Safety Data Sheet
According to REACH Regulation 1907/2006/EC and Regulation (EU) 2015/830

Revision Number: A-2.2-EN	Revision Date: 28-02-2018

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

1.1. Product identifier

Name: Ammonium nitrate.
Synonyms: Nitric-acid ammonium, nitric acid ammonium salt.
CAS number: 6484-52-2.
EC number: 229-347-8.
REACH registration number: 01-2119490981-27-0018.

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

Identified uses:
Fertilizer, use in the manufacturing of formulations for adhesives and sealants, explosives, fertilizers and water treatment chemicals.

Uses advised against: No.

1.3. Details of the supplier of the safety data sheet

Manufacturer:
Uralchem, JSC
Presnenskaya Naberezhnaya 6 bldg. 2
Moscow, 123112, Russia

Azot Branch of Uralchem JSC in Berezniki
Churtanskoe Shosse 75, Berezniki,
Perm Krai, 618401 Russia
Tel.: +7 (3424) 29-82-09
E-mail: azot@uralchem.com

Only representative:
Uralchem Assist GmbH
Johannssenstrasse 10,
Hannover, 30159, Germany

Tel.: + 49 511 45 99 445
Email: info@uralchem-assist.com

E-Mail address for the competent person responsible for the safety data sheet: reach@uralchem.com

1.4. Emergency telephone number

+44 (0) 203 394 9870 (24/7)

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 on classification, labeling and packaging:
Oxidizing solid, Category 3, H272
Eye irritation, Category 2, H319

2.2. Label Elements

WARNING

Hazard Statements:
H272: May intensify fire; oxidizer.
H319: Causes serious eye irritation.

Precautionary Statements:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220: Keep away from clothing and other combustible materials.
P370+P378: In case of fire: Use water to extinguish.
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards

PBT/vPvB: The study does not need to be conducted because the substance is inorganic.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance:
Main ingredient: Ammonium nitrate
CAS number: 6484-52-2
EC number: 229-347-8

CAS number	EC number	Name	Weight % content (or range)	Classification according to Regulation (EC) No 1272/2008	Specific concentration limits/M-Factor	REACH registration number
6484-52-2	229-347-8	Ammonium nitrate	> 98	Oxidising solid 3 H272 Eye Irritation 2 H319	> 80% — <= 100% Eye Irritation 2 H319	01-2119490981-27-0018
10377-60-3	233-826-7	Magnesium nitrate	< 1,9	Oxidising solid 3 H272	--	01-2119491164-38-0003

At customer's request the product is processed with anticaking additive, which is registered under REACH.

3.2. Mixture: Not applicable.

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

4.1.1. General information:
In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if possible).

4.1.2. Following inhalation:
Remove casualty to fresh air and keep warm and at rest.
Rinse nasal cavities with water.

4.1.3. After skin contact:
After contact with skin, wash immediately with plenty of water
Immediately remove any contaminated clothing, shoes or stockings.

4.1.4. Following eye contact:
In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.

4.1.5. After ingestion:

If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention.
Do NOT induce vomiting.

4.1.6. Self-protection of the first aider.
First aid assistant: Pay attention to self-protection!

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: weakness, headache, cough, shortness of breath. In hard cases: cyanosis of skin and mucous membranes, palpitation, decrease in arterial pressure, spasms, spontaneous urination and defaecation.
Swallowing: nausea, vomiting, acute abdominal pain.
Skin contact: reddening, morbidity, burning, edema.
Eye contact: reddening, lacrymation, pain.

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

Treat symptomatically.
First-aid measures: Eyewash, sterile bandages, cotton, activated carbon, laxative salts.

SECTION 5. FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media:
Water spray.

Extinguishing media which must not be used for safety reasons:
Foam.
Sand.
Water steam.

5.2. Special hazards arising from the substance or mixture

Can be released in case of fire: Nitrogen oxides (NOx), ammonia, amines.
Danger of explosion at contact with inflammable or organic substances.

5.3. Advice for firefighters

Fight fire with normal precautions from a reasonable distance.
Wear a self-contained breathing apparatus and chemical resistant suit.
Rubber boots (heat resistant).
Rubber gloves (oil and gasoline resistant).

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.
See protective measures under point 7 and 8.

6.2 Environmental precautions

Do not empty into drains or the aquatic environment.
Do not allow to enter into soil/subsoil.

6.3. Methods and material for containment and cleaning up

Remove mechanically, placing in appropriate containers for disposal.
Unsuitable material for absorbing: Sawdust, Combustible.
Material recycling possible.
Wash with generous amount of water.
In case of gas being released or leakage into waters, ground or the drainage system, the appropriate authorities must be informed.

6.4. Reference to other sections

See protective measures under Section 8 and 13.

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Provide for sufficient ventilation and punctiform suction at critical points.

Keep away from heat sources (e.g. hot surfaces), sparks and open flames.
Keep away from: Metal, dust, organic matter.

7.2. Conditions for safe storage, including any incompatibilities

Store away from other materials.
Keep container tightly closed.
Storage temperature: <30 ºC
Relative room humidity (%): <50%
Protect against: Atmospheric precipitation, ground water.
Use only non-sparking tools.
Electric equipment should be grounded and protected from dust penetration.

7.3. Specific end use(s)

See Annex I.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Substance name:	Exposure limit values			
	8 h		Short term	
	ppm	mg/cm³	ppm	mg/cm³
Ammonium nitrate	--	10	--	--

DNEL/DMEL and PNEC values:

DNEL/DMEL: Worker					
Short term (acute)	Systemic effects	Skin contact	--	mg/kg bw/day	--
		Inhalation	--	mg/m³	--
	Local effects	Skin contact	--	mg/cm²	--
		Inhalation	--	mg/m³	--
Long term (repeated)	Systemic effects	Skin contact	5.12	mg/kg bw/day	Repeated dose toxicity
		Inhalation	36	mg/m³	Repeated dose toxicity
	Local effects	Skin contact	--	mg/cm²	--
		Inhalation	--	mg/m³	--

DNEL/DMEL: Consumer					
Short term (acute)	Systemic effects	Skin contact	--	mg/kg bw/day	--
		Inhalation	--	mg/m³	--
		Ingestion	--	mg/kg bw/day	--
	Local effects	Skin contact	--	mg/cm²	--
		Inhalation	--	mg/m³	--
Long term (repeated)	Systemic effects	Skin contact	2.56	mg/kg bw/day	Repeated dose toxicity
		Inhalation	8.9	mg/m³	Repeated dose toxicity
		Ingestion	2.56	mg/kg	Repeated dose toxicity
	Local effects	Skin contact	--	mg/cm²	Repeated dose toxicity
		Inhalation	--	mg/m³	--
		Ingestion	--	mg/kg bw/day	--

PNEC			
Freshwater	--	mg/l	--
Marine water	--	mg/l	--
Intermittent releases	--	mg/l	--
Sediment	--	mg/kg	--
Sediment-marine	--	mg/kg	--
Soil	--	mg/kg	--
Air	--	mg/cm³	--
Sewage treatment plant	18	mg/l	Extrapolation method
Secondary poisoning	--	mg/kg	--

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate ventilation.
Provide extract ventilation to points where emissions occur.

8.2.2. Individual protection measures, such as personal protective equipment

Respiratory protection:
Use a suitable respirator or a bulky-dressing.
Hand protection:
Long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training.

Eye protection:
Suitable eye protection: Chemical goggles
Skin protection:
Wear suitable working clothes.
Woolen or cotton suits.
Leather or rubber boots.
General protection and hygiene measures:
Work under a high standard of personal hygiene.
Wash hands and face before breaks.
When using the product, do not eat, drink or smoke.

8.2.3. Environmental exposure controls

Establish monitoring systems for monitoring particulates concentration (dust).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance (physical state and colour):	Solid, granulate. White, yellow < 1 mm: < 3% 1-4 mm: >= 95% < 6 mm: 100%.
Odour:	Odourless
Odour threshold:	Not applicable (odourless)
pH:	> 5 (10% water solution)
Melting point/freezing point:	169.6 ºC (1013 hPa)
Boiling point/boiling range:	Decomposes before boiling.
Flash point:	The study does not need to be conducted because the substance is inorganic.

Flammability (solid, gas):	Non-flammable.
Upper/lower flammability or explosive limits:	Not applicable (non-flammable)
Explosive properties:	Not explosive.
Oxidizing properties:	Oxidizing solid, Category 3 H272: May intensify fire; oxidizer.
Vapour pressure:	Not applicable (decomposition)
Relative density:	1.72 (20°C)
Solubility:	No data available (not required by REACH)
Water solubility:	>100 g/l (20 °C)
Partition coefficient: n-octanol/water:	Not applicable (inorganic).
Viscosity:	Not applicable (solid)
Vapour density:	No data available (not required by REACH)
Evaporation rate:	No data available (not required by REACH)
Auto-ignition temperature:	No self-ignition up to the melting point.
Decomposition temperature:	>=210 ºC
9.2. Other information	
Water absorbing.	

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

Reacts with: strong alkalis, strong acid.
Formation of: ammonia, nitrogen oxides (NOx).

10.2. Chemical stability

Not hazardous reaction when handled and stored according to provisions.

10.3. Possibility of hazardous reactions

Thermal decomposition.
Risk of explosion at interaction with combustible/organic substances.
In the closed space the fire with participation of ammonium nitrate can pass in explosion.

10.4. Conditions to avoid

Keep away from: Incompatible materials.
Atmosphere influence.
Keep away from heat sources (e.g. hot surfaces), sparks and open flames.
Welding equipment with traces of fertilizers.

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

Nitrogen oxides (NOx).
Ammonia.
Amines.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

11.1.1. Acute effects (acute toxicity, irritation and corrosivity)

11.1.1.1. LD50 oral:	Ammonium nitrate: 2950 mg/kg bw (rat, male/female) OECD 401
11.1.1.2. LD50 dermal:	Ammonium nitrate: > 5000 mg/kg bw (rat, male/female) OECD 402
11.1.1.3. LC50 inhalation:	No data available.
11.1.1.4. Skin corrosion / irritation:	Ammonium nitrate: Not an irritant. (rabbit) OECD 404
11.1.1.5. Serious eye damage / irritation:	Ammonium nitrate: Irritant (rabbit) OECD 405 Eye irritation, Category 2, H319: Causes serious eye irritation.
11.1.1.6. Specific target organ toxicity – single exposure:	Based on the available data, the classification criteria are not met.

11.1.2. Sensitisation

Ammonium nitrate:
Respiratory sensitisation: No data available.
Skin sensitisation: No sensitising (mouse, read-across)
OECD 429, EU B.42, EPA OPPTS 870.2600

11.1.3. Repeated dose toxicity

Ammonium nitrate:

Specific target organ toxicity — repeated exposure: Based on the available data, the classification criteria are not met.

Subacute oral toxicity:
NOAEL >= 1500 mg/kg bw/day (rat, male/female, read-across)
OECD 422

Chronic oral toxicity:
NOAEL (52, 104 weeks) = 256 mg/kg bw/day (rat, male, read-across)
NOAEL (52, 104 weeks) = 284 mg/kg bw/day (rat, female, read-across)
OECD 453 Ota Y. et al. (2006)

Subacute inhalative toxicity:
NOAEC (systemic) > 185 mg/m^3 air (rat, male)

11.1.4. CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)

Ammonium nitrate:

Carcinogenicity Test not required. The substance is not genotoxic.

Germ cell mutagenicity: Based on the available data, the classification criteria are not met.

Reproductive toxicity: Based on the available data, the classification criteria are not met.
Effects on fertility:
Oral:
NOAEL $\geq$ 1500 mg/kg bw/day (read-across) (rat; male/female)
OECD 422

Developmental toxicity:
Oral):
NOAEL $\geq$ 1500 mg/kg bw/day (read-across) (rat; male/female)
OECD 422

Reproductive toxicity, effects on or via lactation: No data available.

11.1.5. Aspiration hazard

No data available.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity

Acute toxicity to fish	
LC50:	Ammonium nitrate: Species: *Cyprinus carpio* 447 mg/l (48h) (freshwater, static) Dabrowska, H. and Sikora, H. (1986)
Chronic toxicity to fish	
NOEC:	No data available.
Acute toxicity to crustaceans	
EC50:	Ammonium nitrate: Species: *Daphnia magna* 490 mg/l (48h) (freshwater, read-across) Dowden, B. F. and Bennett H. J. (1965)
Chronic toxicity to crustaceans	
NOEC:	No data available.
Acute toxicity to algae and other aquatic plants	
EC50:	Ammonium nitrate: Species: *Several benthic diatoms* > 1700 mg/L (10 d) (marine water, inhibition of growth rate, read-across) Admiraal W. (1977)
Toxicity data on soil micro- and macro-organisms and other environmentally relevant organisms, such as birds, bees and plants	

No data available.	
12.2. Persistence and degradability	
Readily biodegradable:	The study does not need to be conducted because the substance is inorganic. Required removal efficiency (wastewater): Anaerobic conversion of ammonium: Average biodegradation (20ºC): 52 g N/kg/day. Anaerobic transformation of nitrate: Average rate of biodegradation (20ºC): 70 g N/kg/day.
Other relevant information:	In water, the substance is completely dissociated.
12.3. Bioaccumulative potential	
Experimental BCF:	Low bioaccumulation potential
Log Pow:	The study does not need to be conducted because the substance is inorganic.
12.4. Mobility in soil	
Low adsorption potential.	
12.5. Results of PBT and vPvB assessment	
The study does not need to be conducted because the substance is inorganic.	
12.6. Other adverse effects	
In environment transforms with the formation of nitrogen oxides and ammonia.	

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

This product and its packaging must be disposed of in a safe way. Generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional or local authority requirements.

13.1.1. Product

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer but processed in a suitable effluent treatment plant. Depending on the degree and nature of the contamination, dispose of it as fertilizer on the field, as a raw material or in an authorized waste facility. Incineration or landfill should only be considered when recycling is not feasible. European waste catalogue (EWC) waste code 06 10 02 - wastes containing dangerous substances.

13.1.2. Packaging

Empty containers or liners may contain product residues. Packages should be emptied and can be recycled after thorough cleansing. If approved by local authorities, empty containers may be disposed of as non-hazardous material or returned for recycling.

SECTION 14. TRANSPORT INFORMATION

14.1 UN number	1942
14.2 UN proper shipping name	AMMONIUM NITRATE
14.3 Transport hazard class(es)	5.1
14.4 Packing group	III
14.5 Environmental hazards	No.

14.6. Special precautions for user

Reduces oxygen content in hold.
Avoid contact of cargo with heated surfaces above 50 ºC.
Humid cargo is corrosive.

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

Not applicable.

SECTION 15. REGULATORY INFORMATION

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

Regulation (EC) No 2003/2003 of the European Parliament and of the council of 13 October 2003, relating to fertilizers.

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

Council Directive 91/676/EEC concerning the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources.

Directive 2012/18/EU of the European Parliament and of the council of 4 July 2012, on the control of major-accident hazards involving dangerous substances.

15.2. Chemical safety assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16. OTHER INFORMATION

Indication of changes:

Version № A-2.2-EN of 28-02-2018
Section 13.1., 13.1.1, 13.1.2: Added information on Disposal considerations.
Section 15.1: Added Directive 2012/18/EU.

Abbreviations:

DNEL: Derived No-Effect Level
PNEC: Predicted No-Effect Concentration
NOAEL: No Observed Adverse Effect Level
NOEC: No observed effect concentration.
LD50: Lethal Dose 50%. The LD50 corresponds to the dose of a tested substance causing 50% lethality during a specified time interval.
LC50: Lethal Concentration 50%. The LC50 corresponds to the concentration of a tested substance causing 50% lethality during a specified time interval.
EC50: Effective Concentration 50%. The EC50 corresponds to the concentration of a tested substance causing 50% changes in response (e.g. on growth) during a specified time interval.
BCF: Bioconcentration factor
PBT: Persistent, bioaccumulative and toxic
vPvB: Very Persistent and very Biaoccumulative

Recommendations about use:

On loamy soils it is recommended to apply as the basic fertilizer in autumn and spring. On easy soils it is reasonable to apply before dropping under cultivation. Top dressing of plants by ammonium nitrate is necessary for finishing not later than middle of summer not to detain maturing of fruits and vegetables. At regular use of ammonium nitrate acidity of soil can raise. For neutralization of acidity of soil it is necessary to conduct liming.
Recommended doses:
Vegetable cultures, potato (apply before dropping or in top dressing) – 2-3кg/100м^2 and 0,5-1,0кg/100м^2 at top dressing in vegetation. Fruit and berry cultures (top dressing in vegetation) – 150-300g under one tree (bush). All cultures (top dressing in vegetation) – 100g/10L waters/10m^2

ANNEX I

Exposure scenario: Ammonium nitrate

1.- Title of exposure scenario number 1: Manufacturing	
SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) *SU9: Manufacture of fine chemicals*	
ERC1: Manufacture of substances	
PROC1: Use in closed process, no likelihood of exposure *PROC2: Use in closed, continuous process with occasional controlled exposure* *PROC3: Use in closed batch process (synthesis or formulation)* *PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities* *PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities* *PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)* *PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation* *PROC15: Use as laboratory reagent*	
2.- Exposure scenario	
2.1.- Contributing scenario controlling environmental exposure for ERC1	
Environmental assessment: Not performed.	
2.2.- Contributing scenario controlling worker exposure for PROC1, 2, 3, 8a, 8b, 9, 14, 15.	
Product characteristics	
Concentration	No data available.
Physical state	Solid
Volatility	Low
Amounts used	
No data available	
Frequency and duration of use	
Duration	> 4 hours per day.
Human factors not influenced by risk management	
No data available	
Other given operational conditions affecting workers exposure	
Domain	Industrial.
Indoor / Outdoor	Indoor.
Technical conditions and measures at process level (source) to prevent release	
Effectiveness of containment	

Technical conditions and measures to control dispersion from source towards the worker	
Ventilation	Provide a good standard of general ventilation.
Local exhaust ventilation (LEV)	Not required.
Organisational measures to prevent /limit releases, dispersion and exposure	
Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. 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 the RMMs in place are being used correctly and OCs followed . Training for staff on good practice. Good standard of personal hygiene.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	Not required.
Hand protection	Not required.
Eye protection	Goggles.
Skin protection	Not required.
3.- Exposure estimation and reference to its source	
Human health assessment: Qualitative assessment (eye irritation, oxidising) Environmental assessment: Not performed.	
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES.	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling was deemed necessary to define appropriate site-specific risk management measures.	

1.- Title of exposure scenario number 2: Industrial use including distribution and other activities related to the processes in industrial settings
SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites *SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)*
PC1: Adhesives, sealants *PC11: Explosives* *PC12: Fertilizers*

PC19: Intermediate *PC37: Water treatment chemicals*
ERC2: Formulation of preparations (mixtures) *ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates).*
PROC1: Use in closed process, no likelihood of exposure *PROC2: Use in closed, continuous process with occasional controlled exposure* *PROC3: Use in closed batch process (synthesis or formulation)* *PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)* *PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities* *PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities* *PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)* *PROC13: Treatment of articles by dipping and pouring* *PROC15: Use as laboratory reagent*
2.- Exposure scenario
2.1.- Contributing scenario controlling environmental exposure for ERC2 and 6a
Environmental assessment: Not performed.
2.2.- Contributing scenario controlling worker exposure for PC1, 11, 12, 19, 37, PROC1, 2, 3, 5, 8a, 8b, 9,13 and 15
Product characteristics

Concentration	100%
Physical state	Solid, liquid.
Volatility	Low

Amounts used
No data available.
Frequency and duration of use

Duration	> 4 hours day.

Human factors not influenced by risk management
No data available.
Other given operational conditions affecting workers exposure

Domain	Industrial.
Indoor / Outdoor	Indoor.

Technical conditions and measures at process level (source) to prevent release
Effectiveness of containment

Technical conditions and measures to control dispersion from source towards the worker	
Ventilation	Provide a good standard of general ventilation.
Local exhaust ventilation (LEV)	Not required.
Organisational measures to prevent /limit releases, dispersion and exposure	
Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. 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 the RMMs in place are being used correctly and OCs followed . Training for staff on good practice. Good standard of personal hygiene.	
Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	Not required.
Hand protection	Not required.
Eye protection	Goggles.
Skin protection	Not required.
3.- Exposure estimation and reference to its source	
Human health assessment: Qualitative assessment (eye irritation, oxidising) Environmental assessment: Not performed.	
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES.	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling was deemed necessary to define appropriate site-specific risk management measures.	

1.- Title of exposure scenario number 3: Professional end use
SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
PC12: Fertilizers
ERC8b: Wide dispersive indoor use of reactive substances in open systems *ERC8e: Wide dispersive outdoor use of reactive substances in open systems*
PROC1: Use in closed process, no likelihood of exposure *PROC2: Use in closed, continuous process with occasional controlled exposure*

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities *PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities* *PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)* *PROC11: Non industrial spraying* *PROC15: Use as laboratory reagent* *PROC19: Hand-mixing with intimate contact and only PPE available*
2.- Exposure scenario
2.1.- Contributing scenario controlling environmental exposure for ERC8b and 8e
Environmental assessment: Not performed.
2.2.- Contributing scenario controlling worker exposure for PC12, PROC 1, 2, 8a, 8b, 9, 11, 15 and 19
Product characteristics

Concentration	> 25%
Physical state	Solid, liquid.
Volatility	Low.

Amounts used
No data available.
Frequency and duration of use

Duration	> 4 hours per day

Human factors not influenced by risk management
No data available.
Other given operational conditions affecting workers exposure

Domain	Professional.
Indoor / Outdoor	Indoor / Outdoor.

Technical conditions and measures at process level (source) to prevent release
Technical conditions and measures to control dispersion from source towards the worker

Ventilation	Provide a good standard of general ventilation.
Local exhaust ventilation (LEV)	Not required.

Organisational measures to prevent /limit releases, dispersion and exposure
Minimise number of staff exposed. Segregation of the emitting process. Effective contaminant extraction. 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 the RMMs in place are being used correctly and OCs followed . Training for staff on good practice. Good standard of personal hygiene.

Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	Not required.
Hand protection	Not required.
Eye protection	Goggles.
Skin protection	Not required.

3.- Exposure estimation and reference to its source
Human health assessment: Qualitative assessment (eye irritation, oxidising) Environmental assessment: Not performed.

4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES.
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22]. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23]. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling was deemed necessary to define appropriate site-specific risk management measures [DSU1].

1.- Title of exposure scenario number 4: Consumer end use
SU21: Consumer uses: Private households (= general public = consumers)
PC11: Explosives *PC12: Lawn and garden preparations*
ERC8b: Wide dispersive indoor use of reactive substances in open systems *ERC8e: Wide dispersive outdoor use of reactive substances in open systems* *ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release*
2.- Exposure scenario
2.1.- Contributing scenario controlling environmental exposure for ERC 8b, 8e and 10a
Environmental assessment: Not performed.
2.2.- Contributing scenario controlling consumer exposure for PC 11 and 12
Product characteristics
No data available.
Amounts used
No data available.

Frequency and duration of use	
No data available.	
Human factors not influenced by risk management	
No data available.	
Other given operational conditions affecting consumers exposure	
No data available.	
Conditions and measures related to information and behavioural advice to consumers	
Product labelling.	
Conditions and measures related to personal protection and hygiene	
Respiratory protection	Not required.
Hand protection	Not required.
Eye protection	Chemical goggles.
Skin protection	Not required.
3.- Exposure estimation and reference to its source	
Human health assessment: Qualitative assessment (eye irritation, oxidising) Environmental assessment: Not performed.	
4.- Guidance to DU to evaluate whether he works inside the boundaries set by the ES.	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22]. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23]. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling was deemed necessary to define appropriate site-specific risk management measures [DSU1].	