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

1.1 Product identifier

| Trade name     | NAC 27 N, NAC 27 N +3MgO, NAC 26 N |

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

<table>
<thead>
<tr>
<th>Use of the Substance/Mixture</th>
<th>Fertilizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium nitrate: fertilizer grade</td>
<td></td>
</tr>
</tbody>
</table>

1.3 Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Borealis L.A.T GmbH</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Peter-Strasse 25, 4021 Linz, Austria</td>
<td></td>
</tr>
<tr>
<td>Telephone:  +43 732 6915-0</td>
<td></td>
</tr>
<tr>
<td>E-mail address:  <a href="mailto:sds@borealisgroup.com">sds@borealisgroup.com</a></td>
<td></td>
</tr>
</tbody>
</table>

1.4 Emergency telephone number

+44 (0) 1235 239 670 (24h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

| Supplemental Hazard Statements | EUH210 Safety data sheet available on request |

2.3 Other hazards

None known.

Results of PBT and vPvB assessment

Not applicable (inorganic)
SECTION 3: Composition/information on ingredients

Calcium ammonium nitrate fertilizer with trace-nutriments of Mg. These products comply with European regulation 2003/2003 “EC FERTILISER”

3.2 Mixtures

Hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium nitrate</td>
<td>6484-52-2</td>
<td>Ox. Sol. 3; H272 Eye Irrit. 2; H319</td>
<td>&gt;= 70 - &lt; 80</td>
</tr>
<tr>
<td></td>
<td>229-347-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>01-2119490981-27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: Mixtures containing less than 80% ammonium nitrate are not classified as irritating to eyes (OECD 405 and OECD 437 studies done on similar mixtures). Total combustible materials in the form of carbon: equal to or less than 0.4 %.

REACH Registration Numbers:
01-2119490981-27-0023 & 01-2119490981-27-0012

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled: Move to fresh air.
Keep patient warm and at rest.
Give oxygen or artificial respiration if needed.
Seek medical advice.

In case of skin contact: Wash off with plenty of water.
Get medical attention if irritation develops and persists.

In case of eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention if irritation develops and persists.

If swallowed: Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Do NOT induce vomiting.
Get medical advice/ attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: Ingestion may provoke the following symptoms:
- Gastrointestinal disturbance
- The absorption of this product into the body may lead to the formation of methaemoglobin that, in sufficient concentration, causes cyanosis.
- Effects of repeated or prolonged skin contacts may include:
  - Discomfort
  - Inhalation:
    - Risk of delayed pulmonary oedema.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: Keep under medical supervision for at least 48 hours.
Treat symptomatically.
There is no specific antidote available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Water

Unsuitable extinguishing media:
- Dry chemical
- Foam
- Do not smother with steam or sand.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting:
- Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.
  - See chapter 10.
- Hazardous decomposition products formed under fire conditions.
- Nitrogen oxides (NOx)
- Ammonia
- Chlorine
- Hydrogen chloride
5.3 Advice for firefighters

Special protective equipment for firefighters

In the event of fire, wear self-contained breathing apparatus.
Full protective suit protecting against chemicals.

Further information

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

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

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Sweep up to prevent slipping hazard.
Avoid dust formation.
Use personal protective equipment.

6.2 Environmental precautions

Do not flush into surface water or sanitary sewer system.
Inform the responsible authorities in case of entry into waterways or drains.

6.3 Methods and material for containment and cleaning up

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

6.4 Reference to other sections

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Avoid dust formation.
Ensure adequate ventilation.
Keep away from incompatible materials.
Use only clean equipment.

Wash hands after handling.
Keep away from food, drink and animal feedingstuffs.
When using do not eat, drink or smoke.
Advice on protection against fire and explosion: Keep away from heat and sources of ignition. Keep away from combustible material.

7.2 Conditions for safe storage, including any incompatibilities

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

Further information on storage conditions: Protect from sunlight. Do not expose to temperatures exceeding 32 °C. Avoid unprotected outdoor storage. Protect from moisture.

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

On farm, ensure that the fertilizer is not stored near hay, straw, grain, diesel oil, etc. When stored loose, take particular care to avoid mixing with other fertilizers.

Packaging material:

Suitable material: Plastics, Stainless steel, Aluminium
Unsuitable material: Copper, Zinc

7.3 Specific end use(s)

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Engineering measures
Avoid dust formation.
Provide adequate ventilation.
Before working with fire and hot materials on containers and apparatus remains of products must be deleted through efficient cleaning with water.

Personal protective equipment
Eye protection: Safety glasses
Hand protection
  Material : Rubber or plastic gloves
  Material : Leather gloves

Remarks : For prolonged or repeated contact use protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Respiratory protection : Dust safety masks are recommended when the dust concentration is more than 10 mg/m3.

Respiratory protection complying with EN 143 / EN 149.

Filter type : P1 filter

Environmental exposure controls
General advice : Do not flush into surface water or sanitary sewer system. Inform the responsible authorities in case of entry into waterways or drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
  Appearance : solid
  Colour : Varies depending on the formulation:
  light grey, light brown
  Odour : odourless
  Odour Threshold : Not applicable
  pH : 6 - 8
  Melting range : 120 - 180 °C
  Boiling point : Decomposes below the boiling point.
Flash point: Not applicable, (inorganic)
Flammability (solid, gas): The product is not flammable.
Upper explosion limit: Not applicable
Lower explosion limit: Not applicable
Vapour pressure: Not applicable
Density: no data available
Bulk density: 950 - 1.030 g/cm³
Solubility(ies): partly soluble
Water solubility: 1.870 g/l (Ammonium nitrate) (20 °C)
Partition coefficient: n-octanol/water: Not applicable (inorganic)
Auto-ignition temperature: Not applicable
 Decomposition temperature: 130 - 210 °C
Viscosity: Not applicable (solid)
Explosive properties: Ammonium nitrate with less than 0,4% of organic carbon is not classified as an explosive under the UN tests (series 1 and 2)
Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.
Oxidizing properties: The substance or mixture is not classified as oxidizing.

9.2 Other information
no data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No dangerous reaction known under conditions of normal use.
10.2 Chemical stability
Stable under recommended storage conditions.
Repeated heating and cooling above and below 32°C the product becomes porous through the change of crystalline structure, coupled with increased dust building and increased volume of prills. This can lead to a breaking of bags and to product withdrawal.

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

10.4 Conditions to avoid
Conditions to avoid: Temperature > 130 °C
Risk of explosion if heated under confinement.
Keep away from incompatible materials.
Exposure to air or moisture over prolonged periods.

10.5 Incompatible materials
Materials to avoid: Combustible material
Reducing agents
Strong acids and strong bases
Alkalis
sulphur
Chlorates
Chromates
Nitrites
permanganates
Powdered metals
Copper
Nickel
Cobalt
Zinc

10.6 Hazardous decomposition products
Nitrogen oxides (NOx), Ammonia, Chlorine, Hydrogen chloride

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity
Not classified based on available information.
Components:
Ammonium nitrate:
Acute oral toxicity: LD50 (Rat): 2.950 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50: > 88.8 mg/l
Method: No information available.

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

Skin corrosion/irritation
Not classified based on available information.

Product:
Effects of repeated or prolonged skin contacts may include:
Discomfort

Components:
Ammonium nitrate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation
Not classified based on available information.

Components:
Ammonium nitrate:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irritating to eyes.

Respiratory or skin sensitisation
Skin sensitisation: Not classified based on available information.
Respiratory sensitisation: Not classified based on available information.

Components:
Ammonium nitrate:
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.
Test substance: Calcium ammonium nitrate
Read-across (Analogy)

Germ cell mutagenicity
Not classified based on available information.

Components:
Ammonium nitrate:
Genotoxicity in vitro
  Test Type: Ames test
  Method: OECD Test Guideline 471
  Result: negative
  Test substance: Ammonium calcium nitrate

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

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

Carcinogenicity
Not classified based on available information.

Components:
Ammonium nitrate:
Remarks: No significant adverse effects were reported

Reproductive toxicity
Not classified based on available information.

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

STOT - single exposure
Not classified based on available information.

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

STOT - repeated exposure
Not classified based on available information.

Components:
Ammonium nitrate:
Species: Rat
NOAEL: 1.500 mg/kg
Application Route: Oral
Exposure time: 28 d
Method: OECD Test Guideline 422
Test substance: Potassium nitrate

Species: Rat
NOAEL: 256 mg/kg
Application Route: Oral
Exposure time: 364 d
Method: OECD Test Guideline 453
Test substance: Ammonium sulphate

Species: Rat
Application Route: Inhalation
Exposure time: 14 d
Method: OECD Test Guideline 412

Aspiration toxicity
Not classified due to lack of data.

Components:
Ammonium nitrate:
no data available

SECTION 12: Ecological information

12.1 Toxicity

Components:
Ammonium nitrate:
Toxicity to fish: LC50 (Cyprinus carpio (Carp)): 447 mg/l
Exposure time: 48 h
Test Type: Short term

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 490 mg/l
Exposure time: 48 h
Test Type: Short term
Test substance: Potassium nitrate
Remarks: Fresh water

Toxicity to algae: EC50: > 1.700 mg/l
Exposure time: 10 d
Test substance: Potassium nitrate
Remarks: Marine water

Toxicity to bacteria: EC50: > 1.000 mg/l
Exposure time: 180 min  
Test Type: Respiration inhibition of activated sludge  
Test substance: Sodium nitrate  
Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity)  
Remarks: study scientifically unjustified

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

12.2 Persistence and degradability

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

**Components:**  
**Ammonium nitrate:**  
Biodegradability  
Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

**Product:**  
Bioaccumulation  
Remarks: Bioaccumulation not expected.

**Components:**  
**Ammonium nitrate:**  
Bioaccumulation  
Remarks: Bioaccumulation is unlikely.

12.4 Mobility in soil

**Product:**  
Mobility  
Remarks: Not expected to adsorb on soil.

**Components:**  
**Ammonium nitrate:**  
Mobility  
Medium: Water  
Remarks: completely soluble

Medium: Soil  
Remarks: (NO3-), Not expected to adsorb on soil.
12.5 Results of PBT and vPvB assessment

**Product:**

**Assessment** : Not applicable. (inorganic).

12.6 Other adverse effects

**Product:**

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

---

**SECTION 13: Disposal considerations**

13.1 Waste treatment methods

**Product** : Can be landfilled or incinerated, when in compliance with local regulations.

Do not allow product to reach ground water, water bodies or sewage system.

Do not dispose of together with household waste.

European waste code:

02 01 09 (agrochemical waste other than those mentioned in 02 01 08)

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

---

**SECTION 14: Transport information**

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good
14.4 Packing group
   Not regulated as a dangerous good

14.5 Environmental hazards
   Not regulated as a dangerous good
   Not regulated as a dangerous good

14.6 Special precautions for user
   Remarks : No specific instructions needed, Not dangerous goods in the meaning of ADR/RID, ADNR, IMDG-Code, ICAO/IATA-DGR

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
   Remarks : No data is available on the product itself.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
   REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Ammonium nitrate
   Shall not be supplied to non-professional users.

   Not applicable

   Other regulations : Regulation (EC) No 2003/2003 relating to fertilizers
   Annex II

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

SECTION 16: Other information

Full text of H-Statements
   H272 : May intensify fire; oxidizer.
H319 : Causes serious eye irritation.

**Full text of other abbreviations**

Eye Irrit. : Eye irritation
Ox. Sol. : Oxidizing solids

**Further information**

Other information : Issued according to Regulation (EC) No 1907/2006, Annex II, and its amendments. Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Issuer : Borealis, Group Product Stewardship / Mikaela Eriksson.

Sources of key data used to compile the Safety Data Sheet : Chemical Safety Report, Ammonium Nitrate. FARM REACH Consortium, 2015 EFMA / Fertilizers Europe Guidance documents

**Disclaimer**

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

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

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

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

Use: Professional use, Formulation

Chemical product category: PC12: Fertilizers

Process categories:
- PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
- PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
- PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
- PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- PROC15: Use as laboratory reagent
- PROC19: Hand-mixing with intimate contact and only PPE available

Environmental Release Categories:
- ERC2, ERC8b, ERC8e: Formulation of preparations, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems

Activity:
- Blending with e.g. compost, substrates and pesticides,
- Packaging, dilution, suspension, Loading and unloading (bulk or bags), Equipment cleaning and maintenance

Further information:
- A qualitative approach was used to conclude safe use for workers.\"20 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.\"20 The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. See sections 7 and 8 of this safety data sheet.

Use: Professional use, Distribution

Chemical product category: PC12: Fertilizers

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

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

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

Environmental Release Categories: ERC2, ERC8b, ERC8e: Formulation of preparations, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems

Activity: Packaging, Loading and unloading (bulk or bags), Equipment cleaning and maintenance

Further information: A qualitative approach was used to conclude safe use for workers. 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. The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance/mixture. See sections 7 and 8 of this safety data sheet.

Use: Industrial use, Formulation

Chemical product category: PC12: Fertilizers

Process categories:

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

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

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

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

PROC15: Use as laboratory reagent

Environmental Release Categories: ERC2: Formulation of preparations

Activity: Blending with e.g. compost, substrates and pesticides, Packaging, dilution, suspension, Loading and unloading (bulk or bags), Equipment cleaning and maintenance
Further information: A qualitative approach was used to conclude safe use for workers. 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. The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. See sections 7 and 8 of this safety data sheet.