# NITROGEN FERTILIZERS WITH SULPHUR

<table>
<thead>
<tr>
<th>Revision date:</th>
<th>2020.07.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version No.</td>
<td>8</td>
</tr>
<tr>
<td>Revision No.</td>
<td>0</td>
</tr>
<tr>
<td>Issuing date:</td>
<td>2020.07.20</td>
</tr>
</tbody>
</table>

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

### 1.1. Product identifier

**Trade name of mixture** – Nitrogen fertilizers with sulphur.
**Composition**: mixture of ammonium nitrate and gypsum anhydrite powder.
**Identification of hazardous ingredients**:
**Trade name**: Ammonium nitrate.
**Index number according to Regulation No. 1272/2008**: not applicable.
**EC number**: 229-347-8.
**CAS number**: 6484-52-2.
**REACH registration number**: 01-2119490981-27-XXXX.
**Other means of identification**: ammonium nitrate with sulphur.

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

**1.2.1. Uses**:
- Professional use [SU22]: Professional use in formulation and final use (PC12).
- 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](http://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/](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/](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**
### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance

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

- In Lithuanian
  - Eye irritation Cat. 2

- In English
  - Eye Irrit. 2, H319

#### 2.2. Label elements

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

- Hazard pictogram(s):

  ![Hazard Pictogram](image-url)

- 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/acid/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 nitrogen fertilizer with sulphur 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.

### 3.2. Mixtures
Identification of hazardous ingredients in the mixture

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6484-52-2</td>
<td>229-347-8</td>
<td>Not listed</td>
<td>01-2119490981-27-XXXX</td>
<td>≤ 80 % (w/w)</td>
<td>ammonium nitrate</td>
<td>Oxid. Solid Cat. 3, H272; Eye Irrit. Cat. 2, H319</td>
</tr>
</tbody>
</table>

### 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, seek medical advice.
- **Skin contact:** Change affected clothing, wash skin (body) with plenty of water and soap.
- **Eye contact:** Rinse with plenty of clean water for at least for 10 minutes; immediately see medical advice.
- **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
Nitrogen fertilizer with sulphur 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 vapour 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.
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
6.1.1. 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.
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 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. In case of fire, wear protective work clothing in accordance with LST EN 469. 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. Wasted fertilizer must be kept away from heating sources. 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, nitrogen fertilizers with
sulphur are 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 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), 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, nitrates, 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 nitrogen fertilizers with sulphur 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), nitrogen fertilizers with sulphur packed in 500 kg big bags and stored in stacks can’t be loaded on top of one another in more than 4 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 nitrogen fertilizers with sulphur 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.

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. Incompatible materials: storage with combustible substances, agents, acids, alkali, sulphur, chlorates, chlorides, chromates, nitrates, permanganates, metal powders and substances containing such materials as copper, nickel, cobalt, zinc and alloys of any of the aforementioned materials is not recommended.

**Packing materials.** Nitrogen fertilizers with sulphur 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.

At a time in warehouse are allowed to hold a maximum of 1249 tons of nitrogen fertilizers with sulphur. Larger quantities of nitrogen fertilizers with sulphur 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 nitrogen fertilizers with sulphur corresponds 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 nitrogen fertilizers with sulphur correspond to the amount of higher-tier requirements.

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.

Any premises used for storage must be well ventilated. Fertilizer should not be stored in open air, as due to thermal cycles caused by exposure to direct sunlight and atmospheric humidity, its physical properties may be affected.

Packed and unpacked product must be stored in closed, covered, dry, ventilated and clean storehouses. Outside storage of the products allowed only during the cold season (from September 15 to April 15), providing the product is protected against precipitation, moisture (rain, snow, avoid the bag standing in water or water accumulation on the bag) and direct sunlight. Unpacked product cannot be stored outside under any circumstances. Product storage outside during the warm season (April 15 to September 15) is strictly prohibited. During the warm season the product cannot be stored outside under tents, because the greenhouse effect may be caused. The product cannot be exposed to temperature above 30°C. Smoking is prohibited on product storage sites. The product must be stored separately from sources of heat or flame, protected from flammable materials, reducing agents, acids, alkalis, sulfur, chlorates, chlorides, chromates, nitrates, permanganates, metal powders (in particular zinc), materials containing copper, nickel, cobalt, zinc or their alloys.

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

### 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).** 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

<table>
<thead>
<tr>
<th>Exposure mode</th>
<th>Exposure type</th>
<th>Hazardous</th>
<th>Physicochemical property that could have the greatest negative effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Systemic effect – long lasting</td>
<td>DNEL: 36 mg/m³</td>
<td>Toxicity ingested</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Systemic effect - acute</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>Local effect – long lasting</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td>Local effect – acute</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Systemic effect – long lasting</td>
<td>DNEL: 5,12 mg/kg bw/day</td>
<td>Toxicity ingested</td>
</tr>
<tr>
<td>Dermal</td>
<td>Systemic effect – acute</td>
<td>No hazard identified</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Local effect – long lasting</td>
<td>The hazard is not known</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Local effect – acute</td>
<td>No hazard identified</td>
<td></td>
</tr>
<tr>
<td>If in eyes</td>
<td>Local effect</td>
<td>Low hazard</td>
<td></td>
</tr>
</tbody>
</table>

Predicted inactive concentration(s) PNEC

Ammonium nitrate PNEC data

<table>
<thead>
<tr>
<th>Section</th>
<th>Hazardous</th>
<th>Comments / Grounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>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 &quot;Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment&quot;, assessment of the impact of water bodies is not necessary and PNEC values are not derived.</td>
<td></td>
</tr>
<tr>
<td>See water</td>
<td>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 &quot;Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment&quot;, assessment of the impact of water bodies is not necessary and PNEC values are not derived.</td>
<td></td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>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 &quot;Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment&quot;, assessment of the impact of water bodies is not necessary and PNEC values are not derived.</td>
<td></td>
</tr>
<tr>
<td>See water sediment</td>
<td>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 &quot;Guidance on information requirements and chemical safety assessment. Part B: Hazard Assessment&quot;, assessment of the impact of water bodies is not necessary and PNEC values are not derived.</td>
<td></td>
</tr>
<tr>
<td>Microorganisms in sewage treatment system</td>
<td>PNEC STP: 18 mg/l</td>
<td>Extrapolation method: exposure factor Available test data with sodium nitrate, which is similar in structure to ammonium nitrate, EC50&gt; 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.</td>
</tr>
<tr>
<td>Soil</td>
<td>No effect was observed in all eco-toxicity studies with the highest</td>
<td></td>
</tr>
</tbody>
</table>
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 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 LST 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.

<table>
<thead>
<tr>
<th>Glove material</th>
<th>Glove thickness, mm</th>
<th>Penetration time, min*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl rubber - butyl</td>
<td>0.50</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Nitrile rubber/ Nitrile latex</td>
<td>0.35</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Fluorocarbon rubber</td>
<td>n.m. 0.40</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Polychloroprene</td>
<td>n.m. 0.50</td>
<td>&gt; 480</td>
</tr>
<tr>
<td>Natural rubber/ Natural latex</td>
<td>0.50</td>
<td>&gt; 480</td>
</tr>
</tbody>
</table>
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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 nitrogen fertilizers with sulphur consisting of a mixture of ammonium nitrate and anhydrite, 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 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:** nitrogen fertilizers with sulphur 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

<table>
<thead>
<tr>
<th>Polyvinyl chloride</th>
<th>0.50</th>
<th>&gt; 480</th>
</tr>
</thead>
</table>

* Time of penetration of glove material is the time that the product in contact with the glove penetrates through it completely. The shorter the penetration time, the glove material is less resistant to the product.

9.1 **Information on basic physical and chemical properties**

(a) **Appearance:** gray or white granules at 20 °C and pressure 1013 hPa with a size of 2-5 mm and a mixture of such granules of at least 95%.

(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:** Can keep combustion.
(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 cannot 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 (D4 (20)):** (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.
(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:** >210 °C decomposition starts.
(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 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); nitrogen fertilizers with sulphur have 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.

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### SECTION 10. STABILITY AND REACTIVITY

**10.1. Reactivity**

Stable under recommended storage, transportation and handling conditions.

**10.2. Chemical stability**

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

### 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

#### 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.

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

**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:** 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).

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 (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 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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 LC$_{50}$: 447 mg/l (no guideline followed).
- **Fish (long-term):** No data.
- **Daphnia magna (short-term):** 48-h EC$_{50}$: 490 mg/l (no guideline followed, with potassium nitrate).
- **Daphnia magna (long-term):** No data.
- **Algae:** 10-d EC$_{50}$: > 1700 mg/l (seawater, no guideline followed, performed with potassium nitrate).
- **Inhibition of microbial activity:** 3-h EC$_{50}$: >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

- **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 ºC is 52 g N/kg dissolved solid/day. Nitrate degradation is fastest in anaerobic conditions. In the anaerobic transformation of nitrate into N$_2$, N$_2$O, and NH$_3$, the biodegradation rate in wastewater plant at 20 ºC is 70 g N/kg dissolved solid/day.

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

#### 12.3. Bio accumulative potential

- **Octanol-water partition coefficient (K$_{ow}$):** Not relevant as the substance is inorganic, but considered to be low (based on high water solubility).
- **Bio concentration factor (BCF):** Low potential for bioaccumulation (based on substance properties).

#### 12.4. Mobility in soil

Well soluble in water. Nitrate (NO$_3^-$) ion is extremely flexible. Ammonium (NH$_4^+$) cation adsorption to soil. Limestone and dolomite, low water solubility, they are found naturally.

- **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 nitrogen fertilizers with sulphur are 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”. Nitrogen fertilizer with sulphur waste without contamination can be used as bulk fertilizer or must be transferred to waste handling companies. Prevent waste from accessing effluent. Nitrogen fertilizer with sulphur 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.

**Waste from packages:**
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. Nitrogen fertilizer with sulphur 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 nitrogen fertilizer with sulphur 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. Proper shipping name**
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).

**14.6 Special precautions for users**
Product in big bags must be pilled 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:**
European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- 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);

**Domestic legislation (Lithuania):**
- 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 Carcinogenous and Mutagenous 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;
- 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 149 “Respiratory protective devices. Filtering half masks for protection against particles. Requirements, testing, marking”;
- LST EN 166 “Personal eye protection. Technical requirements”;
- LST EN 149 “Respiratory protective devices. Filtering half masks for protection against particles. Requirements, testing, marking”;
- LST EN 166 “Personal eye protection. Technical requirements”;
**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

**NITROGEN FERTILIZERS WITH SULPHUR**

- 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 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).

**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 nitrogen fertilizers with sulfur 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**

<table>
<thead>
<tr>
<th><strong>Revision date:</strong></th>
<th>2020.07.20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version:</strong></td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Revision No. 0</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Issuing date:</strong></td>
<td>2020.07.20</td>
</tr>
</tbody>
</table>

(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;
NITROGEN FERTILIZERS WITH SULPHUR

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 2 category;
UN – United Nations;
Cow – 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, 3 category;
PBT – Persistent, Bioaccumulative, Toxic;
PNEC(s) – Forecast(-s) no effect(-s) concentration(-s);
Explanation of product categories (PC):
PC12 – Fertilizers.
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail;
SDS – Safety Data Sheet;
Explanation of use sectors (SU):
SU21 – Private households (= general public = consumers).
SU22 – Public sector (administration, education, entertainment, services, crafts).
vPvB – very Persistent, very Bioaccumulativ.

(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);
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);
   (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]:

<table>
<thead>
<tr>
<th>Classification in accordance with Regulation (EC) No. 1272/2008</th>
<th>Classification procedure</th>
</tr>
</thead>
</table>


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 ≥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;
- 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/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.

(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, nitrogen fertilizers with sulphur 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.
ANNEX

Exposure scenarios of nitrogen fertilizers with sulphur:
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

<table>
<thead>
<tr>
<th>Use descriptors related to the life cycle stage</th>
<th>SU22</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PC12</td>
</tr>
<tr>
<td></td>
<td>PROC1/2/8a/8b/9/11/15/19</td>
</tr>
<tr>
<td></td>
<td>ERC8b/8e</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of contributing environmental scenario and corresponding ERC</th>
<th>1. Wide dispersive indoor use of reactive substances in open systems (ERC8b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>List of names of contributing worker scenarios and corresponding PROC</th>
<th>1. Use in closed process, no likelihood of exposure (PROC1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Use in closed, continuous process with occasional controlled exposure (PROC2)</td>
</tr>
<tr>
<td></td>
<td>3. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)</td>
</tr>
<tr>
<td></td>
<td>4. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)</td>
</tr>
<tr>
<td></td>
<td>5. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)</td>
</tr>
<tr>
<td></td>
<td>6. Non industrial spraying (PROC11)</td>
</tr>
<tr>
<td></td>
<td>7. Use as laboratory reagent (PROC15)</td>
</tr>
<tr>
<td></td>
<td>8. Hand-mixing with intimate contact and only PPE available (PROC19)</td>
</tr>
</tbody>
</table>

### 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
### 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

<table>
<thead>
<tr>
<th>Amounts used</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Frequency and duration of use/exposure

<table>
<thead>
<tr>
<th>Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure</th>
<th>More than 4 hours per day</th>
</tr>
</thead>
</table>

### Human factors not influenced by risk management

<table>
<thead>
<tr>
<th>Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Other given operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>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.</th>
<th>Indoors or outdoors</th>
</tr>
</thead>
</table>

### Technical conditions and measures at process level (source) to prevent release

<table>
<thead>
<tr>
<th>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)</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Technical conditions and measures to control dispersion from source towards the worker

| Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure | 1. Containment as appropriate  
2. Good standard of general ventilation  
3. Avoid splashing. Use specific dispensers and pumps specifically 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. |
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).

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

| Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant) | 1. Protecting goggles |

### 3. Exposure information and reference to its source

#### Information for contributing scenario (1)

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

#### Information for contributing scenario (2)

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

The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. 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.

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

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

### 5. Additional good practice advice beyond the REACH CSA

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

- Containment as appropriate;
- 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.
## 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  | 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) |
| and corresponding ERC                          |                                  |
| List of names of contributing consumer     | 1. Fertilizers (PC12)              |
| scenarios (2) and corresponding PC and sub- |                                  |
| product categories if applicable             |                                  |

#### 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.

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 ≥10% and <10%. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Amounts used

<table>
<thead>
<tr>
<th>Amounts used per event</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Frequency and duration of use/exposure

<table>
<thead>
<tr>
<th>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);</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Human factors not influenced by risk management

<table>
<thead>
<tr>
<th>Particular conditions of use, e.g. body parts potentially exposed; population potentially</th>
<th>Not applicable</th>
</tr>
</thead>
</table>
exposed (adults, children)

Other given operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Other operational conditions e.g. room volume, air exchange rate, outdoor or indoor use</th>
<th>Indoors or outdoors</th>
</tr>
</thead>
</table>

Conditions and measures related to information and behavioral advice to consumers

<table>
<thead>
<tr>
<th>Safety advice to be communicated to consumers in order to control exposure, e.g. technical instruction, behavioral advice;</th>
<th>Avoid splashing</th>
</tr>
</thead>
</table>

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). | 1. If ≥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)

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

The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. 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.

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

No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers/consumers for use of fertilizers:
If ≥10% ammonium nitrate: Use protecting goggles;
If <10% ammonium nitrate: No personal protection needed.

The End of Safety Data Sheet.