Ammonium nitrate

Safety Data Sheet

according to Regulation (EC) No. 453/2010

Revision date: 02/05/2011 Supersedes: Version: 1.0

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

1.1. Product identifier

Chemical type	:	Substance
Substance name	:	Ammonium nitrate
EC no	:	229-347-8
CAS No.	:	6484-52-2
REACH registration No.	:	01-2119490981-27
IUPAC name	:	Ammonium nitrate
Chemical name	:	Nitric acid ammonium salt
Formula	:	H3N.HNO3

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

1.2.1. Relevant identified uses

Use of the substance/preparation : Adhesives, sealants
Fertilizers
Fuels
Explosives
Intermediates
Water treatment chemicals

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer:
Joint-stock company "Kuibyshev Azot"
6, Novozavodskaya, Toliatti, Samara Region
445007 - Russia
T +7 (8482) 561101, 561301 - F +7 (8482) 561301
E-mail: office@kuazot.ru
http://www.kuazot.ru/

Only representative:

ITS Testing Services (UK) Ltd
Caleb Brett House
734 London Road
RM20 3NL - West Thurrock, Grays
Essex, United Kingdom
T +44(0)161 228 0111 - F +44(0)161 933 4001
E-mail: ies14.reach@intertek.com

1.4. Emergency telephone number

Emergency number : +7 (8482) 561101

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Ox. Sol. 3 H272
Eye Irrit. 2 H319

Full text of H-phrases: see section 16.

Classification according to Directive 67/548/EEC or 1999/45/EC

Xi; R36
O; R8

Full text of R-phrases: see section 16.

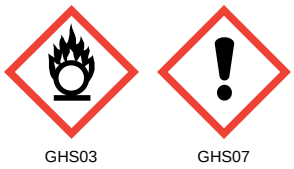
Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS03 GHS07

Signal word (CLP) : Warning

Hazard statements (CLP) : H272 - May intensify fire; oxidizer
H319 - Causes serious eye irritation

Precautionary statements (CLP) : P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P220 - Keep/Store away from clothing/…/combustible materials.
P264 - Wash Hands thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minuts. Remove contact lenses, if present and easy to do. Continue rinsing
P370+P378 - In case of fire: Use Water for extinction.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
Ammonium nitrate	(CAS No.) 6484-52-2 (EC no) 229-347-8 (REACH-no) 01-2119490981-27	>= 97	Xi; R36 O; R8

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Ammonium nitrate	(CAS No.) 6484-52-2 (EC no) 229-347-8 (REACH-no) 01-2119490981-27	>= 97	Ox. Sol. 3, H272 Eye Irrit. 2, H319

Full text of R-, H- and EUH-phrases: see section 16.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : If respiratory irritation occurs upon inhalation, remove to fresh air. Seek medical attention if symptoms develop or persist. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases of doubt, or when symptoms persist, seek medical advice.

First-aid measures after skin contact : Wash immediately with lots of water (15 minutes)/shower. Remove/Take off immediately all contaminated clothing. Seek medical attention if irritation develops.

First-aid measures after eye contact : Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Seek medical attention if ill effect or irritation develops.

First-aid measures after ingestion : Seek medical advice. If swallowed, do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth immediately and drink large quantities of water.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after eye contact : Irritating to eyes.

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

Methaemoglobinaemia.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: : Non combustible. Water.

Unsuitable extinguishing media : combustible materials.

5.2. Special hazards arising from the substance or mixture

Fire hazard : May be explosive in contact with flammable or organic substances and at confinement during fire. . Hazardous decomposition products: Nitrogen oxides (NOx). Ammonia. amines.

Reactivity : Stable in use and storage conditions as recommended in item 7.

5.3. Advice for firefighters

Precautionary measures fire : Use self-contained breathing apparatus and chemically protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid contact with skin, eyes and clothing. Use personal protective equipment as required. For further information refer to section 8 : Exposure-controls/personal protection"".

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent contamination of soil, drains and surface waters. Do not discharge into drains or the environment. Relevant water authorities should be notified of any large spillage to water course or drain.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. To clean the floor and all objects contaminated by this material, use plenty of water. Do not absorb with saw-dust or any other combustible absorbent material. Avoid raising powdered materials into airborne dust.

Other information : Avoid generation of dust. Keep away from sources of ignition.

6.4. Reference to other sections

Refer to sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Provide adequate ventilation. Provide local exhaust or general room ventilation to minimize vapour concentrations. Avoid contact with skin, eye and clothing. Avoid generation of dust. Avoid ignition sources. Protect from moisture. Keep away from: Metals. dust. organic materials.

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Wash contaminated clothing prior to re-use. Remove all contaminated clothing and footwear.

7.2. Conditions for safe storage, including any incompatibilities

Storage condition(s) : Keep in original containers. Keep container tightly closed in a cool, well-ventilated place. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid high temperatures. Keep away from : combustible materials. reducing materials.

Incompatible products : combustible materials. reducing materials.

Incompatible materials : copper. Zinc.

Packaging materials : stainless steel. synthetic material.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupation exposure limits: No data available.

Biological exposure limits: no data available

DNEL/PNEC

DNEL/DMEL			Exposure routs	Exposure frequency	Critical component	Remark
Worker		Consumer				
Industry	Professional					
N/A	N/A	N/A	Oral	Short term (acute)	N/A	None
N/A	N/A	12.8 mg/kg bw/day		Long term (repeated)		
N/A	N/A	N/A	Dermal	Short term (acute)		
21.3 mg/kg bw/day	N/A	12.8 mg/kg bw/day		Long term (repeated)		
N/A	N/A	N/A	Inhalation	Short term (acute)		
37.6 mg/m³	N/A	11.1 mg/m³		Long term (repeated)		

PNEC aqua (freshwater): 0.45 mg/L
PNEC aqua (marine water): 0.045 mg/L

PNEC aqua (intermittent releases): 4.5 mg/L
PNEC for sewage treatment plant: 18 mg/L
PNEC sediment: not available
PNEC soil: not available
PNEC oral (secondary poisoning): No potential for bioaccumulation

8.2. Exposure controls

Appropriate engineering controls	:	Ensure adequate ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Hand protection	:	protective gloves.
Eye protection	:	Chemical goggles or face shield.
Skin and body protection	:	Wear protective clothing.
Respiratory protection	:	Wear respiratory protection.
Environmental exposure controls	:	Can be disposed as waste water according to local regulation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Appearance	:	White granules, Colorless crystalline powder.
Colour	:	transparent. white.
Odour	:	Odourless.
Odour threshold	:	No data available
pH	:	No data available
Melting point	:	169.6-169.7 ℃
Solidification point	:	No data available
Boiling point	:	Not applicable. Decomposes before boiling
Flash point	:	Not applicable. The substance is inorganic.
Relat. evapor. rate comp. to butylacetate	:	No data available
Flammability (solid, gas)	:	Non-flammable.
Explosive limits	:	No data available
Vapour pressure	:	Negligible.
Relative vapour density at 20 ℃	:	No data availabl e
Relative density	:	1.72 g/cm³
Solubility	:	Water: > 100 g/100ml at 20 ℃
Log Pow	:	Not applicable
Self ignition temperature	:	No self-ignition
Decomposition temperature	:	> 210 ℃
Viscosity, kinematic	:	not applicable
Viscosity, dynamic	:	not applicable
Explosive properties	:	Non explosive.
Oxidising properties	:	Oxidizing.
Remarks	:	Ammonium nitrate with > 0.2% of combustible substances is classified as an explosive substance.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable in use and storage conditions as recommended in item 7.

10.2. Chemical stability

Stable in use and storage conditions as recommended in item 7.

10.3. Possibility of hazardous reactions

Decomposes on heating.

10.4. Conditions to avoid

Decomposes on heating. Do not manipulate the product in a confined space.

10.5. Incompatible materials

reducing agents. Strong acids, bases. Metallic powders. combustible materials. zinc. Copper and its alloys. Chlorates. chromates, e.g. potassium chromate, potassium or sodium dichromate.

10.6. Hazardous decomposition products

During a fire: Nitrogen oxides (NOx).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Ammonium nitrate (6484-52-2)	
LD50 oral rat	2950 mg/kg (OECD 401)
LD50 dermal rat	> 5000 mg/kg (OECD 402)
LC50 inhalation rat (mg/l)	> 88.8 mg/l (no guidelines followed)

Skin corrosion/irritation : Not irritating (OECD 401)

Serious eye damage/irritation : Causes serious eye irritation (OECD 405)

Skin sensitisation : Not sensitizing (OECD 405)

Respiratory sensitisation : No data available

Germ cell mutagenicity : Negative (OECD 471, 473, 476)

Carcinogenicity : No carcinogenic effect (OECD 453)

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Ammonium nitrate (6484-52-2)	
NOAEL (oral,rat,25 days)	1500 mg/kg bodyweight/day (OECD 422)
NOAEL (oral,rat,52 weeks)	256 mg/kg bodyweight/day (OECD 453)
NOAEL (inhalation,rat,vapour,2 weeks)	> 185 mg/m^3 (OECD412)

Aspiration hazard : Not classified

Remarks : Some tests have been run on read-across substances

SECTION 12: Ecological information

12.1. Toxicity

Ammonium nitrate (6484-52-2)	
LC50 fish	447 mg/l (48 hours)
EC50 Daphnia	490 mg/l (48 hours)
EC50 microorganisms	> 1000 mg/l
NOEC (acute) microorganisms	180 mg/l
ErC50 (algae)	> 1700 mg/l (10 days)
Remarks	Some tests have been run on read-across substances

12.2. Persistence and degradability

Ammonium nitrate (6484-52-2)	
Persistence and degradability	Not applicable to inorganic substances.
Hydrolysis	No hydrolysable group is present, will completely dissociate into ions.

12.3. Bioaccumulative potential

Ammonium nitrate (6484-52-2)	
Log Pow	Not applicable
Bioaccumulative Potential	Low bioaccumulation potential.

12.4. Mobility in soil

Ammonium nitrate (6484-52-2)	
Ecology - soil	Low potential for absorption.

12.5. Results of PBT and vPvB assessment

Ammonium nitrate (6484-52-2)	
Results of PBT 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

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Can be deposited in landfills, sent to an incineration or other appropriate means of disposal provided they meet the requirements of local laws.

Additional information : Empty containers should be thoroughly rinsed with large quantities of clean water. Empty containers can be dumped after cleaning according to local legislation.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No. : 1942

14.2. UN proper shipping name

Proper shipping name : AMMONIUM NITRATE

Transport document description : UN 1942 AMMONIUM NITRATE, 5.1, III, (E)

14.3. Transport hazard class(es)

Class (UN) : 5.1

Hazard labels (UN) : 5.1 - Oxidizer

14.4. Packing group

Packing group (UN) : III

14.5. Environmental hazards

Other information : No supplementary information available.

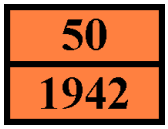
14.6. Special precautions for user

14.6.1. Overland transport

Hazard identification number (Kemler No.) : 50

Classification code : O2

Orange plates :



Tunnel restriction code : E

Limited quantities (ADR) : LQ12

Excepted quantities (ADR) : E1

14.6.2. Transport by sea

Class 5.1 - Oxidizer

14.6.3. Air transport

Class 5.1 - Oxidizer

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No additional information available

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

CSA has been carried out for this substance.

SECTION 16: Other information

Sources of Key data : MSDS.

Abbreviations and acronyms : ACGIH (American Conference of Governement Industrial Hygienists). ASTM - American Society for Testing and Materials . CAS - Chemical Abstracts Service. CAS (Chemical Abstracts Service) number. CLP - Classification, Labelling and Packaging. CSR - Chemical Safety Report. DIN - Deutsches Institut für Normung eV (German Institute for Standardization). EC - European Community. EEC - European Economic Community. FRP: fiberglass-reinforced plastics. GESTIS: Gefahrstoffdaten banken (Database on hazardous substances). GHS - Globally Harmonised System. GPPS: general purpose polystyrenes. HCS - Hazard Communication Standard. HIPS: high impact polystyrenes. HMIS - Hazardous Materials Identification System. IARC (International Agency for Research on Cancer). MSDS - Material Safety Data Sheet. PVA (Polyvinyl alcohol). OSHA - Occupational Safety and Health Administration. Overland transport (ADR). PVC (Polyvinyl chloride). REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals. SDS - Safety Data Sheet . UP: Unsaturated polyester. VCI - volatile corrosion inhibitor. VE: epoxy vinyl ester.

Full text of R-, H- and EUH-phrases:

Eye Irrit. 2	Serious Eye Damage/Irritation Category 2
Ox. Sol. 3	Oxidising Solid Category 3
H272	May intensify fire; oxidizer
H319	Causes serious eye irritation
R36	Irritating to eyes.
R8	Contact with combustible material may cause fire.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

ANNEX TO EXTENDED SAFETY DATA SHEET

Ammonium nitrate

Created on May 03, 2011

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	Not applicable

activity	
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)	More than 4 hours per day

of exposure	
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 (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 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 (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