



Signal word		Warning			
Hazard statement(s):		H302	Harmful if swallowed		
Precautionary statement(s):		P264 P270 P301+P312+P330  P411 P501	Wash the exposed parts of the body thoroughly with water after handling. Do not eat, drink or smoke when using this product. IF SWALLOWED: Rinse mouth. Call a POISON CENTER if you feel unwell. Store at temperatures not exceeding 35°C. Packaging and content waste to be managed in accordance with national legislation.		
<b>2.3 Other hazards</b>					
PBT/vPvB criteria:		This mixture does not contain any substances that are assessed to be a PBT or a vPvB			
Endocrine disrupting properties		Data lacking			
<b>SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS</b>					
<b>3.1 Substances – not applicable</b>					
<b>3.2 Mixture</b>					
CAS №	EC №	REACH registration number	Concentration, % (w/w)	Name	Classification according to Regulation
1066-33-7	213-911-5	01-2119486970-26-0003	99.0-99.6	ammonium hydrogen carbonate	Acute Tox 4., H302
<b>SECTION 4: FIRST AID MEASURES</b>					
<b>4.1 Description of first aid measures</b>					
- general notes		Speed is essential. If unconscious, place casualty in a recovery position with head sideways to avoid choking. Consult physician in case of persisting adverse effects. Never give anything by mouth to an unconscious person or a person with spasms.			
- following inhalation		After inhalation of decomposition products: Keep patient calm, remove to fresh air and seek medical attention.			
- following skin contact		Wash the affected area with water and soap.			
- following eye contact		Wash affected eyes for at least 15 minutes under running water with eyelids held open. Get medical attention if the irritation of the eyes continues.			
- following ingestion		<b>Do not induce vomiting!</b> Carefully rinse the mouth immediately and then give the casualty plenty of water to drink. Seek medical attention.			
■ V11 - self-protection of the first aider		First aider should protect himself first■.			
<b>4.2 Most important symptoms and effects, both acute and delayed</b>					
Acute effects		Irritation of the respiratory tract and eyes, runny nose, nausea, vomiting. Ingestion of very large quantities: drop in blood pressure, collapse, CNS damage, spasms, narcotic conditions etc.			
Delayed effects		Repeated or prolonged contact with skin may cause dermatitis (red, cracked skin)			
<b>4.3 Indication of any immediate medical attention and special treatment needed</b>					
Notes for the doctor: Treat symptomatically. Special measure to be taken to prevent absorption in case of ingestion					
<b>SECTION 5: FIREFIGHTING MEASURES</b>					
<b>5.1 Extinguishing media</b>					
Suitable extinguishing media:		Not combustible. Use extinguishing media appropriate for surrounding fire.			

Unsuitable extinguishing media:	Unknown
<b>5.2 Special hazards arising from the substance or mixture</b>	
Ammonia and carbon dioxide released during the fire are caught with water spray. Do not allow water from the fire or contaminated water to run into watercourses or drains.	
<b>5.3 Advice for firefighters</b>	
Special chemical protective suit, gloves, boots and self-contained breathing apparatus	
<b>SECTION 6: ACCIDENTAL RELEASE MEASURES</b>	
<b>6.1 Personal precautions, protective equipment and emergency procedures</b>	
<b>6.1.1 For non-emergency personnel</b>	
Do not allow people not involved in emergency response and unprotected to enter the contamination zone. Ensure adequate ventilation. Wear personal protective equipment (PPE).	
<b>6.1.2 For emergency responders</b>	
Gloves, anti-dust masks, protective glasses. Filtering gas mask for protection against ammonia.	
<b>6.2 Environmental precautions</b>	
Limit scattering of the spilled material as well as contact with soil, surface water or entering sewage system. Ensure waste is collected and put into container. Inform authorities in case of accidental contamination of some environmental compartments.	
<b>6.3 Methods and material for containment and cleaning up</b>	
6.3.1 For containment: Collect the spilled material mechanically.	
6.3.2 For cleaning up: Store it temporarily in properly labelled containers	
6.3.3 Other information: Manage the waste in accordance with national legislation.	
<b>6.4 Reference to other sections</b>	
See section 8 for personal protective equipment and section 13 for disposal.	
<b>SECTION 7: HANDLING AND STORAGE</b>	
The information in this Section contains general advice and guidance. For the availability of specific information of the use listed in Section 16, refer to the Exposure Scenarios (EC) attached.	
<b>7.1 Precautions for safe handling</b>	
7.1.1 Protective measures:	No special measures are required if the product is handled properly. Avoid dust formation. Ensure adequate ventilation of stores and work areas.
7.1.2 Advice on general occupation hygiene:	When handling the product do not eat, drink or smoke. Wash hands after handling and before eating, smoking and using the lavatory and at the end of the working period. Respect the requirements of good industrial hygiene and safe practice.
<b>7.2 Conditions for safe storage, including any incompatibilities</b>	
Segregate from nitrates, nitrites, alkaline substances, strong acids and bases. Keep only in original tightly closed packaging in a cool, well-ventilated place. Palletizing the product is allowed. The pallets must not be stacked one on top of the others, because the pressure thus applied would favor caking. Keep at temperature not exceeding 35 °C. Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time. Packing: polyethylene, polypropylene Storage class: 13-11	
■ <b>V11 7.3 Specific end use(s):</b> see annex of this safety data sheet (exposure scenarios) ■.	
<b>SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION</b>	
For the availability of specific information of the use listed in Section 16, refer to the Exposure Scenarios (ES) attached.	
<b>8.1 Control parameters</b>	
occupational exposure limit values	No specific data
Other exposure limit for potential	EU limit values

decomposition products	Ammonia - CAS № 7664-41-7 8 hours: 14 mg/m <sup>3</sup> or 20ppm Short term( 15 minutes) : 36 mg/m <sup>3</sup> or 50ppm Carbon dioxide - CAS № 124-38-9 8 hours: 9000 mg/m <sup>3</sup> or 5000ppm
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**Derived No Effect Level (DNEL) for workers**

Exposure pattern	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effects systemic
inhalation	160.7 mg/m <sup>3</sup>	160.7 mg/m <sup>3</sup>	62.5 mg/m <sup>3</sup>	62.5 mg/m <sup>3</sup>
dermal	no hazard was identified	no hazard was identified	no hazard was identified	57 mg/kg bw/day

**Derived No Effect Level (DNEL) for general population**

Exposure pattern	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effects systemic
oral	Not applicable	34.05 mg/kg bw/day	Not applicable	17.1 mg/kg bw/day
inhalation	143.91 mg/m <sup>3</sup>	143.91 mg/m <sup>3</sup>	13.33 mg/m <sup>3</sup>	13.33 mg/m <sup>3</sup>
dermal	no hazard was identified	no hazard was identified	no hazard was identified	34.2 mg/kg bw/day

**Predicted No Effect Concentration:**

PNEC aqua (freshwater)	0.37 mg/L
PNEC aqua (marine water)	0.037 mg/L
PNEC aqua (intermittent releases)	0.63 mg/L
PNEC STP	1347 mg/L
PNEC sediment (freshwater)	0.1332 mg/kg sediment dw
PNEC sediment (marine water)	0.01332 mg/kg sediment dw
PNEC soil	74.9 mg/kg soil dw

**8.2 Exposure controls**

8.2.1 Appropriate engineering controls:	Provide adequate ventilation.
<b>8.2.2 Individual protection measures, such as personal protective equipment</b>	
8.2.2.1 Eye protection:	Safety goggles (EN 166) or full face shield
8.2.2.2 Skin protection:	They are selected depending on the type of activity and exposure. chemically resistant gloves complying with EN 374, including:  material - nitrile, neoprene breakthrough time - ≥ 480 min. Permeation resistance class - 6  Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Manufacturer's instructions for use must be respected because of wide variety of types of gloves and conditions of use.
8.2.2.3	<u>Others:</u>  Depending on the risk and on the work performed, adequate protective equipment such as long-sleeved overall and shoes should be selected and approved by a specialist.  ..
8.2.2.4 Respiratory protection:	Respiratory protection in case of gas / vapor formation:

	<p>Mask/half mask with gas filter for gases/vapours of inorganic compounds (recommended EN 14387 Type B) or gas filter for gases/vapours of alkaline compounds such as ammonia, amines (recommended: EN 14387 Type K).</p> <p>Respiratory protection in case of dust formation: Half mask for finery dispersed dust - EN 149, FFP2. Mask / half mask with combined gas / vapor filter of organic and inorganic compounds, acids, bases and toxic particles (recommended: EN 14387 Type ABEK-P3).</p> <p>Suitable for respiratory protection at higher concentrations or for longer exposures: Self-contained breathing apparatus.</p>
Thermal hazards:	Not applicable
<b>8.2.3.Environmental exposure controls</b> Avoid conditions and processes connected with dust generation. Dispose of the flushing water in accordance with local and national regulations. Do not allow temperatures above 35°C in order to avoid atmospheric air pollution from decomposition products.	
<b>SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES</b>	
<b>9.1 Information on basic physical and chemical properties ( main constituent - ammonium hydrogen carbonate)</b>	
a) Physical state	Fine crystals
b) Colour	white
c) Odour	Slightly ammonia. Odour threshold - not determined
d) Melting/Freezing point	Cannot be determined because it decomposes at temperatures above 35°C
e) Boiling point;	Cannot be determined because it decomposes at temperatures above 35°C
f) Flammability	Non flammable
g) Lower and upper exposure limit	Not applicable
h) Flash-point	Not applicable
i) Auto-ignition temperature	Not applicable
j) Decomposition temperature	>35°C
k) pH	7.5-8.5 of 5% aqueous solution
l) Kinematic Viscosity	Not applicable to solids
m) Solubility	220 g/l in water at 20°C
n) Partition coefficient n-octanol/water:	Not applicable
o) Vapour pressure:	78.6 hPa at 25.6°C
p) Density and/or relative density	1,58
q) Relative vapour density	Няма налична информация
r) Particle characteristics	Няма налична информация
<b>9.2 Other information</b>	
<b>9.2.1.Information with regards to physical hazard classes</b>	
Explosive properties:	Not explosive
Oxidizing properties:	Not oxidising
<b>9.2.2 Other safety characteristics</b>	
Bulk density	ca. 900g/l

**SECTION 10: STABILITY AND REACTIVITY**

**10.1 Reactivity**

The product is stable under recommended storage and handling conditions (see section 7, handling and storage).

**10.2 Chemical stability**

Stable under recommended storage and handling conditions (see section 7, handling and storage).

**10.3 Possibility of hazardous reactions**

Exothermic reaction. Reactions with nitrates, nitrites and strong alkalis.

**10.4 Conditions to avoid**

Temperatures above 35°C; contamination with incompatible materials; proximity with fire or ignition sources.

**10.5 Incompatible materials**

Incompatible with strong bases, strong acids, nitrates and nitrites.

**10.6 Hazardous decomposition products**

When product is heated ammonia and carbon dioxide are released.

**SECTION 11: TOXICOLOGICAL INFORMATION**

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

( main constituent - ammonium bicarbonate )

**Acute toxicity**

Assessment of available data for acute toxicity of ammonium hydrogen carbonate supports and confirms classification Acute Toxicity-oral, hazard category 4 (Acute Tox 4.)

Concerning acute dermal and inhalation toxicity, no classification is required

Method	Species	Route of exposure	Effective dose
EPA OTS 798.1150; analogy CAS 144-55-8, sodium hydrogencarbonate	rat	inhalation	LC <sub>50</sub> > 4.74 mg/л air - 4.5 hours
OECD Guideline 403, analogy CAS 7783-20-0, ammonium sulfate	rat	dermal	LD <sub>50</sub> : > 2000 mg/kg bw
OECD Guideline 401	rat	oral	LD <sub>50</sub> : ca 1576 mg/kg bw

**Skin corrosion/irritation**

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

Method	Species	Results
OECD, Guideline 431	human epidermis model	no skin irritation

**Serious eye damage/irritation**

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

Method	Results
in vitro (HET-CAM Test)	there are no indications of serious eye damage
in vivo EPA OTS 798.4500 analogy CAS 144-55-8, sodium hydrogencarbonate	not irritating

**Respiratory or skin sensitisation**

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

Method	Results
EPA 540/9-82-025;	not sensitising

analogy CAS 12125-02-9, ammonium chloride		
<b>Germ cell mutagenicity</b> Based on available data, the classification criteria are not met.		
Genotoxicity in vitro	Method - Ames test OECD HPRT by analogy to CAS Nos 7783-20-2 and 1111-78-0, Chromosome aberration test Result - negative	
in vivo	MNT by analogy to CAS No. 12125-02-9, ammonium chloride Result - negative	
<b>Carcinogenicity:</b> Based on available data, the classification criteria are not met.		
NOAEL >= 6400 ppm (104 weeks; Analogy CAS 144-55-8, sodium hydrogencarbonate)	Result - oral, negative	
NOAEL >= 1104.6 mg/kg bw/day (30 months; Analogy CAS 12125-02-9; ammonium chloride)	Result - oral, negative	
<b>Reproductive toxicity</b> Based on available data, the classification criteria are not met.		
Developmental toxicity: - oral: NOAEL >= 340 mg/kg bw/d (Analogy CAS 144-55-8, sodium hydrogencarbonate)		
<b>STOT – single exposure:</b> Based on available data, the classification criteria are not met.		
<b>STOT – repeated exposure:</b> Based on available data, the classification criteria are not met.		
Route of exposure: <b>oral</b> Systemic effects Species: rat Result: NOAEL: 864 mg/kg bw/day (70 days feeding study; Analogy CAS 12125-02-9, ammonium chloride)		
Route of exposure: <b>inhalation</b> Systemic effects Species: rat Result: NOAEC: 262mg/m <sup>3</sup> (90 days; Analogy 7664-41-7, ammonia, anhydrous)		
Aspiration toxicity Based on available data, the classification criteria are not met.		
<b>11.2 Information on other hazards</b>		
11.2.1 Endocrine disrupting properties - data lacking		
11.2.2 Other information - data lacking		
<b>SECTION 12: ECOLOGICAL INFORMATION</b>		
<b>12.1 Toxicity</b> ( main constituent - ammonium bicarbonate ) Based on available data, the classification criteria are not met.		
<b>Acute (short-term) toxicity</b>		
Fish, freshwater: <i>Prosopium williamsoni</i> <i>Oncorhynchus mykiss</i>	LC <sub>50</sub> (96 h) -68.4 mg/L LC <sub>50</sub> (96 h) -63.4 mg/L	
Aquatic invertebrates <i>Daphnia magna</i> :	LC <sub>50</sub> (48h) – ca.324.9 mg/L	
<b>Chronic (long-term) toxicity</b>		
Fish, freshwater: <i>Lepomis macrochirus</i>	EC10 (30 d): 6.3 mg/L	



Aquatic invertebrates <i>Daphnia magna</i> :	EC10 (10 wk): 3.7 mg/L
Algae: <i>Chlorella vulgaris</i>	EC <sub>50</sub> (5 d) – 1921 mg/L
Other organisms: soil macro-organisms <i>Eisenia fetida</i> (annelids) short-term toxicity (laboratory study) Substrate: artificial soil EPA/600/3-88/029 (1988)	LC50 (14 d): ca. 241 mg/kg soil dw, analogy CAS No. 12125-02-9, ammonium chloride
<b>12.2 Persistence and degradability</b>	
Abiotic degradation:	There is no evidence for photodegradation of ammonium hydrogencarbonate. In aqueous solution, ammonium hydrogencarbonate is completely dissociated into the ammonium ion (NH <sub>4</sub> <sup>+</sup> ) and the carbonate anion (HCO <sub>3</sub> <sup>-</sup> ). Hydrolysis of ammonium hydrogencarbonate does not occur.
Biotic degradation	1) Due to the inorganic nature of the substance standard testing systems are not applicable. 2) Ammonia from ammonium hydrogencarbonate decomposition can be released from soils. Ammonium remaining in soil is largely adsorbed onto negatively charged clay particles, and will undergo nitrification and denitrification as part of the nitrogen cycle and be taken up by plants via nitrogen fixation
<b>12.3 Bioaccumulative potential</b>	
Based on the high water solubility and the ionic nature, ammonium hydrogencarbonate is not expected to adsorb or bioaccumulate to a significant extent. Ammonia is naturally assimilated by most organisms for protein synthesis.	
<b>12.4 Mobility in soil</b>	
The ammonium cation is relatively immobile in soils, because it is adsorbed on the negatively-charged clay colloids present in all soils. Ammonia may be lost from soils by volatilization, especially after the application of ammonia fertilizers, sewage, or manures, and by uptake of ammonium ions into root systems. However, the most likely fate of ammonium ions in soils is conversion to nitrate by nitrification. Nitrate is, in turn, lost from soils by: leaching, which occurs readily, since it is repulsed by the clay particles; denitrification, which occurs rapidly within a few days or weeks in warm, moist soils; and by uptake by the plant root system. Ammonia in soil is largely fixed	
<b>12.5 Results of PBT and vPvB assessment</b>	
This mixture does not contain any substances that are assessed to be a PBT or a vPvB	
<b>12.6</b> Endocrine disrupting properties - Data lacking	
<b>v11 12.7</b> Other adverse effects – no other information available	
<b>12.8</b> Additional information - Data lacking	



**SECTION 13: DISPOSAL CONSIDERATIONS****■V11** 13.1 Waste treatment methods

13.1.1 Product/packaging disposal: We recommend to contact with the responsible authorities.

13.1.2 Waste treatment-relevant information: Treatment is carried out in accordance with national legislation. We recommend to contact with companies that deal with the disposal of special wastes. Chemical residues are treated as special waste and these companies are able to advise you how to dispose of them. Contaminated packaging is treated as the product itself. Unless otherwise stated, uncontaminated packaging may be recycled.

13.1.3 Sewage disposal - relevant information: Do not discharge the waste into the sewage

13.1.4 Other disposal recommendations: data lacking. ■

**SECTION 14: TRANSPORT INFORMATION****■ V11** 14.1 UN number or ID number

IMDG/ADR/RID/ADN/ICAO TI (IATA) not classified as hazardous

## 14.2 UN proper shipping name

IMDG/ADR/RID/ADN/ICAO TI (IATA) not applicable

## 14.3 Transport hazard class

IMDG/ADR/RID/ADN/ICAO TI (IATA) not applicable

## 14.4 Packing group

IMDG/ADR/RID/ADN/ICAO TI (IATA) not applicable

## 14.5 Environmental hazard

IMDG/ADR/RID/ADN/ICAO TI (IATA) not applicable

## 14.6 Special precautions for users

Do not transport together with food and incompatible materials - strong alkalis, nitrates and nitrites.

## 14.7 Maritime transport in bulk

according to IMO instruments not applicable ■

**SECTION 15: REGULATORY INFORMATION**

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

Regulation EC 1907/2006 (REACH), Regulation EC 1272/2008 (CLP), Regulation 1333/2008

\* Regulations / legislation and amendments to the date of issue of the document are indicated

15.2 Chemical Safety Assessment:

In accordance with REACH Article 14, a Chemical Safety Assessment has been carried out for this substance.

## 16. OTHER INFORMATION

**Indication of changes:** Changes since the last version are highlighted with **■ V11...■** . This version replaces all previous versions\_

**Uses:**

- \*Formulation and repackaging of mixtures
- \*Use as raw material in chemical synthesis

**List of abbreviations**

PBT – persistent, bioaccumulative and toxic  
vPvB - very persistent and very bioaccumulative  
NOAEL - no observed adverse effect level  
NOAEC - no observed adverse effect concentration  
DNEL - derived no-effect level  
PNEC - predicted no-effect concentration  
PEC - predicted environmental concentration  
LOEC - lowest observed effect concentration  
NOEC - no observed effect concentration  
OECD - Organisation for Economic Cooperation and Development  
LC<sub>x</sub> - lethal concentration  
EC<sub>x</sub> - effective concentration  
LD<sub>x</sub> - lethal dose

The information above is on the basis of our knowledge about the product and represents the data currently available to us t the moment of safety data sheet issue. This document is intended as guidance for the appropriate precautionary handling with the product by a properly trained person using this product, and does not legally bind in no way manufacturer with guarantee for specific properties, qualities and applications.

Neochim PLC does not grant, guarantee or implies any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers.

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Users are responsible to make their own investigations to determine the suitability of the information and the product for their particular purposes, and to comply with applicable laws.

## ANNEX

<b>Exposure Scenario 3</b>	
<b>Free short title</b>	Formulation and repackaging of mixtures
<b>Use descriptors related to the life cycle stage</b>	Sector of end use: SU3; 10; Process category: PROC 4, 5, 8b, 9, 15, 19; Environmental release category: ERC 2, 5, 7, 8a
<b>Name of contributing environmental scenario (1) and corresponding ERC</b>	<ol style="list-style-type: none"> <li>1. Formulation of mixture (ERC2)</li> <li>2. Industrial end use resulting in inclusion into or onto a matrix (ERC5)</li> <li>3. Industrial end use of substances in closed systems (ERC7)</li> <li>4. Wide dispersive indoor use of processing aids in open systems (ERC8a)</li> </ol>
<b>List of names of contributing worker scenarios (2) and corresponding PROC</b>	<ol style="list-style-type: none"> <li>1. Use in batch and other processes where the potential for exposure occurs (PROC4)</li> <li>2. Mixing and blending (PROC5)</li> <li>3. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</li> <li>4. Transfer of formulations to small containers (PROC9)</li> <li>5. Use as laboratory reagent (PROC15)</li> <li>6. Hand-mixing with intimate contact and only PPE available (PROC19)</li> </ol>
<b>Contributing scenario (1) controlling environmental exposure for ES 3</b>	
Formulation of mixture (ERC2); Industrial end use resulting in inclusion into or onto a matrix (ERC5); Industrial end use of substances in closed systems (ERC7); Wide dispersive indoor use of processing aids in open systems (ERC8a). An environmental assessment has not been performed as the product does not meet the criteria for being classified	
<b>Contributing exposure scenario (2) controlling worker exposure for PROC 4</b>	
<b>Use descriptor covered</b>	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications
<b>Product characteristic</b>	
Physical state of the product	Solid (dust)
Concentration of substance in product	100%
Dustiness	high
<b>Amounts used</b>	
Not relevant.	
<b>Frequency and duration of use/exposure</b>	
Duration of exposure	> 4 Hours/day
Frequency of exposure	<= 240 Days /year
<b>Human factors not influenced by risk management</b>	
Palm of both hands (480 cm <sup>2</sup> )	
<b>Other given operational conditions affecting workers exposure</b>	
Inside/outside	Inside

Domain	Professional	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	Yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		
Not relevant.		
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
Suitable gloves required	No	
Suitable respiratory protection required	No	
<b>Contributing exposure scenario (3) controlling worker exposure for PROC 5</b>		
<b>Use descriptor covered</b>	PROC 5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications	
<b>Product characteristic</b>		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
<b>Amounts used</b>		
Not relevant.		
<b>Frequency and duration of use/exposure</b>		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
<b>Human factors not influenced by risk management</b>		
Palm of both hands (480 cm <sup>2</sup> )		
<b>Other given operational conditions affecting workers exposure</b>		
Inside/outside	Inside	
Domain	Professional	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		
Not relevant.		
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
Suitable gloves required	No	
Suitable respiratory protection required	No	
<b>Contributing exposure scenario (4) controlling worker exposure for PROC 8b</b>		
<b>Use descriptor covered</b>	PROC 8b Transfer of substance or preparation (charging/discharging)	

	from/to vessels/large containers at dedicated facilities	
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications	
<b>Product characteristic</b>		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
<b>Amounts used</b>		
Not relevant.		
<b>Frequency and duration of use/exposure</b>		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
<b>Human factors not influenced by risk management</b>		
Palm of both hands (480 cm <sup>2</sup> )		
<b>Other given operational conditions affecting workers exposure</b>		
Inside/outside	Inside	
Domain	Professional	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	Yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		
Not relevant.		
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
Suitable gloves required	No	
Suitable respiratory protection required	No	
<b>Contributing exposure scenario (5) controlling worker exposure for PROC 9</b>		
<b>Use descriptor covered</b>	PROC 9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications	
<b>Product characteristic</b>		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
<b>Amounts used</b>		
Not relevant.		
<b>Frequency and duration of use/exposure</b>		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
<b>Human factors not influenced by risk management</b>		

Palm of both hands (480 cm <sup>2</sup> )		
<b>Other given operational conditions affecting workers exposure</b>		
Inside/outside	Inside	
Domain	Professional	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	Yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		
Not relevant.		
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
Suitable gloves required	No	
Suitable respiratory protection required	No	
<b>Contributing exposure scenario (6) controlling worker exposure for PROC 15</b>		
<b>Use descriptor covered</b>	PROC 15 Use as laboratory reagent	
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications	
<b>Product characteristic</b>		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
<b>Amounts used</b>		
Not relevant.		
<b>Frequency and duration of use/exposure</b>		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
<b>Human factors not influenced by risk management</b>		
Palm of one hand (240 cm <sup>2</sup> )		
<b>Other given operational conditions affecting workers exposure</b>		
Inside/outside	Inside	
Domain	Professional	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	Yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		
Not relevant.		
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
Suitable gloves required	No	
Suitable respiratory protection required	No	

<b>Contributing exposure scenario (7) controlling worker exposure for PROC 19</b>		
<b>Use descriptor covered</b>	PROC 19 Hand-mixing with intimate contact and only PPE available	
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications	
<b>Product characteristic</b>		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100 %	
Dustiness	high	
<b>Amounts used</b>		
Not relevant.		
<b>Frequency and duration of use/exposure</b>		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
<b>Human factors not influenced by risk management</b>		
(1980 cm <sup>2</sup> )		
<b>Other given operational conditions affecting workers exposure</b>		
Inside/outside	Inside	
Domain	Professional	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	Yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		
Not relevant.		
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>		
Suitable gloves required	Yes	Effectiveness: 90%
Suitable respiratory protection required	No	

<b>Exposure estimation and reference to its source</b>			
Exposure estimation to humans via the environment			
The toxicological and ecotoxicological properties of the substance give no reason for concern regarding a hazard for man via the indirect exposure route. Thus, a quantitative assessment has not been performed.			
<b>Estimated exposure for professionals – PROC 4</b>			
<b>Route of exposure and type of effects</b>	<b>Exposure estimate</b>		<b>RCR</b>
	Value	Unit	



Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Long-term exposure, local and systemic, inhalative	10.00	mg/m <sup>3</sup>	0.16
Long-term exposure, systemic, combined	8.29	mg/kg bw/d	0.28
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Short-term exposure, local and systemic, inhalative	20.00	mg/m <sup>3</sup>	0.12
Short-term exposure, systemic, combined	6.95	mg/kg bw/d	0.24

**Estimated exposure for professionals – PROC 5**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	13.71	mg/kg bw/d	0.24
Long-term exposure, local and systemic, inhalative	10.00	mg/m <sup>3</sup>	0.16
Long-term exposure, systemic, combined	15.14	mg/kg bw/d	0.4
Short-term exposure, systemic, dermal	13.71	mg/kg bw/d	0.24
Short-term exposure, local and systemic, inhalative	20.00	mg/m <sup>3</sup>	0.12
Short-term exposure, systemic, combined	13.80	mg/kg bw/d	0.37

**Estimated exposure for professionals – PROC 8b**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Long-term exposure, local and systemic, inhalative	10.00	mg/m <sup>3</sup>	0.16
Long-term exposure, systemic, combined	8.29	mg/kg bw/d	0.28
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Short-term exposure, local and systemic, inhalative	20.00	mg/m <sup>3</sup>	0.12

Short-term exposure, systemic, combined	6.95	mg/kg bw/d	0.24
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**Estimated exposure for professionals – PROC 9**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Long-term exposure, local and systemic, inhalative	20.00	mg/m <sup>3</sup>	0.32
Long-term exposure, systemic, combined	9.71	mg/kg bw/d	0.44
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Short-term exposure, local and systemic, inhalative	40.00	mg/m <sup>3</sup>	0.24
Short-term exposure, systemic, combined	7.04	mg/kg bw/d	0.37

**Estimated exposure for professionals – PROC 15**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	0.01
Long-term exposure, local and systemic, inhalative	5.00	mg/m <sup>3</sup>	0.08
Long-term exposure, systemic, combined	1.06	mg/kg bw/d	0.09
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	0.01
Short-term exposure, local and systemic, inhalative	10.00	mg/m <sup>3</sup>	0.06
Short-term exposure, systemic, combined	0.39	mg/kg bw/d	0.07

**Estimated exposure for professionals – PROC 19**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	14.14	mg/kg bw/d	0.25

Long-term exposure, local and systemic, inhalative	10.00	mg/m <sup>3</sup>	0.16
Long-term exposure, systemic, combined	15.57	mg/kg bw/d	0.41
Short-term exposure, systemic, dermal	14.14	mg/kg bw/d	0.25
Short-term exposure, local and systemic, inhalative	20.00	mg/m <sup>3</sup>	0.12
Short-term exposure, systemic, combined	14.23	mg/kg bw/d	0.37

<b>Exposure Scenario 4</b>	
<b>Free short title</b>	Use as raw material in chemical synthesis
<b>Use descriptors related to the life cycle stage</b>	Sector of end use: SU 3, 8, 9; Process category: PROC 3, 4, 8b, 15; Environmental release category: ERC 1, 6a, 7
<b>Name of contributing environmental scenario(1) and corresponding ERC</b>	<ol style="list-style-type: none"> <li>1. Manufacture of substances (ERC1)</li> <li>2. Industrial use resulting of manufacture of another substance(use of intermediates) (ERC6a)</li> <li>3. Industrial use of substances in close systems (ERC7)</li> </ol>
<b>List of names of contributing worker scenarios (2) and corresponding PROC</b>	<ol style="list-style-type: none"> <li>1. Use in closed batch processes (PROC 3)</li> <li>2. Use in batch and other processes where the potential for exposureoccurs (PROC 4)</li> <li>3. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)</li> <li>4. Laboratory use (PROC 15)</li> </ol>
<b>Contributing scenario (1) controlling environmental exposure for ES 4</b>	
Manufacture of substances (ERC1); Industrial use resulting of manufacture of another substance (use of intermediates) (ERC6a); Industrial use of substances in close systems (ERC7) An environmental assessment has not been performed as the product does not meet the criteria for being classified	
<b>Contributing exposure scenario (2) controlling workers exposure for PROC 3</b>	
<b>Use descriptor covered</b>	PROC 3 Use in closed batch process (synthesis or formulation)
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications
<b>Product characteristic</b>	
Physical state of the product	Solid (dust)
Concentration of substance in product	100 %
Dustiness	high
Amounts used	Not relevant.
<b>Frequency and duration of use/exposure</b>	
Duration of exposure	> 4 Hours/day
Frequency of exposure	<= 240 Days /year

Human factors not influenced by risk management		
Palm of both hands (480 cm <sup>2</sup> )		
Other given operational conditions affecting workers exposure		
Inside/outside	Inside	
Domain	Industrial	
Technical conditions and measures at process level (source) to prevent release		
Not relevant		
Technical conditions and measures to control dispersion from source towards the worker		
Local exhaust ventilation	No	
Organisational measures to prevent /limit releases, dispersion and exposure		
Not relevant.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Suitable gloves required	No	
Suitable respiratory protection required	No	
<b>Contributing exposure scenario (3) controlling workers exposure for PROC 4</b>		
<b>Use descriptor covered</b>	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises	
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications	
<b>Product characteristic</b>		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
<b>Amounts used</b>		
Not relevant.		
<b>Frequency and duration of use/exposure</b>		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
<b>Human factors not influenced by risk management</b>		
Palm of both hands (480 cm <sup>2</sup> )		
<b>Other given operational conditions affecting workers exposure</b>		
Inside/outside	Inside	
Domain	Industrial	
<b>Technical conditions and measures at process level (source) to prevent release</b>		
Not relevant		
<b>Technical conditions and measures to control dispersion from source towards the worker</b>		
Local exhaust ventilation	Yes	Effectiveness: 80%
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>		

Not relevant.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Suitable gloves required	No
Suitable respiratory protection required	No
<b>Contributing exposure scenario (4) controlling workers exposure for PROC 8b</b>	
<b>Use descriptor covered</b>	PROC 8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications
<b>Product characteristic</b>	
Physical state of the product	Solid (dust)
Concentration of substance in product	100%
Dustiness	high
<b>Amounts used</b>	
Not relevant.	
<b>Frequency and duration of use/exposure</b>	
Duration of exposure	> 4 Hours/day
Frequency of exposure	<= 240 Days /year
<b>Human factors not influenced by risk management</b>	
Palm of both hands (480 cm <sup>2</sup> )	
<b>Other given operational conditions affecting workers exposure</b>	
Inside/outside	Inside
Domain	Industrial
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Not relevant	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Local exhaust ventilation	No
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	
Not relevant.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Suitable gloves required	No
Suitable respiratory protection required	No
<b>Contributing exposure scenario (5) controlling workers exposure for PROC 15</b>	
<b>Use descriptor covered</b>	PROC 15 Use as laboratory reagent
<b>Assessment Method</b>	ECETOC TRA Worker v2.0 with modifications
<b>Product characteristic</b>	
Physical state of the product	Solid (dust)
Concentration of substance in product	100%
Dustiness	high

<b>Amounts used</b>	
Not relevant.	
<b>Frequency and duration of use/exposure</b>	
Duration of exposure	> 4 Hours/day
Frequency of exposure	<= 240 Days /year
<b>Human factors not influenced by risk management</b>	
Palm of one hand (240 cm <sup>2</sup> )	
<b>Other given operational conditions affecting workers exposure</b>	
Inside/outside	Inside
Domain	Industrial
<b>Technical conditions and measures at process level (source) to prevent release</b>	
Not relevant	
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Local exhaust ventilation	No
<b>Organisational measures to prevent /limit releases, dispersion and exposure</b>	
Not relevant.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Suitable gloves required	No
Suitable respiratory protection required	No

<b>Exposure estimation and reference to its source</b>			
<b>Exposure estimation and reference to its source</b>			
<b>Exposure estimation to humans via the environment</b>			
The toxicological and ecotoxicological properties of the substance give no reason for concern regarding a hazard for man via the indirect exposure route. Thus, a quantitative assessment has not been performed.			
<b>Estimated exposure for workers – PROC 3</b>			
Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	0.01
Long-term exposure, local and systemic, inhalative	1.00	mg/m <sup>3</sup>	0.02
Long-term exposure, systemic, combined	0.49	mg/kg bw/d	0.02
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	0.01

Short-term exposure, local and systemic, inhalative	2.00	mg/m <sup>3</sup>	0.01
Short-term exposure, systemic, combined	0.35	mg/kg bw/d	0.02

**Estimated exposure for workers – PROC 4**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Long-term exposure, local and systemic, inhalative	25.00	mg/m <sup>3</sup>	0.40
Long-term exposure, systemic, combined	10.43	mg/kg bw/d	0.52
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Short-term exposure, local and systemic, inhalative	50.00	mg/m <sup>3</sup>	0.31
Short-term exposure, systemic, combined	7.08	mg/kg bw/d	0.43

**Estimated exposure for workers – PROC 8b**

Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Long-term exposure, local and systemic, inhalative	25.00	mg/m <sup>3</sup>	0.40
Long-term exposure, systemic, combined	10.43	mg/kg bw/d	0.52
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	0.12
Short-term exposure, local and systemic, inhalative	50.00	mg/m <sup>3</sup>	0.31
Short-term exposure, systemic, combined	7.08	mg/kg bw/d	0.43



Estimated exposure for workers – PROC 15			
Route of exposure and type of effects	Exposure estimate		RCR
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	0.01
Long-term exposure, local and systemic, inhalative	5.00	mg/m <sup>3</sup>	0.08
Long-term exposure, systemic, combined	1.06	mg/kg bw/d	0.09
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	0.01
Short-term exposure, local and systemic, inhalative	10.00	mg/m <sup>3</sup>	0.06
Short-term exposure, systemic, combined	0.39	mg/kg bw/d	0.07