

SAFETY DATA SHEET



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SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 PRODUCT IDENTIFIER	Absorgel
1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST	Use as a desiccant, absorbent Formulation or re-packing Use at industrial sites Widespread use by professional workers Consumer use
1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET	Absortech Group Tryckerivägen 4 311 44 Falkenberg, Sweden info@absortech.com Phone: 034-64 20 70
1.4 EMERGENCY TELEPHONE NUMBER	In emergency situations, contact National Poisons Information Service: In England and Wales: NHS 111 - dial 111. In Scotland: NHS 24 - dial 111.

SECTION 2. HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE (CLP)

Health hazards:

The product is classified as hazardous to health.

Causes serious eye irritation. (Eye Irrit.2; H319).

Environmental hazards

The product is not classified as hazardous to the environment.

Physical hazards

The product is not classified for physical hazards.

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2.2 LABEL ELEMENTS

Hazard Pictograms



Signal word

WARNING

Hazard statements

H319 Causes serious eye irritation.

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection.

P305 +P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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

2.3 OTHER HAZARDS

No other hazards are related to the product.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 MIXTURES

Substance	EC No.	CAS No.	REACH No.	Conc. w/w %	Classification (CLP)	
Calcium chloride ^a	233-140-8	10043-52-4	01-2119494219-28	65-<90	Eye Irrit. 2	H319
Starch	232-679-6	9005-25-8	*	10 -< 35	-	-

a) Harmonised classification according to Annex VI, part 3, table 3.1 and 3.2, Regulation (EC) No 1272/2008 (CLP).

* Not available or no REACH registration required.

Other information

For a full text of H- phrases: See Section 16

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SECTION 4. FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES

Inhalation

Fresh air and rest. If symptoms persist, call a physician.

Skin contact

Take off contaminated clothing.

Wash skin immediately with soap and water. If symptoms persist, call a physician.

Eye contact

Rinse immediately with soft jet of water or eye wash for a few at least 15 minutes. Use temperate water. Keep eyelids apart, remove contact lenses. Consult a doctor if symptoms persist.

Ingestion

Rinse the mouth and drink water. Do not induce vomiting. Consult a doctor if symptoms persist.

Information to medical advice

No specific information.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Inhalation: May cause mild/transient irritation.

Skin Contact: May cause mild / transient irritation.

Eye Contact: Causes intense burning, tearing / increased lacrimation.

Ingestion: May cause irritation in the mouth and throat.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

No information

SECTION 5. FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA RELEVANT

Suitable extinguishing media: Use the same extinguishing media as recommended for the surroundings.

Unsuitable extinguishing media: None known.

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5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Not combustible.

In case of fire, toxic and corrosive fumes such as hydrogen chloride and other combustion products may develop.

5.3 ADVICE FOR FIREFIGHTERS

Precautions according to the standard procedure for chemical fires. Use breathing apparatus to protect against toxic / corrosive gases and suitable fire-resistant protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Avoid dust formation. Avoid contact with skin and eyes. Wear protective gloves, eye protection and protective clothing when cleaning and keep unprotected persons away.

6.2 ENVIRONMENTAL PRECAUTIONS

Prevent discharge to drains.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Sweep up and handle in accordance with local regulations.

6.4 REFERENCE TO OTHER SECTIONS

See Section 8 for Exposure controls / personal protection and Section 13 for disposal considerations.

SECTION 7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Avoid inhalation and direct contact with the product. Do not eat, drink and smoke when handling the product. Normal hand hygiene.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in a cool dry place in a well-ventilated area. The product is hygroscopic. Store in labeled original container. Suitable packaging materials are polyethylene, polypropylene and plastic materials such as PVDF, PTFE and PFA. Unsuitable packaging material: aluminum

7.3 SPECIFIC END USE

See Section 1.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

Exposure limits according to National regulations (Great Britain EH40, Workplace exposure limits (Fourth Edition 2020))

Starch	TWA 8h
- total inhalable dust	10 mg/m ³
-respirable fraction	4 mg/m ³

Other information

Calcium chloride	DNEL (worker): Inhalation: 5 mg/m ³ (local effect, long-term exposure) Inhalation: 10 mg/m ³ (local effect, short-term exposure)
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8.2 EXPOSURE CONTROLS

Appropriate technical measures

Methods are designed so that the concentration of dust is kept as low as possible by using closed processes, local ventilation exhaust or the like.

There should be a place for eye rinsing at the workplace.

Personal protection

Eye/face protection:	Protective glasses shall be used.
Skin protection:	At the risk of direct contact protective gloves should be used. Recommended glove material: PVC, neoprene and natural rubber.
Respiratory protection:	When handling large amounts, respiratory protection may be needed, according to EN 143. Particle filter: P2
Other protection:	Long-sleeved coat / overalls and full-coverage shoes.
Thermal hazard.	Not relevant.

8.3 ENVIRONMENTAL EXPOSURE CONTROLS

Prevent release to the environment.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Product description

Appearance:	Solid, powder/granules White, grey (the substance could have small impurities of iron that gives light nuance coloration to the end product depending on the state of oxidation of iron itself (off-white, yellow, pink)).
Odour:	Odorless
Odour threshold:	No data
pH:	No data
Melting-point / freezing-point:	782°C (101.3 kPa) (calcium chloride)
Initial boiling-point and boiling-range:	> 1600 °C (calcium chloride)
Flash-point:	Not relevant
Evaporation rate:	Not applicable
Flammability (solid, gas):	Not flammable
Upper/lower flammability or explosive limits:	Not applicable
Vapour pressure:	Not relevant
Vapour density:	Not relevant
Relative density:	2,15 (20°C) (calcium chloride)
Solubility:	Soluble in water 745g/L (20°C (calcium chloride)
Partition coefficient, n-octanol/water:	No data for the product Not relevant for calcium chloride as it decomposes in water (half-life less than 12 hours)
Auto-ignition temperature:	Not relevant
Decomposition temperature:	No data
Viscosity:	Not relevant (solid)
Explosive properties:	Not explosive
Oxidising properties:	Not oxidising.

9.2 OTHER INFORMATION

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SECTION 10. STABILITY AND REACTIVITY

10.1 REACTIVITY

The product is not reactive in normal handling and storage.

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10.2 CHEMICAL STABILITY

The product is stable under normal handling and storage.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

Calcium chloride can react violently with water.

10.4 CONDITIONS TO AVOID

Avoid exposing the substance to moisture during storage.

10.5 INCOMPATIBLE MATERIALS

The substance may react with strong oxidizing agents / reducing agents.
In an aqueous solution, calcium chloride may be corrosive to metals.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

No hazardous decomposition products known.

SECTION 11. TOXICOLOGICAL INFORMATION

The substance is classified as hazardous to the health (eye irritation). Specific effects are described below.

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity:	Not classified as acutely toxic.
Calcium chloride	LD ₅₀ Oral Rat: 2301 mg/kg LD ₅₀ Dermal Rabbit: >5000 mg/kg
Corrosive/Irritating on the skin	Repeated and prolonged contact may appear dehydrating on the skin. Calcium chloride is not corrosive / irritant to the skin, OECD 404.
Serious eye damage / irritation:	The product is irritating to the eyes, OECD 405.
Respiratory / skin sensitization:	Not considered being sensitizing.
Germ cell mutagenicity:	Not considered to cause mutations in germ cells.
Carcinogenicity	Not considered to be carcinogenic.
Toxic to reproduction	Not considered to be toxic to reproduction.
Specific organ toxicity-single exposure:	If inhaled, dust may be irritating to the upper respiratory tract and lungs.
Specific organ toxicity-repeated exposure:	Not considered to cause damage to organs after repeated exposure.
Aspiration Hazard:	Not relevant since the substance is not a liquid.

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Specific effects

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11.2 OTHER INFORMATION

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SECTION 12. ECOLOGICAL INFORMATION

The product is not classified as a hazardous to the environment and is not expected to result in any negative environmental consequences but should be handled according to good industrial standards.

12.1 TOXICITY

Calcium chloride

LC₅₀ Fish 96h: 4630 mg/L (Pimephales promelas)

EC₅₀ Daphnia 48h: 2400 mg/L (Daphnia magna)

IC₅₀ Algae 72h: >4000 mg/L (Pseudokirchneriella subcapitata)

12.2 PERSISTENCE AND DEGRADABILITY

No data for the product.

For inorganic substances no degradation test needs to be performed.

However, calcium chloride is not expected to undergo photolysis or biodegradation.

12.3 BIOACCUMULATIVE POTENTIAL

No data for the product.

Calcium chloride is easily dissociated into calcium and chloride ions and both ions are essential constituents of the body of all animals hence if a high amount would be taken up this is regulated by the body. Bioaccumulation of calcium chloride is consequently not expected.

12.4 MOBILITY IN SOIL

No data for the product.

Calcium chloride is soluble in water and its vapor pressure is negligible. Calcium chloride is not expected to be absorbed in soil due to its dissociation properties and high water solubility. As for the behaviour of calcium in soil, the calcium ion may bind to soil particulate or may form stable inorganic salts with sulphate and carbonate ions. The chloride ion is mobile in soil and eventually drains into surface water because it is readily dissolved in water.

12.5 RESULTS OF PBT AND vPvB ASSESSMENT

The criteria for PBT and vPvB are not applicable to inorganic substances (calcium chloride).

Based on available information, no other substances in the mixture meet the criteria for PBT or vPvB substances according to Annex XIII of Regulation (EC) No 1907/2006 (REACH).

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12.6 OTHER ADVERSE EFFECTS

None known.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

Product

Dispose of contents/container to approved waste disposal facility in accordance with local regulations.
Prevent discharge into drains, watercourses etc.

Packaging

Packaging containing visible residues of hazardous substances is treated as product.
EWC- code: 15 01 10* (Packaging containing residues of or contaminated by hazardous substances).
Well emptied packaging can be treated as conventional waste and be left for incineration (energy recovery).
Emptied and cleaned packaging can be treated as conventional waste and be left for recycling.

EWC- code: 15 01 01 (Paper and cardboard packaging) / 15 01 02 (Plastic packaging) / 15 01 04 (Metal packaging) / 15 01 07 (Glass packaging)

SECTION 14. TRANSPORT INFORMATION

This product is not covered by the regulations for transportation of dangerous goods according to ADR/RID, ADN, IMDG and IATA/ICAO.

SECTION 15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

This safety data sheet is prepared in accordance with the EUROPEAN PARLIAMENT AND COUNCIL REGULATION (EC) No 1907/2006 of 18 December 2006 concerning the registration, evaluation, authorization and restriction of chemicals (REACH) and Commission Regulation (EU) No 2015/830 of 28 May 2015 amending the European Parliament and Council Regulation (EC) No 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH).

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Regulations

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substance and mixtures (CLP).

Great Britain EH40, Workplace exposure limits (Fourth Edition 2020), Occupational Exposure Limits, UK.

Commission Regulation (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste.

Other information

The product does not contain any substances listed in REACH Annex XIV (Authorization List) or on the EU Candidate List of Substances with Substances of Very High Concern (SVHC) in concentrations $\geq 0.1\%$ (w / w).

The product is not affected by any restrictions under REACH, Annex XVII.

15.2 CHEMICAL SAFETY ASSESSMENT

A Chemical Safety Assessment has been carried out for calcium chloride.

SECTION 16. OTHER INFORMATION

Classification procedure

Test data is prioritized when classifying the product. When no test data are available, the classification rules in regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures (CLP) been used.

Hazard statements in Section 3

H319 Causes serious eye irritation.

Abbreviations

ADR	Regulation for road transport
BCF	Bio Concentration Factor
EC ₅₀	Effective Concentration (concentration that gives response in 50 % of test subjects)
ECHA	European Chemical Agency
EmS	Emergency Schedule Information
IARC	International Agency for Research on Cancer
IC ₅₀	Inhibitory Concentration (concentration that shows inhibition in 50 % of the test subjects)
ICAO	Regulation for transport by air
IMDG	Regulation for transport by sea
LC ₅₀	Lethal Concentration (concentration causing the death of 50 % of a group of test animals)
LD ₅₀	Lethal Dose (dose causing the death of 50 % of a group of test animals)
LD _{LO}	Lethal Dose Low (= Lowest dose of a toxic material at which the death of the exposed test animal occurs.
Log P _{ow}	Partition coefficient octanol - water
PBT	Persistent Bio-accumulative and Toxic

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RID	Regulations for transport by rail-road
STEL	Short Term Exposure Limit
SVHC	Substance of Very High Concern
TWA	Time-weighted average
vPvB	very Persistent and very Bioaccumulative

Advice about education

The user of this product should have training that is relevant to the properties of the product and relevant use.

References

- 1) *Classification & Labelling Inventory Database, ECHA.*
- 2) *Registered substances, ECHA.*
- 3) *Chemical substances online, Prevent.*
- 4) *Information from the supplier*

Version description

The information has been modified under the following sections in the safety data sheet: 14

The safety data sheet is dated 2021-03-18 and it replaces version dated 2020-10-14.

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EXPOSURE SCENARIO FOR CALCIUM CHLORIDE	
No.	Short title
ES 1	Formulation or re-packing
ES 2	Use at industrial sites; Various sectors (SU 1, SU 2a, SU 2b, SU 4, SU 5, SU 6b, SU 8, SU 9, SU 11, SU 12, SU 13, SU 14, SU 15, SU 16, SU 17)
ES 3	Widespread use by professional workers; Various sectors (SU 0, SU 1, SU 13, SU 19, SU 20)
ES 4	Widespread use by professional workers; Various sectors (SU 0, SU 1, SU 5, SU 13, SU 19, SU 20)
ES 5	Consumer use; PC 0, 2

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ES 1: Formulation or re-packing

Title section

ES name: Formulation or re-packing; Distribution of substance

Environment	
1: Formulation into mixture	ERC 2
Worker	
2: <i>Chemical production in closed process without likelihood of exposure or in containment conditions.</i>	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure.</i>	PROC 2
4: <i>Formulation in closed batch processes with occasional controlled exposure.</i>	PROC 3
5: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
6: Mixing or blending in batch processes	PROC 5
7: <i>Transfer of a substance or mixture during process sampling at dedicated facilities</i>	PROC 8b, PROC 26
8: <i>Transfer of a substance or mixture during process sampling at non-dedicated facilities</i>	PROC 8a, PROC 26
9: <i>Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</i>	PROC 9, PROC 26
10: Use as laboratory reagent	PROC 15, PROC 26
11: Tableting, compression, extrusion, pelettisation, granulation	PROC 14
12: <i>Transfer of substance or mixture (charging/discharging) at non dedicated-facilities</i>	PROC 8a, PROC 26
13: <i>Transfer of substance or mixture (charging/discharging) at dedicated-facilities</i>	PROC 8b, PROC 26
14: <i>Equipment cleaning and maintenance at non-dedicated facility</i>	PROC 8a, PROC 28
15: Manual maintenance (cleaning and repair) of machinery	PROC 28

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Conditions of use affecting exposure

Control of worker exposure

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
<i>Solid, medium dustiness. Covers also liquid form</i>
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
<i>Use suitable eye protection.</i>
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 20 °C

Specific conditions of use per contributing scenario

Contributing scenario	Specific conditions of use
<i>Chemical production in closed process without likelihood of exposure or in containment conditions. (PROC 1)</i>	Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour).
<i>Chemical production in closed continuous process with occasional controlled exposure. (PROC 2)</i>	Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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Formulation in closed batch processes with occasional controlled exposure. (PROC 3)	Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Chemical production where opportunity for exposure arises (PROC 4)	Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). <i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i>
Mixing or blending in batch processes (PROC 5)	Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). <i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i>
Transfer of a substance or mixture during process sampling at dedicated facilities (PROC 8b, PROC 26)	Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Transfer of a substance or mixture during process sampling at non-dedicated facilities (PROC 8a, PROC 26)	Covers use up to 1 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour). <i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i>
Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9, PROC 26)	Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). <i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i>
Use as laboratory reagent (PROC 15, PROC 26)	Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)	Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC 8a, PROC 26)	<p>Covers use up to 8 h/day</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p>
Transfer of substance or mixture (charging/discharging) at dedicated-facilities (PROC 8b, PROC 26)	<p>Covers use up to 8 h/day</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p>
Equipment cleaning and maintenance at non-dedicated facility (PROC 8a, PROC 28)	<p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p>
Manual maintenance (cleaning and repair) of machinery (PROC 28)	<p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p>

Exposure estimation and reference to its source

Worker exposure: Chemical production in closed process without likelihood of exposure or in containment conditions. (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.01 mg/m ³ (TRA Workers 3.0)	< 0.01

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Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, acute	0.04 mg/m ³ (TRA Workers 3.0)	< 0.01

Worker exposure: Chemical production in closed continuous process with occasional controlled exposure. (PROC 2)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Formulation in closed batch processes with occasional controlled exposure. (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Mixing or blending in batch processes (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of a substance or mixture during process sampling at dedicated facilities (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

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Worker exposure: Transfer of a substance or mixture during process sampling at non-dedicated facilities (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.1 mg/m ³ (TRA Workers 3.0)	0.02
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Use as laboratory reagent (PROC 15, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC 14)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated-facilities (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14

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Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Equipment cleaning and maintenance at non-dedicated facility (PROC 8a, PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (PROC 8a estimate used to cover PROC 28)	0.1
Inhalation, local, acute	2 mg/m ³ (PROC 8a estimate used to cover PROC 28)	0.2

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ES 2: Use at industrial sites; Various sectors (SU 1, SU 2a, SU 2b, SU 4, SU 5, SU 6b, SU 8, SU 9, SU 11, SU 12, SU 13, SU 14, SU 15, SU 16, SU 17)

Title section

ES name: *Use at industrial site (e.g. Industrial Indoor use as Process aid, Industrial Outdoor use)*

Sector of use: Agriculture, forestry, fishery (SU 1), Mining (without offshore industries) (SU 2a), Offshore industries (SU 2b), Manufacture of food products (SU 4), Manufacture of textiles, leather, fur (SU 5), Manufacture of pulp, paper and paper products (SU 6b), Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8), Manufacture of fine chemicals (SU 9), Manufacture of rubber products (SU 11), Manufacture of plastics products, including compounding and conversion (SU 12), Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13), Manufacture of basic metals, including alloys (SU 14), Manufacture of fabricated metal products, except machinery and equipment (SU 15), Manufacture of computer, electronic and optical products, electrical equipment (SU 16), General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment. (SU 17)

Environment	
1: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)	ERC 4
Worker	
2: <i>Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions</i>	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</i>	PROC 2
4: <i>Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</i>	PROC 3
5: Chemical production where opportunity for exposure arises	PROC 4
6: Mixing or blending in batch processes	PROC 5
7: Calendering operations	PROC 6

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8: <i>Transfer of a substance or mixture during process sampling at non-dedicated facilities with a local exhaust ventilation</i>	PROC 8a, PROC 26
9: <i>Transfer of a substance or mixture during process sampling at non-dedicated facilities without a local exhaust ventilation</i>	PROC 8a, PROC 26
10: <i>Transfer of a substance or mixture during process sampling at dedicated facilities with a local exhaust ventilation</i>	PROC 8b, PROC 26
11: <i>Transfer of a substance or mixture during process sampling at dedicated facilities without a local exhaust ventilation</i>	PROC 8b, PROC 26
12: <i>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities with a local exhaust ventilation.</i>	PROC 8a, PROC 26
13: <i>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities without a local exhaust ventilation.</i>	PROC 8a, PROC 26
14: <i>Transfer of substance or mixture (charging/discharging) at dedicated facilities with a local exhaust ventilation.</i>	PROC 8b, PROC 26
15: <i>Transfer of substance or mixture (charging/discharging) at dedicated facilities without a local exhaust ventilation.</i>	PROC 8b, PROC 26
16: <i>Equipment cleaning and maintenance at non-dedicated facility</i>	PROC 8a, PROC 28
17: <i>Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities with a local exhaust ventilation</i>	PROC 9, PROC 26, PROC 27b
18: <i>Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities without a local exhaust ventilation</i>	PROC 9, PROC 26
25: <i>Tabletting, compression, extrusion, pelettisation, granulation</i>	PROC 14
26: <i>Use as laboratory reagent</i>	PROC 15, PROC 26, PROC 27b
27: <i>Open processing and transfer operations at substantially elevated temperature (= < melting point - Medium fugacity)</i>	PROC 23, PROC 27a
28: <i>Open processing and transfer operations at substantially elevated temperature (> melting point - High fugacity)</i>	PROC 23, PROC 27a
29: <i>Manual maintenance (cleaning and repair) of machinery at non-dedicated facilities</i>	PROC 28

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Conditions of use affecting exposure

Control of worker exposure

Conditions of use applicable to all contributing scenarios

Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
<i>Use suitable eye protection.</i>
Other conditions affecting workers exposure
Assumes process temperature up to 20 °C

Specific conditions of use per contributing scenario

Contributing scenario	Specific conditions of use
<i>Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions (PROC 1)</i>	Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour). Indoor use
<i>Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)</i>	Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour). Indoor use

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<p>Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)</p>	<p>Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 8 h/day Provide a basic standard of general ventilation (1 to 3 air changes per hour). Indoor use</p>
<p>Chemical production where opportunity for exposure arises (PROC 4)</p>	<p>Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Local exhaust ventilation; Inhalation - minimum efficiency of 90 % Indoor use</p>
<p>Mixing or blending in batch processes (PROC 5)</p>	<p>Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 8 h/day Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS. Outdoor use</p>
<p>Calendering operations (PROC 6)</p>	<p>Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). <i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i> Indoor use</p>
<p>Transfer of a substance or mixture during process sampling at non-dedicated facilities with a local exhaust ventilation (PROC 8a, PROC 26)</p>	<p>Covers concentrations up to 100 % <i>Solid, medium dustiness. Covers also liquid form</i> Covers use up to 1 h/day Local exhaust ventilation; Inhalation - minimum efficiency of 90 %</p>

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	<p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Indoor use</p>
<p>Transfer of a substance or mixture during process sampling at non-dedicated facilities without a local exhaust ventilation (PROC 8a, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 1 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p> <p>Indoor use</p>
<p>Transfer of a substance or mixture during process sampling at dedicated facilities with a local exhaust ventilation (PROC 8b, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 95 %</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Indoor use</p>
<p>Transfer of a substance or mixture during process sampling at dedicated facilities without a local exhaust ventilation (PROC 8b, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Indoor use</p>
<p>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities with a local exhaust ventilation. (PROC 8a, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 90 %</p> <p>Indoor use</p>
<p>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p>

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<p>without a local exhaust ventilation. (PROC 8a, PROC 26)</p>	<p>Covers use up to 8 h/day</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p> <p>Indoor or outdoor use</p>
<p>Transfer of substance or mixture (charging/discharging) at dedicated facilities with a local exhaust ventilation. (PROC 8b, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 95 %</p> <p>Indoor use</p>
<p>Transfer of substance or mixture (charging/discharging) at dedicated facilities without a local exhaust ventilation. (PROC 8b, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Indoor or outdoor use</p>
<p>Equipment cleaning and maintenance at non-dedicated facility (PROC 8a, PROC 28)</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 90 %</p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p>Indoor use</p>
<p>Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities with a</p>	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p>

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local exhaust ventilation (PROC 9, PROC 26, PROC 27b)	<p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 90 %</p> <p>Indoor use</p>
Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities without a local exhaust ventilation (PROC 9, PROC 26)	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p> <p>Indoor or outdoor use</p>
Tabletting, compression, extrusion, pelettisation, granulation (PROC 14)	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Indoor use</p>
Use as laboratory reagent (PROC 15, PROC 26, PROC 27b)	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Indoor use</p>
Open processing and transfer operations at substantially elevated temperature (= < melting point - Medium fugacity) (PROC 23, PROC 27a)	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Indoor use</p>
Open processing and transfer operations at substantially elevated temperature (> melting point - High fugacity)	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p>

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(PROC 23, PROC 27a)	<p>Provide a good standard of controlled ventilation (5 to 10 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 90 %</p> <p>Indoor use</p>
Manual maintenance (cleaning and repair) of machinery at non-dedicated facilities (PROC 28)	<p>Covers concentrations up to 100 %</p> <p><i>Solid, medium dustiness. Covers also liquid form</i></p> <p>Covers use up to 8 h/day</p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of %</p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p>Indoor use</p>

Exposure estimation and reference to its source

Worker exposure: Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.01 mg/m ³ (TRA Workers 3.0)	< 0.01
Inhalation, local, acute	0.04 mg/m ³ (TRA Workers 3.0)	< 0.01

Worker exposure: Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

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Worker exposure: Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Mixing or blending in batch processes (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Calendering operations (PROC 6)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of a substance or mixture during process sampling at non-dedicated facilities with a local exhaust ventilation (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.1 mg/m ³ (TRA Workers 3.0)	0.02
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Transfer of a substance or mixture during process sampling at non-dedicated facilities without a local exhaust ventilation (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.1 mg/m ³ (TRA Workers 3.0)	0.02
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

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Worker exposure: Transfer of a substance or mixture during process sampling at dedicated facilities with a local exhaust ventilation (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.05 mg/m ³ (TRA Workers 3.0)	0.01
Inhalation, local, acute	0.2 mg/m ³ (TRA Workers 3.0)	0.02

Worker exposure: Transfer of a substance or mixture during process sampling at dedicated facilities without a local exhaust ventilation (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated facilities with a local exhaust ventilation. (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated facilities without a local exhaust ventilation. (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities with a local exhaust ventilation. (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.035 mg/m ³ (TRA Workers 3.0)	< 0.01
Inhalation, local, acute	0.14 mg/m ³ (TRA Workers 3.0)	0.014

Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities without a local exhaust ventilation. (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14

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Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Equipment cleaning and maintenance at non-dedicated facility (PROC 8a, PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities with a local exhaust ventilation (PROC 9, PROC 26, PROC 27b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) at facilities without a local exhaust ventilation (PROC 9, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

Worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC 14)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Use as laboratory reagent (PROC 15, PROC 26, PROC 27b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (TRA Workers 3.0)	0.1
Inhalation, local, acute	2 mg/m ³ (TRA Workers 3.0)	0.2

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Worker exposure: Open processing and transfer operations at substantially elevated temperature (= < melting point - Medium fugacity) (PROC 23, PROC 27a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Open processing and transfer operations at substantially elevated temperature (> melting point - High fugacity) (PROC 23, PROC 27a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.03 mg/m ³ (TRA Workers 3.0)	< 0.01
Inhalation, local, acute	0.12 mg/m ³ (TRA Workers 3.0)	0.012

Worker exposure: Manual maintenance (cleaning and repair) of machinery at noon-dedicated facilities (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.5 mg/m ³ (ECETOC TRA Workers)	0.1
Inhalation, local, acute	2 mg/m ³ (ECETOC TRA Workers)	0.2

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

Scaling tool: For the evaluation of spraying activities the ART (Advanced Reach Tool) modeling tool has been used. In case the DU cannot demonstrate safe use with the conditions currently presented in this SDS Annex, the ART modeling Tool can be used as scaling tool.

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ES 3: Widespread use by professional workers; Various sectors (SU 0, SU 1, SU 13, SU 19, SU 20)

Title section

ES name: Professional use; Indoor use

Sector of use: Other (SU 0), Agriculture, forestry, fishery (SU 1), Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13), Building and construction work (SU 19), Health services (SU 20)

Environment	
1: Indoor use; Professional use	ERC 8a
Worker	
2: <i>Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions</i>	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</i>	PROC 2
4: <i>Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</i>	PROC 3
5: Chemical production where opportunity for exposure arises	PROC 4
6: Mixing or blending in batch processes	PROC 5
7: <i>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities</i>	PROC 8a, PROC 26
8: <i>Transfer of substance or mixture (charging/discharging) at dedicated facilities</i>	PROC 8b, PROC 26
9: <i>Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</i>	PROC 9, PROC 26
10: Use as laboratory reagent	PROC 15, PROC 26

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11: Manual activities involving hand contact	PROC 19
12: Use of functional fluids in small devices	PROC 20
13: <i>Equipment cleaning and maintenance at non-dedicated facility</i>	PROC 8a, PROC 28
14: <i>Manual maintenance (cleaning and repair) of machinery at non-dedicated facility</i>	PROC 28

Conditions of use affecting exposure

Control of worker exposure

Conditions of use applicable to all contributing scenarios

Conditions and measures related to personal protection, hygiene and health evaluation
<i>Use suitable eye protection.</i>
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 20 °C

Specific conditions of use per contributing scenario

Contributing scenario	Specific conditions of use
<i>Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions (PROC 1)</i>	Covers concentrations up to 100 % Solid, medium dustiness Covers use up to 8 h/day <i>Assumes a good basic standard of occupational hygiene is implemented</i> Provide a basic standard of general ventilation (1 to 3 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
<i>Chemical production in closed</i>	Covers concentrations up to 100 %

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<p>continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)</p>	<p>Solid, medium dustiness Covers use up to 8 h/day <i>Assumes a good basic standard of occupational hygiene is implemented</i> Provide a basic standard of general ventilation (1 to 3 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)</p>	<p>Covers concentrations up to 100 % Solid, medium dustiness Covers use up to 8 h/day Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Chemical production where opportunity for exposure arises (PROC 4)</p>	<p>Covers concentrations up to 100 % Solid, medium dustiness Covers use up to 8 h/day <i>Assumes a good basic standard of occupational hygiene is implemented</i> Local exhaust ventilation; Inhalation - minimum efficiency of 80 % Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Mixing or blending in batch processes (PROC 5)</p>	<p>Covers concentrations up to 100 % Solid, medium dustiness Covers use up to 8 h/day</p>

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	<p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 80 %</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p><i>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities (PROC 8a, PROC 26)</i></p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 80 %</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p><i>Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b, PROC 26)</i></p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 80 %</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p><i>Transfer of substance or mixture into small containers</i></p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p>

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<p><i>(dedicated filling line, including weighing) (PROC 9, PROC 26)</i></p>	<p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 80 %</p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Use as laboratory reagent (PROC 15, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Manual activities involving hand contact (PROC 19)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of 80 %</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Use of functional fluids in small devices (PROC 20)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p>

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	<p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p>
<p>Equipment cleaning and maintenance at non-dedicated facility (PROC 8a, PROC 28)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).</p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Respiratory protection (APF of 10) is to be worn in those case where there is potential for peak exposure. Alternatively, good general ventilation with a minimum of 5-10 air changes per air can be applied.</i></p>
<p>Manual maintenance (cleaning and repair) of machinery at non-dedicated facility (PROC 28)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Provide a basic standard of general ventilation (1 to 3 air changes per hour).</p> <p>Local exhaust ventilation; Inhalation - minimum efficiency of %</p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with</p>

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	'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
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Exposure estimation and reference to its source

Worker exposure: Chemical production in closed process without likelihood of exposure or in containment conditions or processes with equivalent containment conditions (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.01 mg/m ³ (TRA Workers 3.0)	< 0.01
Inhalation, local, acute	0.04 mg/m ³ (TRA Workers 3.0)	< 0.01

Worker exposure: Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Mixing or blending in batch processes (PROC 5)

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Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated facilities (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1.4 mg/m ³ (TRA Workers 3.0)	0.28
Inhalation, local, acute	5.6 mg/m ³ (TRA Workers 3.0)	0.56

Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Use as laboratory reagent (PROC 15, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Manual activities involving hand contact (PROC 19)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

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Worker exposure: Use of functional fluids in small devices (PROC 20)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	1 mg/m ³ (TRA Workers 3.0)	0.2
Inhalation, local, acute	4 mg/m ³ (TRA Workers 3.0)	0.4

Worker exposure: Equipment cleaning and maintenance at non-dedicated facility (PROC 8a, PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Manual maintenance (cleaning and repair) of machinery at non-dedicated facility (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (ECETOC TRA Workers)	0.14
Inhalation, local, acute	2.8 mg/m ³ (ECETOC TRA Workers)	0.28

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

Scaling tool: For the evaluation of spraying activities the ART (Advanced Reach Tool) modeling tool has been used. In case the DU cannot demonstrate safe use with the conditions currently presented in this SDS Annex, the ART modeling Tool can be used as scaling tool.

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ES 4: Widespread use by professional workers; Various sectors (SU 0, SU 1, SU 5, SU 13, SU 19, SU 20)

Title section

ES name: Professional use; Outdoor use

Sector of use: Other (SU 0), Agriculture, forestry, fishery (SU 1), Manufacture of textiles, leather, fur (SU 5), Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13), Building and construction work (SU 19), Health services (SU 20)

Environment	
1: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d
Worker	
2: Chemical production in closed process without likelihood of exposure or in containment conditions.	PROC 1
3: Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC 2
4: Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions	PROC 3
5: Chemical production where opportunity for exposure arises	PROC 4
6: Mixing or blending in batch processes	PROC 5
7: Transfer of substance or mixture (charging/discharging) at non-dedicated facilities	PROC 8a, PROC 26
8: Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC 8b, PROC 26
9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC 9, PROC 26
10: Use as laboratory reagent	PROC 15, PROC 26

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11: Mixing operations; Manual activities involving hand contact	PROC 19
12: <i>Equipment cleaning and maintenance at non-dedicated facility</i>	PROC 8a
13: Use of functional fluids in small devices	PROC 20

Conditions of use affecting exposure

Control of worker exposure

Conditions of use applicable to all contributing scenarios

Other conditions affecting workers exposure
Outdoor use
Assumes process temperature up to 20 °C

Specific conditions of use per contributing scenario

Contributing scenario	Specific conditions of use
<i>Chemical production in closed process without likelihood of exposure or in containment conditions. (PROC 1)</i>	Covers concentrations up to 100 % Solid, medium dustiness Covers use up to 8 h/day <i>Assumes a good basic standard of occupational hygiene is implemented</i> Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS. <i>Use suitable eye protection</i>
<i>Chemical production in closed continuous process with occasional controlled exposure</i>	Covers concentrations up to 100 % Solid, medium dustiness Covers use up to 8 h/day

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<p>or processes with equivalent containment conditions (PROC 2)</p>	<p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p>
<p>Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p>
<p>Chemical production where opportunity for exposure arises (PROC 4)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p>
<p>Mixing or blending in batch processes (PROC 5)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p>

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	<p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p>
<p><i>Transfer of substance or mixture (charging/discharging) at non-dedicated facilities (PROC 8a, PROC 26)</i></p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p>
<p><i>Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b, PROC 26)</i></p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p>
<p><i>Transfer of substance or mixture into small containers</i></p>	<p>Covers concentrations up to 100 %</p>

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<p><i>(dedicated filling line, including weighing) (PROC 9, PROC 26)</i></p>	<p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p><i>Use suitable eye protection</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p>
<p>Use as laboratory reagent (PROC 15, PROC 26)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p>
<p>Mixing operations; Manual activities involving hand contact (PROC 19)</p>	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p>

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Equipment cleaning and maintenance at non-dedicated facility (PROC 8a)	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p><i>Handle substance within a closed system [ES47] Drain down and flush system prior to equipment break-in or maintenance [E55] Transfer via enclosed lines [E52]</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p> <p>Wear suitable respiratory protection.; Inhalation - minimum efficiency of 90 %; For further specification, refer to section 8 of the SDS.</p>
Use of functional fluids in small devices (PROC 20)	<p>Covers concentrations up to 100 %</p> <p>Solid, medium dustiness</p> <p>Covers use up to 8 h/day</p> <p><i>Assumes a good basic standard of occupational hygiene is implemented</i></p> <p>Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.</p> <p><i>Use suitable eye protection</i></p>

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Exposure estimation and reference to its source

Worker exposure: Chemical production in closed process without likelihood of exposure or in containment conditions. (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	7E-3 mg/m ³ (TRA Workers 3.0)	< 0.01
Inhalation, local, acute	0.028 mg/m ³ (TRA Workers 3.0)	< 0.01

Worker exposure: Chemical production in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Manufacture or formulation in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Chemical production where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Mixing or blending in batch processes (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

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Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated facilities (PROC 8a, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Use as laboratory reagent (PROC 15, PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

Worker exposure: Mixing operations; Manual activities involving hand contact (PROC 19)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.35 mg/m ³ (TRA Workers 3.0)	0.07
Inhalation, local, acute	1.4 mg/m ³ (TRA Workers 3.0)	0.14

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Worker exposure: Equipment cleaning and maintenance at non-dedicated facility (PROC 8a)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

Worker exposure: Use of functional fluids in small devices (PROC 20)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	0.7 mg/m ³ (TRA Workers 3.0)	0.14
Inhalation, local, acute	2.8 mg/m ³ (TRA Workers 3.0)	0.28

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

Guidance: Application of de-icing agent (mixture of 70% NaCl and 30% of a 20% solution of CaCl₂) assumes a fraction of 0.06 of CaCl₂ in road salt with an annual tonnage of 0.09 tonnes/km for 25 emission days per year. Application of de-icing agent (liquid CaCl₂ brine (max. 35% solution)) assumes a fraction of 0.35 of CaCl₂ in road salt with an annual tonnage of 0.28 tonnes/km for 25 emission days per year. Application of Dust suppressor (solid CaCl₂ (up to 80%)) assumes a fraction of 0.8 of CaCl₂ in road salt with an annual tonnage of 2.4 tonnes/km for 3 emission days per year. Application of Dust suppressor (solid CaCl₂ (up to 37%)) assumes a fraction of 0.37 of CaCl₂ in road salt with an annual tonnage of 1.11 tonnes/km for 3 emission days per year.

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ES 5: Consumer use; PC 0, 2

Title section

ES name: Consumer use; Indoor or outdoor use

Product category: Adsorbents (PC 2)

Environment	
1: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)	ERC 8a
2: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d
Consumer	
3: <i>Humidity adsorbants</i>	PC 0
4: Adsorbents	PC 2

Conditions of use affecting exposure

Control of consumer exposure: *Humidity adsorbants* (PC 0)

Product (article) characteristics
Covers concentrations up to 100 %
<i>Solid, medium dustiness. Covers also liquid form</i>
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 1 events per day
<i>Covers use up to 24 h</i>
Information and behavioral advice for consumers

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<i>Requires room with good ventilation</i>
<i>Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.</i>
Other conditions affecting consumers exposure
Release area <= 125 m ²

Control of consumer exposure: Adsorbents (PC 2)

Product (article) characteristics
Covers concentrations up to 100 %
<i>Solid, medium dustiness. Covers also liquid form</i>
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 1 events per day
<i>Covers use up to 24 h</i>
Information and behavioral advice for consumers
<i>Requires room with good ventilation</i>
<i>Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.</i>
Other conditions affecting consumers exposure
Release area <= 125 m ²

Exposure estimation and reference to its source

Consumer exposure: *Humidity adsorbants (PC 0)*

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	5E-3 mg/m ³ (ConsExpo)	< 0.01
Inhalation, local, acute	0.01 mg/m ³ (ConsExpo)	< 0.01

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Consumer exposure: Adsorbents (PC 2)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	5E-3 mg/m ³ (ConsExpo)	< 0.01
Inhalation, local, acute	0.01 mg/m ³ (ConsExpo)	< 0.01