

# SC “Achema”

## Safety data sheet



In accordance with Regulation (EC) 1907/2006 (REACH), Annex II with all subsequent amendments and supplements and Commission Regulation (EU) No. 2020/878

### Ammonium nitrate

Revision date:  
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## SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Trade name:** ammonium nitrate.

**Chemical name:** 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:** None.

### 1.2. Relevant identified uses of the mixture and uses advised against

#### 1.2.1. Uses:

##### Industrial use

- Industrial use [SU8, SU9]: Production of material (continuous and periodic production), including handling, warehousing, quality control;

##### Professional use

- Professional use [SU3, SU10]: Professional use in formulation of mixtures, use as an intermediate product and final industrial use (PC1, PC11, PC12, PC19, PC37).

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

##### Further customer use

None.

#### 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. No.: + 370 349 56736

URL website: [www.achema.lt](http://www.achema.lt)

Person responsible for the Safety Data Sheet (with e-mail address): Vytautas Galeckas, [v.galeckas@achema.com](mailto:v.galeckas@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

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## SECTION 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance

**Classification in accordance with EC Regulation No. 1272/2008 [CLP]:**

In Lithuanian

Oxidising solids Cat. 3,

Eye irritation Cat. 2

In English

Oxid. Solid 3, H272

Eye Irrit. 2, H319

### 2.2. Label elements

**2.2.1. Labelling in accordance with EC Regulation No. 1272/2008 [CLP]:**

**Hazard pictogram(s):**



**Signal word: WARNING**

**Hazard statement(s):**

H272 – May intensify fire; oxidiser.

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;

P221 – Take any precaution to avoid mixing with combustibles, 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;

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.

### 2.3 Other hazards

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

Other hazards: The product is non-flammable, but, in contact with combustible materials, increases the risk of ignition and can significantly increase the existing fire. Very soluble in water. Hygroscopic. May cause acute

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deterioration (see sub-section 4.1 of this SDS).

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

According to the REACH Regulation No. 1907/2006 the product is a mono-constituent

CAS Nr.	Index No. in accordance with Regulation (EB) No. 1272/2008	IUPAC name	Mass fraction, %	EC Nr.
6484-52-2	Not applicable	Ammonium nitrate	98,4 %	229-347-8
13446-18-9	Not applicable	Magnesium nitrate	1,3 %	233-826-7

## SECTION 4. FIRST-AID MEASURES

### 4.1. Description of first aid measures

#### General information

**The material can get through:** the respiratory tract, contact with skin and eyes, and orally.

**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 or if breathing is difficult, give oxygen and seek medical advice. Seek medical advice immediately when vapours are intensively inhaled.

**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.

**Eye contact:** Immediately wash eyes with plenty of running water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses if present and easy to do. Seek medical advice if irritation develops and persists.

**Ingestion:** 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 or if breathing is difficult, give oxygen and seek medical advice. Do not use mouth-to-mouth respiration. Seek medical advice immediately when vapours are intensively inhaled.

**Individual protection measures recommended for first-aiders:** Comply with general hygiene requirements. Wear suitable protective clothing and gloves.

### 4.2 Most important symptoms and effects

**Inhaled:** Respiratory tract irritation.

**Skin Contact:** Skin irritation.

**Eye Contact:** Eye irritation, pain.

**Ingestion:** Nausea, mucosal irritations.

**Delayed effects:** none known.

### 4.3 Indication of any immediate medical attention and special treatment needed

Note to physician: Fire extinguishing gas or ammonium nitrate thermal decomposition products (nitrogen oxides, ammonia) can cause respiratory irritation and damage by inhalation. Pulmonary damage may not occur immediately, but after a certain period of time. Give oxygen to breath, especially when the blues around the mouth.

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### 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. In the case of a small fireplace, because the product is non-combustible, it can withstand burning, extinguishing with water. In the case of large fireplaces, the product is non-combustible, but can withstand combustion. Extinguish with water.

**Not suitable:** Do not use chemical extinguishers or chemical foam. Do not attempt to suppress the fire with steam or sand.

#### 5.2. Special hazards arising from the substance or mixture

In case of fire, there is a potential option of explosion, especially if fertilizers are contaminated by inappropriate (incompatible) chemical substances. May be explosive in contact with flammable or organic substances and at confinement during fire. In case of fire, may produce hazardous decomposition products such as nitrogen oxides (NO, NO<sub>2</sub> etc.), ammonia (NH<sub>3</sub>), amines.

#### 5.3. Advice for firefighters

Special measures: open doors and windows in the area to give maximum ventilation. Do not inhale smoke (which is toxic), stand upwind of the fire, ensure that fertilizers are not contaminated with lubricants or flammable materials. Wear protective work clothing, safety boots, protective gloves, eye, face and respiratory protective equipment according to LST EN 469 “Protective clothing for firefighters. Performance requirements for protective clothing for firefighters”. Use compressed air breathing apparatus if necessary.

#### 5.4. Additional information

The water used for extinguishing which has been contaminated must be collected. Do not empty into drains or sewers.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

#### 6.1. Personal precautions, protective equipment and emergency procedures

**6.1.1. For personnel not involved in emergency situations:** Avoid contact with eyes, skin and clothing. Use respiratory protection according to LST EN 149 or a mask with filter A2B2E2K2P3 according to LST EN 405. For eye protection use a chemical resistant goggle complying with LST EN 166 if not using a mask.

**6.1.2. For the personnel involved in emergency situations:** Keep the product away from sources of ignition. Avoid dust formation when wind blows. Avoid walking on the spilt product and exposure to the dust. Use respiratory protection according to LST EN 149 or a respirator with filter A2B2E2K2P3 according to LST EN 405. Use chemical resistant goggles according to LST EN 166 in the event of fire, if a mask is not used. Use self-contained breathing apparatus if necessary.

#### 6.2. Environmental precautions

Prevent the material from contact with soil, entering surface water or sanitary sewer system. Do not discharge directly to a water source. If accidental spillage or washings enter drains or watercourses contact local authority.

#### 6.3. Methods and material for containment and cleaning up

**6.3.1. Containment.** Protective barriers from the ground, sand. In the event of precipitation, cover the sewage systems.

**6.3.2. Cleaning up.** Disperse a small amount of product, vacuum it or soak it into properly labeled waste or waste containers, large bags. The place where the product was poured should then be washed with plenty of water. Do not pick up fertilizer using sawdust or other combustible materials. Dispose of large quantities of product, vacuumed or

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soaked in properly labeled waste or waste containers, large batches. If possible, waste should be recycled. Wash contaminated area with plenty of water. If the fertilizer enters the water body, inform the local state authority about this. Do not pick up fertilizer using sawdust or other combustible materials.

**6.3.3. Other information.** None.

#### 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.** Avoid contact with eyes, skin, and clothing. Use suitable personal protective equipment; wear goggles, gloves, working boots.

**Fire prevention measures.** Use with adequate ventilation. Ventilation requirements are given in sub-section 8.2.1 of this SDS. Keep product away from sources of ignition. Avoid contamination by any source including metals, dust and organic materials. Keep product away from moisture.

**Aerosol and dust prevention measures.** Use adequate ventilation. Ventilation requirements are given in sub-section 8.2.1 of this SDS. When wind blowing, do not let dust build up and spread.

**Environmental precautions.** Do not allow to enter surface water or groundwater or sewage system.

**Recommendations concerning good general hygiene practices at the work place.** Do not eat, drink or 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

In Lithuania ammonium nitrite must be stored in accordance with the Minister of Agriculture of the Republic of Lithuania of 2013 December 9th in 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), as amended and supplemented thereafter. In other countries, the product must be stored in accordance with the storage requirements in force in those countries.

Packed and bulk ammonium nitrate may be stored indoor, covered, dry, clean and ventilated warehouses. Recommended temperature in warehouses should be exposed not higher than 30 °C, and air humidity, not higher than 50 %. The storehouse premises must be single-floor, without cellar or basement. Storehouse sections, where ammonium nitrate is stored, must be emptied and properly cleaned at least once in a year.

Packed ammonium nitrate may be stored in open storage sites only when it is protected from direct sunrays, atmosphere precipitation (rain, snow, bag should not stand in a water and water cannot aggregate on the bag), moisture. Big bags and packages of ammonium nitrate must be wrapped with water-proof membrane. Ammonium nitrate cannot be kept in the temperature above 30 °C. Storage of ammonium nitrate in bulk outdoor is prohibited.

Bulk ammonium nitrate in farms may be stored in silos or closed bunkers in accordance with the requirements of the Guidelines for the storage, handling and transportation of bulk mineral fertilizers (2007) and the Guidelines for the Safe Farm Handling (2012) issued by the European Fertilizer requirements.

Big bags of ammonium nitrate are stored in vertical position, stowed on pallets without any peered nails, screws, wooden chips or other sharp items that can damage big bags.

Ammonium nitrate storage area at manufacturer and in port should be inaccessible to unauthorized personnel. Warnings “Entry by permit only”, “No smoking” and other safety requirements for storage of ammonium nitrate must be posted in prominent locations of storage area.

Strictly forbidden to smoke at storage area of ammonium nitrate, prohibits open heating and light sources. Product must be kept separately from heating sources or flame, stored away from moisture, flammable material, reducing agent, acid, alkali, sulphur, chlorate, chloride of lime, chromate, nitrite, permanganate, metals powder (especially, zinc), materials that have cuprum, nickel, cobalt or alloys of above mentioned metals in it, sulphide,

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superphosphate.

Avoid ammonium nitrate storage in hot places or sunshine, tare damage, moisture, pollution with incompatible material (fertilizers, which possess elemental sulphur, urea, NPK, NP and NK urea basis), grease, and flammable material.

To be ensured that farms that use this fertilizer do not store it together with hay, straw, grain, diesel, grease.

If urea and ammonium nitrate are stored in the same warehouse, contact between these 2 substances should be avoided at any time, also in the event of fire.

There should be a sufficient distance between bulk product piles, in order to prevent the contamination with other substances.

For repacking ammonium nitrate at the port, port's building floor must be of non-combustible materials, without bituminous connections and transitions. There shall be no internal holes, grooves or channels.

Product, packed into 500 kg big bags and stored in piles, cannot be stowed atop one another in more than 4 rows.

Product, packed into 600 kg big bags and stored in piles, cannot be stowed atop one another in more than 4 rows.

Product, packed into 1000 kg big bags and stored in piles, cannot be stowed atop one another in more than 2 rows.

Product, packed into 1250 kg big bags and stored in piles, cannot be stowed atop one another in more than 2 rows.

Height of bulk or bagged product piles should be in the way, that the distance from the top of the piles to eaves, bunks and lamp holder would remain at least 1 m. Size of piles depends on warehouse layout, but piles should be stacked with at least 3 m around each one for a vehicle to approach if discharge is required in case of emergency.

Ammonium nitrate is packed in bags at max 50 °C, therefore ammonium nitrate could be delivered with higher than temperature of atmosphere.

Ammonium nitrate can maintain fire or oxidize, has high detonation resistance. This resistance gets lower depending on defile and/or high temperature.

Ammonium nitrate in contact with alkali materials, emits ammonia. If ammonium nitrate is strongly heated, nitrogen oxides and oxygen are emitted. Decomposition in enclosed utensil can merge to explosion.

Bulk ammonium nitrate loading to the vessel and at a loading time in the event of danger the rain begins, must be closed the vessel's hold and suspended the loading.

The product is subject to the restrictions and obligations laid down in Regulation (EU) 2019/1148 for precursors to restricted explosives. They are listed in sub-section 15.1 of this SDS.

**Suitable packaging materials.** Stainless steel (304). Non suitable packaging materials: Zinc, Copper.

#### **Requirements for storage warehouses and containers.**

In the absence of stricter national requirements, at a time in warehouse are allowed to hold a maximum of 1249 tons of ammonium nitrate. Larger quantities of ammonium nitrate can be stored in facilities according to Lithuanian law or Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances. At a time in warehouse are allowed to hold from 1250 to 5000 t, if the object stored under the classification of ammonium nitrate correspond to the amount of lower-tier requirements. At a time in warehouse are allowed to hold from 5000 t and more, if the object stored under the classification of ammonium nitrate correspond to the amount of higher-tier requirements.

When storing the product in Lithuania in stationary containers with a volume of more than 50 m<sup>3</sup>, these containers must be registered with the state register management institution in accordance with the 2006 Chief State Labor Inspector of the Republic of Lithuania. 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”.

For storage of packed ammonium nitrate in open warehouses or sheds, there can not be more than 700 tons in pile and pile area can not be larger than 300 m<sup>2</sup>. The anti-fire space between piles must be left not less than 6 m.

Exporting product to other countries, allowed storage quantity, heaps and piles size of ammonium nitrate must comply with the local country requirements.

**Additional information on storage conditions.** Product packaging must be protected against damage.

**Note:** See section 10 for information on product stability and reactivity.

#### **7.3 Specific final uses**

Ammonium nitrate registration in the REACH documentation, which is not mentioned in sub-section 1.2.1 of this Safety Data Sheet and for which exposure scenarios are not included in this Safety Data Sheet, are listed below:

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**Industrial use**

1. Sampling, loading, filling, reloading, unloading, packing (loading / unloading) in devices that are adapted and not fitted.
2. Storage.
3. Material reloading into small containers (dedicated lines for filling, including weighing).
4. Quality control.
5. Use of ammonium nitrate in the manufacture of adhesives, sealants, explosives, fertilizers and water treatment chemicals.
6. Seed treatment or coating with fertilizers containing ammonium nitrate.
7. Use of ammonium nitrate for the synthesis of other substances.

**Professional use**

8. Spraying.
9. Non-industrial spraying of liquid fertilizers in open areas.
10. The introduction of liquid fertilizers into the soil.
11. The introduction in open spaces.
12. The introduction of liquid fertilizers in greenhouses into the soil.
13. Use of liquid fertilizers in greenhouses (non-industrial spraying).

**Further customer use**

None.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1. Control parameters**

**Limit value of substance, preparation component in working ambient air:** none.

**Long-term exposure limit (IPRD):** not applicable to ammonium nitrate according to hygiene norm HN 23 in Lithuania.

**Short-term exposure limit (TPRD):** not applicable to ammonium nitrate according to hygiene norm HN 23 in Lithuania.

**Threshold limit value (NRD):** not applicable to ammonium nitrate according to hygiene norm HN 23 in Lithuania.

**Occupational exposure limit (s) according to Directive 98/24/EC:** not applicable for ammonium nitrate.

**Occupational exposure limit (s) according to Directive 2004/37/EC:** not applicable for ammonium nitrate.

**Any other national occupational exposure limits:** no data available.

**Non-limiting value (s) (DNEL):**

The assessment of the safe use of the substance was carried out in a qualitative way. The main toxic effect of this substance is eye irritation, for which the DNEL can not be determined, since the critical dosage is unknown. Since the minimal known systemic effects have been determined using a high amount of substance that is never exposed to human exposure (see DNEL), quantitative exposure assessment is not necessary.

The physicochemical properties of the DNEL product, which could have the greatest negative effect, are provided.

**Workers exposure**

Exposure mode	Exposure type	Hazardous	Physicochemical property that could have the greatest negative effect
Inhalation	Systemic effect – long lasting	DNEL: 36 mg/m <sup>3</sup>	Toxicity ingested
Inhalation	Systemic effect - acute	The hazard is not known	
Inhalation	Local effect – long lasting	The hazard is not known	

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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**

Section	Hazardous	Comments / Grounds
Fresh 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.
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 eco-toxicity 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 eco-toxicity 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. 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.



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No additional material measurements / monitoring are required during product manufacture, 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:** Adequate natural ventilation of good quality must be provided in the storing premises of the product, which would change the air in the premises at least once an hour during non-working hours. Mechanical ventilation must be switched on during operation. Its intensity is calculated taking into account that the amount of harmful substances in the indoor air during operation is not exceeded. When vehicles with internal combustion engines are used for loading, it is necessary to take this into account when calculating the ventilation of the premises.

**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 measures that can be applied following a workplace risk assessment include: appropriate restrictions, reducing the number of unprotected staff; isolation process; effective extraction, removal of contaminants; 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 resistant hermetic safety goggles according to LST EN 166, face protection shield according to LST EN 166.

#### 8.2.2.2. Skin protection

**Hand protection:** adequate protection gloves according to LST EN 420, EN ISO 374-1 due to chemical protection, 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 of glove material, 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:** to wear full body working clothes in accordance with LST EN ISO 13688, wear

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working boot in accordance with LST EN ISO 20345 for the purpose of product packaging.

**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 filter according to LST EN 405.

**8.2.2.4. Thermal protection:** not necessary.

**Hygiene measures:** do not eat, drink or smoke while using the product. Strictly keep the product out of the 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:** 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) Physical state:** solid crystalline material in the form of spherical or near-spherical granules at a temperature of 20 ° C and pressure of 101.3 kPa. Justification: The result of the registration of ammonium nitrate in the REACH documentation is summarized on the basis of data from three directories: The CRC Handbook of Chemistry and Physics (80th ed.), The Merck Index (12th ed.), Sax's Dangerous Properties of Industrial Materials (9th. ed.).

**b) Color:** white or pinkish, yellow in color.

**c) Odor:** odorless.

**d) Melting and solidifying temperature:** 169,9 °C at a pressure of 101,3 kPa. Justification: The result of the registration of ammonium nitrate in the REACH documentation is summarized on the basis of data from these directories: The CRC Handbook of Chemistry and Physics (80th ed.), The Merck Index (12th ed.), Sax's Dangerous Properties of Industrial Materials (9th. ed.). Ammonium nitrate starts to decompose at 210 °C.

**e) Boiling point or initial boiling point and boiling range:** based on column 2 of Annex VII to the REACH Regulation, no clarification is given: it is not necessary to determine because the substance breaks down to a boiling point.

**f) Flammability:** Nonflammable. Justification: The registration dossier for ammonium nitrate under REACH concludes that, based on the molecular structure and experience of ammonium nitrate using this material, ammonium nitrate is not flammable in contact with a source of ignition, water or air.

**g) Upper and lower explosion limits:** ammonium nitrate fertilizers covered by UN No. 2067, does not have explosive properties.

**h) Flash-point:** not determined according to column 2 of Annex VII to REACH, with explanation: not required because ammonium nitrate is an inorganic solid.

**i) Auto ignition temperature:** The registration of ammonium nitrate in the REACH documentation states that, based on the structure of ammonium nitrate, transport information, it is considered that ammonium nitrate is not a self-heating substance. Justification: Ammonium nitrate is not a group that reacts with airborne oxygen. It is also based on the fact that materials at a temperature lower than their melting point is usually not self-heating, followed by self-ignition. Ammonium nitrate is widely used, but there is no evidence that it is characterized by spontaneous combustion. The material is not classified as a self-sustaining ADR. According to Section 1 of Annex XI to the REACH Regulation, studies are omitted through scientific justification.

**j) Decomposition temperature:** > 210 °C.

**k) pH-value:** not less than 5,0 (10% ammonium nitrate water solution).

**l) Kinematic viscosity:** According to Chapter 2 of Annex XI to the REACH Regulation, studies are omitted because it is technically impossible to carry out the study. Ammonium nitrate is a solid state of the aggregate, and the test must be carried out with liquid.

**m) Solubility:** Highly soluble in water: 1198 g/l at 0 °C; 1497 g/l at 10 °C; 1872 g/l at 20 °C. When dissolving ammonium nitrate, the temperature of the solution decreases significantly, therefore, in order to accelerate the dissolution of the ammonium nitrate, the solution must be warmed up.

## Ammonium nitrate

**n) Partition coefficient: n-octanol/water:** Based on column 2 of Annex VII to the REACH Regulation, no clarification is provided: ammonium nitrate is a solid material.

**o) Vapor pressure:** According to section 1 of Annex XI to the REACH Regulation does not apply on a scientific basis. Justification. Based on the fact that ammonium nitrate is a solid which has a melting point high (169.6 °C) and decomposes at 210 °C, the ammonium nitrate registration in the REACH documentation concludes that the ammonium nitrate vapor pressure at ambient temperature is very low and not detectable.

**p) Density and / or relative density:** Not less than 900 kg / m<sup>3</sup>, determined according to LST EN 1236.

**q) Relative vapor density:** not determined for solids.

**r) Granulomere:**

- between 1 mm and 4 mm, not less than 97%;
- between 2 mm and 4 mm, not less than 88%;
- smaller than 1 mm, not more than 1,5%;
- larger than 6 mm, not more than 0,0%.

### 9.2 Other information

**a) Explosive properties:** ammonium nitrate fertilizers covered by UN No. 2067, does not have explosive properties. Ammonium nitrate registration according to the REACH dossier states: experience shows that in order to increase the risk of explosion due to ammonium nitrate, the following factors must be considered: storage of material in large quantities, contamination of any substance (including metals, acids, organic matter) and / or heating (also under fire). Ammonium nitrate fertilizers are specially formulated for high density, high purity, to minimize the risk of explosion.

**b) Oxidizing properties:** has oxidizing properties. Justification. The result of the registration of ammonium nitrate in the REACH dossier is derived from the ADR. When transporting ammonium nitrate (UN No. 2067), it is considered an oxidizing substance. UN 2067 transport classification: hazard class 5.1, packing group III. The oxidizing properties of ammonium nitrate depend on the granulomere composition of the product.

## SECTION 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

Stable under recommended storage and handling conditions (see section 7, handling and storage).

### 10.2. Chemical stability

Stable under recommended storage and handling conditions (see section 7, handling and storage).

### 10.3. Possibility of hazardous reactions

The product may explode if it is contaminated or mixed with the following materials: alkaline metals, aluminum (powder), ammonia, flammable materials, potassium, organic materials, reducers, water, alkylesters, aluminum chloride, antimony (powder), antimony trisulphate, barium nitrile, calcium chloride, carbide, chlorate, chlorine, cyan guanidine, dinitrotoluene, iron (III) chloride, formamide, urea, wood flour, potassium permanganate, carbon, hydrocarbonates, copper-iron (II) sulphide, copper oxide, metal powders, mineral oil, sodium hypochlorite, sodium nitrate, sodium perchlorate, oils, rust, sulfur, trinitroanizole, trinitrotoluene, waxes, sugar.

The product may explode if it is contaminated or blended with these chemical mixtures: 1) aluminum powder + calcium nitrate + formamide; 2) ammonium salts + acids; 3) acetic anhydride + nitric acid; 4) potassium + ammonium sulphate; 5) metal oxides + carbon; 6) superphosphate + organic matter + heat.

Explosion hazards can be caused by heating the product. The heated product breaks down.

The product may react dangerously in contact with ammonium dichromate, acetic acid (if heated additionally), potassium dichromate, metal nitrite, sodium chloride, phosphorus (even if it is low in quantity).

### 10.4. Conditions to avoid

When heated above 210 °C, nitrogen oxides and oxygen are released. In a closed burst, the fragmentation can go into explosion. Decomposition products: In contact with alkaline substances (e.g. lime) releases ammonia.

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**10.5. Incompatible materials**

Combustible, oxidizing, reducing materials, strong acids and bases, sulphur, chlorates, chlorides, chromates, nitrites, permanganates, metal powder (especially zinc), substances containing copper, nickel, cobalt, zinc and their alloys substances, fertilizers containing sulphur, urea, NPK, NP and NK fertilizers. And other materials listed in section 10.

**10.6. Hazardous decomposition products**

Under normal conditions of storage and use, hazardous decomposition products should not be produced. In case of fire, nitrogen oxides (NO<sub>x</sub>).

**SECTION 11. TOXICOLOGICAL INFORMATION**

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

**Acute toxicity:** does not fulfill the classification criteria according to Regulation (EC) No. 1272/2008.

**Human information:** no available data.

**Effects on animals:**

	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

**Other information:** data not available.

**Assessment/Classification:** according to available data, the classification criterion does not match.

**Skin irritation or/and sensitization:** Not irritating. According to the available data, the product does not meet the criteria for classification in accordance with Regulation (EC) No. 1272/2008. Justification. Studies on rabbits (OECD 404 assay) showed no signs of skin irritation after exposure to 72 h (source: ammonium nitrate registration in REACH dossier).

**Serious eye damage / irritation:** Irritates eyes. In accordance with Regulation (EC) No 1272/2008 is classified as eye irritation cat. 2. Justification. Studies on rabbits (OECD 405 analytical method) have shown that ammonium nitrate is irritating to the eye (source: ammonium nitrate registration in REACH dossier).

**Sensitizing of the airways or skin:** have no sensitizing effects. In compliance with Regulation No. 1272/2008 preparation is not classified as sensitizing. Justification. Studies conducted with ammonium nitrate are not available. Investigations performed on a substance of similar structure - nitric acid ammonium calcium salt (calcium nitrate double salt) (OECD 429 analysis method) showed that this substance does not have a sensitizing effect. Based on this result, it has been found from the REACH documentation for registration of ammonium nitrate that ammonium nitrate has no sensitizing effect.

**Mutagenicity:** The product does not meet the criteria for classification in accordance with 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) (source: ammonium nitrate registration in REACH dossier).

**Carcinogenicity:** The product does not meet the criteria for classification in accordance with Regulation (EC) No. 1272/2008. Not carcinogenic (OECD 453, experiments performed on structure-like compound with ammonium sulfate) (source: ammonium nitrate registration in REACH dossier).

**Reproductive toxicity:** The product does not meet the criteria for classification in accordance with Regulation (EC) No. 1272/2008 (studies were carried out using OECD 422 method with a structurally similar substance -

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potassium nitrate). Studies result: oral 28-day NOAEL  $\geq$  1500 mg/kg bw/day (source: ammonium nitrate registration in REACH dossier).

**Specific toxicity for particular organ (STOT) (one time effect):** The product does not meet the criteria for classification in accordance with Regulation (EC) No. 1272/2008.

**Specific toxicity for particular organ (STOT) (repeated effect):** The product does not meet the criteria for classification in accordance with Regulation (EC) No. 1272/2008.

**Aspiration hazard:** none.

#### 11.2. Information on the other hazards

##### 11.2.1. Endocrine disrupting properties

Data not available on the current product.

##### 11.2.2. Other information

None.

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

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

**Fish (short-term):** 48-h LC<sub>50</sub>: 447 mg/l (no guideline followed).

**Fish (long-term):** no data.

**Daphnia magna (short-term):** 48-h EC<sub>50</sub>: 490 mg/l (no guideline followed, with potassium nitrate).

**Daphnia magna (long-term):** no data.

**Algae:** 10-d EC<sub>50</sub>: > 1700 mg/l (seawater, no guideline followed, performed with potassium nitrate).

Inhibition of microbial activity: 3-h EC<sub>50</sub>: >1000 mg/l, NOEC: 180 mg/l (OECD 209, with sodium nitrate).

### 12.2 Persistence and degradability

**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 N<sub>2</sub>, N<sub>2</sub>O and NH<sub>3</sub>, 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<sub>ow</sub>):** 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 Endocrine disrupting properties:

No data available.

### 12.7 Other side effects:

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Undetermined.

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### 13.1.1. Product / package disposal.

Ammonium nitrate waste according to Regulation (EU) No. 1357/2014 are classified as hazardous waste by HP 2 “Oxidising” hazard statement code H 272 “May increase fire, oxidizing agent”, HP 4 “Irritating – irritating to the skin and damaging the eyes” and HP 15 “Wastes that may contain some preceded by a hazardous property in which the primary waste was not directly labelled with danger phrase EUH044 “May explode if heated by a tight seal”. Ammonium nitrate waste in Lithuania must be managed in accordance with the Law on Waste Management in the Republic of Lithuania, in other countries, in accordance with the requirements of national legislation. Unpolluted ammonium nitrate waste can be used as bulk or liquid fertilizer (after dissolving in water) or to be handed over to waste management companies. The final product waste code is assigned by the waste manager / holder.

Waste of outer packaging of polypropylene that is not contaminated with ammonium nitrate or other materials according to Regulation (EU) No. 1357/2014 are classified as non-hazardous waste.

Ammonium nitrate waste inner packaging of polyethylene in accordance with Regulation (EU) No. 1357/2014 is classified as hazardous waste. The codes assigned to these wastes depend on the amount of residual ammonium nitrate remaining in the packaging waste. Waste of inner packaging of polyethylene containing up to 20% ammonium nitrate is assigned the codes HP 2 “Oxidising” Hazard Statement code H 272 “May increase fire, oxidizer” and HP 15 “Wastes that can have any of the following hazardous properties listed above: generates no primary waste directly” hazard statement EUH044 “May explode if heated in a sealed container”. Waste from ammonium nitrate packaging must be handed over to waste management companies. These waste in Lithuania must be handled in accordance with the Law on Packaging and Packaging Waste Management of the Republic of Lithuania, applicable waste management regulations, in other countries – in compliance with the requirements of national legislation. The final product waste code is assigned by the waste manager / holder.

Do not remove label, prepared according to Regulation (EC) No. 1272/2008, until package is thoroughly cleaned.

#### 13.1.2. Waste disposal information.

Physical and chemical properties of the product are listed in Section 9.

#### 13.1.3. Information related to sewage disposal.

It must be ensured that ammonium nitrate waste does not enter the sewage.

It is recommended not to encourage product disposal with waste water.

#### 13.1.4. Other waste disposal guidelines.

All the fertilizer residues must be removed from the bag by gentle shaking.

## SECTION 14. TRANSPORT INFORMATION

### 14.1 UN Number or ID number

UN 2067

### 14.2. UN proper shipping name

Ammonium nitrate fertilizers, type A1.

### 14.3. Transport hazard classes

5.1.

### 14.4. Packaging group

III

### 14.5. Hazard to environment

None.

### 14.6. Special precautions for users

Amonium nitrate is packed in bags at max 50 °C, therefore ammonium nitrate could be delivered with higher than

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temperature of atmosphere.

During transportation of product packed in 500 kg big bags, short storage (up to 9 days) is permitted by stowing bags atop one another in 10 rows.

During transportation of product packed in 600 kg big bags, short storage (up to 9 days) is permitted by stowing bags atop one another in 8 rows. In exceptional cases, 600 kg of ammonium nitrate big bags may be transported stacked on top of each other in 9 rows, but then the transportation time must be less than 9 days.

During transportation of product packed in 1000 kg big bags, short storage (up to 9 days) is permitted by stowing bags atop one another in 5 rows.

During transportation of product packed in 1250 kg big bags, short storage is permitted by stowing bags atop one another in 5 rows.

During loading or unloading of ammonium nitrate on board the rain starts, the hold of the vessel shall be closed and the loading stopped.

#### 14.7. Carriage of bulk cargoes by sea in accordance with IMO measures

The product's hazard class is the Ammonium Nitrate Based Fertilizer UN 2067 (Ammonium nitrate based fertilizer UN 2067) according to the International Maritime Bulk Cargo Code (IMSBC Code).

### 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 No. (EU) 2020/878 amending Regulation of the European Parliament and of the Council Annex II to Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (published in Official Journal of the European Union L 203 of 26 June 2020);

- 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;

- Directive 2012/18/EU of the European Parliament and of the Council of July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC;

- Regulation (EU) 2019/1148 of the European Parliament and of the Council 20th of June 2019 on trade in and use of explosives precursors and amending Regulation (EC) No. 1907/2006 and repealing Regulation (EU) No. 98/2013 (published in the Official Journal of the European Union L 186/1, 2019) as subsequently amended and supplemented;

- 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).

##### National legislation (Lithuania):

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- Applicable Law on Waste Disposal of the Republic of Lithuania;
- 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 Carcinogens and Mutagens 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;
- The product is not subject to requirements according to the Government Resolution No. 966 of the Government of the Republic of Lithuania of 2004.08.17 „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).
- 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), as subsequently amended.
- 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.
- 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 405:2002+A1:2009 “Respiratory protective equipment. Valves with filter valves for protection against gas or gas and particles. Requirements, testing, marking”;
- LST EN 469 “Protective clothing for firefighters. Performance requirements for firefighting protective clothing”;
- LST EN 1236 “Fertilizers. Determination of bulk density of loose fertilizers (ISO 3944: 1992 modified)”.
- LST EN ISO 13688 “Protective clothing. General requirements (ISO 13688: 2013)”;
- 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 a dangerous substance, which is subject to the Government of the Republic Regulation No. 18.08.2004. 966 “On the Approval of the Listing and Attribution Criteria of Materials, Mixtures or Preparations of Hazardous Substances in Hazardous Substances” (Official Gazette, 2004, No. 130-4649), as amended, and supplemented and Annex I, Part 2 of Directive 2012/18/EU.



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**Product Restrictions on Regulation (EU) No. 2019/1148:** The product according to Regulation (EU) No. 2019/1148 is classified as a precursor to explosives of limited use. It shall be subject to the restrictions and obligations laid down in this Regulation for precursors to contained uses. The restrictions on regulation (EU) No. 2019/1148 under article 5 paragraph 1 applies to the product: it cannot be supplied (restriction applies to both paid and free of charge supplies) to members of the general public, as well restricted explosives precursors shall not be made available to, or introduced, possessed or used by members of the general public. According to Regulation (EU) No. 2019/1148 article 3 paragraph 8 ‘member of the general public’ means any natural or legal person who is acting for purposes not connected with that person’s trade, business, or profession. When supplying the product (insurance applies to both paid and free of charge supplies) to professional users or other economic operators, in accordance with Regulation (EU) No. 2019/1148 article 8 paragraph 2 of this regulation imposes an obligation on each transaction, unless that verification was carried out one year before that transaction, to verify that the potential customer is a professional user and another economic operator. According to Regulation (EU) No. 2019/1148 article 3 paragraph 9 ‘professional user’ means any natural or legal person or public entity or group of such persons or entities that has a demonstrable need for a restricted explosives precursor for purposes connected with its trade, business, or profession, including agricultural activity, conducted either on a full-time or part-time basis and not necessarily related to the size of the area of land on which that agricultural activity is conducted, provided that such purposes do not include making that restricted explosives precursor available to another person. When buying, importing, storing or using this product under the Regulation (EU) No. 2019/1148 article 9 the obligation is laid down within 24 hours for the reporting of suspicious transactions and significant disappearances and thefts to the national contact point of the Member State where the suspicious transaction was concluded or attempted.

#### 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:** 2021.01.30

**Version:** 11.0

**Revision No.** 0

**Issuing date:** 2021.01.30

#### (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:

- Headline of SDS: Commission Regulation (EU) No 2015/830 replaced by Commission Regulation (EU) 2020/878;
- sub-section 1.1: “Other means of identification” has been changed;
- sub-section 1.2.1: “Further customer use” has been repealed;
- sub-section 1.3: the title of this sub-section has been changed;
- sub-section 3.1: adjusted mass fraction of magnesium nitrate %;
- sub-section 5.1: the title of this sub-section has been changed;
- sub-section 5.2: the title of this sub-section has been changed;
- sub-section 7.1: requirements for ventilation has been changed;
- sub-section 7.2: product storing conditions has been changed; Regulation (EU) 2019/1148 was included;
- sub-section 7.3: “Further customer use” has been repealed;
- sub-section 8.2: the title of this sub-section has been changed;
- sub-section 8.2.1: requirements for ventilation has been changed;
- sub-section 9.1: the names of physico-chemical properties and the order of their arrangement have been changed;
- sub-section 9.2: From sub-section 9.1 transferred explosive and oxidizing properties;
- section 10: the title of this section has been changed;
- sub-section 10.1: the title of this sub-section has been changed;
- sub-section 11.1: the title of this sub-section has been changed;

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- sub-section 11.2: this sub-section is newly included;
- sub-section 12.2: the title of this sub-section has been changed;
- sub-section 12.6: the title of this sub-section has been changed;
- sub-section 12.7: this sub-section is newly included;
- sub-section 13.1: the title of this sub-section has been changed;
- sub-section 14.1: the title of this sub-section has been changed;
- sub-section 14.2: the title of this sub-section has been changed;
- sub-section 14.3: the title of this sub-section has been changed;
- sub-section 14.4: the title of this sub-section has been changed;
- sub-section 14.6: Requirements for transportation included;
- sub-section 14.7: the title of this sub-section has been changed;
- sub-section 15.1: Regulatory documents amended. Regulation (EU) No. 2020/878 has been included, Regulation (EU) No. 2018/5830 has been repealed, Regulation (EU) 2019/1148 has been included, product restrictions on Regulation (EU) No. 2019/1148 has been included (Regulation No. 98/2013 has been repealed). Regulation (EU) No. 552/2009 has been repealed.
- section 16: Revision date, version number and issuing date of this safety data sheet has been changed.
- Exposure scenario (4) for consumer end-use of fertilizers in the Annex of this SDS 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;  
IATA – International Air Transport Organization;  
IMO – International Marine Organization;  
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail;  
SMGS – International Agreement on Carriage of Loads by Rail;  
CLP – Classification, Labeling and Packaging Regulation; Regulation (EC) No 1272/2008;  
CAS – Chemical Abstracts Service;  
DNEL – Derived No-Effect value;  
EC No. – EINECS ir ELINCS numbers;  
EU – European Union;  
ECHA – European Chemicals Agency;  
EINECS – European List of Existing Commercial Chemical Substances;  
ELINCS – European Register of Substances;  
Eye Irrit. 2 – eye irritating 2 category;  
UN – United Nations;  
C<sub>ow</sub> – octanol-water partition coefficient;  
LD<sub>50</sub> – Lethal dose for 50% of tested population;  
LC<sub>50</sub> – Lethal concentration of 50% of tested population;  
HS – Hygiene Standard;  
IMSBC – International Code for the Carriage of Dangerous Goods by Sea;  
Oxid. Solid 3 – oxidizing solids, 3 category;  
PBT – Persistent, Bio accumulative, Toxic;  
PNEC(s) – Forecast(-s) no effect(-s) concentration(-s);  
SDS – Safety Data Sheet;  
vPvB – very Persistent, very Bio accumulative.

#### **(iii) Bibliography:**

- 1) Registration of Ammonium Nitrate under the REACH dossier, published on the website of the European Chemicals Agency (data downloaded as of January 29, 2021);
- 2) ECHA Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment (2011) (Guidance on Information Requirements and Chemical Safety Assessment, Part B);
- 3) ECHA Guidance on information requirements and chemical safety assessment. Section R.10. (2011) (Guidance

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on information requirements and chemical safety assessment, Chapter R.10);  
4) European Fertilizer Manufacturers Association (Fertilizers Europe) released Guidance for the storage, handling and transportation of solid mineral fertilizers);  
5) European Fertilizer Manufacturers Association (Fertilizers Europe) released Guidance for safe and secure storage of fertilizers on farms“ (2012);  
6) The CRC Handbook of Chemistry and Physics (80th ed.);  
7) The Merck Index (12th ed.);  
8) Sax's Dangerous Properties of Industrial Materials (9th. ed.);  
9) <http://gestis-en.itrust.de/nxt/gateway.dll?f=templates&fn=default.htm&vid=gestiseng:sdbeng> (data downloaded as of January 29, 2021).

#### (iv) Relevant precautionary phrases:

H272 – May intensify fire; oxidizer;  
H319 – Causes serious eye irritation;  
H360 – May damage fertility or the unborn child;  
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 *exposure cause the hazard*;  
H373 – May cause damage to organs through prolonged or repeated exposure *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/permanganates/powder of metals and materials containing metals as follows: copper, nickel, cobalt, zinc and their alloys/combustible materials;  
P221 – Take any precaution to avoid mixing with combustibles, 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;  
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.

#### (v) 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:**

- 1 Exposure scenario (1): Manufacturing of the substance including handling, storage and quality controls;**
- 2 Exposure scenario (2): Industrial use for formulation of preparations/articles, intermediate use and end-use in industrial settings;**
- 3 Exposure scenario (3): Professional use in formulation of preparations and end-use.**

<b>1. Exposure scenario (1)</b>	
<b>Manufacturing of the substance including handling, storage and quality controls</b>	
Use descriptors related to the life cycle stage	SU8/9 PROC1/2/3/8a/8b/9/14/15 ERC1
Name of contributing environmental scenario (1) and corresponding ERC	1. Manufacturing of substances (ERC1)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Use in closed process, no likelihood of exposure (PROC1) 2. Manufacturing in a closed continuous process, with occasional exposure (PROC2) 3. Use in closed batch process (synthesis or formulation) (PROC3) 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. Production of preparations* or articles by tableting, compression, extrusion, pelletisation (PROC14) 8. Use as laboratory reagent (PROC15)
<b>2.1 Contributing scenario (1) controlling environmental exposure</b>	
Environmental release during manufacturing ERC1 An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>2.2 Contributing scenario (2) controlling worker exposure for manufacturing of the substance including handling, storage and quality controls</b>	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical.	

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PROC1/2/3/8a/8b/9/14/15	
<b>Product characteristic</b>	
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
<b>Amounts used</b>	
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.
<b>Frequency and duration of use/exposure</b>	
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
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
<b>Other given operational conditions affecting workers exposure</b>	
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
<b>Technical conditions and measures at process level (source) to prevent release</b>	
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
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	<ol style="list-style-type: none"> <li>1. Containment as appropriate</li> <li>2. Good standard of general ventilation</li> </ol>
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be	Not applicable

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reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
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
<b>3. Exposure information and reference to its source</b>	
<b>Information for contributing scenario 1</b>	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
<b>Information for contributing scenario 2</b>	
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.	
<b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.	
<b>5. Additional good practice advice beyond the REACH CSA</b>	
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:	
<ul style="list-style-type: none"> <li>- Containment as appropriate;</li> <li>- Minimize number of staff exposed;</li> <li>- Segregation of the emitting process;</li> <li>- Effective contaminant extraction;</li> <li>- Good standard of general ventilation;</li> <li>- Minimization of manual phases;</li> <li>- Avoidance of contact with contaminated tools and objects;</li> <li>- Regular cleaning of equipment and work area;</li> <li>- Management/supervision in place to check that RMMs in place are being used correctly and OCs followed;</li> <li>- Training staff on good practice;</li> <li>- Good standard of personal hygiene.</li> </ul>	

**1. Exposure scenario (2)**

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**Industrial use for formulation of preparations/articles, intermediate use and end-use in industrial settings.**

Use descriptors related to the life cycle stage	SU3/10 PC1/11/12/19/37 PROC1/2/3/5/8a/8b/9/13/15 ERC2/6a
Name of contributing environmental scenario (1) and corresponding ERC	1. Formulation of preparations (ERC2) 2. Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)
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. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5) 5. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 6. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 7. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 8. Treatment of articles by dipping and pouring (PROC13) 9. Use as laboratory reagent (PROC15)

**2.1 Contributing scenario (1) controlling environmental exposure**

Formulation of preparations (ERC2) and industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)

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/articles, 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.

PROC1/2/3/5/8a/8b/9/13/15

**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
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<b>Amounts used</b>	
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
<b>Frequency and duration of use/exposure</b>	
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
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
<b>Other given operational conditions affecting workers exposure</b>	
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
<b>Technical conditions and measures at process level (source) to prevent release</b>	
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
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	1. Containment as appropriate 2. Good standard of general ventilation
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational 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
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	



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<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. Chemical goggles</p>
<p><b>3. Exposure information and reference to its source</b></p>	
<p><b>Information for contributing scenario 1</b></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><b>Information for contributing scenario 2</b></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><b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b></p>	
<p>No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.</p>	
<p><b>5. Additional good practice advice beyond the REACH CSA</b></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"> <li>- Containment as appropriate;</li> <li>- Minimize number of staff exposed;</li> <li>- Segregation of the emitting process;</li> <li>- Effective contaminant extraction;</li> <li>- Good standard of general ventilation;</li> <li>- Minimization of manual phases;</li> <li>- Avoidance of contact with contaminated tools and objects;</li> <li>- Regular cleaning of equipment and work area;</li> <li>- Management/supervision in place to check that RMMs in place are being used correctly and OCs followed;</li> <li>- Training staff on good practice;</li> <li>- Good standard of personal hygiene;</li> </ul>	
<p><b>1. Exposure scenario (3)</b></p>	
<p><b>Professional use in formulation of preparations and end-use</b></p>	
<p>Use descriptors related to the life cycle stage</p>	<p>SU22          PC12          PROC1/2/8a/8b/9/11/15/19          ERC8b/8e</p>

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Name of contributing environmental scenario (1) and corresponding ERC	<ol style="list-style-type: none"> <li>1. Wide dispersive indoor use of reactive substances in open systems (ERC8b)</li> <li>2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e)</li> </ol>
List of names of contributing worker scenarios (2) and corresponding PROC	<ol style="list-style-type: none"> <li>1. Use in closed process, no likelihood of exposure (PROC1)</li> <li>2. Use in closed, continuous process with occasional controlled exposure (PROC2)</li> <li>3. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)</li> <li>4. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</li> <li>5. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)</li> <li>6. Non industrial spraying (PROC11)</li> <li>7. Use as laboratory reagent (PROC15)</li> <li>8. Hand-mixing with intimate contact and only PPE available (PROC19)</li> </ol>
<b>2.1 Contributing scenario (1) controlling environmental exposure</b>	
<p>Wide dispersive indoor use of reactive substances in open systems (ERC8b) and wide dispersive outdoor use of reactive substances in open systems (ERC8e).</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>	
<b>2.2 Contributing scenario (2) controlling worker exposure for professional use in formulation of preparations and end-use</b>	
<p>All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical.</p> <p>PROC1/2/8a/8b/9/11/15/19</p>	
<b>Product characteristic</b>	
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	<p>Solid, low dustiness</p> <p>Liquid, &gt;25% substance in the product</p>
<b>Amounts used</b>	
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
<b>Frequency and duration of use/exposure</b>	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or	More than 4 hours per day

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repeated) of exposure	
<b>Human factors not influenced by risk management</b>	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
<b>Other given operational conditions affecting workers exposure</b>	
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
<b>Technical conditions and measures at process level (source) to prevent release</b>	
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
<b>Technical conditions and measures to control dispersion from source towards the worker</b>	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	<ol style="list-style-type: none"> <li>1. Containment as appropriate</li> <li>2. Good standard of general ventilation</li> <li>3. Avoid splashing. Use specific dispensers and pumps specifically designed to prevent splashes/spills/ exposure to occur</li> </ol>
<b>Organizational measures to prevent /limit releases, dispersion and exposure</b>	
Specific organizational 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.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
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"> <li>1. Chemical goggles</li> </ol>

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<b>3. Exposure information and reference to its source</b>
<b>Information for contributing scenario 1</b>
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.
<b>Information for contributing scenario 2</b>
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.
<b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.
<b>5. Additional good practice advice beyond the REACH CSA</b>
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: <ul style="list-style-type: none"><li>- Containment as appropriate;</li><li>- Minimize number of staff exposed;</li><li>- Segregation of the emitting process;</li><li>- Effective contaminant extraction;</li><li>- Good standard of general ventilation;</li><li>- Minimization of manual phases;</li><li>- Avoidance of contact with contaminated tools and objects;</li><li>- Regular cleaning of equipment and work area;</li><li>- Management/supervision in place to check that RMMs in place are being used correctly and OCs followed;</li><li>- Training staff on good practice;</li><li>- Good standard of personal hygiene;</li></ul>

The End of Safety Data Sheet.