SAFETY DATA SHEET

(according to Regulation (EC) No 1907/2006 (REACH), ANNEX II)

AMMONIUM NITRATE

Revision date: 01.06.2012 Version 3.0

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY	
1.1 Product identifier	
Trade name:	Ammonium Nitrate
Other names:	Ammonium Nitrate Based Fertilizer
Name IUPAC/ international chemical name:	Nitric Acid Ammonium Salt
INDEX number and name as listed in Annex VI of CLP:	Not listed
CAS number:	6484-52-2
REACH registration No.:	01-2119490981-27-0042
Molecular formula:	H3N.HNO3
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Relevant identified uses:	1: Manufacturing of the substance, including handling, storage and quality control. *(see ES 1)* 2: Sampling, loading, filling, transfer, dumping, bagging of substance (charging/discharging) at (non-)dedicated facilities. Industrial/professional settings. *(see ES 1)* 3: Storage *(see ES 1)* 4: Transfer of substance into small containers (dedicated filling line, including weighing). Industrial/professional setting. *(see ES 1)* 5: Quality control *(see ES 1)* 6: Use of ammonium nitrate in the manufacturing of formulations for adhesives and sealants, explosives, fertilizers and water treatment chemicals. *(see ES 2)* 7: Treating or coating of seed with fertilizer containing ammonium nitrate. *(see ES 2)* 8: Use of ammonium nitrate as an intermediate to synthesize other substances. *(see ES 2)* 9: Spraying. *(see ES 3)* 10: Professional use of fertilizers containing ammonium nitrate – liquid fertigation at open field (non industrial spraying). *(see ES 3)* 11: Professional use of fertilizers containing ammonium nitrate – liquid fertigation in the soil. *(see ES 3)* 12: Professional use of fertilizers containing ammonium nitrate – fertigation at open field. *(see ES 3)* 13: Professional use of fertilizers containing ammonium nitrate – outdoor mixing. *(see ES 3)* 14: Professional use of fertilizers containing ammonium nitrate – indoor mixing. *(see ES 3)* 15: Professional use of fertilizers containing ammonium nitrate – greenhouse liquid fertigation in the soil. *(see ES 3)* 16: Professional use of fertilizers containing ammonium nitrate – greenhouse liquid fertigation (non industrial spraying). *(see ES 3)* 17: Consumer end use – fertilization at open field. *(see ES 4)* 18: Consumer end use – indoor use of fertilizers. *(see ES 4)* 19: Consumer end use – matches and fireworks. *(see ES 4)*
Uses advised against:	None
1.3 Details of the supplier of the safety data sheet	
Only Representative:	OSTCHEM GERMANY GmbH Erdmannstr. 10 222765 Hamburg, Germany Phone: +49 40 5300 300 Fax: +49 40 5300 30 33 www.ostchem.com E-mail: matthaeus.ebinal@ostchem.de larissa.schmelzing@ostchem.de
Manufacturer:	PJSC "AZOT" 72, Pervomayskaya Str., Cherkassy, Ukraine Tel.: +38 0472 39-63-03 +38 0472 39-23-33 URL website: http://www.azot.cherkassy.net Email: let@azot.cherkassy.net sale@azot.cherkassy.net avalon@azot.cherkassy.net
E-mail address of the competent person responsible for this Safety Data Sheet	PJSC "AZOT" REACH Department onr@azot.cherkassy.net
National contact:	Not available

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1.4 Emergency telephone number		
Emergency phone number:	Tel: + 49 405 300 300 Opening hours: 9-18 (CET) Languages of the phone service: German, English, Russian Tel: + 38 (0472) 39 61 17 Opening hours: 0-24 Languages of the phone service: Russian, Ukrainian	
SECTION 2: HAZARDS IDENTIFICATION		
2.1 Classification of the substance		
Classification in accordance with Regulation 1272/2008 (CLP)		
Hazard statement(s):	H272 H319	Cat.3 - May intensify fire; oxidiser. Cat.2 - Causes serious eye irritation.
Classification in accordance with Directive 67/548 (DSD)		
Risk phrase(s):	R8 R36	Oxidising; Contact with combustible material may cause fire. Irritant; Irritating to eyes.
2.2 Label elements		
Labelling in accordance with Regulation 1272/2008 (CLP)		
Hazard pictogram(s):		
Signal word	Warning	
Hazard statement(s):	H272 May intensify fire; oxidiser H319 Causes serious eye irritation	
Precautionary Statements (Prevention):	P210 Keep away from heat/ sparks/open flames/hot surfaces. — No smoking P220 Keep/Store away from clothing/acids/alkali/combustible materials P264 Wash hands thoroughly after handling P280 Wear protective gloves/protective clothing/eye protection/face protection	
Precautionary Statements (Response):	P370+P378 In case of fire: Use water for extinction P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing	
2.3 Other hazards		
PBT/vPvB criteria:	According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted since ammonium nitrate is inorganic.	
Other hazards:	None known	
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS		
3.1 Substances		
According to the REACH Regulation the product is a mono-constituent		
Name	**INDEX No. as listed in Annex VI of CLP**	**Weight % content (or range)**
Ammonium nitrate	Not listed	Not less than 97 % (w/w)
Note: This substance is treated with organic substances (anti-caking agent).		
SECTION 4: FIRST-AID MEASURES		
4.1 Description of first aid measures		
General notes:	Avoid breathing vapor or dust. Use adequate ventilation. Avoid contact with eyes, skin or clothes. Wash thoroughly after handling. Keep closed. In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label/this eSDS where possible)	
Following 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.	
Following 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.	
Following ingestion:	Seek medical advice if the victim feels unwell. Wash out mouth with plenty of water and give plenty of water to drink. Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical advice if symptoms occur.	

Following 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 vapors are intensively inhaled.
Self-protection for the first aider:	None
4.2 Most important symptoms and effects, both acute and delayed	
Acute effects	Eye irritation
Delayed effects	None known
4.3 Indication of any immediate medical attention and special treatment needed Note to physician: Methaemoglobinaemia.	
SECTION 5: FIRE-FIGHTING MEASURES	
5.1 Extinguishing media	
Suitable extinguishing media:	Non-combustible. Water.
Not suitable extinguishing media:	Combustible material.
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, NO_2 etc.), ammonia (NH_3), amines.	
5.3 Advice for firefighters No special measures required. In the event of fire, wear a self-contained breathing apparatus and a chemical protective suit.	
SECTION 6: ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures *6.1.1 For non-emergency personnel* Protective equipment: Gas masks with suitable for dust protection cartridge 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. *6.1.2 For emergency responders:* Wear suitable protective clothing, including respiratory protection. Portable showers and eyewash may also be needed.	
6.2 Environmental precautions Prevent the material from contact with soil, entering surface water or sanitary sewer system. Do not discharge directly to a water source. If accidental spillage or washings enter drains or watercourses contact local authority.	
6.3 Methods and material for containment and cleaning up *6.3.1 For containment:* Stop spillage if you can do so without risk. *6.3.2 For 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. *6.3.3 Other information:* Keep combustibles (wood, paper, oil etc.) away from spilled material.	
6.4 Reference to other sections See section 8 for personal protective equipment and section 13 for waste disposal.	
SECTION 7: HANDLING AND STORAGE	
7.1 Precautions for safe handling	
Protective measures:	Avoid contact with eyes, skin and clothing.
Measures to prevent fire:	Keep away from sources of ignition.
Measures to prevent aerosol and dust generation:	Use with adequate ventilation. Local exhaust ventilation should be provided.
Measures to protect the environment:	Avoid creating dusty conditions and prevent wind dispersal.
Advice on general occupational hygiene:	Do not eat, drink or smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
7.2 Conditions for safe storage, including any incompatibilities	
Technical measures/ Storage conditions:	Avoid contamination by any source including metals, dust and organic materials. Keep away from moisture. Keep in the original container. Keep container tightly closed in a cool, dry, well-ventilated place. Keep product away from heat, sparks, flame and other sources of ignition, out of direct sunlight and away from combustible and reducing materials and other incompatible materials.

	Non suitable packaging materials: Zinc, Copper
Packing materials:	Polypropylene, polyethylene
Requirements for storage rooms and vessels: Storage class:	 5.1 C
Further information on storage conditions:	None
Incompatible products:	Combustible and reducing materials (strong acids and bases, metal powders, chromates, zinc, copper and copper alloys, chlorates, etc.)
7.3 Specific end use(s):	None

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

8.1.1 National occupational exposure limit values: Not available

8.1.2 National biological limit values: Not available

8.1.3 PNEC (Predicted No Effect Concentration):

Environmental protection target	PNEC
Aqua – freshwater	0.45 mg/L
Aqua - marine water	0.045 mg/L
Aqua – intermittent releases	4.5 mg/L
Sediment	No hazard identified
Soil	No hazard identified
Sewage treatment plant	18 mg/L
Food chain: oral (secondary poisoning)	No exposure expected
Air	No hazard identified

8.1.4 DNEL:

Route	Derived No Effect Level (DNEL)	
	Workers	General population
Oral[1]	Not applicable	12.8 mg/kg bw/d
Dermal[1]	21.3 mg/kg bw/day	12.8 mg/kg bw/day
Inhalation[1]	37.6 mg/m^3	11.1 mg/m^3

[1]: As an acute toxicity hazard leading to Classification and Labeling 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 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).

8.1.5 Monitoring procedures: Not available

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Substance/mixture related measures to prevent exposure during identified uses: None required

Technical measures to prevent exposure: Use of adequate ventilation is good industrial practice. In addition, an eyewash facility and a safety shower for facilities storing or utilizing this material is good industrial practice.

8.2.2 Personal protection equipment:

8.2.2.1 Respiratory protection:	Respiratory equipment
8.2.2.2 Skin protection: Hand protection: Other skin protection:	 Protective (heat resistant) gloves Working clothes
8.2.2.3 Eye and face protection:	Chemical goggles or face shield
8.2.3 Environmental exposure controls:	Dispose of rinse water in accordance with local and national regulations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Transparent/white deliquescent crystals (orthorhombic at room temperature) or white granules.
Odour:	Odourless

Odour threshold:	Not applicable
pH:	4,5 – 7,0 100g/l at 20°C
Melting point/Freezing point:	169.6 – 169.7ºC (from peer-reviewed handbook)
Initial boiling point and boiling range:	No boiling point
Flash-point:	Not relevant, as the substance is an inorganic solid.
Evaporation rate:	Not available
Flammability (solid, gas):	Non-flammable (based on molecular structure).
Upper/lower flammability or explosive limits:	Not applicable
Vapour pressure:	Considered negligible (based on melting and boiling point).
Vapour density:	Negligible
Relative density (D4 (20)):	1.72 (from peer-reviewed handbook)
Solubility in water:	>100 g/l at 20ºC (from peer-reviewed handbook)
Oxidizing properties:	For transport ammonium nitrate fertilisers (UN2067) are considered oxidizing substances. Transport classification: Class 5.1; PG III.
Partition coefficient n-octanol/water:	Not relevant as the substance is inorganic, considered to be low (based on high water solubility)
Auto ignition temperature:	No auto-ignition (based on structure and melting point): <0.2% combustible material
Decomposition temperature:	> 210ºC
Viscosity:	Not applicable to solids
Explosive properties:	Ammonium nitrate fertilizers falling under UN 2067 do not have explosive properties either.

9.2 Other information

SECTION 10: STABILITY AND REACTIVITY

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

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

10.3 Possibility of hazardous reactions
When heated, decomposition products.

10.4 Conditions to avoid
Decomposes on heating. Confinement must be avoided.

10.5 Incompatible materials
Reducing agents, strong acids and bases, metal powders, combustible materials, chromates, zinc, copper and copper alloys, chlorates.

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, NO_2), ammonia (NH_3), amines.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Acute toxicity

Route of exposure	*Species*	*Method*	*Effective dose*	*Exposure time*	*Results*
Oral	rat (Wistar) male/female	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)	–	–	LD_{50}: 2950 mg/kg bw
Dermal	rat (Sprague-Dawley rat, albino) male/female	OECD Guideline 402 (Acute Dermal Toxicity)	–	–	LD_{50}: > 5000 mg/kg bw
Inhalation	rat	–	–	–	LC_{50}: > 88.8 mg/l

11.1.2 Serious eye damage/irritation	Irritating (OECD 405)
11.1.3 Skin corrosion/irritation	Not irritating (OECD 404)
11.1.4 Respiratory or skin sensitization	Not sensitizing (OECD 429, with magnesium nitrate, nitric acid ammonium calcium salt, sodium nitrate)
11.1.5 Germ cell mutagenicity	Negative (OECD 471, 473, with nitric acid ammonium calcium salt) Negative (OECD 476, with potassium nitrate)
11.1.6 Carcinogenicity:	Not carcinogenic (OECD 453, with ammonium sulfate)

11.1.7 Reproductive toxicity:	Oral 28-day NOAEL ≥ 1500 mg/kg bw/day (OECD 422, with potassium nitrate)
11.1.8 STOT-single exposure	Not available
11.1.9 STOT-repeated exposure	Not available
11.1.10 Aspiration hazard	Not available
11.1.11 Sub-acute toxicity:	Oral 28-day NOAEL ≥ 1500 mg/kg bw/day (OECD 422, with potassium nitrate) Oral 52-week NOAEL = 256 mg/kg bw/day (OECD 453, with ammonium sulfate) Inhalation 2-weeks NOAEL ≥ 185 mg/m^3 (OECD 412)
11.1.12 Toxicokinetics (absorption, metabolism, distribution and elimination)	50% absorption is taken for oral, dermal and inhalation exposure.
SECTION 12: ECOLOGICAL INFORMATION	
12.1 Toxicity	
Fish (freshwater, short-term):	48-h LC_{50}: 447 mg/l (no guideline followed)
Fish (long-term):	No data
Freshwater invertebrates (short-term):	48-h EC_{50}/LC_{50}: 490 mg/L
Saltwater invertebrates (long-term):	7 d EC_{50}: 555 mg/L
Daphnia magna (short-term):	48-h EC_{50}: 490 mg/l (no guideline followed, with potassium nitrate)
Daphnia magna (long-term):	No data
Algae:	10-d EC_{50}: > 1700 mg/l (seawater, no guideline followed, performed with potassium nitrate)
Inhibition of microbial activity:	3-h EC_{50}: >1000 mg/l, NOEC: 180 mg/l (OECD 209, with sodium nitrate)
12.2 Persistence and degradability	
Abiotic degradation:	
Hydrolysis:	No hydrolysable group is present, will completely dissociate into ions.
Phototransformation/photolysis:	No information available, not a required REACH endpoint.
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 52g N/kg dissolved solid/day. Nitrate degradation is fastest in anaerobic conditions. In the anaerobic transformation of nitrate into N2, N2O and NH3, the biodegradation rate in wastewater plant at 20ºC is 70g N/kg dissolved solid/day.
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	
Known or predicted distribution to environmental compartments:	Simple inorganic salts with high aqueous solubility will exist in a dissociated form in an aqueous solution. Nitrate is not bound to the soil and will follow water movements.
Adsorption coefficient:	Low potential for adsorption (based on substance properties).
Surface tension:	No surface activity is expected for an inorganic salt at the maximum test concentration of 1 g/L.
12.5 Results of PBT and vPvB assessment According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted since ammonium nitrate is inorganic.	
12.6 Other adverse effects: None	
12.7 Additional information: None	
SECTION 13: DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods:	
13.1.1 Product / Packaging disposal:	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.
Waste codes / waste designations according to LoW (Commission Decision 2001/118/EC):	06 10 99 Wastes not otherwise specified
13.1.2 Waste treatment-relevant information:	In accordance with local and national regulations, disposed by landfill or incineration.
13.1.3 Sewage disposal-relevant information:	Controlled biodegradation in waste water treatment is possible.

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13.1.4 Other disposal recommendations:	None
SECTION 14: TRANSPORT INFORMATION	
14.1 UN Number:	2067
14.2 UN proper shipping name:	Ammonium nitrate based fertilizer
14.3 Transport hazard classes:	5.1
14.4 Packaging group:	III
14.5 Environmental hazards:	Not available
14.6 Special precautions for user:	Not available
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available
SECTION 15: REGULATORY INFORMATION	
15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:	
EU Regulations	
Authorisations and\or restrictions on use: ***Authorisation*:** EU Regulation (EC) No. 1907/2006 (REACH) Annex XIV - List of substances subject to authorisation Substances of very high concern ***Restrictions on use*:** COMMISSION REGULATION (EC) No 552/2009 of 22 June 2009 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards Annex XVII	None of the components are listed 1. Shall not be placed on the market for the first time after 27 June 2010 as a substance, or in mixtures that contain more than 28 % by weight of nitrogen in relation to ammonium nitrate, for use as a solid fertiliser, straight or compound, unless the fertiliser complies with the technical provisions for ammonium nitrate fertilisers of high nitrogen content set out in Annex III to Regulation (EC) No 2003/2003 of the European Parliament and of the Council. 2. Shall not be placed on the market after 27 June 2010 as a substance, or in mixtures that contain 16 % or more by weight of nitrogen in relation to ammonium nitrate except for supply to: (a) downstream users and distributors, including natural or legal persons licensed or authorised in accordance with Council Directive 93/15/EEC; (b) farmers for use in agricultural activities, either full time or part time and not necessarily related to the size of the land area.

Other EU Regulations:
Annex I of Seveso II Directive 96/82/EC:

Dangerous substances	*CAS number*	*Qualifying quantity (tonnes) for the application of*	
		Lower tier	*Upper tier*
Ammonium nitrate	6484-52-2	1250	5000

National regulations (*country*): Not available

15.2 Chemical safety assessment:	In accordance with REACH Article 14 a Chemical Safety Assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

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.

16.1 Indication of changes:	Changes were made to comply with the Guidance on the compilation of safety data sheets (version 1.1)

Page header; 1.1; 1.2; 1.3; 1.4; 3.1; 4.1; 6.1; 6.3; 7.1; 7.2; 7.3; 8.1; 8.2; 9.1; 11.1; 12.1; 12.2; 12.4; 12.6; 12.7; 13.1; 14.5; 14.6; 14.7; 15.1

16.2 Abbreviations and acronyms:

- CAS - Chemical Abstracts Service
- CLP - Classification, Labelling and Packaging of chemicals
- DSD - Dangerous Substance Directive
- EC - European Commission
- EC50 - half maximal effective concentration
- ES - Exposure Scenario
- IBC Code - International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk
- IUPAC - International Union of Pure and Applied Chemistry

- LC50 - Lethal Concentration
- LD50 - Lethal Dose
- LoW - List of Wastes
- MARPOL - International Convention for the Prevention of Pollution From Ships
- OECD - Organization for Economic Co-operation and Development
- PBT - Persistent, bioaccumulative, toxic chemical
- PJSC - Public Joint-Stock Company
- REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals
- STOT - Specific Target Organ Toxicity
- UN - United Nations
- vPvB - very persistent, very bioaccumulative

16.3 Key literature references and sources for data: CSR (Chemical Safety Report), Guidance on safe use etc.	
16.4 Training advice:	In accordance with the local regulations
16.5 Further information:	None

OSTCHEM

AZOT

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ANNEX

1 Exposure scenario (1) **Manufacturing of the substance including handling, storage and quality controls**	
Use descriptors related to the life cycle stage	SU8/9 PROC1/2/3/8a/8b/9/14/15 ERC1
Name of contributing environmental scenario (1) and corresponding ERC	1. Manufacturing of substances (ERC1)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Use in closed process, no likelihood of exposure (PROC1) 2. Manufacturing in a closed continuous process, with occasional exposure (PROC2) 3. Use in closed batch process (synthesis or formulation) (PROC3) 4. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 5. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 6. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 7. Production of preparations* or articles by tabletting, compression, extrusion, pelletisation (PROC14) 8. Use as laboratory reagent (PROC15)
2.1 Contributing scenario (1) controlling environmental exposure	
Environmental release during manufacturing ERC1 An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) controlling worker exposure for manufacturing of the substance including handling, storage and quality controls	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC1/2/3/8a/8b/9/14/15	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness
Amounts used	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable.
Frequency and duration of use/exposure	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	More than 4 hours per day
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
Other given operational conditions affecting workers exposure	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors
Technical conditions and measures at process level (source) to prevent release	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
Technical conditions and measures to control dispersion from source towards the worker	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	1. Containment as appropriate 2. Good standard of general ventilation
Organisational measures to prevent/limit releases, dispersion and exposure	
Specific organisational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for demonstrating strictly controlled conditions (to justify exposure based waiving).	Not applicable

Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)	1. Chemical goggles
3 Exposure information and reference to its source	
Information for contributing scenario 1	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
Information for contributing scenario 2	
A qualitative approach was used to conclude safe use for workers. The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.	
4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers.	
5 Additional good practice advice beyond the REACH CSA Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets. Such as: - Containment as appropriate; - Minimise number of staff exposed; - Segregation of the emitting process; - Effective contaminant extraction; - Good standard of general ventilation; - Minimisation of manual phases; - Avoidance of contact with contaminated tools and objects; - Regular cleaning of equipment and work area; - Management/supervision in place to check that RMMs in place are being used correctly and OCs followed; - Training staff on good practice; - Good standard of personal hygiene.	

1 Exposure scenario (2) **Industrial use for formulation of preparations/articles, intermediate use and end-use in industrial settings.**	
Use descriptors related to the life cycle stage	SU3/10 PC1/11/12/19/37 PROC1/2/3/5/8a/8b/9/13/15 ERC2/6a
Name of contributing environmental scenario (1) and corresponding ERC	1. Formulation of preparations (ERC2) 2. Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Use in closed process, no likelihood of exposure (PROC1) 2. Use in closed, continuous process with occasional controlled exposure (PROC2) 3. Use in closed batch process (synthesis or formulation) (PROC3) 4. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5) 5. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 6. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 7. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 8. Treatment of articles by dipping and pouring (PROC13) 9. Use as laboratory reagent (PROC15)
2.1 Contributing scenario (1) controlling environmental exposure	
Formulation of preparations (ERC2) and industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a) An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) controlling worker exposure for industrial use for formulation of preparations/articles, intermediate use and end-use in industrial settings.	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC1/2/3/5/8a/8b/9/13/15	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid
Amounts used	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
Frequency and duration of use/exposure	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	More than 4 hours per day
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
Other given operational conditions affecting workers exposure	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors
Technical conditions and measures at process level (source) to prevent release	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
Technical conditions and measures to control dispersion from source towards the worker	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	1. Containment as appropriate 2. Good standard of general ventilation
Organizational measures to prevent /limit releases, dispersion and exposure	
Specific organizational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for	Not applicable

demonstrating strictly controlled conditions (to justify exposure based waiving).	
Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)	1. Chemical goggles

3 Exposure information and reference to its source

Information for contributing scenario 1

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

Information for contributing scenario 2

A qualitative approach was used to conclude safe use for workers. The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.

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

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

5 Additional good practice advice beyond the REACH CSA

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

- Containment as appropriate;
- Minimise number of staff exposed;
- Segregation of the emitting process;
- Effective contaminant extraction;
- Good standard of general ventilation;
- Minimisation of manual phases;
- Avoidance of contact with contaminated tools and objects;
- Regular cleaning of equipment and work area;
- Management/supervision in place to check that RMMs in place are being used correctly and OCs followed;
- Training staff on good practice;
- Good standard of personal hygiene;

1 Exposure scenario (3) **Professional use in formulation of preparations and end-use**	
Use descriptors related to the life cycle stage	SU22 PC12 PROC1/2/8a/8b/9/11/15/19 ERC8b/8e
Name of contributing environmental scenario (1) and corresponding ERC	1. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e)
List of names of contributing worker scenarios (2) and corresponding PROC	1. Use in closed process, no likelihood of exposure (PROC1) 2. Use in closed, continuous process with occasional controlled exposure (PROC2) 3. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a) 4. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b) 5. Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9) 6. Non industrial spraying (PROC11) 7. Use as laboratory reagent (PROC15) 8. Hand-mixing with intimate contact and only PPE available (PROC19)
2.1 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of reactive substances in open systems (ERC8b) and wide dispersive outdoor use of reactive substances in open systems (ERC8e). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) controlling worker exposure for professional use in formulation of preparations and end-use	
All Process Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. PROC1/2/8a/8b/9/11/15/19	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid, >25% substance in the product
Amounts used	
Amounts used at a workplace (per task or per shift); note: sometimes this information is not needed for assessment of worker's exposure	Not applicable
Frequency and duration of use/exposure	
Duration per task/activity (e.g. hours per shift) and frequency (e.g. single events or repeated) of exposure	More than 4 hours per day
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed as a result of the nature of the activity	Not applicable
Other given operational conditions affecting workers exposure	
Other given operational conditions: e.g. technology or process techniques determining the initial release of substance from process into workers environment; room volume, whether the work is carried out outdoors/indoors, process conditions related to temperature and pressure.	Indoors or outdoors
Technical conditions and measures at process level (source) to prevent release	
Process design aiming to prevent releases and hence exposure of workers; this in particular includes conditions ensuring rigorous containment; performance of containment to be specified (e.g. by quantification of residual losses or exposure)	Not applicable
Technical conditions and measures to control dispersion from source towards the worker	
Engineering controls, e.g. exhaust ventilation, general ventilation; specify effectiveness of measure	1. Containment as appropriate 2. Good standard of general ventilation 3. Avoid splashing. Use specific dispensers and pumps specifically designed to prevent splashes/spills/ exposure to occur
Organisational measures to prevent/limit releases, dispersion and exposure	
Specific organisational measures or measures needed to support the functioning of particular technical measures (e.g. training and supervision). Those measures need to be reported in particular for	Not applicable.

demonstrating strictly controlled conditions (to justify exposure based waiving).	
Conditions and measures related to personal protection, hygiene and health evaluation	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant)	1. Chemical goggles

3 Exposure information and reference to its source

Information for contributing scenario 1

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

Information for contributing scenario 2

A qualitative approach was used to conclude safe use for workers. The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.

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

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

5 Additional good practice advice beyond the REACH CSA

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

- Containment as appropriate;
- Minimise number of staff exposed;
- Segregation of the emitting process;
- Effective contaminant extraction;
- Good standard of general ventilation;
- Minimisation of manual phases;
- Avoidance of contact with contaminated tools and objects;
- Regular cleaning of equipment and work area;
- Management/supervision in place to check that RMMs in place are being used correctly and OCs followed;
- Training staff on good practice;
- Good standard of personal hygiene.

OSTCHEM

AZOT

SAFETY DATA SHEET

(according to Regulation (EC) No 1907/2006 (REACH), ANNEX II)

AMMONIUM NITRATE

Revision date: 01.06.2012 Version 3.0

1 Exposure scenario (4) **Consumer end-use of fertilizers and matches/fireworks**	
Use descriptors related to the life cycle stage	SU21 PC11/12 ERC8b/8e/10a
Name of contributing environmental scenario (1) and corresponding ERC	1. Wide dispersive indoor use of reactive substances in open systems (ERC8b) 2. Wide dispersive outdoor use of reactive substances in open systems (ERC8e) 3. Wide dispersive outdoor use of long-life articles and materials with low release (ERC10a)
List of names of contributing consumer scenarios (2) and corresponding PC and sub-product categories if applicable	1. Explosives (PC11) 2. Fertilizers (PC12)
2.1 Contributing scenario (1) controlling environmental exposure	
Wide dispersive indoor use of reactive substances in open systems (ERC8b), wide dispersive outdoor use of reactive substances in open systems (ERC8e) and wide dispersive outdoor use of long-life articles and materials with low release (ERC10a). An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
2.2 Contributing scenario (2) consumer end-use of fertilizers and matches/fireworks	
All Product Categories are covered by this contributing scenario as all Operational Conditions (OCs) and Risk Management Measures (RMMs) are identical. Exposure to eye irritating dilutions can occur during consumer use of fertilizers (PC12). No exposure is expected from the use of matches/fireworks (PC11).	
Product characteristic	
Product related conditions, e.g. the concentration of the substance in a mixture, the physical state of that mixture (solid, liquid; if solid: level of dustiness), package design affecting exposure	Solid, low dustiness Liquid Products containing ≥10% and <10%.
Amounts used	
Amounts used per event	Not applicable
Frequency and duration of use/exposure	
Duration of exposure per event and frequency of events; please note: Tier 1 exposure assessment usually refers to external event exposure, without taking into account the duration and frequency of the event (see Guidance Chapter R.15)	Not applicable
Human factors not influenced by risk management	
Particular conditions of use, e.g. body parts potentially exposed; population potentially exposed (adults, children)	Not applicable
Other given operational conditions affecting workers exposure	
Other operational conditions e.g. room volume, air exchange rate, outdoor or indoor use	Indoors or outdoors
Conditions and measures related to information and behavioral advice to consumers	
Safety advice to be communicated to consumers in order to control exposure, e.g. technical instruction, behavioral advice	Avoid splashing
Conditions and measures related to personal protection and hygiene	
Personal protection, e.g. wearing of gloves, face protection, full body dermal protection, goggles, respirator; specify effectiveness of measure; specify the suitable material for the PPE (where relevant) and advise how long the protective equipment can be used before replacement (if relevant).	1. If ≥10% of ammonium nitrate: Use chemical goggles 2. If <10% of ammonium nitrate: no personal protection needed 3. Instructions addressed to the consumer via product labelling
3 Exposure information and reference to its source	
Information for contributing scenario 1	
An environmental assessment has not been performed as the substance does not meet the criteria for being classified as dangerous for the environment.	
Information for contributing scenario 2	
A qualitative approach was used to conclude safe use for consumers. The leading toxicological effect is eye irritation (local endpoint), for which no DNEL can be derived as no dose-response information is available. As minimal systemic effects were only noted at such high levels of substance that humans are normally not exposed to (see DNELs), a quantitative assessment is not considered necessary.	
4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
No additional risk management measures, besides those that are mentioned above, are needed to guarantee safe use for workers/consumers for use of fertilisers: If ≥10% ammonium nitrate: Use chemical goggles If <10% ammonium nitrate: No personal protection needed	