

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Ammonium nitrate > 28% N

Version 2.1

Revision Date: 12.05.2021

Former date: 29.01.2021

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

1.1 Product identifier

Trade name : MYPREMIAN® 33.5, AN 33,5 N

REACH Registration Number : 01-2119490981-27-0023

Unique Formula Identifier (UFI) : 53WC-AVTH-KF89-SK9K

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

Use of the Substance/Mixture : Fertilizers

Recommended restrictions on use : Consumer uses

1.3 Details of the supplier of the safety data sheet

Supplier : Borealis L.A.T GmbH
St.-Peter-Strasse 25, 4021 Linz, Austria
Telephone: +43 732 6915-0

E-mail address : sds@borealisgroup.com

1.4 Emergency telephone number

+44 (0) 1235 239 670 (NCEC Carechem 24)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Oxidizing solids, Category 3 H272: May intensify fire; oxidizer.

Eye irritation, Category 2 H319: Causes serious eye irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

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Hazard pictograms

:



Signal word

:

Warning

Hazard statements

:

H272 May intensify fire; oxidizer.
H319 Causes serious eye irritation.

Precautionary statements

:

Prevention:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P220 Keep/Store away from combustible materials.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P264 Wash hands thoroughly after handling.

Response:

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

P370 + P378 In case of fire: Use water to extinguish.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

Ammonium nitrate: fertilizer grade

3.2 Mixtures

Components

Chemical name	CAS-No.	Classification	Concentration
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	EC-No. Index-No. Registration number		(% w/w)
Ammonium nitrate	6484-52-2 229-347-8 01-2119490981-27	Ox. Sol. 3; H272 Eye Irrit. 2; H319	>= 90 - <= 100
C16-18-(even numbered)- alkylamines	90640-32-7 292-550-5 01-2119473799-15	Skin Irrit. 2; H315 Eye Dam. 1; H318 Asp. Tox. 1; H304 STOT RE 2; H373 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 10	>= 0,0025 - < 0,025

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- If inhaled : Remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Seek medical advice.
No mouth-to-mouth respiration.
- In case of skin contact : Wash off with soap and plenty of water.
Remove contaminated clothing and shoes.
Call a physician if irritation develops or persists.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids,
for at least 5 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention if irritation develops and persists.
- If swallowed : Obtain medical attention.
Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.

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4.2 Most important symptoms and effects, both acute and delayed

Symptoms

: Eye contact:
Irritation

Inhalation of dust may provoke the following symptoms:
Respiratory irritation
Cough

Inhalation of decomposition fumes may provoke the following symptoms:
Risk of delayed pulmonary oedema.

Gastrointestinal disturbance
The absorption of this product into the body may lead to the formation of methaemoglobine that, in sufficient concentration, causes cyanosis.

Risks

: Causes serious eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment

: Treat symptomatically.
There is no specific antidote available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : High volume water jet

Unsuitable extinguishing media : Foam
Sand
Dry powder
Halons
Carbon dioxide (CO₂)

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Hazardous decomposition products formed under fire conditions.
Toxic vapours are evolved.

Nitrogen oxides (NO_x)
Ammonia

Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.

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See chapter 10.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Complete suit protecting against chemicals

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system. Contact the proper local authorities.

Avoid inhalation of decomposition fumes.
Ensure doors and windows are opened.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.
Avoid dust formation.
Eliminate all ignition sources if safe to do so.
Sweep up to prevent slipping hazard.

6.2 Environmental precautions

Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Sweep up or vacuum up spillage and collect in suitable container for disposal.
Do not mix with sawdust, combustible or organic material.
Keep the container open.
After cleaning, flush away traces with water.

6.4 Reference to other sections

For personal protection see section 8.
For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Avoid creating dust.
Ensure adequate ventilation.
Keep away from incompatible materials.

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Keep away from food, drink and animal feedingstuffs.
Use only clean equipment.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition. Keep away from combustible material.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing. Wash hands before breaks and immediately after handling the product. When using do not eat, drink or smoke.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in a dry, cool and well-ventilated place. Store in accordance with the particular national regulations. Store in a place accessible by authorized persons only. Restrict stack size (according to local regulations) and keep at least 1m distance around the stacks of bagged products. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

Suitable materials for containers: Plastics Stainless steel
Aluminium

Unsuitable materials for containers: Copper Zinc

Further information on storage conditions : Protect from sunlight. Protect from moisture. Avoid unprotected outdoor storage.

Advice on common storage : Do not store near combustible materials.
Keep away from incompatible materials.
See chapter 10.

On farm, ensure that the fertilizer is not stored near hay, straw, grain, diesel oil, etc.

7.3 Specific end use(s)

Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

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Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
calcium carbonate	471-34-1	TWA (inhalable dust)	10 mg/m ³	GB EH40
Further information	<p>For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/4 General methods for sampling and gravimetric analysis or respirable, thoracic and inhalable aerosols., The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m⁻³ 8-hour TWA of inhalable dust or 4 mg.m⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed to dust above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limits., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system, and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/4., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit should be used.</p>			
		TWA (Respirable dust)	4 mg/m ³	GB EH40
Further information	<p>For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/4 General methods for sampling and gravimetric analysis or respirable, thoracic and inhalable aerosols., The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m⁻³ 8-hour TWA of inhalable dust or 4 mg.m⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed to dust above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limits., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system, and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are</p>			

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given in MDHS14/4., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit should be used.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Ammonium nitrate	Workers	Inhalation	Long-term, Systemic	36 mg/m ³
	Workers	Skin contact	Long-term, Systemic	5,12 mg/kg bw/day
	Consumers	Ingestion	Long-term, Systemic	2,56 mg/kg bw/day
	Consumers	Inhalation	Long-term, Systemic	8,9 mg/m ³
	Consumers	Skin contact	Long-term, Systemic	2,56 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Ammonium nitrate	Sewage treatment plant	18 mg/l
C16-18-(even numbered)-alkylamines	Fresh water	0,26 µg/l
	Sewage treatment plant	550 µg/l
	Soil	10 mg/kg dry weight (d.w.)

8.2 Exposure controls

Engineering measures

Provide adequate ventilation.

Before working with fire and hot materials on containers and apparatus remains of products must be removed through efficient cleaning with water.

Personal protective equipment

Eye protection : Safety goggles or face-shield.
(EN 166)

Hand protection

Material : Nitrile rubber
Break through time : >= 480 min
Glove thickness : >= 0,11 mm

Remarks : Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

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The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

- Skin and body protection : Wear suitable protective clothing.
- Respiratory protection : Respirator must be worn if exposed to dust.
Respiratory protection complying with EN 143 / EN 149.
- Filter type : P1 filter
- Protective measures : Ensure that eye flushing systems and safety showers are located close to the working place.

Environmental exposure controls

- General advice : Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Physical state : solid
granules, prills
- Colour : white
- Odour : odourless
- Odour Threshold : Not applicable
- Melting point : > 150 °C
- Boiling point : Decomposition: Decomposes below the boiling point.
- Flammability : The product is not flammable.
- Upper explosion limit / Upper flammability limit : Not applicable
- Lower explosion limit / Lower flammability limit : Not applicable
- Flash point : Not applicable, (inorganic)

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Decomposition temperature	:	> 150 °C
pH	:	6,5 - 7,5 Concentration: 10 %
Solubility(ies) Water solubility	:	partly soluble (20 °C)
Partition coefficient: n- octanol/water	:	Not applicable (inorganic)
Vapour pressure	:	negligible
Bulk density	:	900 kg/m ³
Relative vapour density	:	Not applicable
Particle characteristics Particle size	:	3,25 mm

9.2 Other information

Explosives	:	Not explosive UN Series 1 and 2 Total combustible materials in the form of carbon: equal to or less than 0,2%. Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.
Oxidizing properties	:	May intensify fire; oxidizer.
Evaporation rate	:	negligible
Molecular weight	:	80,04 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under recommended storage conditions.

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Repeated heating and cooling above and below 32°C can lead to changes of the crystalline structure, with the effect of a loss of mechanical resistance up to degranulation of the exposed area of the product.

10.3 Possibility of hazardous reactions

Hazardous reactions : Contact with strong bases liberates ammonia.
Contact with strong acids liberates nitrous gases.
Decomposes on heating.

10.4 Conditions to avoid

Conditions to avoid : Temperature > 150 °C
Risk of explosion if heated under confinement.
Keep away from incompatible materials.
Exposure to air or moisture over prolonged periods.

10.5 Incompatible materials

Materials to avoid : Organic materials
Reducing agents
Combustible material
Strong acids and strong bases
Powdered metals
Copper
Copper alloys
Chlorates
Chromates
Nitrites
sulphur
permanganates

10.6 Hazardous decomposition products

Nitrogen oxides (NO_x)
Ammonia

SECTION 11: Toxicological information

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

Acute toxicity

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

Components:

Ammonium nitrate:

Acute oral toxicity : LD50 (Rat): 2.950 mg/kg
Method: OECD Test Guideline 401

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Acute inhalation toxicity : LC50: > 88,8 mg/l
Method: No information available.

Acute dermal toxicity : LD50: > 5.000 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

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

Components:

Ammonium nitrate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Ammonium nitrate:

Species: Rabbit

Method: OECD Test Guideline 405

Result: Irritating to eyes.

Respiratory or skin sensitisation

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

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

Components:

Ammonium nitrate:

Species: Mouse

Method: OECD Test Guideline 429

Result: Does not cause skin sensitisation.

Test substance: Calcium ammonium nitrate

Read-across (Analogy)

Germ cell mutagenicity

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

Components:

Ammonium nitrate:

Genotoxicity in vitro

: Test Type: Ames test

Method: OECD Test Guideline 471

Result: negative

Test substance: Ammonium calcium nitrate

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: Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Test substance: Ammonium calcium nitrate

: Test Type: In vitro gene mutation study in mammalian cells
Method: OECD Test Guideline 476
Result: negative
Test substance: Potassium nitrate

Carcinogenicity

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

Components:

Ammonium nitrate:

Remarks: No significant adverse effects were reported

Reproductive toxicity

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

Components:

Ammonium nitrate:

Effects on fertility : Species: Rat
NOAEL: > 1.500 mg/kg,
Method: OECD Test Guideline 422
Test substance: Potassium nitrate

STOT - single exposure

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

Components:

Ammonium nitrate:

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

STOT - repeated exposure

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

Components:

Ammonium nitrate:

Species: Rat
NOAEL: 0,185 mg/l
Application Route: Inhalation
Exposure time: 14 d
Method: OECD Test Guideline 412
Test substance: Ammonium nitrate

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Aspiration toxicity

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

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Ammonium nitrate:

- Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 447 mg/l
Exposure time: 48 h
Test Type: Short term
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 490 mg/l
Exposure time: 48 h
Test Type: Short term
Test substance: Potassium nitrate
Remarks: Fresh water
- Toxicity to algae : EC50 : > 1.700 mg/l
Exposure time: 10 d
Test substance: Potassium nitrate
Remarks: Marine water
- Toxicity to bacteria : EC50 : > 1.000 mg/l
Exposure time: 180 min
Test Type: Respiration inhibition of activated sludge
Test substance: Sodium nitrate
Method: OECD Test Guideline 209
- Toxicity to fish (Chronic toxicity) : Remarks: study scientifically unjustified

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50: 555 mg/l
Exposure time: 7 d
Species: Bullia digitalis (prosobranch gastropod)

C16-18-(even numbered)-alkylamines:

Toxicity to fish : LC50 (fathead minnow (Pimephales promelas)): 0,06 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): 0,011 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae : NOEC (algae): 0,008 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 201

M-Factor (Short-term (acute) aquatic hazard) : 10

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : 0,013 mg/l
Exposure time: 21 d
Species: Daphnia (water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211

M-Factor (Long-term (chronic) aquatic hazard) : 10

Toxicity to soil dwelling organisms : LC50: > 1.000 mg/kg
Exposure time: 14 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 207

NOEC: 200 mg/kg
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222

12.2 Persistence and degradability

Components:

Ammonium nitrate:

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

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C16-18-(even numbered)-alkylamines:

Biodegradability : Result: Readily biodegradable.

12.3 Bioaccumulative potential

Components:

Ammonium nitrate:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

C16-18-(even numbered)-alkylamines:

Bioaccumulation : Bioconcentration factor (BCF): 173

12.4 Mobility in soil

Components:

Ammonium nitrate:

Mobility : Medium: Water
Remarks: completely soluble

: Medium: Soil
Remarks: (NO₃-), Not expected to adsorb on soil.

: Medium: Soil
Remarks: (NH₄+), After release, adsorbs onto soil.

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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12.7 Other adverse effects

Product:

Additional ecological information : Do not allow product to reach ground water, water bodies or sewage system.
Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Can be landfilled or incinerated, when in compliance with local regulations.
Do not allow product to reach ground water, water bodies or sewage system.
Do not dispose of together with household waste.

European waste code:
06 10 02* (wastes containing dangerous substances)

Contaminated packaging : Empty remaining contents.
Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : UN 2067
RID : UN 2067
IMDG : UN 2067

14.2 UN proper shipping name

ADR : AMMONIUM NITRATE BASED FERTILIZER
RID : AMMONIUM NITRATE BASED FERTILIZER
IMDG : AMMONIUM NITRATE BASED FERTILIZER

14.3 Transport hazard class(es)

ADR : 5.1

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RID : 5.1

IMDG : 5.1

14.4 Packing group

ADR

Packing group : III

Classification Code : O2

Hazard Identification Number : 50

Labels : 5.1

Tunnel restriction code : (E)

RID

Packing group : III

Classification Code : O2

Hazard Identification Number : 50

Labels : 5.1

IMDG

Packing group : III

Labels : 5.1

EmS Code : F-H, S-Q

14.5 Environmental hazards

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : SDS: No specific instructions needed.

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Remarks : No data is available on the product itself.

SECTION 15: Regulatory information

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

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REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Category		Quantity 1	Quantity 2
2	Ammonium nitrate: fertilizer grade	1.250 t	5.000 t

Other regulations:

Regulation (EU) 2019/1148 on the marketing and use of explosives precursors - ANNEX I. RESTRICTED EXPLOSIVES PRECURSORS

Acquisition, introduction, possession or use of the explosive precursor by the general public is restricted.

All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point. Please see https://ec.europa.eu/home-affairs/sites/homeaffairs/files/what-we-do/policies/crisis-and-terrorism/explosives/explosives-precursors/docs/list_of_competent_authorities_and_national_contact_points_en.pdf.

Regulation (EC) No 2003/2003 relating to fertilizers

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance. (Ammonium nitrate)

SECTION 16: Other information

Full text of H-Statements

H272 : May intensify fire; oxidizer.
H304 : May be fatal if swallowed and enters airways.
H315 : Causes skin irritation.
H318 : Causes serious eye damage.
H319 : Causes serious eye irritation.
H373 : May cause damage to organs through prolonged or repeated exposure if swallowed.

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- H400 : Very toxic to aquatic life.
H410 : Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

- Aquatic Acute : Short-term (acute) aquatic hazard
Aquatic Chronic : Long-term (chronic) aquatic hazard
Asp. Tox. : Aspiration hazard
Eye Dam. : Serious eye damage
Eye Irrit. : Eye irritation
Ox. Sol. : Oxidizing solids
Skin Irrit. : Skin irritation
STOT RE : Specific target organ toxicity - repeated exposure
GB EH40 : UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)

Further information

- Training advice : Provide adequate information, instruction and training for operators.
Regular trainings of all employees which are involved in the transport of dangerous goods (according to chapter 1.3 ADR).
- Other information : Issued according to Regulation (EC) No 1907/2006, Annex II, and its amendments.

Enclosed you will find exposure scenarios for the following substance:
Ammonium nitrate
- Issuer : Borealis, Group Product Stewardship / Steffen Pfeiffer
- Sources of key data used to compile the Safety Data Sheet : Chemical Safety Report, Ammonium Nitrate. FARM REACH Consortium, 2019
EFMA / Fertilizers Europe Guidance documents

Classification of the mixture:

- Ox. Sol. 3 H272
Eye Irrit. 2 H319

Classification procedure:

- Calculation method
Calculation method

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Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.

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Annex

Exposure Scenario

Number	Title
ES1	Formulation or re-packing, Formulation & (re)packing of substances and mixtures
ES2	Use at industrial sites, Use of reactive processing aid at industrial site (no inclusion into or onto article)
ES3	Widespread use by professional workers, Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

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ES1: Formulation & (re)packing of substances and mixtures

1.1. Title section

Structured Short Title	: Formulation or re-packing
-------------------------------	-----------------------------

Environment		
CS1	Formulation & (re)packing of substances and mixtures	ERC2, ERC3
Worker		
CS2	Formulation & (re)packing of substances and mixtures, General measures	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15
CS3	Continuous process, Closed systems	PROC2
CS4	Use in closed batch process (synthesis or formulation)	PROC3
CS5	Batch process	PROC4
CS6	Mixing or blending, Batch process	PROC5
CS7	Material transfers, Non-dedicated facility	PROC8a
CS8	Material transfers, Dedicated facility	PROC8b
CS9	Material transfers, Small package filling, Dedicated facility	PROC9
CS10	Treatment by dipping and pouring	PROC13
CS11	Tabletting, compression, extrusion or pelletisation	PROC14
CS12	Laboratory activities	PROC15

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1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Formulation into solid matrix (ERC3)

1.2.2. Control of worker exposure: Formulation & (re)packing of substances and mixtures, General measures

Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Treatment of articles by dipping and pouring (PROC13) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers percentage substance in the product up to 100 %.	
Physical form of product	: Solid, low dustiness Liquid
Amount used, frequency and duration of use (or from service life)	
Duration	: Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Provide a basic standard of general ventilation (1 to 3 air changes per hour).	
Local exhaust ventilation no Inhalation - minimum efficiency of 0 %	
Occupational Health and Safety Management System: Advanced	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Long sleeved clothing Dermal - minimum efficiency of 90 %	
Use eye protection according to EN 166.	
Respiratory protection	

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no

Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

1.2.3. Control of worker exposure: Continuous process, Closed systems

Use in closed, continuous process with occasional controlled exposure (PROC2)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.4. Control of worker exposure: Use in closed batch process (synthesis or formulation)

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

Technical and organisational conditions and measures

Closed batch process with occasional controlled exposure

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

1.2.5. Control of worker exposure: Batch process

Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.6. Control of worker exposure: Mixing or blending, Batch process

Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

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1.2.7. Control of worker exposure: Material transfers, Non-dedicated facility

Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities (PROC8a)

Other conditions affecting workers exposure

Body parts exposed : Two hands (960 cm²)

1.2.8. Control of worker exposure: Material transfers, Dedicated facility

Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Other conditions affecting workers exposure

Body parts exposed : Two hands (960 cm²)

1.2.9. Control of worker exposure: Material transfers, Small package filling, Dedicated facility

Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.10. Control of worker exposure: Treatment by dipping and pouring

Treatment of articles by dipping and pouring (PROC13)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.11. Control of worker exposure: Tableting, compression, extrusion or pelletisation

Production of preparations or articles by tableting, compression, extrusion, pelletisation (PROC14)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.12. Control of worker exposure: Laboratory activities

Use as laboratory reagent (PROC15)

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Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Formulation into solid matrix (ERC3)

Additional information on exposure estimation

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

1.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,027	
combined routes	systemic	long-term		0,027	

1.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,013	

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combined routes	systemic	long-term		0,016	
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1.3.5. Worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134	
combined routes	systemic	long-term		0,148	

1.3.6. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,282	

1.3.7. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,282	

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1.3.8. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,271	

1.3.9. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134	
combined routes	systemic			0,137	

1.3.10. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,271	

1.3.11. Worker exposure: Production of preparations or articles by tableting, compression, extrusion, pelletisation (PROC14)

Exposure route	Health effect	Exposure	Exposure level	RCR	Remarks
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		indicator			
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,343 mg/kg bw/day (ECETOC TRA worker v3)	0,067	
combined routes	systemic	long-term		0,07	

1.3.12. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01	
combined routes	systemic	long-term		< 0,01	

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

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

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ES2: Use of reactive processing aid at industrial site (no inclusion into or onto article)

2.1. Title section

Structured Short Title	: Use at industrial sites
-------------------------------	---------------------------

Environment		
CS1	Reactive processing aid, Industrial use	ERC6b
Worker		
CS2	Reactive processing aid, General measures	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15
CS3	Continuous process, Closed systems	PROC1
CS4	Use in closed, continuous process with occasional controlled exposure	PROC2
CS5	Use in closed batch process (synthesis or formulation)	PROC3
CS6	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS7	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)	PROC5
CS8	Industrial spraying	PROC7
CS9	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS10	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS11	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9

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CS12	Roller application or brushing	PROC10
CS13	Treatment of articles by dipping and pouring	PROC13
CS14	Use as laboratory reagent	PROC15

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Industrial use of reactive processing aids (ERC6b)

2.2.2. Control of worker exposure: Reactive processing aid, General measures

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Industrial spraying (PROC7) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers percentage substance in the product up to 100 %.	
Physical form of product	: Solid, low dustiness Liquid
Amount used, frequency and duration of use (or from service life)	
Duration	: Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Provide a basic standard of general ventilation (1 to 3 air changes per hour).	
Local exhaust ventilation no Inhalation - minimum efficiency of 0 %	
Occupational Health and Safety Management System: Advanced	

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Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Long sleeved clothing

Dermal - minimum efficiency of 90 %

Use eye protection according to EN 166.

Respiratory protection

no

Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

2.2.3. Control of worker exposure: Continuous process, Closed systems

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

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

2.2.4. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure

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

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

2.2.5. Control of worker exposure: Use in closed batch process (synthesis or formulation)

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

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

2.2.6. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises

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Chemical production where opportunity for exposure arises (PROC4)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

2.2.7. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) Mixing or blending in batch processes (PROC5)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

2.2.8. Control of worker exposure: Industrial spraying Industrial spraying (PROC7)

Other conditions affecting workers exposure	
Body parts exposed	: Two hands and upper wrists (1500 cm ²)

2.2.9. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Other conditions affecting workers exposure	
Body parts exposed	: Two hands (960 cm ²)

2.2.10. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Other conditions affecting workers exposure	
Body parts exposed	: Two hands (960 cm ²)

2.2.11. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

2.2.12. Control of worker exposure: Roller application or brushing Roller application or brushing (PROC10)

Other conditions affecting workers exposure	
Body parts exposed	: Two hands (960 cm ²)

2.2.13. Control of worker exposure: Treatment of articles by dipping and pouring Treatment of articles by dipping and pouring (PROC13)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

2.2.14. Control of worker exposure: Use as laboratory reagent Use as laboratory reagent (PROC15)

Other conditions affecting workers exposure	
Body parts exposed	: One hand face only (240 cm ²)

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Industrial use of reactive processing aids (ERC6b)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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2.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01	
combined routes	systemic	long-term		< 0,01	

2.3.4. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,027	
combined routes	systemic	long-term		0,027	

2.3.5. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,013	
combined routes	systemic	long-term		0,016	

2.3.6. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

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Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134	
combined routes	systemic	long-term		0,148	

2.3.7. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,282	

2.3.8. Worker exposure: Industrial spraying (PROC7)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	1 mg/m ³ (ECETOC TRA worker v3)	0,028	
dermal	systemic	long-term	4,286 mg/kg bw/day (ECETOC TRA worker v3)	0,837	
combined routes	systemic	long-term		0,865	

2.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	

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dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,282	

2.3.10. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,271	

2.3.11. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134	
combined routes	systemic	long-term		0,137	

2.3.12. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	2,743 mg/kg bw/day (ECETOC TRA worker v3)	0,536	

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combined routes	systemic	long-term		0,55	
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2.3.13. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,271	

2.3.14. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01	
combined routes	systemic	long-term		< 0,01	

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

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

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**ES3: Widespread use of reactive processing aid (no inclusion into or onto article, indoor),
Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)**

3.1. Title section

Structured Short Title : Widespread use by professional workers

Environment		
CS1	Reactive processing aid, Professional use	ERC8b, ERC8e
Worker		
CS2	Reactive processing aid, General measures	PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC11, PROC15, PROC19
CS3	Continuous process, Closed systems	PROC1
CS4	Use in closed, continuous process with occasional controlled exposure	PROC2
CS5	Use in closed batch process (synthesis or formulation)	PROC3
CS6	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)	PROC5
CS7	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS8	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS10	Non industrial spraying	PROC11
CS11	Use as laboratory reagent	PROC15
CS12	Hand-mixing with intimate contact and only PPE available	PROC19

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3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC8b) / Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC8e)

3.2.2. Control of worker exposure: Reactive processing aid, General measures
Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Non-industrial spraying (PROC11) / Use as laboratory reagent (PROC15) / Manual activities involving hand contact (PROC19)

Product (article) characteristics	
Covers percentage substance in the product up to 100 %.	
Physical form of product	: Solid, low dustiness Liquid
Amount used, frequency and duration of use (or from service life)	
Duration	: Covers daily exposures up to 8 hours (unless stated differently).
Technical and organisational conditions and measures	
Provide a basic standard of general ventilation (1 to 3 air changes per hour).	
Local exhaust ventilation no Inhalation - minimum efficiency of 0 %	
Assumes a good basic standard of occupational hygiene is implemented	
Conditions and measures related to personal protection, hygiene and health evaluation	

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Wash hands and face before breaks and immediately after handling the product. When using do not eat or drink.
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Long sleeved clothing Dermal - minimum efficiency of 90 %
Use eye protection according to EN 166.
Respiratory protection no Inhalation - minimum efficiency of 0 %
Other conditions affecting workers exposure
Indoor or outdoor use : Covers indoor and outdoor use.

3.2.3. Control of worker exposure: Continuous process, Closed systems Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Other conditions affecting workers exposure
Body parts exposed : One hand face only (240 cm2)

3.2.4. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Other conditions affecting workers exposure
Body parts exposed : Palms of both hands (480 cm2)

3.2.5. Control of worker exposure: Use in closed batch process (synthesis or formulation) Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Other conditions affecting workers exposure
Body parts exposed : One hand face only (240 cm2)

3.2.6. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) Mixing or blending in batch processes (PROC5)

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Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

3.2.7. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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

Other conditions affecting workers exposure

Body parts exposed : Two hands (960 cm²)

3.2.8. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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

Other conditions affecting workers exposure

Body parts exposed : Two hands (960 cm²)

3.2.9. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

3.2.10. Control of worker exposure: Non industrial spraying Non-industrial spraying (PROC11)

Conditions and measures related to personal protection, hygiene and health evaluation

Complete suit protecting against chemicals
Dermal - minimum efficiency of 96 %

Other conditions affecting workers exposure

Body parts exposed : Two hands and upper wrists (1500 cm²)

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3.2.11. Control of worker exposure: Use as laboratory reagent Use as laboratory reagent (PROC15)

Other conditions affecting workers exposure	
Body parts exposed	: One hand face only (240 cm ²)

3.2.12. Control of worker exposure: Hand-mixing with intimate contact and only PPE available Manual activities involving hand contact (PROC19)

Amount used, frequency and duration of use (or from service life)	
Duration	: Covers exposure up to 1 h
Other conditions affecting workers exposure	
Body parts exposed	: Two hands and forearms (1980 cm ²)

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC8b) / Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC8e)

Additional information on exposure estimation
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

3.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01	

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combined routes	systemic	long-term		< 0,01	
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3.3.4. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,027	
combined routes	systemic	long-term		0,027	

3.3.5. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,013	
combined routes	systemic	long-term		0,016	

3.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	1 mg/m ³ (ECETOC TRA worker v3)	0,028	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,296	

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3.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,282	

3.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268	
combined routes	systemic	long-term		0,282	

3.3.9. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014	
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134	
combined routes				0,148	

3.3.10. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure	Exposure level	RCR	Remarks
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		indicator			
inhalative	systemic	long-term	1 mg/m ³ (ECETOC TRA worker v3)	0,028	
dermal	systemic	long-term	4,284 mg/kg bw/day (ECETOC TRA worker v3)	0,837	
combined routes	systemic	long-term		0,865	

3.3.11. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01	
combined routes	systemic	long-term		< 0,01	

3.3.12. Worker exposure: Manual activities involving hand contact (PROC19)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR	Remarks
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01	
dermal	systemic	long-term	2,829 mg/kg bw/day (ECETOC TRA worker v3)	0,552	
combined routes	systemic	long-term		0,555	

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

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

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