscibility: N.A.
Conductivity: N.A.
Explosive properties: No (There are no chemical groups present in the molecule which are associated with these properties)
Oxidizing properties: No (There are no chemical groups present in the molecule which are associated with these properties)
Evaporation rate: Not Relevant
No other relevant information

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

Exothermic reaction. Reacts with nitrates. Reacts with nitrites. Reacts with strong alkalies.

10.4. Conditions to avoid

Stable under normal condition. Keep away from heat and direct sunlight.

Avoid temperatures exceeding the decomposition temperature.

10.5. Incompatible materials

Alkalis, acids, nitrates and nitrites

10.6. Hazardous decomposition products

Toxic gases
Ammonia
Carbon Dioxide

SECTION 11: Toxicological information

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

Toxicological Information of the Preparation

- | | |
|------------------------------|---|
| a) acute toxicity | The product is classified: Acute Tox. 4(H302) LD50 Oral Rat = 1576 mg/kg - OECD 401 LD50 Skin Rat > 2000 mg/kg bw - The product has not been tested. The statement was derived from substances/products of similar structure or composition. - (OECD 403 Analogy CAS 7783-20-0) LC50 Inhalation Rat > 4.74 mg/l - The product has not been tested. The statement was derived from substances/products of similar structure or composition. - (EPA OTS 798.1150 Analogy CAS 144-55-8) |
| b) skin corrosion/irritation | Not classified Based on available data, the classification criteria are not met |

| | |
|--------------------------------------|---|
| | Skin Irritant Negative - OECD 431 |
| c) serious eye damage/irritation | Not classified Based on available data, the classification criteria are not met Eye Irritant No - The product has not been tested. The statement was derived from substances/products of similar structure or composition. - EPA OTS 798.4500 |
| d) respiratory or skin sensitisation | Not classified Based on available data, the classification criteria are not met Skin Sensitization Negative - Tests on animals gave no indication of effects. The product has not been tested. The statement was derived from substances/products of similar structure or composition. - EPA 540/9-82-025 |
| e) germ cell mutagenicity | Not classified Based on available data, the classification criteria are not met |
| f) carcinogenicity | Not classified Based on available data, the classification criteria are not met |
| g) reproductive toxicity | Not classified Based on available data, the classification criteria are not met |
| h) STOT-single exposure | Not classified Based on available data, the classification criteria are not met |
| i) STOT-repeated exposure | Not classified Based on available data, the classification criteria are not met |
| j) aspiration hazard | Not classified Based on available data, the classification criteria are not met |

11.2. Information on other hazards

Endocrine disrupting properties:

No endocrine disruptor substances present in concentration $\geq 0.1\%$

SECTION 12: Ecological information

12.1. Toxicity

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

Eco-Toxicological Information:

List of Eco-Toxicological properties of the product

Not classified for environmental hazards.

Based on available data, the classification criteria are not met

a) Aquatic acute toxicity : LC50 Fish *O. mykiss* = 63.4 mg/l 96h

a) Aquatic acute toxicity : EC50 aquatic invertebrates *Ceriodaphnia acanthina* 145.6 mg/l 48h

b) Aquatic chronic toxicity : EC10 Fish *Lepomis macrochirus* 6.3 mg/l

b) Aquatic chronic toxicity : EC10 aquatic invertebrates *Hyalella azteca* 3.7 mg/l

12.2. Persistence and degradability

N.A.

12.3. Bioaccumulative potential

Bioaccumulation is not to be expected

12.4. Mobility in soil

Adsorption to solid soil phase (e.g. clay) is not expected

12.5. Results of PBT and vPvB assessment

No PBT, vPvB or endocrine disruptor substances present in concentration $\geq 0.1\%$

12.6. Endocrine disrupting properties

No endocrine disruptor substances present in concentration $\geq 0.1\%$

12.7. Other adverse effects

N.A.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Recover if possible. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information

Not classified as dangerous in the meaning of transport regulations.

14.1. UN number or ID number

N.A.

14.2. UN proper shipping name

N.A.

14.3. Transport hazard class(es)

N.A.

14.4. Packing group

N.A.

14.5. Environmental hazards

N.A.

14.6. Special precautions for user

N.A.

Road and Rail (ADR-RID):

N.A.

Air (IATA):

N.A.

Sea (IMDG):

N.A.

14.7. Maritime transport in bulk according to IMO instruments

N.A.

SECTION 15: Regulatory information

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

Regulation (EU) n. 2020/878

Regulation (EC) n. 1907/2006 (REACH) and subsequent amendments

Regulation (EC) n. 1272/2008 (CLP) and subsequent amendments

Dir. 98/24/EC (Risks related to chemical agents at work)

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

Restrictions related to the product: None.

Restrictions related to the substances contained: None.

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

N.A.

Regulation (EU) No 649/2012 (PIC regulation)

No substances listed

Where applicable, refer to the following regulatory provisions :

German Water Hazard Class.

Class 1: slightly hazardous for water.

SVHC Substances:

No data available

15.2. Chemical safety assessment

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

SECTION 16: Other information

| Code | Description |
|------|-----------------------|
| H302 | Harmful if swallowed. |

| Code | Hazard class and hazard category | Description |
|------------|----------------------------------|-----------------------------------|
| 3.1/4/Oral | Acute Tox. 4 | Acute toxicity (oral), Category 4 |

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

| Classification according to Regulation | Classification procedure |
|--|--------------------------|
|--|--------------------------|

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

Legend to abbreviations and acronyms used in the safety data sheet:

ACGIH: American Conference of Governmental Industrial Hygienists

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ATE: Acute Toxicity Estimate

ATEmix: Acute toxicity Estimate (Mixtures)

BCF: Biological Concentration Factor

BEI: Biological Exposure Index

BOD: Biochemical Oxygen Demand

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CAV: Poison Center

CE: European Community

CLP: Classification, Labeling, Packaging.

CMR: Carcinogenic, Mutagenic and Reprotoxic

COD: Chemical Oxygen Demand

COV: Volatile Organic Compound

CSA: Chemical Safety Assessment

CSR: Chemical Safety Report

DMEL: Derived Minimal Effect Level

DNEL: Derived No Effect Level.

DPD: Dangerous Preparations Directive

DSD: Dangerous Substances Directive

EC50: Half Maximal Effective Concentration

ECHA: European Chemicals Agency

EINECS: European Inventory of Existing Commercial Chemical Substances.

ES: Exposure Scenario

GefStoffVO: Ordinance on Hazardous Substances, Germany.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

IC50: half maximal inhibitory concentration

ICAO: International Civil Aviation Organization.

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).

IMDG: International Maritime Code for Dangerous Goods.

INCI: International Nomenclature of Cosmetic Ingredients.

IRCCS: Scientific Institute for Research, Hospitalization and Health Care

KAFH: KAFH

KSt: Explosion coefficient.

LC50: Lethal concentration, for 50 percent of test population.

LD50: Lethal dose, for 50 percent of test population.

LDLo: Leathal Dose Low

N.A.: Not Applicable

N/D: Not defined/ Not available

NIOSH: National Institute for Occupational Safety and Health

NOAEL: No Observed Adverse Effect Level

OSHA: Occupational Safety and Health Administration.

PBT: Persistent, Bioaccumulative and Toxic

PGK: Packaging Instruction

PNEC: Predicted No Effect Concentration.

PSG: Passengers

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.

STEL: Short Term Exposure limit.

STOT: Specific Target Organ Toxicity.

TLV: Threshold Limiting Value.

TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).

vPvB: Very Persistent, Very Bioaccumulative.

WGK: German Water Hazard Class.

Paragraphs modified from the previous revision:

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- SECTION 2: Hazards identification
- SECTION 3: Composition/information on ingredients
- SECTION 4: First aid measures
- SECTION 5: Firefighting measures
- SECTION 6: Accidental release measures
- SECTION 7: Handling and storage
- SECTION 8: Exposure controls/personal protection
- SECTION 9: Physical and chemical properties
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EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



Short title of exposure scenario

1. Production, Distribution of substance, Industrial applications

SU3; SU3; ERC1; PROC2, PROC9

Control of exposure and risk management measures

| Contributing exposure scenario | |
|--|---|
| Use descriptors covered | PROC2: Use in closed, continuous process with occasional controlled exposure. PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: $\geq 0\%$ - $\leq 100\%$ |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of both hands (480 cm ²) |
| Exposure estimate and reference to its source | |
| PROC2 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 1.37 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.02 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC2 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 1 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.02 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 20 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.32 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |
| Contributing exposure scenario | |
| Use descriptors covered | ERC1: Manufacture of substances As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



Short title of exposure scenario

2. Formulation & (re)packing of substances and mixtures, Industrial applications

SU3; SU3, SU10; ERC2, ERC5, ERC7, ERC8a; PROC4, PROC5, PROC8b, PROC9, PROC15, PROC19

Control of exposure and risk management measures

| Contributing exposure scenario | |
|---|---|
| Use descriptors covered | <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC15: Use a laboratory reagent. PROC19: Hand-mixing with intimate contact and only PPE available.</p> <p>Use domain: industrial</p> |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: $\geq 0\%$ - $\leq 100\%$ |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | Relevant for PROC 4 Relevant for PROC 5 Relevant for PROC 8b Relevant for PROC 9 |
| Exposed skin area | Both hands and main part of the arms (1980 cm ²) |
| | Relevant for PROC 19 |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | Relevant for PROC 15 |
| Risk Management Measures | |
| Wear chemically resistant gloves in combination with 'basic' employee training. | Effectiveness: 90 % |
| Relevant for PROC 19 | |
| Exposure estimate and reference to its source | |
| PROC4, PROC8b, PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC4, PROC5, PROC8b, PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 25 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.4 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC5 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



| | |
|--|--|
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 13.71 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 20 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.32 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.01 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 5 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.08 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 14.14 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.25 |
| | The short-term exposure value corresponds to the long-term value. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |

| | |
|---------------------------------------|--|
| Contributing exposure scenario | |
| Use descriptors covered | ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| | |
|---------------------------------------|--|
| Contributing exposure scenario | |
| Use descriptors covered | ERC5: Industrial use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| | |
|---------------------------------------|---|
| Contributing exposure scenario | |
| Use descriptors covered | ERC7: Industrial use of substances in closed systems. As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8a: Wide dispersive indoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

Short title of exposure scenario

3. Formulation & (re)packing of substances and mixtures, Professional applications

SU22; SU10, SU22; ERC2, ERC5, ERC7, ERC8a; PROC4, PROC5, PROC8b, PROC9, PROC15, PROC19

Control of exposure and risk management measures

| Contributing exposure scenario | |
|--------------------------------|--|
| Use descriptors covered | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC15: Use a laboratory reagent. PROC19: Hand-mixing with intimate contact and only PPE available. Use domain: professional |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: $\geq 0\%$ - $\leq 100\%$ |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



| | |
|---|---|
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | Relevant for PROC 4 Relevant for PROC 5 Relevant for PROC 8b Relevant for PROC 9 |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | Relevant for PROC 15 |
| Exposed skin area | Both hands and main part of the arms (1980 cm ²) |
| | Relevant for PROC 19 |
| Risk Management Measures | |
| Provide extract ventilation to points where emissions occur (LEV). | Effectiveness: 80 % |
| Wear chemically resistant gloves in combination with 'basic' employee training. | Effectiveness: 90 % |
| Relevant for PROC 19 | |
| Exposure estimate and reference to its source | |
| PROC4, PROC8b, PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of <u>dermal exposure estimates</u> . |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC4, PROC5, PROC8b, PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 10 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.16 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC5 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of <u>dermal exposure estimates</u> . |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 13.71 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The short-term exposure value corresponds to the long-term value. |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



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| PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 20 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.32 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates. Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.01 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 5 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.08 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for localexhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally Worker - dermal, long-term - systemic |
| Exposure estimate | 14.14 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.25 |
| | The short-term exposure value corresponds to the long-term value. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |

| | |
|---------------------------------------|--|
| Contributing exposure scenario | |
| Use descriptors covered | ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| | |
|---------------------------------------|--|
| Contributing exposure scenario | |
| Use descriptors covered | ERC5: Industrial use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk |

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Ammonium Bicarbonate

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| | characterization was performed. |
|--|---------------------------------|

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC7: Industrial use of substances in closed systems. As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8a: Wide dispersive indoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

Short title of exposure scenario

4. Use as a Process chemical, Use as Reactive process agent, Industrial applications

SU3; SU3, SU4, SU5, SU6a, SU6b, SU8, SU9, SU11, SU12, SU13, SU14, SU18, SU20, SU21, SU22, SU24;
ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC7, ERC8a, ERC8b, ERC8c, ERC8d; PROC3, PROC4, PROC5,
PROC6, PROC7, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC16, PROC19,
PROC21, PROC23

Control of exposure and risk management measures

| Contributing exposure scenario | |
|------------------------------------|--|
| Use descriptors covered | PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC6: Calendaring operations PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10: Roller application or brushing Use domain: industrial |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 100 % |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |

EXPOSURE SCENARIO

Ammonium Bicarbonate

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| | |
|--|---|
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | |
| | Relevant for PROC 3 |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | |
| | Relevant for PROC 4 Relevant for PROC 5 Relevant for PROC 8b Relevant for PROC 9 |
| Exposed skin area | Both hands (960 cm ²) |
| | |
| | Relevant for PROC 6 Relevant for PROC 10 |
| Exposure estimate and reference to its source | |
| PROC3 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.01 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC3 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 1 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.02 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC4, PROC8b, PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC4, PROC5, PROC6, PROC8b | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 25 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.4 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC5 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 13.71 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |

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Ammonium Bicarbonate

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|--|---|
| Exposure estimate | 20 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.32 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC6 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 5.49 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.1 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC10 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 27.43 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.48 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC10 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 10 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.16 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |

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| Contributing exposure scenario | |
| Use descriptors covered | PROC7: Industrial spraying Use domain: industrial |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 90 % |
| Physical state | Solid |
| Duration and Frequency of activity | 240 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Room size | 1,000 m ³ |
| Amounts used | Amount per use 0.3 l/min Relevant for inhalative exposure estimates |
| | Amount per use 0.08 kg/min Relevant for dermal exposure estimates |
| Risk Management Measures | |
| Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker | |

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Ammonium Bicarbonate

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| (distance head-product greater than 1m). Clean equipment and the work area every day. | |
| Ensure mechanical ventilation is in place. | |
| Wear suitable coveralls to prevent exposure to the skin. | Effectiveness: 80 % |
| Use suitable chemically resistant gloves. | Effectiveness: 80 % |
| Exposure estimate and reference to its source | |
| Assessment method | RISKOFDERM v2.1 |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 17.49 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.31 |
| | The exposure estimate represents the 75th percentile of the exposure distribution. |
| Assessment method | Advanced REACH Tool v1.0 |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 3.1 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.05 |
| | The exposure estimate represents the 75th percentile of the exposure distribution. |
| Assessment method | RISKOFDERM v2.1 |
| | Worker - dermal, short-term - systemic |
| Exposure estimate | 51.89 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.91 |
| | The exposure estimate represents the 90th percentile of the exposure distribution. |
| Assessment method | Advanced REACH Tool v1.0 |
| | Worker- inhalative, short-term - local und systemic |
| Exposure estimate | 5.90 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.037 |
| | The exposure estimate represents the 90th percentile of the exposure distribution. |
| Guidance to Downstream Users | |
| For scaling see: http://www.advancedreachtool.com For scaling see: http://www.tno.nl and search for "riskofderm". | |

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| Contributing exposure scenario | |
| Use descriptors covered | PROC12: Use of blow agents in manufacture of foam. Use domain: industrial |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 100 % |
| Physical state | Solid, Extremely dusty |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |

EXPOSURE SCENARIO

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| | |
|--|---|
| Room size | 1,000 m3 |
| Exposed skin area | Palm of both hands (480 cm ²) |
| Risk Management Measures | |
| Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Regular inspection and maintenance of equipment and machines. Clean equipment and the work area every day. | |
| Ensure mechanical ventilation is in place. | |
| Provide extract ventilation to points where emissions occur (LEV). | Effectiveness: 70 % |
| Exposure estimate and reference to its source | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| Assessment method | Stoffenmanager v4.0 |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 14.83 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The exposure estimate represents the 75th percentile of the exposure distribution. |
| Assessment method | Stoffenmanager v4.0 |
| | Worker- inhalative, short-term - local und systemic |
| Exposure estimate | 42.33 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.26 |
| | The exposure estimate represents the 90th percentile of the exposure distribution. |
| Guidance to Downstream Users | |
| For scaling see: https://www.stoffenmanager.nl/default.aspx For scaling see: http://www.ecetoc.org/tra | |

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| Contributing exposure scenario | |
| Use descriptors covered | PROC13: Treatment of articles by dipping and pouring. PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation. PROC15: Use a laboratory reagent. PROC16: Using material as fuel sources, limited exposure to unburned product to be expected. PROC19: Hand-mixing with intimate contact and only PPE available. PROC21: Low energy manipulation of substances bound in materials and/or articles PROC23: Open processing and transfer operations (with minerals) at elevated temperature |

EXPOSURE SCENARIO

Ammonium Bicarbonate

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| | |
|---|---|
| | Use domain: industrial |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: $\geq 0\%$ - $\leq 100\%$ |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | Relevant for PROC 13 Relevant for PROC 14 |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | Relevant for PROC 15 Relevant for PROC 16 |
| Exposed skin area | Both hands and main part of the arms (1980 cm ²) |
| | Relevant for PROC 19 Relevant for PROC 21 Relevant for PROC 23 |
| Risk Management Measures | |
| Wear chemically resistant gloves in combination with 'basic' employee training. | Effectiveness: 90 % |
| Relevant for PROC 19 | |
| Exposure estimate and reference to its source | |
| PROC13 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 13.71 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC13, PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 5 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.08 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC14 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 3.43 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.06 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC14, PROC16, PROC21, PROC23 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |

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| Exposure estimate | 10 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.16 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC15, PROC16 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.01 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 25 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.4 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC21 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 2.83 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.05 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC23 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 1.41 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.02 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Use of gloves has been considered additionally. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 14.14 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.25 |
| | The short-term exposure value corresponds to the long-term value. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |

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| Contributing exposure scenario | |
| Use descriptors covered | ERC1: Manufacture of substances As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

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| Contributing exposure scenario | |
| Use descriptors covered | ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |
| Contributing exposure scenario | |
| Use descriptors covered | ERC3: Formulation in materials As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |
| Contributing exposure scenario | |
| Use descriptors covered | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |
| Contributing exposure scenario | |
| Use descriptors covered | ERC5: Industrial use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |
| Contributing exposure scenario | |
| Use descriptors covered | ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |
| Contributing exposure scenario | |
| Use descriptors covered | ERC6b: Industrial use of reactive processing aids As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |
| Contributing exposure scenario | |
| Use descriptors covered | ERC7: Industrial use of substances in closed systems. As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

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| Contributing exposure scenario | |
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| Use descriptors covered | ERC8a: Wide dispersive indoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8b: Wide dispersive indoor use of reactive substances in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|--|
| Use descriptors covered | ERC8d: Wide dispersive outdoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

Short title of exposure scenario

5. Use as a Process chemical, Use as Reactive process agent, Professional applications

SU22; SU3, SU4, SU5, SU21, SU22; ERC2, ERC4, ERC5, ERC8a, ERC8b, ERC8c, ERC8d; PROC4, PROC5, PROC11, PROC13, PROC14, PROC15, PROC16, PROC19, PROC21

Control of exposure and risk management measures

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC13: Treatment of articles by dipping and pouring. PROC14: Production of preparations or articles by tableting, compression, extrusion, pelettisation. PROC15: |

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| | Use a laboratory reagent. PROC16: Using material as fuel sources, limited exposure to unburned product to be expected. PROC19: Hand-mixing with intimate contact and only PPE available. PROC21: Low energy manipulation of substances bound in materials and/or articles Use domain: professional |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 100 % |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | Relevant for PROC 4 Relevant for PROC 5 Relevant for PROC 13 Relevant for PROC 14 |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | Relevant for PROC 15 Relevant for PROC16 |
| Exposed skin area | Both hands and main part of the arms (1980 cm ²) |
| | Relevant for PROC 19 Relevant for PROC21 |
| Risk Management Measures | |
| Provide extract ventilation to points where emissions occur (LEV). | Effectiveness: 80 % |
| Relevant for PROC 4, Relevant for PROC 5, Relevant for PROC 14, Relevant for PROC 15, Relevant for PROC 16. Relevant for PROC 19 | |
| Wear chemically resistant gloves in combination with 'basic' employee training. | Effectiveness: 90 % |
| Relevant for PROC 19 | |
| Exposure estimate and reference to its source | |
| PROC4 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC4, PROC5, PROC14, PROC16, PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 10 mg/m ³ |

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| | |
|-----------------------------------|---|
| Risk Characterization Ratio (RCR) | 0.16 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC5 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 13.71 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC13 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 13.71 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.24 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC13, PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 5 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.08 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC14 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 3.43 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.06 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC15, PROC16 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.006 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC19 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version, ECETOC TRA modified version: Reduction factor for local exhaust |

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| | ventilation (LEV) has not been used for the calculation of dermal exposure estimates., ECETOC TRA modified version: Use of gloves has been considered additionally. |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 14.14 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.25 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC21 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 2.83 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.05 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC21 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 20 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.32 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |

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| Contributing exposure scenario | |
| Use descriptors covered | PROC11: Non industrial spraying Use domain: professional |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 90 % |
| Physical state | Solid |
| Duration and Frequency of activity | 240 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Room size | 100 m ³ |
| Amounts used | Amount per use 0.3 l/min Relevant for inhalative exposure estimates |
| | Amount per use 0.08 kg/min Relevant for dermal exposure estimates |
| Risk Management Measures | |
| Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day. | |

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| Ensure mechanical ventilation is in place. | |
| Wear suitable coveralls to prevent exposure to the skin. | Effectiveness: 80 % |
| Provide extract ventilation to points where emissions occur (LEV). | Effectiveness: 80 % |
| Use suitable chemically resistant gloves. | Effectiveness: 80 % |
| Exposure estimate and reference to its source | |
| Assessment method | RISKOFDERM v2.1 |
| | Worker - dermal, long-term - systemic |
| Exposure estimate | 17.49 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.31 |
| | The exposure estimate represents the 75th percentile of the exposure distribution. |
| Assessment method | Advanced REACH Tool v1.0 |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 6.3 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.1 |
| | The exposure estimate represents the 75th percentile of the exposure distribution. |
| Assessment method | RISKOFDERM v2.1 |
| | Worker - dermal, short-term - systemic |
| Exposure estimate | 51.89 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.91 |
| | The exposure estimate represents the 90th percentile of the exposure distribution. |
| Assessment method | Advanced REACH Tool v1.0 |
| | Worker- inhalative, short-term - local und systemic |
| Exposure estimate | 12 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.075 |
| | The exposure estimate represents the 90th percentile of the exposure distribution. |
| Guidance to Downstream Users | |
| For scaling see: http://www.advancedreachtool.com For scaling see: http://www.tno.nl and search for "riskofderm". | |

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| Contributing exposure scenario | |
| Use descriptors covered | ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

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| Contributing exposure scenario | |
| Use descriptors covered | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

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| Contributing exposure scenario | |
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| Use descriptors covered | ERC5: Industrial use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8a: Wide dispersive indoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8b: Wide dispersive indoor use of reactive substances in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|--|
| Use descriptors covered | ERC8d: Wide dispersive outdoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

Short title of exposure scenario

6. Use as raw material, Use in chemical synthesis, Industrial applications

SU3; SU3, SU8, SU9; ERC1, ERC6a, ERC7; PROC3, PROC4, PROC8b, PROC15

Control of exposure and risk management measures

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| Contributing exposure scenario |
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| Use descriptors covered | PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use a laboratory reagent. Use domain: industrial |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 100 % |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | Relevant for PROC 3 Relevant for PROC 15 |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | Relevant for PROC 4 Relevant for PROC 8b |
| Exposure estimate and reference to its source | |
| PROC3, PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.01 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC3 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 1 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.02 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC4, PROC8b | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC4, PROC8b | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 25 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.4 |
| | The short-term exposure value corresponds to the long- |

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| | term value multiplied by a factor of 2. |
| PROC15 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version |
| | Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 5 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.08 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| Guidance to Downstream Users | |
| For scaling see: http://www.ecetoc.org/tra | |

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|---------------------------------------|--|
| Contributing exposure scenario | |
| Use descriptors covered | ERC1: Manufacture of substances As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

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|---------------------------------------|---|
| Contributing exposure scenario | |
| Use descriptors covered | ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| | |
|---------------------------------------|---|
| Contributing exposure scenario | |
| Use descriptors covered | ERC7: Industrial use of substances in closed systems. As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

Short title of exposure scenario

7. Use in Metallurgy, Industrial applications

SU3; SU2a, SU3, SU14; ERC1, ERC4, ERC6a, ERC6b; PROC3, PROC4, PROC8b, PROC9

Control of exposure and risk management measures

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|---------------------------------------|---|
| Contributing exposure scenario | |
| Use descriptors covered | PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domains: industrial |

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| | |
|--|---|
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: $\geq 0\%$ - $\leq 100\%$ |
| Physical state | Solid – high Dustiness |
| Duration and Frequency of activity | 480 min 5 days per week |
| Indoor/Outdoor | Indoor |
| Exposed skin area | Palm of both hands (480 cm ²) |
| | Relevant for PROC 4 Relevant for PROC 8b Relevant for PROC 9 |
| Exposed skin area | Palm of one hand (240 cm ²) |
| | Relevant for PROC 3 |
| Exposure estimate and reference to its source | |
| PROC3 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 0.34 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.01 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC3 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 1 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.02 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC4, PROC8b, PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - dermal, long-term - systemic |
| Exposure estimate | 6.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | The short-term exposure value corresponds to the long-term value. |
| PROC4, PROC8b | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 25 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.4 |
| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
| PROC9 | |
| Assessment method | ECETOC TRA v2.0 Worker; modified version Worker - inhalative, long-term - local und systemic |
| Exposure estimate | 20 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.32 |

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| | The short-term exposure value corresponds to the long-term value multiplied by a factor of 2. |
|--|---|

Guidance to Downstream Users

For scaling see: <http://www.ecetoc.org/tra>

| Contributing exposure scenario | |
|--------------------------------|--|
| Use descriptors covered | ERC1: Manufacture of substances As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
|--------------------------------|--|
| Use descriptors covered | ERC6b: Industrial use of reactive processing aids As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

Short title of exposure scenario

8. Consumer applications, Use in Cleaning Agents

SU21; ERC8d, ERC8e; PC35

Control of exposure and risk management measures

| Contributing exposure scenario | |
|--------------------------------|---|
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products), Liquid cleaners, Mixing and loading, Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate |

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| | Content: $\geq 0\%$ - $\leq 2\%$ |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 0.75 min 104 days per year Relevant for mixing and loading |
| Duration and Frequency of activity | Application duration: 0.3 min Relevant for mixing and loading |
| Duration and Frequency of activity | Exposure duration: 240 min 104 days per year Relevant for the cleaning process. |
| Duration and Frequency of activity | Application duration: 20 min Relevant for the cleaning process. |
| Room size | 1 m ³ |
| Ventilation rate per hour | 0.5 |
| | Relevant for mixing and loading |
| Room size | 58 m ³ |
| Ventilation rate per hour | 0.5 |
| | Relevant for the cleaning process. |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for mixing and loading |
| | Relevant for mixing and loading |
| Exposed skin area | Both hands and forearms (1900 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 500 g Relevant for inhalative exposure estimates Relevant for mixing and loading |
| | Amount per use 0.01 g Relevant for dermal exposure estimates Relevant for mixing and loading |
| | Amount per use 400 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 19 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release area | 20 cm ² |
| | Relevant for mixing and loading |
| Release area | 100000 cm ² |
| | Relevant for the cleaning process. |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 9.38 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.7037 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 5.86 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.172 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 0.207 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.00144 |

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| | Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| | The calculated exposure value is negligibly low., Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 56.3 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.392 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 5.85 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.172 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

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| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Liquid cleaners, Spray, Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 20 % |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 60 min 365 days per year |
| Duration and Frequency of activity | Application duration: 10 min Relevant for the cleaning process. |
| Duration and Frequency of activity | Spray duration: 0.41 min Relevant for the spraying process. |
| Room size | 15 m ³ |
| Ventilation rate per hour | 2.5 |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 16.2 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 0.16 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release area | 17100 cm ² |
| | Relevant for the cleaning process. |
| Release duration | 24.6 sec |
| | Relevant for the spraying process. |
| Exposure estimate and reference to its source | |

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| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 3.27 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.246 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 0.55 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0161 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| | The calculated exposure value is negligibly low., Relevant for the spraying process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 0.058 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0017 |
| | Relevant for the spraying process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 78.5 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.546 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 0.492 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0144 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

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| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Bathroom cleaning (spray), Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 5 % |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 25 min 52 days per year |
| Duration and Frequency of activity | Application duration: 1.5 min Relevant for the cleaning process. |
| Duration and Frequency of activity | Spray duration: 1.5 min Relevant for the spraying process. |
| Room size | 10 m ³ |
| Ventilation rate per hour | 2 |

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| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 30 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 0.3 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release area | 64000 cm ² |
| | Relevant for the cleaning process. |
| Release duration | 90 sec |
| | Relevant for the spraying process. |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 1.73 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.1298 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 0.284 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.00831 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| | The calculated exposure value is negligibly low., Relevant for the spraying process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 0.0531 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.00155 |
| | Relevant for the spraying process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 99.8 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.694 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 0.231 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.00675 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

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| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products), Bathroom cleaning (liquid), Mixing and loading, Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate |

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| | Content: $\geq 0\%$ - $\leq 1.4\%$ |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 0.75 min 4 days per year Relevant for mixing and loading |
| Duration and Frequency of activity | Application duration: 0.3 min Relevant for mixing and loading |
| Duration and Frequency of activity | Exposure duration: 25 min 4 days per year Relevant for the cleaning process. |
| Duration and Frequency of activity | Application duration: 20 min Relevant for the cleaning process. |
| Room size | 1 m ³ |
| Ventilation rate per hour | 2 |
| | Relevant for mixing and loading |
| Room size | 10 m ³ |
| Ventilation rate per hour | 2 |
| | Relevant for the cleaning process. |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for mixing and loading |
| | Relevant for mixing and loading |
| Exposed skin area | Both hands and forearms (1900 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 500 g Relevant for inhalative exposure estimates Relevant for mixing and loading |
| | Amount per use 0.01 g Relevant for dermal exposure estimates Relevant for mixing and loading |
| | Amount per use 260 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 19 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release area | 20 cm ² |
| | Relevant for mixing and loading |
| Release area | 64000 cm ² |
| | Relevant for the cleaning process. |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 2.05 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.1538 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 2.93 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0857 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 0.169 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.0012 |

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| | Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| | The calculated exposure value is negligibly low., Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 118 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.82 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 4.09 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.12 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

| | |
|--|--|
| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Toilet cleaners (acid), Toilet cleaners (bleach) |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 12.5 % |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 3 min 260 days per year Relevant for toilet cleaners (acid) |
| Duration and Frequency of activity | Application duration: 2 min |
| Duration and Frequency of activity | Exposure duration: 3 min 120 days per year Relevant for toilet cleaners (bleach) |
| Room size | 2.5 m ³ |
| Ventilation rate per hour | 2 |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Amount per use 1,000 g Relevant for inhalative exposure estimates |
| | Amount per use 2.2 g Relevant for dermal exposure estimates |
| Release area | 750 cm ² |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 0.233 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.0175 |

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| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 4.23 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.124 |
| | The short-term exposure value corresponds to the long-term value. |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 112 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.7783 |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

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| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Floor cleaning (liquids), Mixing and loading, Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 1 % |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 0.75 min 104 days per year Relevant for mixing and loading |
| Duration and Frequency of activity | Application duration: 0.3 min Relevant for mixing and loading |
| Duration and Frequency of activity | Exposure duration: 240 min 104 days per year Relevant for the cleaning process. |
| Duration and Frequency of activity | Application duration: 30 min Relevant for the cleaning process. |
| Room size | 1 m ³ |
| Ventilation rate per hour | 0.5 |
| | Relevant for mixing and loading |
| Room size | 58 m ³ |
| Ventilation rate per hour | 0.5 |
| | Relevant for the cleaning process. |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for mixing and loading |
| | Relevant for mixing and loading |
| Exposed skin area | Both hands and forearms (1900 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 500 g Relevant for inhalative exposure estimates Relevant for mixing and loading |
| | Amount per use 0.01 g Relevant for dermal exposure estimates Relevant for mixing and loading |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



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| | Amount per use 880 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 19 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release area | 20 cm ² |
| | Relevant for mixing and loading |
| Release area | 220000 cm ² |
| | Relevant for the cleaning process. |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local undsystemic |
| Exposure estimate | 9.75 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.7314 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 2.93 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0857 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 0.103 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.00071 |
| | Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| | The calculated exposure value is negligibly low., Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 58.4 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.406 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 2.92 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0854 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

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| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Carpet cleaning (liquids), Mixing and loading, Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 0.5 % |
| Physical state | liquid |

EXPOSURE SCENARIO

Ammonium Bicarbonate

July 2013



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| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 0.75 min Relevant for mixing and loading |
| Duration and Frequency of activity | Application duration: 0.3 min Relevant for mixing and loading |
| Duration and Frequency of activity | Exposure duration: 110 min Relevant for the cleaning process. |
| Duration and Frequency of activity | Application duration: 110 min Relevant for the cleaning process. |
| Room size | 1 m ³ |
| Ventilation rate per hour | 0.5 |
| | Relevant for mixing and loading |
| Room size | 58 m ³ |
| Ventilation rate per hour | 0.5 |
| | Relevant for the cleaning process. |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for mixing and loading |
| | Relevant for mixing and loading |
| Exposed skin area | Both hands (860 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 500 g Relevant for inhalative exposure estimates Relevant for mixing and loading |
| | Amount per use 0.01 g Relevant for dermal exposure estimates Relevant for mixing and loading |
| | Amount per use 10,000 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 27 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release area | 20 cm ² |
| | Relevant for mixing and loading |
| Release area | 220000 cm ² |
| | Relevant for the cleaning process. |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 8.54 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.6632 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 2.08 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0608 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 0.0836 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.00058 |
| | Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |

EXPOSURE SCENARIO

Ammonium Bicarbonate

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| | The calculated exposure value is negligibly low., Relevant for mixing and loading |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 112 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.7783 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 2.08 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0608 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

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| Contributing exposure scenario | |
| Use descriptors covered | SU21: Consumer uses PC35: Washing and Cleaning Products (including solvent based products)., Glass cleaners, Spray, Application |
| Operational conditions | |
| Concentration of the substance | Ammonium hydrogencarbonate Content: >= 0 % - <= 20 % |
| Physical state | liquid |
| Vapour pressure of the substance during use | 78.5 hPa |
| Duration and Frequency of activity | Exposure duration: 240 min 365 days per year Relevant for the spraying process. |
| Duration and Frequency of activity | Spray duration: 0.7 min Relevant for the spraying process. |
| Duration and Frequency of activity | Exposure duration: 30 min 365 days per year Relevant for the cleaning process. |
| Duration and Frequency of activity | Application duration: 3 min Relevant for the cleaning process. |
| Room size | 58 m ³ |
| Ventilation rate per hour | 0.5 |
| Exposed skin area | Palm of one hand (215 cm ²) |
| | Relevant for the cleaning process. |
| | Relevant for the cleaning process. |
| | Amount per use 16.2 g Relevant for inhalative exposure estimates Relevant for the cleaning process. |
| | Amount per use 0.29 g Relevant for dermal exposure estimates Relevant for the cleaning process. |
| Release duration | 42 sec |
| | Relevant for the spraying process. |
| Release area | 30000 cm ² |
| | Relevant for the cleaning process. |
| Exposure estimate and reference to its source | |
| Assessment method | ConsExpo v4.1 |

EXPOSURE SCENARIO

Ammonium Bicarbonate

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| | Consumer- inhalative, long-term - local und systemic |
| Exposure estimate | 0.125 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.00938 |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, long-term - systemic |
| Exposure estimate | 0.991 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.029 |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| | The calculated exposure value is negligibly low., Relevant for the spraying process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| | The calculated exposure value is negligibly low., Relevant for the spraying process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer- inhalative, short-term - local und systemic |
| Exposure estimate | 5.99 mg/m ³ |
| Risk Characterization Ratio (RCR) | 0.042 |
| | Relevant for the cleaning process. |
| Assessment method | ConsExpo v4.1 |
| | Consumer - dermal, short-term - systemic |
| Exposure estimate | 0.892 mg/kg bw/day |
| Risk Characterization Ratio (RCR) | 0.0261 |
| | Relevant for the cleaning process. |
| Guidance to Downstream Users | |
| For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp | |

| Contributing exposure scenario | |
|--------------------------------|--|
| Use descriptors covered | ERC8d: Wide dispersive outdoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |

| Contributing exposure scenario | |
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| Use descriptors covered | ERC8e: Wide dispersive outdoor use of reactive substances in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed. |