

SC "Achema"
Safety data sheet



In accordance with Regulation (EC) 1907/2006 (REACH), Annex II with all subsequent amendments and supplements and EC Regulation No. 830/2015

CALCIUM AMMONIUM NITRATE

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Revision date:
2020.07.20
Version No.8
Revision No. 0
Issuing date:
2020.07.20

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

1.1 Product identifier

Trade name of mixture – Calcium ammonium nitrate
Composition: a mixture of ammonium nitrate and dolomite powder.
Identification of hazardous ingredients:
Trade name: Calcium ammonium nitrate;
Index number according to Regulation No. 1272/2008: not applicable.
CAS number: 6484-52-2.
EC number: 229-347-8.
REACH registration number: 01-2119490981-27-XXXX.
Other means of identification: calcium ammonium nitrate, CAN.

1.2 Relevant identified uses of the mixture and uses advised against

1.2.1 Uses:

Professional use

- Professional use [SU22]: Professional use in formulation and final use (PC12).

Further customer use

- Further customer use [SU21]: further customer use as fertilizers (PC12).

1.2.2 Uses advised against: None.

1.3 Details of the supplier of the safety data sheet

Manufacturer: AB Achema
Full address: Jonalaukio k., Ruklos sen., LT-55296
Country: Lithuania
Tel. Nr.: + 370 349 56736
URL website: www.achema.lt
Person responsible for the Safety Data Sheet (with e-mail address): Žydrūnas Utka, z.utka@achema.com

1.4. Emergency telephone number

Please contact: Poison Information and Control Office in the Republic of Lithuania by phone +370 52362052, cell phone +370 687 53378, on site <http://www.apsinuodijau.lt/information-in-english/> or by the Common emergency Center by 112.

Helpdesk services work: 24 hours a day, 365 days a year.

Other remarks (language in which assistance is provided): assistance is provided in Lithuanian.

Poison Control Centers in Europe are available on site <http://www.who.int/pcs/poisons/centre/directory/euro/en/>.

Telephone numbers of poison control centers in the European Economic Area: **IRELAND** (Dublin) +353 1 8379964; **AUSTRIA** (Vienna) +43 1 406 43 43; **BELGIUM** (Brussels) +32 70 245 245; **BULGARIA**

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(Sofia) +359 2 9154 409; **CZECH REPUBLIC** (Praha) +420 224 919 293; **DENMARK** (Copenhagen) 82 12 12 12; **ESTONIA** (Tallinn) 112; **GREECE** (Athens) +30 10 779 3777; **ICELAND** (Reykjavik) +354 525 111, +354 543 2222; **ITALY** (Rome) +39 06 305 4343; **LATVIA** (Ryga) +371 704 2468; **MALTA** (Valletta) 2425 0000; **NORWAY** (Oslo) 22 591300; **NETHERLANDS** (Bilthoven) +31 30 274 88 88; **FRANCE** (Paris) +33 1 40 0548 48; **FINLAND** (Helsinki) +358 9 471 977; **HUNGARY** (Budapest) 06 80 20 11 99; **GERMANY** (Berlin) +49 30 19240.

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1. Classification in accordance with Regulation No. 1272/2008:

In Lithuanian

Eye irritation Cat. 2

In English

Eye Irrit. 2, H319

2.2. Label elements

Labelling in accordance with Regulation No. 1272/2008:

Hazard pictogram(s):



(GHS07)

Signal word: WARNING

Hazard statement(s):

H319 – Causes serious eye irritation.

Precautionary statement(s):

P210: Keep away from heat/ sparks/open flames/hot surfaces. — No smoking. Keep away from heat.

P220: Keep/Store away from clothing/reducing agents/acids/alkali/sulphur/chlorates/chlorides/nitrates/permanganates/powder of metals and materials containing metals as follows: copper, nickel, cobalt, zinc and their alloys/combustible materials.

P370+P378: In case of fire: Use water for extinction.

P264: Wash hands thoroughly after handling.

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

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

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

2.3. Other hazards

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

Contact with non-protective gloves may cause skin irritation.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

According to the Regulation (EC) No 1907/2006 the product is a multi-constituent.

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3.2. Mixtures

Identification of hazardous ingredients in the mixture

CAS no.	EC no.	Index No. in accordance with Regulation (EB) No. 1272/2008	REACH registration No.	Mass fraction, %	IUPAC name	Classification in compliance with Regulation (EC) No. 1272/2008 (CLP)
6484-52-2	229-347-8	Not listed	01-2119490981-27-XXXX	≤ 80 %	ammonium nitrate	Oxid. Solid Cat. 3, H272; Eye Irrit. Cat. 2, H319

SECTION 4. FIRST-AID MEASURES

4.1 Description of first aid measures

The material can get through:

Inhalation: Leave the affected area. When feeling bad, see your doctor.

Eye contact: Rinse with plenty of clean water for at least for 10 minutes; immediately see the doctor.

Skin contact: Change affected clothing, wash skin (body) with plenty of water and soap.

Ingestion: Do not cause vomiting; give the affected person some water or milk to drink.

a) see the doctor;

b) it is recommended that first-aiders wear personal protective equipment: protective gloves.

4.2 Most important symptoms and effects

Inhaled: there is no available data on the inhalation of the product which causes adverse symptoms.

Skin Contact: may cause skin irritation.

Eye Contact: eye irritation.

Ingestion: nausea, vomiting, possible fainting.

4.3 Indication of any immediate medical attention and special treatment needed

Calcium ammonium nitrate combustion process results in toxic nitrogen oxide and ammonia fumes, which can irritate and destroy the respiratory system. These side effects emerge after a period of time. If the skin around the mouth turns blue, give oxygen to breathe. Seek medical advice immediately.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable: If fertilizer is not directly involved in the combustion process, use any best available measures. If fertilizer is directly involved in combustion process, use large quantities of water.

Not suitable: Chemical extinguishers and foam. Don't use water vapor or sand.

5.2 Special hazards arising from the substance or mixture

Specific hazards: In case of fire, there is a potential option of explosion, especially if fertilizers are contaminated by inappropriate (incompatible) chemical substances (e.g. oils, see section 10).

Special exposure hazards arising from the substance/ preparation itself, combustion products, and resulting gases: nitrogen oxides, ammonia.

5.3 Advice for firefighters

Open windows and doors, do not inhale smoke (which is toxic), stand upwind of the fire, ensure that fertilizers are not contaminated with lubricants or flammable materials.

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Personal protective equipment: isolating apparel used by fireman, use isolating personal oxygen masks. Wear protective work clothing, safety boots, protective gloves, eye, face and respiratory protective equipment according to LST EN 469. Use compressed air breathing apparatus if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

For personnel not involved in emergency situations:

Use personal safety measures as specified in section 8. Do not walk through spilled fertilizers, do not raise fertilizer dust.

For the personnel involved in emergency situations: keep the product away from sources of ignition. Avoid dust formation when wind blows. Avoid walking on spilled product, avoid dust. For respiratory protection use a respirator according to LST EN 149 or a respirator with filter A2B2E2K2P3 according to LST EN 405. In the event of fire use chemical resistant goggles according to LST EN 166, if a mask is not used. Use compressed air breathing apparatus if necessary.

6.2 Environmental precautions

Keep away from spreading.

6.3 Methods and material for containment and cleaning up

Spilled substance/ preparation must be picked, the affected site cleaned up, open container with collected remains of the fertilizer must be disposed at an appropriate waste disposal site. Do not let the fertilizer to be mixed up with sawdust and oil lubricants.

Dilute collected small fertilizer particles mixing them with inert materials (limestone, dolomite, mineral phosphates, gypsum, sand) or dissolve in water.

6.4 Reference to other sections

See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Protective measures: do not let forming a vast amount of fertilizer dust, prevent the fertilizer from being polluted with combustible (e.g. lubricants) or incompatible substances; ensure product protection against atmosphere and humidity.

Fire prevention measures: fertilizers are not self-igniting, but can support combustion, also without air. During melting or at elevated temperatures, the product may break down into toxic nitrogen oxides and ammonia smoke. Irrespective of limits (above 170 °C), heating may cause an explosion.

Recommendations concerning good general hygiene practices at the work place: use appropriate personal precaution measures while working with fertilizer for a long time (e.g. gloves). Wear suitable protective clothing. After working with fertilizers – wash your hands.

Requirements to packages: to ensure safe product transportation and keeping, calcium ammonium nitrate is packed to polyethylene or polypropylene bags, big bags or other packages, ensuring safety transportation and storage. Packages containing zinc or copper cannot be used.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:

The product must be stored in accordance with the Minister of Agriculture of the Republic of Lithuania 2013 December 9th, Order no. 3D-825 “On Approval of Rules for Technological Design of Warehouses for Mineral

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Fertilizers and Plant Protection Products in the UAA TPT 10: 2013” (Official Gazette, 2013, No. 128-6540), with all the supplements and amendments.

Storage Requirements: Packaged and bulk products can be stored in closed, covered, dry, ventilated and clean warehouses. No smoking in the storage area. The product should be stored away from sources of ignition or flame, protected from flammable substances, reducing agents, acids, alkalis, sulfur, chlorates, chlorides, chromates, nitrites, permanganates, metal powders (zinc), materials containing copper, nickel, cobalt, zinc or their alloys.

Big bags must be kept in vertical position, stored on pallets without nails or sharp wood chips able to damage the big bag. During the cold season (from September 15 to April 15) packed in big bags of 500 kg and stored in stacks, can't be loaded on top of one another in more than 4 rows. When using larger big bags, the number of rows to be loaded on one another should not exceed 3. During the cold period (from September 15 to April 15), when transporting CAN fertilizers packed in 500 kg big bags, by vessels, it is possible to store them briefly (up to 8 days) by loading 6 bags in a row. In this way, the product can be trapped in easily sub-cut pieces.

During the warm season (from April 15 to September 15), CAN fertilizers packed in 500 kg big bags and stored in stacks can't be loaded on top of one another in more than 3 rows. When using larger bags, the number of rows to be loaded on one another should not exceed 3. During the warm season (from April 15 to September 15), transporting CAN fertilizers packed in 500 kg big bags, by vessels, can be stored with one bag on the other in no more than 3 rows.

Farmers using the fertilizer must ensure they will not be stored with hay, straw, corn, diesel-based lubricants, etc.

Avoid storage in hot areas or at the direct sunlight, damaging the packaging, entering moisture, contaminating materials (fertilizers containing elemental sulfur, urea, NPK and NP and NK urea based materials), lubricants, combustible materials. The heights of unpacked product piles or packed product stacks should remain at least 1 m from the hangers, beams and lamp holders. The size of piles depends on the layout of the warehouse, but they must be stacked so that around each of them there is at least 1 m of access to the vehicle if loading is to be organized in the event of an accident. There must be a sufficient distance between the stacks of the bulk product to ensure that the product is not contaminated with other materials.

Product must be kept separately from heat sources and open fire, protected from oxidizing substances, reducing agents, acids, alkali, sulphur, chlorates, chlorides, chromates, nitrites, permanganates, metal powder (especially zinc), substances containing copper, nickel, cobalt, zinc.

Packing materials. Calcium ammonium nitrate is packaged in polyethylene, polypropylene, paper bags, boxes, bags, big bags, steel, aluminum or other containers. Unpackaged fertilizers can be loaded with rain-fed and moisture-proof means of transport or by the buyer's container to ensure safe transportation of the product. A container that has zinc or copper can't be used.

Requirements for storage. Any building used for storage must be well ventilated. Fertilizers must not be stored outdoors in order to avoid deterioration of their physical properties due to thermal cycles in the fertilizer and atmospheric humidity caused by direct sunlight.

The product is not subject to restrictions in accordance with the Resolution No. 966 of the Government of the Republic of Lithuania of August 07, 2004 “On the Approval of the Listing and Classification of Criteria for the Listing and Classification of Substances, Mixtures and Preparations of Hazardous Substances in Hazardous Substances” (Official Gazette, 2004, No. 130-4649), with all subsequent amendments and supplements) or Part 2 of Annex I to Directive 2012/18/EU.

When storing the product in Lithuania in stationary containers with a volume of more than 50 m³, these containers must be registered with the state register management institution in accordance with the Chief State Labor Inspector of the Republic of Lithuania of August 1, 2006, Order No. 1-178 “On the Approval of the List-Classification of Potentially Dangerous Equipment to be Registered in the State Register, Indicating Their Parameters”. When storing the product in other countries, the storage requirements in force in those countries must be complied with.

Additional information on storage conditions. Warranty period is 12 months from the date of manufacture

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when the product is stored in warehouse and the warranty period is 10 months from the date of manufacture when the product is stored outdoors.

7.3 Specific final uses

Used as fertilizers.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Regulated occupational exposure limit values:

Maximum allowable value for long-term exposure (IPRD) according to HN23: not applicable to the product and its components.

Maximum allowable value for short-term exposure (TPRD) according to HN23: not applicable to the product and its components.

Limit value (NRD) according to HN 23: not applicable to the product and its components.

Occupational exposure limit (s) according to Directive 98/24/EC: not applicable for the product and its components.

Occupational exposure limit (s) according to Directive 2004/37/EC: not applicable for the product and its components.

Any other national occupational exposure limits: no data available.

Non-limiting value (s) (DNEL). The product does not meet the criteria for classification in accordance with Regulation (EC) No. 1272/2008, therefore, no DNEL and PNEC are identified. DNEL and PNEC values for ammonium nitrate contained in the product are presented.

Ammonium nitrate DNEL is the physico-chemical property of ammonium nitrate, which could have the greatest negative effects.

Workers exposure

Ammonium nitrate DNEL data

Exposure mode	Exposure type	Hazardous	Physicochemical property that could have the greatest negative effect
Inhalation	Systemic effect – long lasting	DNEL: 36 mg/m ³	Toxicity ingested
Inhalation	Systemic effect - acute	The hazard is not known	
Inhalation	Local effect – long lasting	The hazard is not known	
Inhalation	Local effect – acute	The hazard is not known	
Dermal	Systemic effect – long lasting	DNEL: 5,12 mg/kg bw/day	Toxicity ingested
Dermal	Systemic effect – acute	No hazard identified	
Dermal	Local effect – long lasting	The hazard is not known	
Dermal	Local effect – acute	No hazard identified	
If in eyes	Local effect	Low hazard	

Predicted inactive concentration(s) PNEC

Ammonium nitrate PNEC data

Section	Hazardous	Comments / Grounds
Fresh water		No effect was observed in all eco-toxicity studies with the highest

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		recommended concentration of ammonium nitrate (nominal 100 mg / l). Therefore, on the basis of the ECHA document "Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment", assessment of the impact of water bodies is not necessary and PNEC values are not derived.
See water		No effect was observed in all eco-toxicity studies with the highest recommended concentration of ammonium nitrate (nominal 100 mg / l). Therefore, on the basis of the ECHA document "Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment ", assessment of the impact of water bodies is not necessary and PNEC values are not derived.
Freshwater sediment		No effect was observed in all eco-toxicity studies with the highest recommended concentration of ammonium nitrate (nominal 100 mg / l). No data on ecotoxicity in sediment organisms. In addition, it is considered that such data are not necessary. Therefore, on the basis of the ECHA document "Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment ", assessment of the impact of water bodies is not necessary and PNEC values are not derived.
See water sediment	There is no probability of sediment exposure	No effect was observed in all eco-toxicity studies with the highest recommended concentration of ammonium nitrate (nominal 100 mg / l). No data on ecotoxicity in sediment organisms. In addition, it is considered that such data are not necessary. Therefore, on the basis of the ECHA document "Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment ", assessment of the impact of water bodies is not necessary and PNEC values are not derived.
Microorganisms in sewage treatment system	PNEC STP: 18 mg/l	Exposure factor: 10 Extrapolation method: exposure factor Available test data with sodium nitrate, which is similar in structure to ammonium nitrate, EC50> 1000 mg / l and NOx 180 mg / l. An assessment factor of 10 was used in accordance with the ECHA Guideline on Information Requirements and Chemical Safety Assessment. Section R.10.
Soil		No effect was observed in all eco-toxicity studies with the highest recommended concentration of ammonium nitrate (nominal 100 mg / l). No data on ecotoxicity to soil. In addition, it is considered that such data are not necessary. Therefore, on the basis of the ECHA document "Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment ", assessment of the impact of water bodies is not necessary and PNEC values are not derived.
Air		No data available: It is proposed that the PNEC value should not be set.
Food chain	No bioaccumulation potential	According to Regulation (EC) No. 1272/2008 hazard statements H373, H372, H360, H361 and H362 are excluded from the scope of Regulation (EC) No 1272/2008. The substance is highly water soluble and is therefore believed to have a low bioaccumulation potential. Therefore, on the basis of the ECHA document "Guidance on information requirements and chemical safety assessment Part B.7", exposure assessment for the food chain is not necessary and the values for PNEC in the mouth are not derived.

No additional material measurements / monitoring are required during product storage, and product use. The product must be manufactured and used in a professional manner by the Minister of Social Security and Labor of the Republic of Lithuania and the Minister of Health of 2001 July 24 order No. 97/406 “On Approval of Regulations for the Protection of Workers from Chemical Agents at Work and for the Protection of Workers against the Exposure to Carcinogens and Mutagens at Work” (Official Gazette, 2001, No. 65-2396), as subsequently amended.

8.2 Exposure controls

8.2.1. Appropriate engineering controls: Air supply-extraction ventilation; prevent from accumulation of non-allowed concentrations of gases. Avoid concentrating on unauthorized dust concentrations. In addition to

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the places where the product is stored or recycled, have a shower. Use other good manufacturing practice experience.

8.2.2 Individual protection measures, such as personal protective equipment

The personal protective equipment must be used in accordance with good work-hygiene practices and must be used in conjunction with other control measures, including technical controls, ventilation and isolation. Additional good practice tools that can be carried out in the workplace risk assessment may include: appropriate restrictions; reducing the number of unprotected staff; isolation and efficient extraction of emissions; general ventilation in good level; manual work reduction; avoiding contact with contaminated tools and objects; regular cleaning of equipment and workstation; management / supervision by verifying the correct use of RMMs in compliance with OCs; staff training on good practice; personal hygiene.

8.2.2.1. Eye (face) protection: chemical protective safety goggles according to EN 166 or face shield according to EN 166.

8.2.2.2. Skin protection

Hand protection: adequate protection gloves according to LST EN 420, LST EN ISO 374-1 due to chemical protection, LST EN 388 due to mechanical protection.

Protective gloves must be made of one of the materials listed in the table, at least as specified, for penetration of thickness and resistance.

Glove material	Glove thickness, mm	Penetration time, min*
Butyl rubber - butyl	0.50	> 480
Nitrile rubber/ Nitrile latex	0.35	> 480
Fluorocarbon rubber	n.m. 0.40	> 480
Polychloroprene	n.m. 0.50	> 480
Natural rubber/ Natural latex	0.50	> 480
Polyvinyl chloride	0.50	> 480

*- the breakthrough time of the glove material is the time taken for the product to come in full contact with the glove. The shorter the penetration time, the less resistant the glove material to the product.

Skin protection creams do not adequately protect from the product.

Please note that the penetration time of the glove material in this section has been set at 22 ° C and using pure ammonium nitrate. When using calcium ammonium nitrate consisting of a mixture of ammonium nitrate and dolomite, the time of penetration of the glove material should be similar in size. When working at a higher temperature, the resistance of the glove material may be considerably lower, and in such cases, the permitted life of the glove must be shortened. We recommend that when you start using a new type or other manufacturer's gloves, make sure that they are chemically and mechanically resistant to working conditions. If you have any questions about the suitability of the gloves, please contact the manufacturers / suppliers of gloves.

The inside of the gloves should not contain powders which can cause hand skin allergies.

Before using the gloves, please always make sure there are no tears, cracks, or other defects. When the work is finished, the gloves must be cleaned and washed thoroughly before they are dry. After work, care must be taken to the hand skin.

Other protective equipment: Wear working boots according to EN ISO 20345 and wear full body work clothing or suitable chemical resistant work suit according to EN ISO 13688.

8.2.2.3. Respiratory protection: In the event of an accident (for example, accidentally pouring the product), wear mask according to LST EN 149. Do not use the same mask for longer than allowed by the duration of use. Wear dust protection mask with A2B2E2K2P3 (ABEK2P3) filter according to LST EN 14387.

8.2.2.4. Thermal protection: not applicable.

Hygiene measures: do not eat, drink or smoke while using the product. Strictly keep the product out of the

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skin, eyes or clothing. Keep away from food, drink and animal feed. Wash your hands every time you finish working with the product, and at the end of the day. After the work is done, take a shower. Remove contaminated clothing immediately. Do not breathe dust, vapors or aerosols.

8.2.3. Environmental exposure controls: calcium ammonium nitrate washings in Lithuania must be disposed of in accordance with the Lithuanian Republic Law on Waste Management, in other countries – in accordance with national legislation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

(a) **Appearance:** gray granules at 20⁰C temperature and 1013 hPa pressure. Product granulometry: at least 95 % granules of 2 – 5 mm size.

(b) **Odour:** odourless;

(c) **Odor threshold:** not applicable, product odourless.

(d) **pH:** of water solution (100g/l) > 4,5.

(e) **Melting/Freezing temperature:** 160 – 170 °C (depending on humidity). > 210 °C; product decomposition starts.

(f) **Primary boiling temperature and interval of boiling temperature:** The substance decomposes before boiling. Decomposition at > 210 °C. In accordance with Column 2 of REACH Annex VII, the boiling point does not need to be conducted in case the substance decomposes before boiling.

(g) **Flash-point:** The substance is inorganic. In accordance with Column 2 of REACH Annex VII, flash point does not need to be conducted in case the substance is inorganic.

(h) **Speed of vaporization:** Not applicable.

(i) **Flammability:** In accordance with REACH Annex XI, testing may be omitted if testing does not appear scientifically necessary. Calcium ammonium nitrate with less than 0.2% combustible substances has no explosive properties. However, this alkali nitrate does not contain groups that may react with oxygen, thus is not expected to propagate combustion along a test substance pile, and is therefore considered not flammable.

(j) **Limit values of flammability or explosion:** undetermined.

(k) **Vapor pressure:** Due to the relatively high melting point (160-170 °C depending on the moisture of the product), and hence it decomposes before boiling, the vapor pressure at room temperature is negligible. The vapor pressure calculations are usually based on the boiling point of the product, which this material can not be determined because it is inorganic. In accordance with REACH Annex XI, testing may be omitted if testing does not appear scientifically necessary.

(l) **Vapor density:** Not applicable.

(m) **Bulk density:** (900-1100) kg/m³.

(n) **Solubility in water:** Ammonium nitrate is highly soluble in water (1920 g/l at 20°C); calcium and magnesium carbonates are poorly soluble in water. The fertilizer is hygroscopic.

(o) **Partition coefficient n-octanol/water:** The substance is inorganic. In accordance with Column 2 of REACH Annex VII, the partition coefficient n-octanol/water does not need to be conducted in case the substance is inorganic.

(p) **Auto ignition temperature:** In accordance with REACH Annex XI, testing may be omitted if testing does not appear scientifically necessary. Ammonium nitrate with less than 0.2% combustible substances has no explosive properties. However, Calcium ammonium nitrate does not contain groups that may react with oxygen and therefore will not auto-ignite at temperatures between room temperature and melting point at ca 170°C. Therefore, a study is not considered necessary.

(q) **Decomposition temperature:** >210 °C decomposition starts.

(r) **Viscosity:** Test method is not applicable to solids. Viscosity is only relevant to liquids. In accordance with

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REACH Annex XI, viscosity testing may be omitted if it is technically not possible to conduct the study.

(s) **Explosive properties:** Non-explosive, in compliance with EEC test A14 (67/548/EEC); calcium ammonium nitrate has a high detonation resistance ratio; this ratio decreases depending on contamination and/or exposure to high temperature.

(t) **Oxidizing properties:** Non-classified as oxidizing substance in compliance with Regulation No. 1272/2008.

9.2 Other information

none

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended storage and handling conditions.

10.2 Chemical stability

Stable under recommended storage and handling conditions.

10.3 Possibility of hazardous reactions

Non self-ignitable, but may support combustion, as well as in the absence of air. When heated to melting or higher temperatures product may decompose and emit toxic nitrogen oxides and ammonia fumes. The product is detonation resistant. When heated above the fixed limits (over 170°C) may cause an explosion.

10.4 Conditions to avoid

Smoking is not allowed in the storage area. The product must be stored away from heat sources or flames. Avoid storage in hot places or in direct sunlight. The product cannot be stored at higher than 30 °C.

Do not carry out welding work near calcium ammonium nitrate fertilizer.

Adverse atmospheric effects (humidity). Avoid damaging the product packaging, moisture entering the package.

The product must be protected from flammable substances, reducing agents, acids, alkalis, sulfur, chlorates, chlorides, chromates, nitrites, permanganates, metal powders (especially zinc), substances containing copper, nickel, cobalt, zinc or their alloys, fertilizers containing elemental sulfur, urea, NPK and NP and NK based on urea.

On farms using these fertilizers, it must be ensured that they are not stored together with hay, straw, cereals, diesel fuel, oils.

10.5 Incompatible materials

Combustible substances, agents, acids, alkali, sulphur, chlorates, chlorides, chromates, nitrites, permanganates, metal powders and substances containing such materials as copper, nickel, cobalt, zinc and alloys, fertilizers containing elemental sulfur, urea, NPK and NP and NK based on urea.

10.6 Hazardous decomposition products

In contact with alkaline metals, gaseous ammonia may be emitted; intensive heating in closed premises may cause active reactions or explosion, especially when fertilizers are contaminated with impurities or any of the aforementioned materials.

SECTION 11. TOXICOLOGICAL INFORMATION

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11.1. Information on toxicological effects

Acute toxicity: According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008.

Details of the ingredient of the product - ammonium nitrate:

Based on the available data, ammonium nitrate does not meet this hazard criteria in accordance with Regulation (EC) No 1272/2008. The effects of ammonium nitrate on animals are presented in the table.

	Exposure dose / concentration	Routes	Method	Symptoms / delayed effects	Notes
Acute oral toxicity	LD50: 2950 mg/kg bw	Female/Male rats	OECD 401	Negative effects have not been established	Direct ATE Validation for Trusted Data
Acute dermal toxicity	LD50: > 5000 mg/kg bw	Female/Male rats	OECD 402	Negative effects have not been established	Direct ATE Validation for Trusted Data
Acute inhalation toxicity (vapour)	LC50: > 88,8 mg/kg bw	Rats		Negative effects have not been established	Direct ATE Validation for Trusted Data

Skin irritation or/and sensitization: Not irritating (OECD 404). Not sensitizing (OECD 429, with magnesium nitrate, nitric acid ammonium calcium salt, sodium nitrate). According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008.

Details of the ingredient of the product - ammonium nitrate:

Based on the available data, ammonium nitrate does not meet this classification criteria in accordance with Regulation (EC) No 1272/2008. Studies on rabbits (OECD 404 analytical method) showed no evidence of skin irritation after 72 h (source: ammonium nitrate registration dossier under REACH).

Serious eye damage/irritation: the product according to Regulation (EC) No. 1272/2008 is classified as eye irritating Cat.2.

Details of the ingredient of the product - ammonium nitrate:

Based on the available data, ammonium nitrate in accordance with Regulation (EC) No 1272/2008 is classified as eye irritation Cat.2. Studies on rabbits (OECD 405 analytical method) have shown that ammonium nitrate is an eye irritant (source: REACH registration dossier for ammonium nitrate).

Sensitizing of the airways or skin: According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008.

Details of the ingredient of the product - ammonium nitrate:

Ammonium nitrate does not have a sensitizing effect. Does not meet this classification criteria according to Regulation (EC) No. 1272/2008. Justification. Studies with ammonium nitrate are not available. Studies with a similarly structured substance, the ammonium calcium salt of nitric acid (double salt of calcium nitrate) (OECD 429 method of analysis), have shown that this substance does not have a sensitizing effect. Based on this result, the dossier for the registration of ammonium nitrate under REACH concluded that ammonium nitrate also did not have a sensitizing effect.

Mutagenicity: According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008 (OECD 471, 473, experiments performed on structure-like compounds with nitric acid ammonium calcium salt; OECD 476, tests performed on a structurally similar compound – potassium nitrate).

Details of the ingredient of the product - ammonium nitrate:

Ammonium nitrate is not mutagenic, does not meet the criteria for classification according to Regulation (EC) No. 1272/2008 (based on OECD 471, 473 studies with ammonium nitrate and structurally similar ammonium calcium salt and OECD 476 study with potassium nitrate) (source: REACH registration dossier for

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ammonium nitrate).

Carcinogenicity: According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008. Not carcinogenic (OECD 453, experiments performed on structure-like compound with ammonium sulfate).

Details of the ingredient of the product - ammonium nitrate:

Ammonium nitrate. Non-carcinogenic, does not meet this classification criteria according to Regulation (EC) No. 1272/2008 (studies performed according to OECD 453 method with nitrates) (source: dossier for registration of ammonium nitrate under REACH).

Reproductive toxicity: According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008. Oral 28-day NOAEL \geq 1500 mg/kg bw/day (OECD 422, experiments performed on structure-like compound with potassium nitrate).

Details of the ingredient of the product - ammonium nitrate:

Reproductive toxicity is not appropriate; ammonium nitrate does not meet this classification criteria according to Regulation (EC) No. 1272/2008 (studies performed according to OECD Method 422 with a structurally similar substance - potassium nitrate). The result is a NOAEL \geq 1500 mg / kg / day after ingestion over 28 days (source: ammonium nitrate registration dossier under REACH).

Specific toxicity for particular organ (STOT) (one-time effect): According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008. Oral 28-day NOAEL \geq 1500 mg/kg bw/day (OECD 422, experiments performed on structure-like compound with potassium nitrate). Oral 52-week NOAEL = 256 mg/kg bw/day (OECD 453, experiments performed on structure-like compound with ammonium sulfate). Inhalation 2-weeks NOAEL \geq 185 mg/m³ (OECD 412).

Details of the ingredient of the product - ammonium nitrate:

Ammonium nitrate does not meet this classification criteria according to Regulation (EC) No. 1272/2008 (source: dossier for registration of ammonium nitrate under REACH).

Specific toxicity for particular organ (STOT) (repeated effect): According to the available data, the product does not meet the criteria for classification according to Regulation (EC) No 1272/2008.

Details of the ingredient of the product - ammonium nitrate:

Ammonium nitrate does not meet this classification criteria according to Regulation (EC) No. 1272/2008 (source: dossier for registration of ammonium nitrate under REACH).

Aspiration hazard: none.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Fish (short-term): 48-h LC₅₀: 447 mg/l (no guideline followed).

Fish (long-term): No data.

Daphnia magna (short-term): 48-h EC₅₀: 490 mg/l (no guideline followed, with potassium nitrate).

Daphnia magna (long-term): No data.

Algae: 10-d EC₅₀: > 1700 mg/l (seawater, no guideline followed, performed with potassium nitrate).

Inhibition of microbial activity: 3-h EC₅₀: >1000 mg/l, NOEC: 180 mg/l (OECD 209, with sodium nitrate).

Based on available data, the product does not meet the criteria for classification as hazardous to the aquatic environment in accordance with Regulation (EC) No. 1272/2008.

12.2 Persistence and degradability

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Biodegradation: Standard test is not applicable as the substance is inorganic. In addition, in the anaerobic transformation of ammonium, one group of bacteria oxidizes ammonium to nitrite while another group oxidizes nitrite into nitrate. The average biodegradation rate in wastewater plant at 20 °C is 52 g N/kg dissolved solid/day. Nitrate degradation is fastest in anaerobic conditions. In the anaerobic transformation of nitrate into N₂, N₂O and NH₃, the biodegradation rate in wastewater plant at 20 °C is 70 g N/kg dissolved solid/day.

Hydrolysis: No hydrolysable group is present, will completely dissociate into ions.

12.3 Bioaccumulative potential

Octanol-water partition coefficient (K_{ow}): Not relevant as the substance is inorganic, but considered to be low (based on high water solubility)

Bioconcentration factor (BCF): Low potential for bioaccumulation (based on substance properties).

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 ammonium nitrate is inorganic.

12.6 Other adverse effects

None.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste from residues:

Product waste according to Regulation (EU) No. 1357/2014 are classified as hazardous waste under the code **HP 4** “Irritant - irritating to skin and injuries to eyes”. Calcium ammonium nitrate waste without contamination can be used as bulk fertilizer or must be transferred to waste handling companies. Prevent waste from accessing effluent. Calcium ammonium nitrate wastes in Lithuania must be handled in accordance with Law on Waste Disposal of the Republic of Lithuania, in other countries - in accordance with national legislation. The final product waste code is assigned by the waste manager / holder. Do not dispose of product with waste water.

Package waste disposal: After spreading fertilizer from bags, bags must be completely empty.

External packaging waste that is not contaminated with the product or other substances in accordance with Regulation (EU) No. 1357/2014 are classified as non-hazardous waste. Waste packaging within the product containing 20% or more by weight of the product according to Regulation (EU) No. 1357/2014 are classified as hazardous waste under the code **HP 4** “Irritant - irritating to skin and injuries to eye”.

Waste from packages must be transferred to waste handling companies. Calcium ammonium nitrate packages wastes in Lithuania must be handled in accordance with Law on Package and Package Waste Handling of the Republic of Lithuania, in other countries - in accordance with national legislation.

As long as the package is not fully emptied, as long as they are not allowed to be cleaned from calcium ammonium nitrate labeling in accordance with Regulation (EC) No. 1272/2008.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number

Not available because the product is not subject to ADR requirements.

14.2 UN proper shipping name

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Not available because the product is not subject to ADR requirements.

14.3 Transport hazard classes

Not available because the product is not subject to ADR requirements.

14.4 Packaging group

Not available because the product is not subject to ADR requirements.

14.5 Hazard to environment

The product is not classified as hazardous substance according to the Orange Book and International Transport Codes RID (Railway), ADR (Road) and IMDG (sea transport).

Product in big bags must be piled in no more than 4 layers.

14.6 Special precautions for users

Product in big bags must be piled in no more than 4 layers.

14.7 Bulk transport, according to Annex II to MARPOL Convention and IBC Code

Product Hazard Class according to the International Code for the Carriage of Solid Bulk Cargoes by Sea (IMSBC Code) is ammonium nitrate based fertilizer (non-hazardous).

SECTION 15. REGULATORY INFORMATION

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

EU legislation:

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC;
- Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH);
- Commission Regulation (EC) No 552/2009 of 22 June 2009 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) as regards Annex XVII;
- REGULATION (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 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;
- Commission Regulation (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives;
- Regulation (EU) No 98/2013 of the European Parliament and of the Council of 15 January 2013 on the marketing and use of explosives precursors;
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR);
- The International Rule for Transport of Dangerous Substances by Railway (RID);
- The International Maritime Dangerous Goods (IMDG);
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78);
- The International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code) (the IBC Code);

Domestic legislation (Lithuania):

- Applicable Law on Waste Disposal of the Republic of Lithuania;

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- Applicable Law on Package and Package Waste Handling of the Republic of Lithuania;
- HN23 Maximum Allowable Concentrations of Hazardous Chemical Substances and Preparations in Working Environment. General Requirements;
- HN36 Banned and Restricted Substances;
- Applicable Regulations for Workers “Protection against the Impact of Chemical Factors” and Regulations for Workers “Protection against Carcinogenic and Mutagenic Impacts”;
- Applicable Procedure of Safety Data Sheet Requirements and Supply thereof to Professional Users;
- Applicable Rules on Labeling of Items (Products) to be Sold in Lithuania and Referring Price thereof;
- Applicable Rules on Waste Disposal.
- 17 of August 2004 Government of the LR resolution No. 966 „On Prevention, Response and Investigation of dangerous objects and substances, mixtures or preparations classified as hazardous materials, and a list of criteria for designation of the Approval, as subsequently amended and supplemented. (Official Gazette, 2004, No. 130-4649; 2005 No. 131-4731, 2008, No. 109-4159; 2009 No. 90-3855; 2010, No. 59-2894; 2012 No. 61-3078), as amended and supplemented.
- Minister of Agriculture of the Republic of Lithuania 2013 December 9 th order No. 3D-825 “On Approval of Rules for Technological Design of Warehouses for Mineral Fertilizers and Plant Protection Products in the UAA TPT 10: 2013” (Official Gazette, 2013, No. 128-6540, TAR identification code 1132330ISAK003D-825), including all subsequent amendments and supplements.
- Minister of Social Security and Labor of the Republic of Lithuania and Minister of Health of 2001 July 24 order No. 97/406 “On Approval of Provisions for the Protection of Workers from Chemical Agents at Work and the Protection of Workers from the Effects of Carcinogens and Mutagens at Work” (Official Gazette, 2001, No. 65-2396, TAR identification code 1012230ISAK0097 / 406), including all subsequent amendments and supplements.
- Chief State Labor Inspector of the Republic of Lithuania in 2006 August 1 Order no. 1-178 “On the Approval of the List-Classification of Potentially Dangerous Equipment to be Registered in the State Register, Indicating Their Parameters”;
- LST EN 149 “Respiratory protective devices. Filtering half masks for protection against particles. Requirements, testing, marking”;
- LST EN 166 “Personal eye protection. Technical requirements”;
- LST EN ISO 374-1 “Protective gloves against hazardous chemicals and micro-organisms. Part 1. Protective gloves against hazardous chemicals and micro-organisms. Part 1. Terminology and chemical resistance requirements (ISO 374-1: 2016)”;
- LST EN 388 “Protective gloves against mechanical hazards”;
- LST EN 397 “Industrial protective helmets”;
- LST EN 405 “Respiratory Protection. Filtering half masks with valves for protection against gases or gases and particles. Requirements, test, marking”;
- LST EN 420 “Protective gloves. General requirements and testing methods”;
- LST EN ISO 13688 “Protective clothing. General requirements (ISO 13688: 2013)”.
- LST EN 469 “Protective clothing for firefighters. Performance requirements for firefighting protective clothing”;
- LST EN 14387 “Respiratory protective devices. Gas filters and composite filters. Requirements, testing, marking”;
- LST EN ISO 20345 “Personal protective equipment. Safe footwear (ISO 20345: 2011)”.

Additional information about the relevant Community provisions on safety, health and the environment for the product:

The product is not subject to requirements according to the Government Resolution No. 966 of the Government of the Republic of Lithuania of 2004.08.07 „On Approval of the Description of the List and Attribution Criteria for List of Materials, Mixtures or Preparations of Hazardous Substances in the Hazardous Objects“ (Official Gazette, 2004, No. 130-4649) with all subsequent amendments and supplements) or

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according to European Parliament and Council regulation 2012/18/EU.

Restrictions on the product according to Regulation (EU) No. 98/2013: Mixtures containing more than 16% nitrogen in the form of ammonium nitrate are those given in Annex II to Regulation (EC) No 98/2013. On this basis, economic operators who sell, use, and protect calcium ammonium nitrate must comply with Regulation (EU) No. 98/2013 to report suspicious transaction of this substance, material disappearances and theft or theft or loss of theft to a national contact point in the Member State in which the suspicious transaction occurred.

15.2 Chemical safety assessment

In accordance with Regulation (EU) No 1907/2006 (REACH) Article 14, a Chemical Safety Assessment has been carried out for this substance. See Annex.

SECTION 16. OTHER INFORMATION

Revision date: 2020.07.20

Version: 8.0

Revision No. 0

Issuing date: 2020.07.20

(i) A clear evidence of added, deleted or modified information:

The following changes were made to the safety data sheet as compared to the previous version:

- sub-section 1.2.1: the name of the further use of the product has been changed and the product category PC11 has been deleted.
- Annex of SDS: the name of the further use of the product has been changed and the product category PC11 has been deleted.

(ii) List of abbreviations and acronyms used throughout the Safety Data Sheet:

ATE - acute toxicity estimate;
ADR – European Agreement on Dangerous Goods by Road;
CLP – Classification, Labeling and Packaging Regulation; Regulation (EC) No 1272/2008;
DNEL – Derived No-Effect value;
EC No. – EINECS ir ELINCS numbers;
EU – European Union;
EINECS – European List of Existing Commercial Chemical Substances;
ELINCS – European Register of Substances;
Eye Irrit. 2 – eye irritating Cat.2;
UN – United Nations;
C_{ow} – octanol-water partition coefficient;
LD₅₀ – Lethal dose for 50% of tested population;
LC₅₀ – Lethal concentration of 50% of tested population;
HS – Hygiene Standard;
IMSBC – International Code for the Carriage of Solid Bulk Cargoes by Sea;
Oxid. Solid 3 – oxidizing solids, Cat.3;
PBT - Persistent, Bioaccumulative, Toxic;
PNEC(s) – Forecast(-s) no effect(-s) concentration(-s);
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail;
SDS – Safety Data Sheet;
vPvB – very Persistent, very Bioaccumulative.
Explanation of use sectors (SU):

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SU21 – Private households (= general public = consumers).
 SU22 – Public sector (administration, education, entertainment, services, crafts).
 Explanation of product categories (PC):
 PC12 – Fertilizers.

(iii) Bibliography:

- 1) European Fertilizer Manufacturers Association (Fertilizers Europe) released Guidance for the storage, handling and transportation of solid mineral fertilizers);
- 2) European Fertilizer Manufacturers Association (Fertilizers Europe) released Guidance for safe and secure storage of fertilizers on farms“ (2012);
- 3) European Fertilizer Manufacturers Association (Fertilizers Europe) released Guidance for UN transport classification of ammonium nitrate based substances (2011);
- 4) ECHA Guidance on Information Requirements and Chemical Safety Assessment. Part B: Hazard Assessment (2011) (Guidance on Information Requirements and Chemical Safety Assessment);
- 5) ECHA Guidance on information requirements and chemical safety assessment, Chapter R.10);
- 6) Registration of Ammonium Nitrate under the REACH dossier, published on the website of the European Chemicals Agency (data taken as of April 6, 2020);
- 7) <http://gestis-en.itrust.de/nxt/gateway.dll?f=templates&fn=default.htm&vid=gestiseng:sdbeng> (data taken 2019-01-29).

(iv) Applicable classification and procedures used to determine the classification of mixtures in accordance with Regulation (EC) No. 1272/2008 [CLP Regulation]:

Classification in accordance with Regulation (EC) No. 1272/2008	Classification procedure
Eye irritating Cat.2, H319	The product has been classified by the manufacturer after evaluation in the context of Regulation (EC) No. 1272/2008 for the classification of the hazard class or differentiation referred to in paragraphs 2 to 5 of Annex I in order to determine the hazards associated with the mixture. The product is classified as eye irritation Cat.2 as it contains more ammonium nitrate than the general concentration limit for classification in Category 2 laid down in table 3.3.3 of Annex I to Regulation (EC) No 1272/2008 and equal to $\geq 10\%$.
The product is not classified as oxidizing solid Cat.3, H272	The product is not classified as oxidizing according to the Guidelines for the Classification of Substances of Ammonium Nitrate under UN Fertilizers Europe (2011), which states that mixtures containing ammonium nitrate with ammonium nitrate content not exceeding 80% are not classified as oxidizing.

(v) Relevant precautionary phrases:

- H272 – May intensify fire; oxidizer;
- H319 – Causes serious eye irritation;
- H360 – May damage fertility or the unborn child;

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H361 – Suspected of damaging fertility or the unborn child;
H362 – May cause harm to breast-fed children;
H372 – Causes damage to organs through prolonged or repeated exposure cause the hazard;
H373 – May cause damage to organs through prolonged or repeated exposure cause the hazard;
P210 – Keep away from heat/sparks/open flames/hot surfaces. No smoking;
P220 – Keep/Store away from clothing/reducing agents/acids/alkali/sulphur/chlorates/chlorides/nitrates/permanaganates/powder of metals and materials containing metals as follows: copper, nickel, cobalt, zinc and their alloys/combustible materials;
P370+P378 – In case of fire: Use water for extinction;
P264 – Wash hands thoroughly after handling;
P280 – Wear protective gloves/protective clothing/eye protection/face protection;
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

(vi) Training Advice:

To ensure the protection of people and the environment, people who manufacture, handle and use this product must be trained to work with hazardous substances, hazardous materials, calcium ammonium nitrate properties, have adequate hygiene skills, first aid principles and information on emergency procedures. This safety data sheet must be made available to those working with the product. Persons must be instructed before working with the product.

NOTE. 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.

Release info: This version replaces all previous documents.

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ANNEX

Exposure scenarios of calcium ammonium nitrate:

- 1 Exposure scenario (1): Professional use in formulation of preparations and end-use;
- 2 Exposure scenario (2): Consumer end-use of fertilizers.

1. Exposure scenario (1)	
Professional use in formulation of preparations and end-use	
Use descriptors related to the life cycle stage	SU22 PC12 PROC1/2/8a/8b/9/11/15/19 ERC8b/8e
Name of contributing environmental scenario and corresponding ERC	1. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e)
List of names of contributing worker scenarios 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. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 4. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 5. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 6. Non industrial spraying (PROC11) 7. Use as laboratory reagent (PROC15) 8. Hand-mixing with intimate contact and only PPE available (PROC19)
2.1 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of reactive substances in open systems (ERC8b) and wide dispersive outdoor use of reactive substances in open systems (ERC8e). 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. PROC1/2/8a/8b/9/11/15/19	

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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 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	<ol style="list-style-type: none"> 1. Containment as appropriate 2. Good standard of general ventilation 3. Avoid splashing. Use specific dispensers and pumps specifically designed to prevent splashes/spills/exposure to occur
Organizational measures to prevent /limit releases, dispersion and exposure	
Specific organizational measures or measures needed to support the functioning	Not applicable.

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<p>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).</p>	
<p>Conditions and measures related to personal protection, hygiene and health evaluation</p>	
<p>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)</p>	<p>1. Protecting goggles</p>
<p>3. Exposure information and reference to its source</p>	
<p>Information for contributing scenario (1)</p>	
<p>An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.</p>	
<p>Information for contributing scenario (2)</p>	
<p>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. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.</p>	
<p>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</p>	
<p>No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.</p>	
<p>5. Additional good practice advice beyond the REACH CSA</p>	
<p>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:</p> <ul style="list-style-type: none"> - Containment as appropriate; - Minimize number of staff exposed; - Segregation of the emitting process; - Effective contaminant extraction; - Good standard of general ventilation; - Minimization 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. 	

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2. Exposure scenario (2)	
Consumer end-use of fertilizers	
Use descriptors related to the life cycle stage	SU21 PC12 ERC8b/8e/10a
Name of contributing environmental scenario and corresponding ERC	1. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e) 3. 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. Fertilizers (PC12)
1.1 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of reactive substances in open systems (ERC8b), wide dispersive outdoor use of reactive substances in open systems (ERC8e) and wide dispersive outdoor use 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 matches/fireworks	
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).	
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 $< 10\%$.
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

SC “Achema”

Safety data sheet

In accordance with Regulation (EC) 1907/2006 (REACH), Annex II with all subsequent amendments and supplements and EC Regulation No. 830/2015

CALCIUM AMMONIUM NITRATE

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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).	<ol style="list-style-type: none"> 1. If $\geq 10\%$ of ammonium nitrate: Use chemical goggles 2. If $< 10\%$ of ammonium nitrate: no personal protection needed 3. Instructions addressed to the consumer via product labeling
2. 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)	
<p>A qualitative approach was used to conclude safe use for consumers.</p> <p>The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.</p>	
4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
<p>No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers/consumers for use of fertilizers:</p> <p>If $\geq 10\%$ ammonium nitrate: Use protecting goggles;</p> <p>If $< 10\%$ ammonium nitrate: No personal protection needed.</p>	

The end of Safety Data Sheet.