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

1.1. Product identifier:

Trade name: DUCANIT[®] – EU fertilising product

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

Relevant identified uses:

Professional use of fertilizers containing nitric acid ammonium calcium salt. Consumer use of seeds coated in fertilizer substance.

Uses advised against:

Not recommended for other uses than is mentioned.

1.3. Details of the supplier of the safety data sheet:

Duslo, a.s.

Administratívna budova ev.č. 1236
927 03 Šaľa
Slovenská republika
tel.:+421 31 775 3783
e-mail: msds@duslo.sk

1.4. Emergency telephone number:

Company dispatching center tel.: +421 31 775 4112 e-mail: dispecer@duslo.sk

NÁRODNÉ TOXIKOLOGICKÉ INFORMAČNÉ CENTRUM,

Klinika pracovného lekárstva a toxikológie, Bratislava

Tel.č.: 02/5477 4166 Fax: 02/5477 4605 e-mail: ntic@ntic.sk

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture:

Mixture is classified as dangerous according to the Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.

Acute Tox. 4 H302; Eye Dam. 1 H318

2.2. Label elements:



Danger

H302 Harmful if swallowed.

H318 Causes serious eye damage.

P264 Wash hands thoroughly after handling.

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

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

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

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

2.3. Other hazards:

The product is subject to the requirements of EU regulation No. 2019/1148 on placing explosives precursors on the market and their use.

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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances:

CAS	EC	Registration number	Classification	Content (%)
Nitric acid, ammonium calcium salt				

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15245-12-2	239-289-5	01-2119493947-16-0001	Acute Tox. 4 H302 Eye Dam. 1 H318	≥ 97.0
¹ Calcium nitrate				
13477-34-4	233-332-1	01-2119495093-35-0008	Acute Tox. 4 H302 Eye Dam. 1 H318	≤ 3.0

3.2. Mixtures:

Contains no hazardous mixtures.

Notes: ¹anhydrous forms of calcium nitrate (CAS 10124-37-5) under normal conditions not occur. In production is used commonly occurring form of calcium nitrate tetrahydrate (CAS 13477-34-4), which is not classified as oxidizing (Cat. 3 May intensify fire; oxidizer.) Anhydrous form was used only for the purposes of registration materials, complete classification of the anhydrous form of calcium nitrate is given in Section 16.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures:

Eye contact: Immediately wash eyes with plenty of running water for at least 15 minutes; keep the eyelids open and occasionally lifting the upper and lower eyelids. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical advice.

Skin contact: Wash affected skin area with plenty of water and soap for at least 15 minutes thoroughly while removing contaminated clothing and shoes. Seek medical advice if irritation develops and persists.

Ingestion: Seek medical advice if the victim feels unwell. Wash out mouth with plenty of water and give plenty of water to drink. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Remove the victim from exposure into fresh air immediately if adverse effects (e.g. dizziness, drowsiness or respiratory irritation) occur. If not breathing, give artificial respiration and if breathing is difficult, give oxygen, seek medical advice. Seek medical advice when dust is intensively inhaled and the victim feels unwell.

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

Acute effects: Eye irritation (redness). Ingestion: abdominal pain, confusion, convulsions, dizziness, headache, nausea, unconsciousness.

Delayed effects: Ingestion: blue lips or fingernails (methemoglobinemia)

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

Normally no immediate medical service and special treatment is needed. If the effects are persisting get medical attention. It can cause methemoglobinemia.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media:

Suitable extinguishing media:

Use appropriate extinguishing media.

Note: As the substance is non-combustible, but enhances combustion of other substances, the preferable medias are water or foam.

Unsuitable extinguishing media:

No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture:

In case of fire, may produce hazardous decomposition products such as nitrogen oxides (NO, NO₂ etc.).

Keep away from combustible materials.

5.3. Advice for firefighters:

No special measures required. In the event of fire, wear a self-contained breathing apparatus and a chemical protective suit.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:

Avoid creating dusty conditions. Avoid contact with eyes and skin. Use personal protective equipments.

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Keep away from sources of ignition.

6.2. Environmental precautions:

Prevent the material from entering surface water or sanitary sewer system. Do not discharge directly to a water source. If accidental high amount spillage or washings enter drains or watercourses contact local Environment Authority.

6.3. Methods and material for containment and cleaning up:

Sweep up into suitable labelled containers for recovery or disposal. Clean up affected area with a large amount of water. Pick up with suitable absorbent material (dry sand or soil). Do not use sawdust and other combustible materials as absorbent. Sweep up absorbed substance, place in a solid waste container for later disposal.

6.4. Reference to other sections:

For more information about protective equipment see section 8.

For more information about the disposal of substance, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling:

Use with adequate ventilation. Use personal protective equipment as advised in Section 8.2. Avoid contact with eyes and skin. Avoid creating dusty conditions. Keep away from sources of ignition. Prevent moisture pick-up.

Do not to eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities:

Keep in the original container. Do not store near combustible materials. Keep container tightly closed in a cool, dry, well-ventilated place. Keep product away from heat, sparks, flame and other sources of ignition, out of direct sunlight and away from incompatible materials (see Section 10).

Suitable material for containers: Plastic drums, containers and vessels.

Combustible and reducing materials.

7.3. Specific end use(s):

See point 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Indicative occupational exposure limit values (IOELVs) for the protection of workers from chemical risks according to the Directive 98/24/EC. No limits established for this product.

Exposure pattern	Derived No Effect Level (DNEL)	
	Workers	General population
Oral1	Not applicable	8.33 mg/kg bw/d
Dermal1	13.9 mg/kg bw/day	8.33 mg/kg bw/day
Inhalation1	24.5 mg/m ³	6.3 mg/m ³

Exposure pattern	Predicted No Effect Level (PNEC)
Aqua-freshwater	0.45 mg/l
Aqua-marine water	0.045 mg/l
Aqua-intermittent release	4.5 mg/l
STP	18 mg/l

8.2. Exposure controls:

None required: Use of adequate ventilation is good industrial practice. In addition, an eyewash facility and a safety shower for facilities storing or utilizing this material is good industrial practice.

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

a) Eye/face protection:

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Use dust goggles if high dust concentration is generated.

b) Skin protection:

I. Hand protection:

Due to the properties and use of the product, no special protective gloves are required. Use normal work gloves.
Replace damaged gloves immediately.
Use work clothes and shoes.

II. Other:

c) Respiratory protection:

In case of excessive dust formation, use a respirator to solid particulars (e.g. FFP1).

d) Thermal hazards:

Information is not available.

Environmental exposure controls:

Leakage of product should be cleaned up promptly and placed in a clean labelled container for safe disposal. (See also Section 6.3 and 13).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties:

Physical state:	solid
Colour:	white
Odour:	odourless
Melting point/freezing point:	116.6°C
Boiling point or initial boiling point and boiling range:	not determined, no melting up to 300°C*
Flammability:	Non-flammable.
Lower and upper explosion limit:	Information is not available.
Flash point:	irrelevant, as the substance is an inorganic.
Auto-ignition temperature:	Irrelevant, non-flammable substance
Decomposition temperature:	Information is not available.
pH:	5.0 – 7.0
Kinematic viscosity:	not applicable to solids.
Solubility:	in water: 1,147 g/l pri 20°C (Method A.6/OECD 105)
Partition coefficient n-octanol/water (log value):	irrelevant as the substance is inorganic.
Vapour pressure:	considered negligible (based on high melting point)
Density and/or relative density:	1.12 g/cm ³ at 25°C
Relative vapour density:	irrelevant
Particle characteristics:	1 – 4 mm, granule

9.2. Other information:

explosive properties:	not explosive.
oxidising properties:	not oxidising.
surface tension:	not surface active (based on molecular structure).
bulk density:	1,000 – 1,200 kg.m ⁻³

* Information relating to Nitric acid, ammonium calcium salt.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity:

The substance is not reactive under recommended storage and use conditions.

10.2. Chemical stability:

The substance is stable under recommended storage and use conditions.

10.3. Possibility of hazardous reactions:

When heated, decomposition products.

10.4. Conditions to avoid:

Decomposes on heating.

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10.5. Incompatible materials:

Reactive or incompatible with the following materials: combustible materials, acids and alkalis.

10.6. Hazardous decomposition products:

These products are nitrogen oxides metal oxide/oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

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

a) acute toxicity:

Harmful if swallowed.

Oral:

Female, OECD 423:

LD₅₀: > 300 — < 2,000 mg/kg bw

Dermal:

OECD 402 with KNO₃.5Ca(NO₃)₂.10H₂O:

LD₅₀ > 2,000 mg/kg bw

Inhalation:

No data. Vapour pressure considered to be low, particle size is high.

Sub-acute toxicity:

Oral 28-day; OECD 407 with KNO₃.5Ca(NO₃)₂.10H₂O:

NOAEL ≥ 1,000 mg/kg bw

b) skin corrosion/irritation:

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

c) serious eye damage/irritation:

Causes serious eye damage.

d) respiratory or skin sensitisation:

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

e) germ cell mutagenicity:

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

f) carcinogenicity:

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

g) reproductive toxicity:

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

h) STOT-single exposure:

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

i) STOT-repeated exposure:

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

j) aspiration hazard:

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

11.2 Information on other hazards:

No other information is available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity:

Fish (short-term):

no guideline followed, with ammonium nitrate:

48-h LC₅₀: 447 mg/l

Daphnia magna (short-term):

OECD 202, EC C.2:

48-h EC₅₀: >100 mg/l

Algae:

OECD 202:

72-h EC₅₀: >100 mg/l

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NOEC: 100 mg/l

Inhibition of microbial activity:

OECD 209, with sodium nitrate

3-h EC₅₀: >1,000 mg/l

NOEC: 180 mg/l

12.2. Persistence and degradability:

In aqueous solution, nitric acid, ammonium calcium salt is completely dissociated into the calcium ion (Ca_2^+), the ammonium ion (NH_4^+) and the nitrate anion (NO_3^-). Hydrolysis of nitric acid, ammonium calcium salt does not occur.

Hydrolysis: No data available: not required as the substance is inorganic.

12.3. Bioaccumulative potential:

Such a mixture has a low potential for bioaccumulation.

12.4. Mobility in soil:

Adsorption coefficient: Low potential for adsorption (based on substance properties).

12.5. Results of PBT and vPvB assessment:

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

12.6. Endocrine disrupting properties:

The product nor its ingredients are identified as endocrine disruptors.

12.7. Other adverse effects:

No other information is available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods:

Waste from residues: In accordance with local and national regulations, disposed by landfill or incineration.

Containers: Empty containers or liners may retain some product residues. Do not empty into drains; dispose of this material and its container in a safe way. Dispose of in accordance with all applicable local and national regulations.

Classification according to the waste catalogue:

Unused or contaminated product:

06 13 99 wastes not otherwise specified

Contaminated packaging:

15 01 02 plastic packaging

SECTION 14: TRANSPORT INFORMATION

Product is not classified as dangerous good for transport according to the ADR/RID/IMDG Code.

Provision 208, Chapter 3.3 of ADR: The commercial grade of calcium nitrate fertilizer, when consisting mainly of a double salt (calcium nitrate and ammonium nitrate) containing not more than 10% ammonium nitrate and at least 12% water of crystallization, is not subject to the requirements of ADR.

14.1. UN number or ID number: unassigned

14.2. UN proper shipping name: unassigned

14.3. Transport hazard class(es): Unassigned

14.4. Packing group: Unassigned

14.5. Environmental hazards: Product is not classified as environmentally hazardous substance according to the ADR/RID/IMDG Code.

14.6. Special precautions for user: The packed product can be transported by vehicles, railway carriages and ships.

14.7. Maritime transport in bulk according to IMO Information is not available.

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instruments:

SECTION 15: REGULATORY INFORMATION

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

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and as amended;
Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 and as amended; Commission Regulation (EU) 2020/878 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work and as amended;

Regulation (EU) 2019/1009 of the European Parliament and of the Council laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003;

This product is regulated by Regulation (EU) 2019/1148: 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

15.2. Chemical safety assessment:

According to the Regulation REACH, Article 14 was carried out a chemical safety assessment for individual components of the mixture

SECTION 16: OTHER INFORMATION

Changes made in the revision:

Section 8 – personal protective equipment.

Used information sources:

The information provided in this safety data sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any proceed, unless specified in the text.

Instructions for the training:

Instruction in work with product shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to concrete conditions at the workplace.

List of relevant H-phrases:

H302 Harmful if swallowed.

H318 Causes serious eye damage.

Other information:

Classification and labelling Calcium nitrate CAS 10124-37-5:



Danger

H272 May intensify fire; oxidiser.

H302 Harmful if swallowed.

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H318 Causes serious eye damage.

P264 Wash hands thoroughly after handling.

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

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

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

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

This safety data sheet has been prepared on the basis of available information and the state of knowledge about the product itself as of the date of issue of this safety data sheet.

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Annex I. Exposure scenario

1 Exposure scenario for calcium nitrate tetrahydrate	
Consumer end-use of fertilizers and other products	
Use descriptors related to the life cycle stage	SU21 PC4/12/35/39 ERC8a/8b/8d/8e/10a
Name of contributing environmental scenario (1) and corresponding ERC	1. Wide dispersive indoor use of processing aids in open systems (ERC8a) 2. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 3. Wide dispersive outdoor use of processing aids in open systems (ERC8d) 4. Wide dispersive outdoor use of reactive substances in open systems (ERC8e) 5. Wide dispersive outdoor use of long-life articles and materials with low release (ERC10a)
List of names of contributing consumer scenarios (2) and corresponding PC and sub-product categories if applicable	1. Anti-Freeze and de-icing products (PC4) 2. Fertilizers (PC12) 3. Washing and cleaning products (including solvent based products) (PC35) 4. Cosmetics, personal care products (PC39)
2.1 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of processing aids in open systems (ERC8a) and of reactive substances in open systems (ERC8b). Wide dispersive outdoor use of processing aids in open systems (ERC8d), of reactive substances in open systems (ERC8e) and of long-life articles and materials with low release (ERC10a). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) Consumer end-use of fertilizers and other products	
All Product Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. Exposure to eye irritating dilutions can occur during consumer use of fertilizers (PC12), anti-freeze and de-icing products (PC4) and washing and cleaning products (PC35). The exposure of consumers to cosmetics (PC39) is covered by the Cosmetics Directive.	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid Products containing $\geq 10\%$ (and $< 25\%$) or $< 10\%$.
Amounts used	
Amounts used per event	Not applicable
Frequency and duration of use/exposure	
Duration of exposure per event and frequency of events; please note: Tier 1 exposure assessment usually refers to external event exposure, without taking into account the duration and frequency of the event (see Guidance Chapter R.15);	Not applicable
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed; population potentially exposed (adults, children)	Not applicable
Other given operational conditions affecting workers exposure	
Other operational conditions e.g. room volume, air exchange rate, outdoor or indoor use	Indoors or outdoors
Conditions and measures related to information and behavioral advice to consumers	
Safety advice to be communicated to consumers in order to control exposure, e.g. technical instruction, behavioral advice;	Avoid splashing
Conditions and measures related to personal protection and hygiene	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles,	1. If $\geq 10\%$ calcium nitrate: Use chemical goggles 2. If $< 10\%$ calcium nitrate: No personal protection needed

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respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant).	3. Instructions addressed to the consumer via product labelling
3 Exposure information and reference to its source	
Information for contributing scenario 1	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
Information for contributing scenario 2	
A qualitative approach was used to conclude safe use for consumers. The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. Although acute orally harmful, the acute oral route is not considered a relevant exposure route in the exposure scenarios described and no peak exposure is possible via this route. The substance did not show any systemic effects in the repeated dose studies and thus a quantitative assessment for systemic toxicity is not considered relevant for this substance.	
4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers/consumers for use of fertilizer, anti-freeze and de-icing products and washing and cleaning products: If ≥10% calcium nitrate: Use chemical goggles If <10% calcium nitrate: No personal protection needed	

1 Exposure scenario (2) for calcium nitrate tetrahydrate	
Industrial use for formulation of preparations, intermediate use and end-use in industrial settings.	
Use descriptors related to the life cycle stage	SU 3/10 PC0(K35000)/4/9a/11/12/14/16/20/21/34/35/37/39 PROC1/2/3/4/5/7/8a/8b/9/10/13/14/15 ERC2/4/5/6a/6b/6d/7
Name of contributing environmental scenario (1) and corresponding ERC	1. Formulation of preparations (ERC2) 2. Industrial use of processing aids in processes and products, not becoming part of articles (ERC4) 3. Industrial use resulting in inclusion into or onto a matrix (ERC5) 4. Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a) 5. Industrial use of reactive processing aids (ERC6b) 6. Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers (ERC6d) 7. Industrial use of substances in closed systems (ERC7)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Use in closed process, no likelihood of exposure (PROC1) 2. Use in closed, continuous process with occasional controlled exposure (PROC2) 3. Use in closed batch process (synthesis or formulation) (PROC3) 4. Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4) 5. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5) 6. Industrial spraying (PROC7) 7. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 8. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 9. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 10. Roller application or brushing (PROC10) 11. Treatment of articles by dipping and pouring (PROC13)

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	12. Production of preparations* or articles by tableting, compression, extrusion, pelletisation (PROC14) 13. Use as laboratory reagent (PROC15)
1.1 Contributing scenario (1) controlling environmental exposure	
Formulation of preparations (ERC2) and industrial use of processing aids in processes and products, not becoming part of articles (ERC4). Industrial use resulting in inclusion into or onto a matrix (ERC5) and in manufacture of another substance (use of intermediates, ERC6a). Industrial use of reactive processing aids (ERC6b), of process regulators for polymerisation processes in production of resins, rubbers, polymers (ERC6d) and industrial use of substances in closed systems (ERC7). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) controlling worker exposure for industrial use for formulation of preparations, intermediate use and end-use in industrial settings.	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC1/2/3/4/5/7/8a/8b/9/10/13/14/15	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid >25% substance in the product
Amounts used	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
Frequency and duration of use/exposure	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	More than 4 hours per day
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
Other given operational conditions affecting workers exposure	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors
Technical conditions and measures at process level (source) to prevent release	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
Technical conditions and measures to control dispersion from source towards the worker	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	1. Containment as appropriate 2. Good standard of general ventilation
Organisational measures to prevent /limit releases, dispersion and exposure	
Specific organisational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	Not applicable
Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify	1. Chemical goggles

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the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)

3 Exposure information and reference to its source

Information for contributing scenario 1

An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.

Information for contributing scenario 2

A qualitative approach was used to conclude safe use for workers.

The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. Although acute orally harmful, the acute oral route is not considered a relevant exposure route in the exposure scenarios described and no peak exposure is possible via this route. The substance did not show any systemic effects in the repeated dose studies and thus a quantitative assessment for systemic toxicity is not considered relevant for this substance.

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

No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.

5 Additional good practice advice beyond the REACH CSA

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as:

- Containment as appropriate;
- Minimise number of staff exposed;
- Segregation of the emitting process;
- Effective contaminant extraction;
- Good standard of general ventilation;
- Minimisation of manual phases;
- Avoidance of contact with contaminated tools and objects;
- Regular cleaning of equipment and work area;
- Management/supervision in place to check that RMMs in place are being used correctly and OCs followed;
- Training staff on good practice;
- Good standard of personal hygiene;

1 Exposure scenario (3) for calcium nitrate tetrahydrate

Professional use in formulation of preparations and end-use

Use descriptors related to the life cycle stage

SU 22
PC4/12/14/16/20/21/35/37
PROC1/2/5/8a/8b/9/10/13/15/20
ERC8a/8b/8c/8d/8e/9a/9b

Name of contributing environmental scenario (1) and corresponding ERC

1. Wide dispersive indoor use of processing aids in open systems (ERC8a)
2. Wide dispersive indoor use of reactive substances in open systems (ERC8b)
3. Wide dispersive indoor use resulting in inclusion into or onto a matrix (ERC8c)
4. Wide dispersive outdoor use of processing aids in open systems (ERC8d)
5. Wide dispersive outdoor use of reactive substances in open systems (ERC8e)
6. Wide dispersive indoor use of substances in closed systems (ERC9a)
7. Wide dispersive outdoor use of substances in closed systems (ERC9b)

List of names of contributing worker scenarios (2) and corresponding PROC

1. Use in closed process, no likelihood of exposure (PROC1)
2. Use in closed, continuous process with occasional controlled exposure (PROC2)
3. Mixing or blending in batch processes for formulation of preparations* and articles (multistage and/or significant

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	contact) (PROC5) 4. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 5. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 6. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 7. Roller application or brushing (PROC10) 8. Treatment of articles by dipping and pouring (PROC13) 9. Use as laboratory reagent (PROC15) 10. Heat and pressure transfer fluids in dispersive, professional use but closed systems (PROC20)
2.1 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of processing aids in open systems (ERC8a), of reactive substances in open systems (ERC8b), resulting in inclusion into or onto a matrix (ERC8c), and of substances in closed systems (ERC9a). Wide dispersive outdoor use of processing aids in open systems (ERC8d), of reactive substances in open systems (ERC8e), and of substances in closed systems (ERC9b). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) controlling worker exposure for professional use in formulation of preparations and end-use	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC1/2/5/8a/8b/9/10/13/15/20	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid >25% substance in the product
Amounts used	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
Frequency and duration of use/exposure	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	More than 4 hours per day
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
Other given operational conditions affecting workers exposure	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors or outdoors
Technical conditions and measures at process level (source) to prevent release	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or	Not applicable

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exposure)	
Technical conditions and measures to control dispersion from source towards the worker	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	1. Containment as appropriate 2. Good standard of general ventilation 3. Avoid splashing. Use specific dispensers and pumps specifically to designed to prevent splashes/spills/exposure to occur
Organisational measures to prevent /limit releases, dispersion and exposure	
Specific organisational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	Not applicable
Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)	1. Chemical goggles
3 Exposure information and reference to its source	
Information for contributing scenario 1	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
Information for contributing scenario 2	
A qualitative approach was used to conclude safe use for workers. The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. Although acute orally harmful, the acute oral route is not considered a relevant exposure route in the exposure scenarios described and no peak exposure is possible via this route. The substance did not show any systemic effects in the repeated dose studies and thus a quantitative assessment for systemic toxicity is not considered relevant for this substance.	
4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.	
5 Additional good practice advice beyond the REACH CSA	
Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as: - Containment as appropriate; - Minimise number of staff exposed; - Segregation of the emitting process; - Effective contaminant extraction; - Good standard of general ventilation; - Minimisation of manual phases; - Avoidance of contact with contaminated tools and objects; - Regular cleaning of equipment and work area; - Management/supervision in place to check that RMMs in place are being used correctly and OCs followed; - Training staff on good practice; - Good standard of personal hygiene;	

2 Exposure scenario (4) for calcium nitrate tetrahydrate	
Consumer end-use of fertilizers and other products	
Use descriptors related to the life cycle stage	SU21 PC4/12/35/39

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Name of contributing environmental scenario (1) and corresponding ERC	ERC8a/8b/8d/8e/10a 6. Wide dispersive indoor use of processing aids in open systems (ERC8a) 7. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 8. Wide dispersive outdoor use of processing aids in open systems (ERC8d) 9. Wide dispersive outdoor use of reactive substances in open systems (ERC8e) 10. Wide dispersive outdoor use of long-life articles and materials with low release (ERC10a)
List of names of contributing consumer scenarios (2) and corresponding PC and sub-product categories if applicable	5. Anti-Freeze and de-icing products (PC4) 6. Fertilizers (PC12) 7. Washing and cleaning products (including solvent based products) (PC35) 8. Cosmetics, personal care products (PC39)
2.2 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of processing aids in open systems (ERC8a) and of reactive substances in open systems (ERC8b). Wide dispersive outdoor use of processing aids in open systems (ERC8d), of reactive substances in open systems (ERC8e) and of long-life articles and materials with low release (ERC10a). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) Consumer end-use of fertilizers and other products	
All Product Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. Exposure to eye irritating dilutions can occur during consumer use of fertilizers (PC12), anti-freeze and de-icing products (PC4) and washing and cleaning products (PC35). The exposure of consumers to cosmetics (PC39) is covered by the Cosmetics Directive.	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid Products containing ≥10% (and <25%) or <10%.
Amounts used	
Amounts used per event	Not applicable
Frequency and duration of use/exposure	
Duration of exposure per event and frequency of events; please note: Tier 1 exposure assessment usually refers to external event exposure, without taking into account the duration and frequency of the event (see Guidance Chapter R.15);	Not applicable
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed; population potentially exposed (adults, children)	Not applicable
Other given operational conditions affecting workers exposure	
Other operational conditions e.g. room volume, air exchange rate, outdoor or indoor use	Indoors or outdoors
Conditions and measures related to information and behavioral advice to consumers	
Safety advice to be communicated to consumers in order to control exposure, e.g. technical instruction, behavioral advice;	Avoid splashing
Conditions and measures related to personal protection and hygiene	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant).	4. If ≥10% calcium nitrate: Use chemical goggles 5. If <10% calcium nitrate: No personal protection needed 6. Instructions addressed to the consumer via product labelling
4 Exposure information and reference to its source	
Information for contributing scenario 1	

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An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.

Information for contributing scenario 2

A qualitative approach was used to conclude safe use for consumers.

The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. Although acute orally harmful, the acute oral route is not considered a relevant exposure route in the exposure scenarios described and no peak exposure is possible via this route. The substance did not show any systemic effects in the repeated dose studies and thus a quantitative assessment for systemic toxicity is not considered relevant for this substance.

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

No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers/consumers for use of fertilizer, anti-freeze and de-icing products and washing and cleaning products:

If $\geq 10\%$ calcium nitrate: Use chemical goggles

If $< 10\%$ calcium nitrate: No personal protection needed

- End of Safety Data Sheet -