

SAFETY DATA SHEET

in accordance with Regulation (EC) 1907/2006 (REACH) amended with Commission Regulation (EU) 2015/830

■ V8 – amendments in this revision ■

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING
1.1 Product identifier

Substance name	AMMONIUM HYDROGEN CARBONATE without anticaking agent
Synonyms	Ammonium bicarbonate
CAS number:	1066-33-7
EC number:	213-911-5
REACH registration number:	01-2119486970-26-0003
Neochim PLC code	12-01

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

Uses:	<ul style="list-style-type: none"> - raw material in chemical synthesis; - in formulation of mixture; - raising agent in food industry
Uses advised against:	Unknown

1.3 Details of the supplier of the safety data sheet

Manufacturer: Address: Tel.;fax: URL website: Email:	NEOCHIM PLC East Industrial Zone, Himkombinatska Str. 6403 Dimitrovgrad, Bulgaria +359 391 65 205; +359 391 60 555 http:// www.neochim.bg neochim@neochim.bg
■ V8 Company e-mail for SDS	reach-neochim@neochim.bg ■

1.4 Emergency telephone number

■ V8 National Toxicology Information Center - HAMTEM "N.I.Pirogov"	+ 359 2 9154 233	24/24 h	7/7 d ■
	+ 359 2 9154 409		

SECTION 2: HAZARDS IDENTIFICATION
2.1 Classification of the substance or mixture

Classification of the substance or mixture in accordance with Regulation 1272/2008 (CLP) and its amendments at the date of the issue of the document

Acute Toxicity-oral, hazard category 4 (Acute Tox 4.), H302 - Harmful if swallowed

2.2 Label elements

Labelling in accordance with Regulation 1272/2008 (CLP) and its amendments at the date of the issue of the document.

Hazard pictogram(s):



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. Packing and content waste to be managed in accordance with national legislation.

2.3 Other hazards

PBT/vPvB criteria:	According to Annex XIII of Regulation (EC) No 1907/2006, PBT and vPvB assessment has not been conducted since ammonium hydrogen carbonate is inorganic.
Other hazards:	Unknown

SECTION 3: HAZARDS IDENTIFICATION

3.1 Substances

CAS number	Name	Content, % (w/w)
1066-33-7	Ammonium hydrogen carbonate	min. 99,4

SECTION 4: FIRST- AID MEASURES

4.1 Description of first aid measures

- V8 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, 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	Do not induce vomiting! Carefully rinse the mouth immediately and then give the casualty plenty of water to drink. Seek medical attention

4.2 Most important symptoms and effects, both acute and delayed

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)

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor: Treat symptomatically. Special measure to be taken to prevent absorption in case of ingestion

SECTION 5: FIRE - FIGHTING MEASURES

5.1 Extinguishing media

Suitable:	Not combustible. Use extinguishing media appropriate for surrounding fire.
Not suitable:	Unknown

5.2 Special hazards arising from the substance or mixture

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.

5.3 Advice for firefighters	
Special chemical protective suit, gloves, boots and self-contained breathing apparatus	
SECTION 6: ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures	
6.1.1 For non-emergency personnel	
Do not allow people not involved in emergency response and unprotected to enter the contamination zone. Ensure adequate ventilation. Wear personal protective equipment (PPE).	
6.1.2 For emergency responders	
Gloves, anti-dust masks, protective glasses. Filtering gas mask for protection against ammonia.	
6.2 Environmental precautions	
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.	
6.3 Methods and material for containment and cleaning up	
Mechanically collect the spilled material and store it temporarily in properly labeled containers for later recovery or disposal.	
6.4 Reference to other sections	
See section 8 for personal protective equipment and section 13 for disposal.	
SECTION 7: HANDLING AND STORAGE	
<p>■ V8 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 ■.</p>	
7.1 Precautions for safe handling	
Technical measures/ Precautions:	No special measures are required if the product is handled properly. Avoid dust formation. Ensure adequate ventilation of stores and work areas.
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.
7.2 Conditions for safe storage, including any incompatibilities	
<p>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</p>	
SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION	
<p>■ V8 For the availability of specific information of the use listed in Section 16, refer to the Exposure Scenarios (ES) attached ■.</p>	
8.1 Control parameters	
occupational exposure limit values	No specific data
<p>■ V8 Other exposure limit for potential decomposition products</p>	<p>EU limit values Ammonia - CAS № 7664-41-7 8 hours: 14 mg/m³ or 20ppm Short term(15 minutes) : 36 mg/m³ or 50ppm Carbon dioxide - CAS № 124-38-9 8 hours: 9000 mg/m³ or 5000ppm■</p>

Derived No Effect Level (DNEL) for workers

Exposure pattern	Acute effects	Acute effects	Chronic effects	Chronic effects
	local	systemic	local	systemic
inhalation	160.7 mg/m ³	160.7 mg/m ³	62.5 mg/m ³	62.5 mg/m ³
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	Acute effects	Chronic effects	Chronic effects
	local	systemic	local	systemic
oral	Not applicable	34.05 mg/kg bw/day	Not applicable	17.1 mg/kg bw/day
inhalation	143.91 mg/m ³	143.91 mg/m ³	13.33 mg/m ³	13.33 mg/m ³
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.
8.2.2 Individual protection measures, such as personal protective equipment	
8.2.2.1 Eye protection:	Safety goggles (EN 166) or full face shield
8.2.2.2 Skin protection:	<p>■ V8 They are selected depending on the type of activity and exposure. chemically resistant gloves complying with EN 374, including:</p> <p>material - nitrile, neoprene</p> <p>breakthrough time - ≥ 480 min.</p> <p>Permeation resistance class - 6</p> <p>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.</p>
<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 ■.
Respiratory protection:	<p>..</p> <p>Respiratory protection in case of gas / vapor formation: 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:</p>

	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). Suitable for respiratory protection at higher concentrations or for longer exposures: Self-contained breathing apparatus.
Thermal hazards:	Not applicable
8.2.3.Environmental exposure controls 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.	
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES	
9.1 Information on basic physical and chemical properties	
Appearance:	Fine, white crystals
Odour:	Slightly ammonia
pH of 5% aqueous solution	7.5-8.5
■ V8 Odour threshold;	Not determined ■
Melting/Freezing temperature:	Cannot be determined because it decomposes at temperatures above 35°C
Boiling temperature:	Cannot be determined because it decomposes at temperatures above 35°C
Flash-point:	Not applicable
Evaporation rate:	Not applicable
Flammability:	Non flammable
Upper/lower flammability or explosive limits:	Not applicable
Vapour pressure:	78.6 hPa at 25.6°C
Vapour density:	No data available
Relative density:	1,58
Solubility:	220 g/l in water at 20°C
■ V8 Partition coefficient n-octanol/water:	Not applicable
Auto ignition temperature:	Not applicable
Decomposition temperature:	>35°C
Viscosity:	Not applicable to solids
Explosive properties:	Not explosive
Oxidizing properties:	Not oxidising
9.2 Other information	
■ V8 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 toxicological effects

■ V8 Acute toxicity

Assessment of available data for acute toxicity of ammonium hydrogencarbonate 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 ₅₀ > 4.74 mg/л air - 4.5 hours
OECD Guideline 403, analogy CAS 7783-20-0, ammonium sulfate	rat	dermal	LD ₅₀ : > 2000 mg/kg bw
OECD Guideline 401	rat	oral	LD ₅₀ : 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 for skin sensitisation, the classification criteria are not met.

Method	Results
EPA 540/9-82-025; analogy CAS 12125-02-9, ammonium chloride	not sensitising

Mutagenicity

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

Genotoxicity	Method - Ames test OECD HPRT by analogy to CAS Nos7783-20-2 and 1111-78-0, Chromosome aberration test
in vitro	Result - negative
in vivo	MNT by analogy to CAS No. 12125-02-9, ammoniumchloride
	Result - negative

Carcinogenicity: 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
Reproductive toxicity 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)	
Repeated dose toxicity: Based on available data, the classification criteria are not met.	
Route of exposure: oral 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: inhalation Systemic effects Species: rat Result: NOAEC: 262mg/m ³ (90 days; Analogy 7664-41-7, ammonia, anhydrous) ■	
SECTION 12: ECOLOGICAL INFORMATION	
■ V8 12.1 Toxicity Based on available data, the classification criteria are not met .	
Acute (short-term) toxicity	
Fish, freshwater: <i>Prosopium williamsoni</i> <i>Oncorhynchus mykiss</i>	LC ₅₀ (96 h) -68.4 mg/L LC ₅₀ (96 h) -63.4 mg/L
Aquatic invertebrates <i>Daphnia magna</i> :	LC ₅₀ (48h) – ca.324.9 mg/L
Chronic (long-term) toxicity	
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 ₅₀ (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
12.2 Persistence and degradability	
Abiotic degradation:	There is no evidence for photodegradation of ammonium hydrogencarbonate. In aqueous solution, ammonium hydrogencarbonate is completely dissociated into the ammonium ion (NH ₄ ⁺) and the carbonate anion (HCO ₃ ⁻). Hydrolysis of ammonium hydrogencarbonate does not occur.

Biotic degradation	<p>1) Due to the inorganic nature of the substance standard testing systems are not applicable.</p> <p>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</p>
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12.3 Bioaccumulative potential

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.

12.4 Mobility in soil

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

12.5 Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted since ammonium hydrogen carbonate is inorganic.

SECTION 13: DISPOSAL CONSIDERATIONS

<p>■ V8 Waste treatment methods:</p>	We recommend to contact both the responsible authorities and the 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.
Package waste disposal:	Treatment is carried out in accordance with national legislation. Contaminated packaging is treated as the product itself. Unless otherwise stated, uncontaminated packaging may be recycled.

SECTION 14: TRANSPORT INFORMATION

Not classified as hazardous goods according to international transport legislation (ADR, RID, IMDG). Do not transport together with food and incompatible materials - strong alkalis, nitrates and nitrites.

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 **■ V8...■** . 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_x - lethal concentration
EC_x - effective concentration
LD_x - 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. Neochim PLC does not carry any liability for damages resulting from the product use or reliance upon this information, data and recommendations for it. 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

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

Domain	Professional	
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	Yes	Effectiveness: 80%
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	
Contributing exposure scenario (3) controlling worker exposure for PROC 5		
Use descriptor covered	PROC 5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	
Assessment Method	ECETOC TRA Worker v2.0 with modifications	
Product characteristic		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
Amounts used		
Not relevant.		
Frequency and duration of use/exposure		
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 ²)		
Other given operational conditions affecting workers exposure		
Inside/outside	Inside	
Domain	Professional	
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	yes	Effectiveness: 80%
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	
Contributing exposure scenario (4) controlling worker exposure for PROC 8b		
Use descriptor covered	PROC 8b Transfer of substance or preparation (charging/discharging)	

	from/to vessels/large containers at dedicated facilities	
Assessment Method	ECETOC TRA Worker v2.0 with modifications	
Product characteristic		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
Amounts used		
Not relevant.		
Frequency and duration of use/exposure		
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 ²)		
Other given operational conditions affecting workers exposure		
Inside/outside	Inside	
Domain	Professional	
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	Yes	Effectiveness: 80%
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	
Contributing exposure scenario (5) controlling worker exposure for PROC 9		
Use descriptor covered	PROC 9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	
Assessment Method	ECETOC TRA Worker v2.0 with modifications	
Product characteristic		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
Amounts used		
Not relevant.		
Frequency and duration of use/exposure		
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 ²)		
Other given operational conditions affecting workers exposure		
Inside/outside	Inside	
Domain	Professional	
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	Yes	Effectiveness: 80%
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	
Contributing exposure scenario (6) controlling worker exposure for PROC 15		
Use descriptor covered	PROC 15 Use as laboratory reagent	
Assessment Method	ECETOC TRA Worker v2.0 with modifications	
Product characteristic		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100%	
Dustiness	high	
Amounts used		
Not relevant.		
Frequency and duration of use/exposure		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
Human factors not influenced by risk management		
Palm of one hand (240 cm ²)		
Other given operational conditions affecting workers exposure		
Inside/outside	Inside	
Domain	Professional	
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	Yes	Effectiveness: 80%
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	
Contributing exposure scenario (7) controlling worker exposure for PROC 19		
Use descriptor covered	PROC 19 Hand-mixing with intimate contact and only PPE available	
Assessment Method	ECETOC TRA Worker v2.0 with modifications	
Product characteristic		
Physical state of the product	Solid (dust)	
Concentration of substance in product	100 %	
Dustiness	high	
Amounts used		
Not relevant.		
Frequency and duration of use/exposure		
Duration of exposure	> 4 Hours/day	
Frequency of exposure	<= 240 Days /year	
Human factors not influenced by risk management		
(1980 cm ²)		
Other given operational conditions affecting workers exposure		
Inside/outside	Inside	
Domain	Professional	
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	Yes	Effectiveness: 80%
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	Yes	Effectiveness: 90%
Suitable respiratory protection required	No	

Exposure estimation and reference to its source			
Estimated exposure for professionals – PROC 4			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA

Long-term exposure, local and systemic, inhalative	10.00	mg/m ³	NA
Long-term exposure, systemic, combined	8.29	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	20.00	mg/m ³	NA
Short-term exposure, systemic, combined	6.95	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for professionals – PROC 5			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	13.71	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	10.00	mg/m ³	NA
Long-term exposure, systemic, combined	15.14	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	13.71	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	20.00	mg/m ³	NA
Short-term exposure, systemic, combined	13.80	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for professionals – PROC 8b			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	10.00	mg/m ³	NA
Long-term exposure, systemic, combined	8.29	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	20.00	mg/m ³	NA
Short-term exposure, systemic, combined	6.95	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for professionals – PROC 9			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	20.00	mg/m ³	NA
Long-term exposure, systemic, combined	9.71	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	40.00	mg/m ³	NA
Short-term exposure, systemic, combined	7.04	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for professionals – PROC 15			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	5.00	mg/m ³	NA
Long-term exposure, systemic, combined	1.06	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	10.00	mg/m ³	NA
Short-term exposure, systemic, combined	0.39	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for professionals – PROC 19			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	14.14	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	10.00	mg/m ³	NA

Long-term exposure, systemic, combined	15.57	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	14.14	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	20.00	mg/m ³	NA
Short-term exposure, systemic, combined	14.23	mg/kg bw/d	NA

NA: not applicable

Exposure Scenario 4	
Free short title	Use as raw material in chemical synthesis
Use descriptors related to the life cycle stage	Sector of end use: SU 3, 8, 9; Process category: PROC 3, 4, 8b, 15; Environmental release category: ERC 1, 6a, 7
Name of contributing environmental scenario(1) and corresponding ERC	<ol style="list-style-type: none"> 1. Manufacture of substances (ERC1) 2. Industrial use resulting of manufacture of another substance(use of intermediates) (ERC6a) 3. Industrial use of substances in close systems (ERC7)
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> 1. Use in closed batch processes (PROC 3) 2. Use in batch and other processes where the potential for exposure occurs (PROC 4) 3. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b) 4. Laboratory use (PROC 15)
Contributing scenario (1) controlling environmental exposure for ES 4	
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	
Contributing exposure scenario (2) controlling workers exposure for PROC 3	
Use descriptor covered	PROC 3 Use in closed batch process (synthesis or formulation)
Assessment Method	ECETOC TRA Worker v2.0 with modifications
For further information see ES 4	
Contributing exposure scenario (3) controlling workers exposure for PROC 4	
Use descriptor covered	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Assessment Method	ECETOC TRA Worker v2.0 with modifications
For further information see ES 2	
Contributing exposure scenario (4) controlling workers exposure for PROC 8b	
Use descriptor covered	PROC 8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Assessment Method	ECETOC TRA Worker v2.0 with modifications
For further information see ES 2	

Contributing exposure scenario (5) controlling workers exposure for PROC 15	
Use descriptor covered	PROC 15 Use as laboratory reagent
Assessment Method	ECETOC TRA Worker v2.0 with modifications
For further information see ES 2	

Exposure estimation and reference to its source			
Estimated exposure for workers – PROC 3			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	1.00	mg/m ³	NA
Long-term exposure, systemic, combined	0.49	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	2.00	mg/m ³	NA
Short-term exposure, systemic, combined	0.35	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for workers – PROC 4			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	25.00	mg/m ³	NA
Long-term exposure, systemic, combined	10.43	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	50.00	mg/m ³	NA
Short-term exposure, systemic, combined	7.08	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for workers – PROC 8b			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	25.00	mg/m ³	NA
Long-term exposure, systemic, combined	10.43	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	6.86	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	50.00	mg/m ³	NA
Short-term exposure, systemic, combined	7.08	mg/kg bw/d	NA

NA: not applicable

Estimated exposure for workers – PROC 15			
Route of exposure	Concentrations		Justification
	Value	Unit	
Long-term exposure, systemic, dermal	0.34	mg/kg bw/d	NA
Long-term exposure, local and systemic, inhalative	5.00	mg/m ³	NA
Long-term exposure, systemic, combined	1.06	mg/kg bw/d	NA
Short-term exposure, systemic, dermal	0.34	mg/kg bw/d	NA
Short-term exposure, local and systemic, inhalative	10.00	mg/m ³	NA
Short-term exposure, systemic, combined	0.39	mg/kg bw/d	NA

NA: not applicable