Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY	
1.1 Product identifier	
Trade name:	Ammonium Nitrate minimum 34.4 % N
Other names:	Ammonium Nitrate
Chemical name:	Nitric acid ammonium salt
INDEX # as listed in Annex 6, Table 3.1 of the CLP Regulation:	Not listed in an Annex VI / CLP.
CAS/EC number:	6484-52-2/229-347-8
REACH registration no(s):	01-2119490981-27-0027
UFI #	H300-900U-F002-G6K5
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Exposure Scenarios (ES)/Uses:	ES-1(M): Production of the substance (continuous and batch synthesis), including processing, storage and control. ES-2(F): Formulation of chemicals and mineral fertilizers – formulation of mixtures. ES-3(IU-1): Industrial use as an intermediate product (in a chemical reaction), incl. sampling, loading, filling, transfer, packaging, quality control - industrial use leading to the production of another substance (use as an intermediate reagent). ES-4(IU-2): Industrial use as a process aid, including sampling, loading, filling, transfer, packaging, quality control - industrial use as a reactive aid. ES-5(PU-1): Use by professional workers (outdoors or indoors in open reactive substance systems). ES-6(PU-2): Proffesional use: Outdoor use – direct use of solid fertilizers in the soil; surface scattering ES-10 (CU-1): Consumer use: Outdoor use – direct use of solid fertilizers in the soil; surface scattering
Uses advised against:	**Use of Ammonium nitrate containing fertilizers if weight of nitrogen in relation to ammonium nitrate is equal or more than 16 %. Consumer products may contain up to 46% ammonium nitrate.**
1.3 Details of the supplier of the safety data sheet	
Manufacturer/ Supplier	AGROPOLYCHIM JSC BULGARIA Industrial zone 9160, DEVNYA Tel: +359 / 519 97 526,511 URL website: www.agropolychim.bg
Person responsible for the Safety Data	Eng. Miroslava Tsvetkova AGROPOLYCHIM JSC

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Sheet (with e-mail address)	BULGARIA Industrial zone 9160, DEVNYA Tel.: +359 / 519 97 419 Email: m.tsvetkova@agropolychim.bg
1.4 Emergency telephone number	
Emergency phone number in Bulgaria – Toxicology Clinique "Pirogov" Medical Institute: International emergency phone number	+359 2 9154 233; +359 2 9154 409 (24 hours / day) Toxicology Clinique, Pirogov National Institute, Sofia 112

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification based on self-classification. The substance Ammonium nitrate is not included in Annex VI, Table. 3.1 of Regulation 1272/2008 (CLP).

2.1.1. Classification according to Regulation 1272/2008 (CLP)

Oxidizing solids, Hazard category 3 (Oxid. Solid3), H272
Serious eye irritation, Hazard category 2 (Eye Irrit. 2), H319

2.1.2 Additional information

For the full text of the hazard statements: see SECTION 16.

2.2 Label elements

Labelling in accordance with Regulation 1272/2008 (CLP)

Hazard pictogram(s):		GHS07 GHS03
Signal word		Warning
Hazard statement(s):	H272 H319	Cat.3 - May intensify fire; oxidiser. Cat.2 - Causes serious eye irritation.

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Precautionary statement(s):	P210 P220 P370+P378 P264 P280 P305+P351+P338 P337+P313 P501:	Keep away from heat/ sparks/open flames/hot surfaces. - No smoking. Keep/Store away from clothing and combustible materials. In case of fire: Use water for extinction. Wash exposed parts thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. In case of prolonged eye irritation, seek medical attention. Dispose of contents/container ин accordance with local/regional/national /international regulations.
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.
Endocrine disrupting properties:		Data lacking
Nanoforms:		This product does not contain nanoforms or nanoform-containing substances.
Other hazards identifications:		When wet, a slippery surface is formed.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Mixture:

The product is produced with an inorganic additive. Usually the product is to be treated with anticaking agent different commercial grades. This product is relevant with Fertilizer Regulation (EU) 2019/1009

Chemical name/REACH registration number	**CAS no.**	**EC no.**	**Classification according to Regulation (EC) 1272/2008 (CLP)**	**Typical conc.**	**SCL Limits, M-Coeff. ATE-Value; Type**
Nitric acid ammonium salt: 01-2119490981-27-0027	6484-52-2	229-347-8	May intensify fire; oxidant -H272, cat. 3 Causes serious eye irritation. - H319, cat. 2	98 – 100	No Identified values (1)*

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Magnesium nitrate: 01-2119491164-38-0071	10377-60-3	233-826-7	May intensify fire; oxidant -H272, cat. 3	1 – 2	No identified values (1)*

Type

[1] Substance classified as a physical hazard, health hazard and environmental hazard.

[2] Substance with occupational exposure limits.

[3] The substance meets the criteria for PBT according to Regulation (EC) № 1907/2006, Annex XIII.

[4] The substance meets the criteria for very persistent and very bioaccumulative (vPvB) in accordance with Regulation (EC) № 1907/2006, Annex XIII.

[5] Substance of very high concern.

For the full text of the hazard statements, see SECTION 16

4. FIRST-AID MEASURES

4.1 Description of first aid measures. The speed of response is important. In case of unconsciousness, place the victim in a stable lateral position. Provide a shower and eye wash near the workplace.

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.
Skin contact:	Wash affected skin area with plenty of water and soap for at least 15 minutes thoroughly while removing contaminated clothing and shoes. Seek medical advice if irritation develops and persists
Ingestion:	**Do not induce vomiting**! Never give anything by mouth to an unconscious person! Seek medical attention.
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. Do not use mouth-to-mouth respiration. Seek medical advice immediately when vapours are intensively inhaled.

4.2 Most important symptoms and effects

Acute effects	Eye irritation, cough and dryness. Skin redness
Delayed effects	Not known

4.3 Indication of any immediate medical attention and special treatment needed

To the doctor's attention: Treat symptomatically. In case of ingestion, contact a specialist immediately. Delayed effects may occur in case of fire exposure involving the product.

5. FIRE-FIGHTING MEASURES

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

5.1 Extinguishing media	
Small fire:	**If involved in fire**: Finely sprayed water. **If not involved in fire**: Suitable media for materials involved in fire.
Unsuitable media:	Chemical fire extinguishers, foam, fire blanket, sand.
5.2 Special hazards arising from the substance or mixture	
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, NO2 etc.), ammonia (NH3), amines.	
5.3 Advice for firefighters In case of fire, wear personal protective equipment and chemical protective clothing. Use a polyvalent filter. In case of ignition indoors - use an oxygen-insulating gas mask. Don't dispose in a sewer!	
6. ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures Avoid creating dusty conditions and prevent wind dispersal. Avoid contact with eyes, skin, and clothing. Use suitable protective equipment. Keep away from sources of ignition.	
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 Vacuum or sweep up and place into suitable labelled containers for recovery or disposal. Clean up affected area with a large amount of water. Do not collect spilled material in sawdust or other combustible material. Prevent formation of dust clouds. Residual trace can be wiped away.	
6.4 Reference to other sections See section 8 for personal protective equipment and section 13 for waste disposal.	
7. HANDLING AND STORAGE	
7.1 Precautions for safe handling	
Technical measures/ Precautions:	Use with adequate ventilation. Local exhaust ventilation should be provided. Avoid contact with eyes, skin and clothing. Avoid creating dusty conditions and prevent wind dispersal. Keep away from sources of ignition (spark or flame). Avoid contamination by any source including metals, dust and organic materials. Keep away from moisture.
General occupation hygiene:	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	
Technical measures/ Storage conditions:	In case of indoor storage, use with adequate ventilation. Avoid contact

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	with eyes, skin and clothing. Avoid creating conditions of dust and do not allow scattering by the wind. Keep away from sources of ignition. Do not store fertilizer in the field near hay, straw, grain, fuels and hydrocarbon-based lubricants, etc. Do not store in direct sunlight and under conditions that allow the occurrence of thermal phases / large temperature fluctuations / to avoid destruction of the product granules. Storage temperature not higher than 30 ° C. Store in piles as their maximum size complies with national and regional legal regulations. Provide a distance for quick access between the piles. Do not store together with other products in the same pile. To comply with the requirements of the Ordinance on the procedure and manner of storage of hazardous chemical substances and mixtures Packaging materials: Stainless steel (304). Synthetic material. Non suitable: Zinc, Copper
7.3 Specific end uses:	See exposure scenarios attached to this Safety Data Sheet.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION	
8.1 Control parameters	
Regulated occupational exposure limit values:	There are no limit values for the content of the substance in the working environment according to Ordinance 13 / 30.12.2003. The limit values for particulate matter in the working environment, according to Ordinance 13 / 30.12.2003 are 10 mg / m3. The limit values for Insoluble Powder containing less than 2% free crystalline silica in the respirable fraction (not containing fibrous particles), not specified in the application of Ordinance 13 / 30.12.2003 are: Inhalable fraction 10.0 mg / m3 Respirable fraction 4.0 mg / m3
Hazard conclusions, following from performed CSA:	

Exposure pattern	**Type of effects**	**Derived No Effect Level (DNEL)**	
		Workers	**Consumers**
Oral[1]	Chronic effects - systemic	Not applicable	2.56 mg/kg bw/day
Dermal[1]		5.12 mg/kg bw/day	2.56 mg/kg bw/day
Inhalation[1]		36 mg/m^3	8.9 mg/m^3
	PNEC of sewage system:		18 mg/dm^3

[1]: As an acute toxicity hazard leading to Classification and Labelling of the substance has not been identified, the long-term DNEL is considered sufficient to ensure that effects from acute exposure to the substance do not occur (in accordance with ECHA Guidance

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	on information requirements and chemical safety assessment: Chapter R.8: Characterisation of dose [concentration]-response for human health, May 2008 and Part B: Hazard Assessment, Draft new chapter B.8 Scope of Exposure Assessment, March 2010).
8.2 Exposure controls	
8.2.1. Appropriate engineering control: Basic general ventilation (1-3 air changes per hour). Local exhaust ventilation: not required. In addition, an eyewash facility and a safety shower for facilities storing or utilizing this material is good industrial practice.	
8.2.2. Individual protection measures, such as personal protective equipment	
Respiratory protection:	Dust masks or respirators with suitable filter (recommended EN 143, 149, filters R2, P3).
Dermal protection:	Long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
Eye protection:	Chemical goggles (EN166) or face shield
Body protection:	Protective work clothes
Hygiene measures:	Wash your hands thoroughly to the elbows and face after working with this product, before eating, smoking and going to the toilet, as well as at the end of the working day. Wash contaminated clothing before reuse.
8.2.3. Environmental exposure controls: Dispose of rinse water in accordance with local and national regulations.	
9. PHYSICAL AND CHEMICAL PROPERTIES	
9.1 Information on basic physical and chemical properties	
a) Physical state:	Granules at 20^0C and 101.3 kPa
b) Colour	White
c) Odour:	Odourless
d) Melting/freezing temperature:	At 101,3 кPa: 169.6 – 169.7ºC; (decomposition starts at 210^0C)
e) Boiling temperature/boiling range	Not applicable, decomposes before boiling
f) Flammability:	Non-flammable (based on molecular structure).
g) Lower and upper explosive limits:	Ammonium nitrate with less then 0.2% of combustible substances (UN 1942) is not classified as an explosive.
h) Flash point:	Not relevant, as the substance is an inorganic solid.
i) Autoignition point	Not relevant, as the substance is an inorganic solid. Based on structure, use and transport information, ammonium nitrate is not expected to be a self-heating substance
j) Decomposition temperature	Not relevant, as the substance is an inorganic solid.
k) pH of aqueous solution / 20^0C (10 g / 100 cm^3)	> 4.5

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

l) Kinematic viscosity	Not relevant, as the substance is an inorganic solid.
m) Solubility in water	> 100 g/l at 20ºC
n) Partition coefficient n - octanol/water:	Not relevant as the substance is inorganic, considered to be low (based on high water solubility)
o) Vapour pressure	Based on the high melting temperature (170°C) and decomposition at 210°C, the vapour pressure of the solid substance at room temperature is considered to be very low. Calculation of the vapour pressure is not possible for an inorganic substance
p) Relative density (D4(20)):	1.72 at 20^0C
q) Relative density of vapours:	Not relevant, as the substance is an inorganic solid.
r) Characteristics of the particles	White oval granules with size between 1-5 mm
s) Oxidizing properties:	Oxidizer
t) Specific conductivity:	No data
u) Surface tension:	The surface tension study was not performed because the substance is inorganic.

9.2 Other information

9.2.1 Information related to physical hazard classes

This product has oxidizing properties.

9.2.2 Other characteristics regarding safety

Highly hygroscopic product.

10. STABILITY AND REACTIVITY

10.1 Reactivity

Unstable at high temperature. Strong oxidizing agent and reacts violently with combustible materials and reducing agents (see section 10.5).

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

Decomposes on heating - danger of release of products (see Section 10.5).

10.4 Conditions to avoid

Decomposes on heating. Avoid enclosed spaces, contact with incompatible materials, exposure to atmospheric conditions.

10.5 Incompatible materials

Reducing agents, mineral acids and bases, metal dust, combustible materials, chromates, zinc, copper and copper alloys, chlorates, cobalt-containing alloys. Do not mix with hard urea.

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, NO2).

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

11. TOXICOLOGICAL INFORMATION	
11.1 Information on the hazard classes defined in Regulation (EC) No. 1272/2008	
11.1.1 ACUTE TOXICITY	
Acute oral toxicity:	Rat LD50: 2950 mg / kg bw (OECD 401); non toxic
Acute dermal toxicity:	Rat LD50: 5000 mg / kg bw (OECD 402); non toxic
Acute inhalation toxicity:	Not applicable; non toxic
11.1.2 LOCAL EFFECTS	
Skin Corrosion / skin irritation:	Rabbit: non-irritating (OECD 404) This study does not need to be carried out as an acute dermal toxicity study shows no skin irritation up to the relevant limit dose level (2000 mg/kg body weight)
Serious eye damage / eye irritation:	Rabbit: irritating (OECD 405) Category 2A (eye irritant) based on GHS criteria - Classified as category 2 according to Regulation (EC) No. 1272/2008 an in vitro eye irritation study does not need to be conducted because adequate data from an in vivo eye irritation study are available.
Respiratory / Skin sensitization	Mice: not sensitizing (OECD 429)
11.1.3 OTHER ADVERSE EFFECTS	
Germ cell mutagenicity:	**In vitro:** No adverse effect observed (negative) **In vivo:** No adverse effect observed (negative)
Carcinogenicity:	Non carcinogenic (OECD 453, with ammonium sulphate).
Reproductive toxicity:	Ingestion 28 days NOAEL ≥ 920 mg / kg body weight per day, rats (OECD 422, with potassium nitrate).
STO (specific toxicity to certain organs) — single exposure	**Inhalation - local effects:** No study available **Inhalation - local effects:** No study available
STOT (specific toxicity to certain organs) — repeated exposure;	**Via oral route - systemic effects:** No adverse effect observed (NOAEL: 256 mg/kg bw/day) (subacute; rat) **Dermal - systemic effects:** No study available **Inhalation - systemic effects:** No adverse effect observed (NOAEC: 185 mg/m³) (subacute; rat)
Aspiration hazard:	This product is solid and this hazard is not relevant.
11.2 Information on other hazards	
11.2.1 Endocrine-disrupting properties	
Data Lacking	
11.2.2 Other information No other effects are known	
12. ECOLOGICAL INFORMATION	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

12.1 Toxicity	
Fish (acute toxicity):	48-h LC50 of 346 mg NO3-/L added as NH4NO3 for mortality of the fish Cyprinus carpio in fresh water. The lowest reliable acute toxicity for 96h-LC50 was 10359 mg NO3-/L for the effect of NaNO3 on the fish Hexagrammos otakii in marine water.
Fish (long-term toxicity): NOEC- fresh water NOEC- marine water PNEC – fresh water PNEC – marine water	Reliable data from studies where test concentrations have been verified are available for five freshwater and one marine fish species and range as follows: • Between a 7-day NOEC for the effect of KNO3 on Gobiocypris rarus growth of 88 mg NO3-/L • 11-day NOEC for the effect of NaNO3 on Pimephales promelas hatching of 3175 mg NO3-/L. • 7-day NOEC of 88.4 mg NO3-/L for growth of Gobiocypris rarus • 30-day NOEC of 1186.9 mg NO3-/L for growth of Notropis topeka • The average EC10 and NOEC values for the most sensitive endpoint, i.e. survival, of Pimephales promelas, amounting to 656.2 mg NO3-/L (mean 30-d NOEC of 256.9 mg NO3-/L and 7-d LC10 values of 345.4, 1252.0, and 1669, 6 mg NO3-/L) • 42-day NOEC of 279.2 mg NO3-/L for growth and biomass of Psetta maxima
Aquatic invertebrates (acute toxicity): Fresh water Marine water	Considering only studies where nitrate concentrations were measured in the test medium, the lowest reliable EC50 values for acute toxicity were as follows: 48-h EC50 of 340 mg NO3-/L, for freshwater on motility of the invertebrate Ceriodaphnia silverstrii. 96-h LC50 of 496 mg NO3-/L on the crab Portunus pelagicus.
Aquatic invertebrates (long-term toxicity): PNEC- fresh water PNEC-marine water	A total of chronic toxicity data were extracted for 10 different freshwater invertebrates. The NOEC and EC10 values ranged between 13 and 1585 mg NO3-/L for the lowest value on growth of Chironomus dilutus after 10 days of exposure, and the highest value obtained on reproduction of Daphnia magna exposed for 7 days. Summarized chronic toxicity data for 2 different marine invertebrates. The reliable NOEC values ranged between 23 and 1935 mg NO3-/L with the lowest value on the weight of Farfantepenaeus brasiliensis after 40 days of exposure, and the highest value on the mortality of Litopenaeus vannamei exposed for 42 days.
Algae (acute toxicity):	72-h NOEC of 71 mg NO3-/L on growth rate of the freshwater alga Pseudokirchneriella subcapitata.

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	10-d NOEC on growth rate of ten saltwater diatoms was 418.5 mg NO3-/L. EC50 for growth rate was >1048 mg NO3-/L.
Algae (long-term toxicity)	10-d NOEC on the growth rate of ten saltwater diatoms was 418.5 mg NO3-/L. EC50 for growth rate was >1048 mg NO3-/L.
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 20ºC 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_2O and NH_3, the biodegradation rate in wastewater plant at 20ºC is 70 g N/kg dissolved solid /day.
Hydrolysis:	No hydrolysable group is present, will completely dissociate into ions.
12.3 Bioaccumulative potential	
Octanol-water partition coefficient (K_{ow}):	Not relevant as the substance is inorganic, but considered to be low (based on high water solubility)
Bioconcentration factor (BCF):	Low potential for bioaccumulation (based on substance properties).
12.4 Mobility in soil	
Adsorption coefficient:	Low potential for adsorption (based on substance properties).
12.5 Results of PBT and vPvB assessment In accordance with REACH Annex XIII, PBT assessment does not apply as this substance is an inorganic substance. PBT assessment does not apply.	
12.6 Endocrine disrupting properties No available data for endocrine disrupting properties.	
12.7 Other adverse effects Not known. Follow the relevant identified uses and see uses against.	
13. DISPOSAL CONSIDERATIONS	
Waste from residues:	In accordance with local and national regulations, disposed by landfill or incineration. Controlled biodegradation in waste water treatment is possible. Don't allow product disposal in the sewage system and send waste waters for treatment. Disposal of this product must always be carried out in accordance with the requirements of National waste management legislation.
Waste code: **European waste catalogue (EWC)**	06 10 02* (wastes containing hazardous substances)

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Container:	Containers should be cleaned by appropriate method and then re-used or disposed by landfill or incineration as appropriate, in accordance with local and national regulations. Do not remove label until container is thoroughly cleaned.
14. TRANSPORT INFORMATION	
UN Number:	ADR/RID: UN2067 ADN/ADNR: UN2067 IMDG: UN2067 ICAO/IATA: UN2067
Proper shipping name:	Ammonium nitrate, based fertilizer
Transport hazard classes:	ADR/RID: 5.1 ADN/ADNR: 5.1 IMDG: 5.1 ICAO/IATA: 5.1
Packaging group:	ADR/RID: III ADN/ADNR: III IMDG: III
Label ADR/RID: Special precautions: Transport in bulk, Annex II / MARPOL / IBC Code	 Hazard identification number: 50. Packing group: III Limited quantity: LQ12. Classification code: O2; Hazard class: 5.1 Approved transport: B; Tunnel restriction code: E IMDG: EmS codes: F-H, S-Q IMSBC code – Group B
15. REGULATORY INFORMATION	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

<table>
<tr><td>15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:</td><td>Regulation (EC) 1907/2006 (REACH)
Fertilizer Regulation (EU) 2019/1009
Directive 2012/18/EC dated 4.07.2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (SEVEZO III): listed in Part 2 of Appendix 1 as ammonium nitrate (1250/5000): fertilizer grade. It refers to simple and complex fertilizers, ammonium nitrate based, that meet the requirements of EU Regulation for fertilizing products, and the nitrogen content as a result of ammonium nitrate is:
• more than 24,5% (by weight), except for mixtures of simple fertilizers based on ammonium nitrate with dolomite, limestone and / or calcium carbonate with a purity of at least 90%; more than 15,75% (by weight) for mixtures of ammonium nitrate and ammonium sulphate;
• more than 28% (28% by weight) nitrogen content due to the presence of ammonium nitrate corresponds to 80% ammonium nitrate) for mixtures of simple fertilizers based on ammonium nitrate with dolomite, limestone and / or calcium carbonate with purity at least 90%.
<table>
<tr><td rowspan="2">Dangerous subst.</td><td colspan="3">Concentration limits, t</td></tr>
<tr><td>CAS #</td><td>Low hazard potential</td><td>High hazard potential</td></tr>
<tr><td>Ammonium nitrate</td><td>6484-52-2</td><td>1250</td><td>5000</td></tr>
</table>
Regulation for Classification, Labeling and Packaging (CLP) 1272/2008.</td></tr>
<tr><td>15.2 Chemical safety assessment:</td><td>In accordance with REACH Article 14, a Chemical Safety Assessment has been carried out for this substance.</td></tr>
<tr><td>15.3 Regulation 2019/1148 amending Regulation EC №98/2013 on a marketing and use of explosive precursors harmonized rules across Europe</td><td>Ammonium nitrate with concentration of nitrogen above 16% is under the scope of Appendix 1 with code 3102 30 10 (water solution) and 3102 30 90 (others). Purchasing, handling and storage from individual consumer is strictly prohibited!</td></tr>
<tr><td colspan="2">16. OTHER INFORMATION</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td colspan="2">Classification in accordance with Regulation 1272/2008, as listed in Annex VI:

None.
Classification in accordance with Regulation 1272/2008, by self-classification based on the performed CSA:

May intensify fire; oxidiser. (H272), cat.3
Causes serious eye irritation (H319), cat.2</td></tr>
<tr><td>Version:</td><td>12</td></tr>
<tr><td>Revision date:</td><td>June, 2024</td></tr>
<tr><td>Previous revision date:</td><td>September, 2022</td></tr>
</table>

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Release info:	Section 1.2,11.1, 12.1; **Annex**- Exposure Scenario
Created/Revised by:	"AGROPOLYCHIM"AD, Production Department
Abbreviations and acronyms	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road EC: European Community EN: European standard ERC: Category for release into the environment EU: European Union UN Number: United Nation number ICAO: International Civil Aviation Organization IMDG: International Maritime Regulations for the Transport of Dangerous Goods by Sea IATA: International Air Transport Association LC50: Medium lethal dose EC50: Effect Dose DNEL: Predictable no-effect level NOEC- No Observed Effect Concentration NOAEC / NOAEL: Concentration / level of unobserved adverse effect ATE- Acute Toxicity Estimate SCL- Specific concentration limit OECD: Organization for Economic Co-operation and Development PBT: Persistence, bioaccumulation, toxicity vPvB: High persistence and strong bioaccumulation PNEC: Predictable no-effect exposure concentration CSA: Chemical Safety assessment PROC: Process category SU: Sector of use PU- Professional use CU- Consumer use IU- Industrial use F- Formulation M-Manufacture ES- Exposure scenario

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

ANNEX

1. Exposure scenario 1: Manufacture - Manufacturing of the substance (continuous and batch synthesis), including handling, storage and control

Environment contributing scenario(s):		
CS 1	Manufacturing of the substance - no STP	ERC 1
Worker contributing scenario(s):		
CS 3	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC 1
CS 4	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC 2
CS 5	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 6	Chemical production where opportunity for exposure arises	PROC 4
CS 8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC 8b
CS 10	Tabletting, compression, extrusion, pelletisation, granulation	PROC 14
CS 11	Use as laboratory reagent	PROC 15
CS 12	Manual maintenance (cleaning and repair) of machinery	PROC 28

1.1. Env CS 1: Manufacturing of the substance - no STP (ERC 1)

1.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 3.84E3 tonnes/day
• Annual use amount at site: <= 1.4E6 tonnes/year
• Number of emission days per year: = 365 days per year
Conditions and measures related to biological sewage treatment plant
• Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason) *Waste disposal according to national/local legislation is sufficient.*
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1E6 m3/day
• Discharge rate of effluent: >= 1E5 m3/day

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

1.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 1.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	Estimated release factor	**Release factor before on site RMM:** 0.25% **Release factor after on site RMM:** 0.25% **Local release rate:** 9.59E3 kg/day **Explanation:** Fertilizers Europe Environnemental Survey – year 2020
Air	Measured release rate	**Release factor after on site RMM:** 7.01E-3% **Local release rate:** 268.8 kg/day **Explanation:** Large Volume Inorganic Chemicals (European Commission, August 2007) – Ammonia, Acids and Fertilisers - Table 7.5 - Emission to air from the production of NPK fertilizers
Non agricultural soil	Estimated release factor	**Release factor after on site RMM:** 0% **Explanation:** No direct release to soil.

1.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 1.2. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 14.98 mg/L	RCR = 0.937
Sediment (freshwater)	**Local PEC:** 72.83 mg/kg dw	RCR = 0.937
Marine water	**Local PEC:** 1.576 mg/L	RCR = 0.099
Sediment (marine water)	**Local PEC:** 7.659 mg/kg dw	RCR = 0.099
Sewage Treatment Plant	**Local PEC:** 0 mg/L	RCR < 0.01

1.2.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 1.3. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 7.521 mg/L	RCR = 0.47
Sediment (freshwater)	**Local PEC:** 36.54 mg/kg dw	RCR = 0.47
Marine water	**Local PEC:** 0.742 mg/L	RCR = 0.047
Sediment (marine water)	**Local PEC:** 3.607 mg/kg dw	RCR = 0.047
Sewage Treatment Plant	**Local PEC:** 12.5 mg/L	RCR = 0.74

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

1.2. Worker CS 3: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)

1.2.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.2.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.3. Worker CS 4: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

1.3.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.3.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.4. Worker CS 5: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

1.4.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.4.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.5. Worker CS 6: Chemical production where opportunity for exposure arises (PROC 4)

1.5.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.5.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.6. Worker CS 8: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

1.6.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.6.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.7. Worker CS 10: Tabletting, compression, extrusion, pelletisation, granulation (PROC 14)

1.7.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.7.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.8. Worker CS 11: Use as laboratory reagent (PROC 15)

1.8.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

1.8.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

1.9. Worker CS 12: Manual maintenance (cleaning and repair) of machinery (PROC 28)

1.9.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	

1.9.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Risk characterisation

Qualitative risk characterisation (Eye, local):

2. Exposure scenario 2: Formulation or re-packing - Formulation of chemicals and fertilizers

Product category formulated: PC 12: Fertilizers

Environment contributing scenario(s):		
CS 1	Formulation into mixture - no STP	ERC 2
Worker contributing scenario(s):		
CS 4	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC 1
CS 5	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC 2
CS 6	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 7	Chemical production where opportunity for exposure arises	PROC 4
CS 10	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC 8b
CS 13	Tabletting, compression, extrusion, pelletisation, granulation	PROC 14
CS 14	Use as laboratory reagent	PROC 15
CS 15	Manual maintenance (cleaning and repair) of machinery	PROC 28

2.1. Env CS 1: Formulation into mixture - no STP (ERC 2)

2.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 2.47E3 tonnes/day
• Annual use amount at site: <= 9E5 tonnes/year
• Number of emission days per year: = 365 days per year
Conditions and measures related to biological sewage treatment plant
• Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason) *Waste disposal according to national/local legislation is sufficient.*
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1E6 m3/day

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

• Discharge rate of effluent: >= 1E5 m3/day

2.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 2.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	Estimated release factor	**Release factor before on site RMM:** 0.25% **Release factor after on site RMM:** 0.25% **Local release rate:** 6.17E3 kg/day **Explanation:** Fertilizers Europe Environnemental Survey – year 2020
Air	Measured release rate	**Release factor after on site RMM:** 0.011% **Local release rate:** 268.8 kg/day **Explanation:** Large Volume Inorganic Chemicals (European Commission, August 2007) – Ammonia, Acids and Fertilisers - Table 7.5 - Emission to air from the production of NPK fertilizers
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.01%

2.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 2.1.1 Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 11.87 mg/L	RCR = 0.742
Sediment (freshwater)	**Local PEC:** 57.70 mg/kg dw	RCR = 0.743
Marine water	**Local PEC:** 1.234 mg/L	RCR = 0.078
Sediment (marine water)	**Local PEC:** 5.995 mg/kg dw	RCR = 0.078
Sewage Treatment Plant	**Local PEC:** 0 mg/L	RCR < 0.01

2.2.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

2.2. Env CS 3: Formulation into solid matrix (ERC 3)

2.2.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 15 tonnes/day
• Annual use amount at site: <= 3E3 tonnes/year
• Number of emission days per year: = 200 days per year

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0%]
• Discharge rate of STP: >= 2E3 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason) *Waste disposal according to national/local legislation is sufficient.*
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day

2.2.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 2.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 0.2% **Release factor after on site RMM:** 0.2% **Local release rate:** 30 kg/day
Air	ERC	**Release factor before on site RMM:** 30% **Release factor after on site RMM:** 30% **Local release rate:** 4.5E3 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.1%

2.3.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 2.3. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 7.771 mg/L	RCR = 0.486
Sediment (freshwater)	**Local PEC:** 37.75 mg/kg dw	RCR = 0.486
Marine water	**Local PEC:** 0.767 mg/L	RCR = 0.048
Sediment (marine water)	**Local PEC:** 3.729 mg/kg dw	RCR = 0.048
Sewage Treatment Plant	**Local PEC:** 15 mg/L	RCR = 0.888

2.4. Worker CS 4: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

2.4.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.4.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.5. Worker CS 5: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

2.5.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.5.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.6. Worker CS 6: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

2.6.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors*	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
need to be worn.	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.6.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.7. Worker CS 7: Chemical production where opportunity for exposure arises (PROC 4)

2.7.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.7.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.8. Worker CS 10: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

2.8.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.8.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.9. Worker CS 13: Tabletting, compression, extrusion, pelletisation, granulation (PROC 14)

2.9.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
Solid or liquid.	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.9.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.10. Worker CS 14: Use as laboratory reagent (PROC 15)

2.10.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

2.10.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

2.11. Worker CS 15: Manual maintenance (cleaning and repair) of machinery (PROC 28)

2.11.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	

2.11.2. Exposure and risks for workers

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3. Exposure scenario 3: Use at industrial sites - Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control

Sector of use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products); SU 9: Manufacture of fine chemicals

Environment contributing scenario(s):		
CS 1	Use of intermediate - no STP	ERC 6a
CS 2	Use of intermediate - STP	ERC 6a
Worker contributing scenario(s):		
CS 3	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC 1
CS 4	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC 2
CS 5	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 6	Chemical production where opportunity for exposure arises	PROC 4
CS 9	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC 8b
CS 12	Tabletting, compression, extrusion, pelletisation, granulation	PROC 14
CS 13	Use as laboratory reagent	PROC 15

3.1. Env CS 1: Use of intermediate - no STP (ERC 6a)

3.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 4.1 tonnes/day
• Annual use amount at site: <= 1.5E3 tonnes/year
• Number of emission days per year: = 365 days per year
Conditions and measures related to biological sewage treatment plant
• Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason)

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Waste disposal according to national/local legislation is sufficient.
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day
• Discharge rate of effluent: >= 2E3 m3/day

3.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 3.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 82 kg/day
Air	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 205 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.1%

3.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 3.1.1. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 10.37 mg/L	RCR = 0.648
Sediment (freshwater)	**Local PEC:** 50.39 mg/kg dw	RCR = 0.649
Marine water	**Local PEC:** 1.027 mg/L	RCR = 0.065
Sediment (marine water)	**Local PEC:** 4.992 mg/kg dw	RCR = 0.065
Sewage Treatment Plant	**Local PEC:** 0 mg/L	RCR < 0.01

3.2. Worker CS 3: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)

3.2.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

3.2.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3.3. Worker CS 4: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

3.4.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

3.3.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3.4. Worker CS 5: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

3.4.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

3.4.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3.5. Worker CS 6: Chemical production where opportunity for exposure arises (PROC 4)

3.5.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

3.5.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3.6. Worker CS 9: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

3.6.1. Conditions of use

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

3.6.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3.7. Worker CS 12: Tabletting, compression, extrusion, pelletisation, granulation (PROC 14)

3.7.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

3.7.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

3.8. Worker CS 13: Use as laboratory reagent (PROC 15)

3.8.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

3.8.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

4. Exposure scenario 4: Use at industrial sites - Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control

Product category used: PC 0: Other;
Sector of use: SU 1: Agriculture, forestry, fishery;
()

Environment contributing scenario(s):		
CS 1	Use of reactive processing aid at industrial site (no inclusion into or onto article) - no STP	ERC 6b
CS 2	Use of reactive processing aid at industrial site (no inclusion into or onto article) - STP	ERC 6b
Worker contributing scenario(s):		
CS 3	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC 1
CS 4	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC 2
CS 5	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC 3
CS 6	Chemical production where opportunity for exposure arises	PROC 4
CS 10	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC 8b
CS 14	Use as laboratory reagent	PROC 15

4.1. Env CS 1: Use of reactive processing aid at industrial site (no inclusion into or onto article) - no STP (ERC 6b)

4.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

• Daily use amount at site: <= 3.7 tonnes/day
• Annual use amount at site: <= 1.35E3 tonnes/year
• Number of emission days per year: = 365 days per year
Conditions and measures related to biological sewage treatment plant
• Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason) *Waste disposal according to national/local legislation is sufficient.*
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 1.8E4 m3/day
• Discharge rate of effluent: >= 2E3 m3/day

4.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 4.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 5% **Release factor after on site RMM:** 5% **Local release rate:** 185 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1% **Local release rate:** 3.7 kg/day
Non agricultural soil	ERC	**Release factor after on site RMM:** 0.025%

4.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 4.2. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 15.52 mg/L	RCR = 0.97
Sediment (freshwater)	**Local PEC:** 75.41 mg/kg dw	RCR = 0.971
Marine water	**Local PEC:** 1.542 mg/L	RCR = 0.097
Sediment (marine water)	**Local PEC:** 7.494 mg/kg dw	RCR = 0.097
Sewage Treatment Plant	**Local PEC:** 0 mg/L	RCR < 0.01

4.2. Worker CS 3: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC 1)

4.2.1. Conditions of use

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.2.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

4.3. Worker CS 4: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)

4.3.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.3.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

4.4. Worker CS 5: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)

4.4.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.4.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

4.5. Worker CS 6: Chemical production where opportunity for exposure arises (PROC 4)

4.5.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.5.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

4.6. Worker CS 10: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

4.6.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.6.2 Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

4.7. Worker CS 11: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)

4.7.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.7.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

4.8. Worker CS 14: Use as laboratory reagent (PROC 15)

4.8.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Advanced	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

4.8.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

5. Exposure scenario 5: Widespread use by professional workers - Use by professional worker (outdoor and indoor of reactive substances in open systems)

Product category used: 12: Fertilizers;
Sector of use: SU 1: Agriculture, forestry, fishery;

Environment contributing scenario(s):		
CS 1	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)	ERC 8b
CS 2	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8e
Worker contributing scenario(s):		
CS 8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC 8b
CS 9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC 9
CS 10	Non industrial spraying	PROC 11
CS 12	Manual activities involving hand contact	PROC 19

5.1. Env CS 1: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC 8b)

5.1.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

• Biological STP: Standard [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason) *Waste disposal according to national/local legislation is sufficient.*

5.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 5.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 0%

5.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 5.2. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 6.272 mg/L	RCR = 0.392
Sediment (freshwater)	**Local PEC:** 30.47 mg/kg dw	RCR = 0.392
Marine water	**Local PEC:** 0.617 mg/L	RCR = 0.039
Sediment (marine water)	**Local PEC:** 3 mg/kg dw	RCR = 0.039
Sewage Treatment Plant	**Local PEC:** 8.25E-3 mg/L	RCR < 0.01

5.2. Env CS 2: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC 8e)

5.2.1. Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 8.25E-4 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: No (other reason) *Waste disposal according to national/local legislation is sufficient.*

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

5.2.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 5.3. Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	**Release factor before on site RMM:** 2% **Release factor after on site RMM:** 2% **Local release rate:** 0.017 kg/day
Air	ERC	**Release factor before on site RMM:** 0.1% **Release factor after on site RMM:** 0.1%
Non agricultural soil	ERC	**Release factor after on site RMM:** 1%

5.2.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 5.4. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	**Local PEC:** 6.272 mg/L	RCR = 0.392
Sediment (freshwater)	**Local PEC:** 30.47 mg/kg dw	RCR = 0.392
Marine water	**Local PEC:** 0.617 mg/L	RCR = 0.039
Sediment (marine water)	**Local PEC:** 3 mg/kg dw	RCR = 0.039
Sewage Treatment Plant	**Local PEC:** 8.25E-3 mg/L	RCR < 0.01

5.3. Worker CS 8: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)

5.3.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Basic	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

5.3.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

5.4. Worker CS 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)

5.4.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Basic	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

5.4.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

5.5. Worker CS 10: Non industrial spraying (PROC 11)

5.5.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Basic	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

5.5.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

5.6. Worker CS 12: Manual activities involving hand contact PROC 19)

5.6.1. Conditions of use

	Method
Product (article) characteristics	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

	Method
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness) *Solid or liquid.*	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Basic	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Indoor	
• Operating temperature: <= 40 °C	

5.6.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

6. Exposure scenario 6: Widespread use by professional workers - Outdoor use – direct application of solid fertilizers to soil; surface spreading

Product category used: PC 12: Fertilizers
Sector of use: SU 1: Agriculture, forestry, fishery

Environment contributing scenario(s):		
CS 1	Outdoor use – direct application of solid fertilizers to soil; surface spreading	ERC 8e
Worker contributing scenario(s):		
CS 4	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC 8b
CS 6	Non industrial spraying	PROC 11

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

6.1. Env CS 1: Outdoor use – direct application of solid fertilizers to soil; surface spreading (ERC 8e)

6.1.1. Conditions of use

Product (article) characteristics
• Solid fertilizers intended for outdoor use (in a.o. agriculture, forestry, horticulture, gardens, golf courses) by consumers and professionals. Farmers are considered professional users. *The use of fertilizers in enclosed structures is covered when crops are cultivated in contact with the soil (e.g. non-permanent covers, walk-in tunnels and nurseries). In this case, outdoor use represents a worst-case for environmental exposure. High-tech greenhouse structures, with no direct soil contact and closed water circulation systems are not covered by the Fertilizers Europe SPERCs.*
Amount used, frequency and duration of use (or from service life)
• Number of release days per year: >= days/year *1-3 applications per year; depending on crop type and agricultural soil characteristics*
• Daily local widespread use amount: <= 0.055 tonnes/day *not relevant* *Substance use amount expressed as maximum yearly fertilizer application rate (kg/ha/year):* *Single application per year:* *• High runoff scenario: 138 kg NH4NO3/ha/year (=107 kg nitrate/ha/year)* *• Intermediate runoff scenario: 346 kg NH4NO3/ha/year (=268 kg nitrate/ha/year)* *• Low runoff scenario: 692 kg NH4NO3/ha/year (=536 kg nitrate/ha/year)* *Split applications: 3 applications with 30 days interval between applications:* *• High runoff scenario: 271 kg NH4NO3/ha/year (=210 kg nitrate/ha/year)* *• Intermediate runoff scenario: 678 kg NH4NO3/ha/year (=525 kg nitrate/ha/year)* *• Low runoff scenario: 1356 kg NH4NO3/ha/year (=1050 kg nitrate/ha/year)*
Technical and organisational conditions and measures
• Direct application of solid fertilizers to soil; surface spreading *The default worst-case scenario is based on a 1 ha agricultural field, surrounded by a shallow water body (width of 2.5 m and depth of 0.3 m), with a surface of one tenth of the agricultural field (field:water ratio of 10). A default maximum runoff percentage of 5% is applied for such scenarios, where 36% of the fertilized crop area is within 10 m of nearby surface water.* *An intermediate runoff scenario (2% runoff) can be applied when 60% runoff reduction is anticipated. This corresponds to a vegetative buffer strip of 10-12m between the crop area and the surface water in the default scenario described above or a field bordering surface water for maximum 25% of its perimeter.* *A low runoff scenario (1% runoff) is applicable to fields where the distance between surface water and the fertilized area is always at least 20 m.*
• Controlled application to agricultural soil
Conditions and measures related to biological sewage treatment plant
• Biological STP: None [Effectiveness Water: 0%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: Other *Dispose of waste product or used containers according to local regulations.*
• Service life *Service life is not applicable to fertilizers*
Other conditions affecting environmental exposure

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

• Place of use: Outdoor

6.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 6.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	Estimated release factor (based on SPERC Fertilizers Europe SPERC 8e.1.v2)	**Release factor before on site RMM:** 0% **Release factor after on site RMM:** 0% **Local release rate:** 0 kg/day **Explanation:** Numeric value / percent of input amount (Water): 0% Justification of RFs (Water): The only potential for direct release to surface water is by spray drift during application. This is not relevant for direct application of solid fertilizers by surface spreading. Release to water is therefore considered 0%.
Air	Estimated release factor (based on SPERC Fertilizers Europe SPERC 8e.1.v2)	**Release factor before on site RMM:** 0% **Release factor after on site RMM:** 0% **Explanation:** Numeric value / percent of input amount (Air): 0% Justification of RFs (Air): Volatilization to air is not relevant for solid fertilizers, soil improvers or related products. Therefore, the release factor to air is set to 0%.
Agricultural soil	Estimated release factor (based on SPERC Fertilizers Europe SPERC 8e.1.v2)	**Release factor after on site RMM:** 100% **Explanation:** Numeric value / percent of input amount (Soil): 100% (agricultural soil) Justification of RFs (Soil): Direct application to agricultural soil, intentional release. As a conservative approach, it is assumed that 100% of the fertilizer substance applied can be released to soil. This was based on the consideration that fertilizers are applied directly onto/into soil or on the foliage of crops, in order to promote growth of cultivated crops. Further details on release factors to the environment can be found in the Fertilizers Europe SPERC background document. A fertilizer environmental exposure (FEE) tool was developed for environmental fate modelling and quantitative risk assessment of fertilizer substances and soil improvers. This tool can be downloaded at: http://www.reachfertilizers.com/

Releases to waste

Release factor to external waste: 0.01 %
Percent of input amount disposed as waste: 0.01% (OECD Emission scenario document plastic additives, 2009).
Justification of RFs:
Please refer to the OECD Emission scenario document plastic additives (2009).

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

6.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 6.2. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	Clocal: 8.059 mg/L (estimated by Fee tool v1.2)	RCR = 0.896
Sediment (freshwater)	Clocal: 34.99 mg/kg dw (estimated by Fee tool v1.2)	RCR = 0.901

Remarks on exposure data from external estimation tools:

Fee tool v1.2:
Explanation:
The fertilizer exposure scenarios are based on a default worst-case scenario of a 1 ha agricultural field, surrounded by a shallow water body (width of 2.5 m and depth of 0.3 m), with a residence time of 40 days, resulting in a flow rate of only 7.5 m3 per day. The contribution of industrial emissions to this setting is considered not relevant and therefore the PECregional from industrial emissions is set to 0 for these fertilizer uses. This is done in CHESAR by subtracting the PECregional (see section 10.2.2) from the Clocal calculated for this worst-case scenario for fertilizer uses, resulting in a PECtotal equal to the Clocal.
No hazards are identified for the soil compartment. Assessment of exposure of man via the environment is not needed, since no hazards are identified for systemic effects of nitrate salts on humans.

6.2. Worker CS 4: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b)

6.2.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Basic	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Outdoor	
• Operating temperature: <= 40 °C	

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

6.2.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

6.3. Worker CS 6: Non industrial spraying (PROC 11)

6.3.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (material with low dustiness)	
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8 h/day	
Technical and organisational conditions and measures	
• Local exhaust ventilation: No	
• Occupational Health and Safety Management System: Basic	
• Room ventilation: Basic (up to 3 ACH)	
Conditions and measures related to personal protection, hygiene and health evaluation	
• Dermal protection: No	
• Respiratory protection: No	
• Face/eye protection: Eye protection *In case exposure can not be avoided by the type of work, chemical goggles or visors need to be worn.*	
Other conditions affecting workers exposure	
• Place of use: Outdoor	
• Operating temperature: <= 40 °C	

6.3.2. Exposure and risks for workers

No exposure datasets are defined for this worker contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
See section 9

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

7. Exposure scenario 10: Consumer use - Outdoor use - direct application of solid fertilizers to soil; surface spreading

Environment contributing scenario(s):		
CS 1	Outdoor use - direct application of solid fertilizers to soil; surface spreading	ERC 8e
Consumer contributing scenario(s):		
CS 2	Fertilizers	PC 12

7.1. Env CS 1: Outdoor use - direct application of solid fertilizers to soil; surface spreading (ERC 8e)

7.1.1. Conditions of use

Product (article) characteristics
• Solid fertilizers intended for outdoor use (in a.o. agriculture, forestry, horticulture, gardens, golf courses) by consumers and professionals. Farmers are considered professional users. *The use of fertilizers in enclosed structures is covered when crops are cultivated in contact with the soil (e.g. non-permanent covers, walk-in tunnels and nurseries). In this case, outdoor use represents a worst-case for environmental exposure. High-tech greenhouse structures, with no direct soil contact and closed water circulation systems are not covered by the Fertilizers Europe SPERCs.*
Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0 tonnes/day *not relevant* *Substance use amount expressed as maximum yearly fertilizer application rate (kg/ha/year):* *Single application per year:* *• High runoff scenario: 138 kg NH4NO3/ha/year (=107 kg nitrate/ha/year)* *• Intermediate runoff scenario: 346 kg NH4NO3/ha/year (=268 kg nitrate/ha/year)* *• Low runoff scenario: 692 kg NH4NO3/ha/year (=536 kg nitrate/ha/year)* *Split applications: 3 applications with 30 days interval between applications:* *• High runoff scenario: 271 kg NH4NO3/ha/year (=210 kg nitrate/ha/year)* *• Intermediate runoff scenario: 678 kg NH4NO3/ha/year (=525 kg nitrate/ha/year)* *• Low runoff scenario: 1356 kg NH4NO3/ha/year (=1050 kg nitrate/ha/year)* *The default worst-case scenario is based on a 1 ha agricultural field, surrounded by a shallow water body (width of 2.5 m and depth of 0.3 m), with a surface of one tenth of the agricultural field (field:water ratio of 10). A default maximum runoff percentage of 5% is applied for such scenarios, where 36% of the fertilized crop area is within 10 m of nearby surface water.* *An intermediate runoff scenario (2% runoff) can be applied when 60% runoff reduction is anticipated. This corresponds to a vegetative buffer strip of 10-12m between the crop area and the surface water in the default scenario described above or a field bordering surface water for maximum 25% of its perimeter.* *A low runoff scenario (1% runoff) is applicable to fields where the distance between surface water and the fertilized area is always at least 20 m.*
• Number of release days per year: days/year *1-3 applications per year; depending on crop type and agricultural soil characteristics*
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations: Other *Dispose of waste product or used containers according to local regulations.*

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

• Controlled application to agricultural soil
Other conditions affecting environmental exposure
• Biological STP: None [Effectiveness Water: 0%]
• Place of use: Outdoor

7.1.2. Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Table 7.1. Local releases to the environment

Release	Release estimation method	Explanations
Water	Estimated release factor (based on SPERC Fertilizers Europe SPERC 8e.1.v2)	**Release factor before on site RMM:** 0% **Release factor after on site RMM:** 0% **Local release rate:** 0 kg/day **Explanation:** Numeric value / percent of input amount (Water): 0% Justification of RFs (Water): The only potential for direct release to surface water is by spray drift during application. This is not relevant for direct application of solid fertilizers by surface spreading. Release to water is therefore considered 0%.
Air	Estimated release factor (based on SPERC Fertilizers Europe SPERC 8e.1.v2)	**Release factor before on site RMM:** 0% **Release factor after on site RMM:** 0% **Explanation:** Numeric value / percent of input amount (Air): 0% Justification of RFs (Air): Volatilization to air is not relevant for solid fertilizers, soil improvers or related products. Therefore, the release factor to air is set to 0%.
Agricultural soil	Estimated release factor (based on SPERC Fertilizers Europe SPERC 8e.1.v2)	**Release factor after on site RMM:** 100% **Explanation:** Numeric value / percent of input amount (Soil): 100% (agricultural soil) Justification of RFs (Soil): Direct application to agricultural soil, intentional release. As a conservative approach, it is assumed that 100% of the fertilizer substance applied can be released to soil. This was based on the consideration that fertilizers are applied directly onto/into soil or on the foliage of crops, in order to promote growth of cultivated crops. Further details on release factors to the environment can be found in the Fertilizers Europe SPERC background document. A fertilizer environmental exposure (FEE) tool was developed for environmental fate modelling and quantitative risk assessment of fertilizer substances and soil improvers. This tool can be downloaded at: http://www.reachfertilizers.com/

Releases to waste

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Release factor to external waste: 0.01 %
Percent of input amount disposed as waste: 0.01% (OECD Emission scenario document plastic additives, 2009).
Justification of RFs:
Please refer to the OECD Emission scenario document plastic additives (2009).

7.1.3. Exposure and risks for the environment and man via the environment

The exposure concentrations and risk characterisation ratios (RCR) are reported in the following table. The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 7.2. Exposure concentrations and risks for the environment and man via the environment

Protection target	Exposure concentration	Risk quantification
Fresh water	Clocal: 8.095 mg/L (estimated by Fee tool v1.2)	RCR = 0.898
Sediment (freshwater)	Clocal: 34.99 mg/kg dw (estimated by Fee tool v1.2)	RCR = 0.901

Remarks on exposure data from external estimation tools:

Fee tool v1.2:
Explanation:
The fertilizer exposure scenarios are based on a default worst-case scenario of a 1 ha agricultural field, surrounded by a shallow water body (width of 2.5 m and depth of 0.3 m), with a residence time of 40 days, resulting in a flow rate of only 7.5 m3 per day. The contribution of industrial emissions to this setting is considered not relevant and therefore the PECregional from industrial emissions is set to 0 for these fertilizer uses. This is done in CHESAR by subtracting the PECregional (see section 10.2.2) from the Clocal calculated for this worst-case scenario for fertilizer uses, resulting in a PECtotal equal to the Clocal.
No hazards are identified for the soil compartment. Assessment of exposure of man via the environment is not needed, since no hazards are identified for systemic effects of nitrate salts on humans.

7.2. Cons CS 2: Fertilizers (PC 12)

7.2.1. Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100 %	
• Physical form of the used product: Solid (non or low dusty form)	
Information and behavioral advice for consumers	
• Product labelling *Product labelling should contain instructions to minimise the exposure (e.g. wash hands after use, ...). Only required when the mixture is classified as eye irritating.*	

7.2.2. Exposure and risks for consumers

No exposure datasets are defined for this consumer contributing scenario.

Risk characterisation

Qualitative risk characterisation (Eye, local):
Product labelling should contain instructions to minimise the exposure (e.g. wash hands after use, ...). Only required when the mixture is classified as eye irritating.

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

8. RISK CHARACTERISATION RELATED TO COMBINED EXPOSURE

8.1. Human health

8.1.1. Workers

Not relevant since only local effects.

8.1.2. Consumer

Not relevant since only local effects.

8.2. Environment (combined for all emission sources)

8.2.1. All uses (regional scale)

8.2.1.1. Total releases

The total releases to the environment from all the exposure scenarios covered are presented in the table below. This is the sum of the releases to the environments from all exposure scenarios addressed.
Where there is more than one contributing scenario for the environment for a given exposure scenario, the highest release per route across all the contributing scenarios within the use has been taken into account as the release for the use (both for the regional and the exposure due to all the widespread uses). This may lead to overestimation of the PEC.

Table 8.1. Total releases to the environment per year from all life cycle stages

Release route	Total releases per year
Water	1.3E7 kg/year
Air	3.08E8 kg/year
Soil	4.01E8 kg/year

8.2.2. Regional assessment

The regional predicted environmental concentration (PEC regional) and the related risk characterisation ratios when a PNEC is available are presented in the table below. The exposure to man via the environment from regional exposure and the related risk characterisation ratios are also provided (when relevant). The exposure concentration for human via inhalation is equal to the PEC air.
The exposure estimates have been obtained with EUSES 2.1.2 unless stated otherwise.

Table 8.2. Predicted regional exposure concentrations (Regional PEC) and risks for the environment

Protection target	Regional PEC	Risk characterisation
Fresh water	**Regional PEC:** 6.271 mg/L	RCR = 0.392
Sediment (freshwater)	**Regional PEC:** 34.99 mg/kg dw	RCR = 0.45
Marine water	**Regional PEC:** 0.617 mg/L	RCR = 0.039
Sediment (marine water)	**Regional PEC:** 3.501 mg/kg dw	RCR = 0.045

8.2.3. Local exposure due to all widespread uses

The predicted local environmental concentrations (PEC local) and the exposure to man via the environment (when relevant) based on the releases from all widespread uses are reported in the table below, when relevant, together with the risk characterisation ratio when a PNEC is available. The exposure estimates have been obtained with EUSES 2.1.2.

Extended SAFETY DATA SHEET
In accordance with Regulation (EC) 1907/2006 (REACH), Annex II, amended with Regulation (EC) 2020/878

Ammonium nitrate

Table 8.3. Predicted exposure concentrations and risks for the environment and man via the environment due to all widespread uses

Protection target	PEC local due to all widespread uses	Risk characterisation
Fresh water	**PEC:** 6.273 mg/L	RCR = 0.392
Sediment (freshwater)	**PEC:** 30.47 mg/kg dw	RCR = 0.392
Marine water	**PEC:** 0.618 mg/L	RCR = 0.039
Sediment (marine water)	**PEC:** 3.001 mg/kg dw	RCR = 0.039
Sewage Treatment Plant	**PEC:** 0.017 mg/L	RCR < 0.01

9. Scope and type of assessment for workers and consumers:

The scope of exposure assessment and type of risk characterisation required for workers are described in the following table based on the hazard conclusions presented in section 8 and section 11.1 of the Safety data sheet.

Route	Type of effect	Risk characterisation type	Hazard conclusion (see section 5.11)
Inhalation	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Not needed	No hazard identified
	Local effects - acute	Not needed	No hazard identified
Dermal	Systemic effects - long term	Not needed	No hazard identified
	Systemic effects - acute	Not needed	No hazard identified
	Local effects - long term	Not needed	No hazard identified
	Local effects - acute	Not needed	No hazard identified
Eye	Local effects	Qualitative	Low hazard (no threshold derived)