

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

Ammonium nitrate - Solution

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY	
1.1 Product identifier	
Trade name:	Ammonium Nitrate- Solution
Other names:	Ammonium Nitrate solution
Chemical name:	Nitric acid ammonium salt water solution
INDEX # as listed in Annex 6, Table 3.1 of the CLP Regulation:	Not listed in an Annex VI / CLP.
CAS/EC number:	6484-52-2/229-347-8
REACH registration no(s):	01-2119490981-27-0027
UFI #	SF00-90SE-P001-4JWE
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Uses:	<p><u>Uses by workers in industrial settings:</u></p> <p>M-1: Manufacturing of the substance, including handling, storage and quality control.</p> <p>F-1: Formulation of chemicals and fertilizers – formulation of preparations.</p> <p>IW-1: Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control - industrial use resulting in manufacture of another substance (use of intermediates).</p> <p>IW-2: Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control - industrial use of reactive processing aids.</p> <p>PW-1: Use by professional worker (outdoor and indoor of reactive substances in open systems)</p> <p><u>Consumer Use:</u> <u>Substance under restriction according to Regulation 2019/1148 amending Regulation No. 98/2013 on the marketing and use of precursors of explosive substances – NOT provided, introduced, possessed or used by the mass consumer!</u></p>
Uses advised against:	None
1.3 Details of the supplier of the safety data sheet	
Manufacturer	AGROPOLYCHIM JSC BULGARIA Industrial zone 9160, DEVNYA Tel: +359 / 519 97 526,511 URL website: www.agropolychim.bg
Supplier:	AFER BULGARIA EOOD BULGARIA Industrial zone 9160, DEVNYA Tel: +359/519 97 452 / afere@agropolychim.bg

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

Ammonium nitrate - Solution

Person responsible for the Safety Data Sheet (with e-mail address)		Eng. Miroslava Tsvetkova AGROPOLYCHIM JSC BULGARIA Industrial zone 9160, DEVNYA Tel.: +359 / 519 97 419 Email: m.tsvetkova@agropolychim.bg
1.4 Emergency telephone number		
Emergency phone number in Bulgaria – Toxicology Clinique “Pirogov” Medical Institute: International emergency phone number		+359 2 9154 233; +359 2 9154 409 (24 hours / day) Toxicology Clinique, Pirogov National Institute, Sofia 112
2. HAZARDS IDENTIFICATION		
2.1 Classification of the substance or mixture		
Classification based on self-classification. The substance Ammonium nitrate-solution is not included in Annex VI, Table. 3.1 of Regulation 1272/2008 (CLP).		
2.1.1. Classification according to Regulation 1272/2008 (CLP) Oxidizing solids, Hazard category 3 (Oxid. Solid3), H272 Serious eye irritation, Hazard category 2 (Eye Irrit. 2), H319.		
2.1.2 Additional information For the full text of the hazard statements: see SECTION 16.		
2.2 Label elements		
Labelling in accordance with Regulation 1272/2008 (CLP)		
Hazard pictogram(s):	GHS07 	GHS03 
Signal word		Warning
Hazard statement(s):	H272 H319	Cat.3 - May intensify fire; oxidiser. Cat.2 - Causes serious eye irritation.

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

Ammonium nitrate - Solution

Precautionary statement(s):	P210 P220 P370+P378 P264 P280 P305+P351+P338 P337+P313 P501:	Keep away from heat/ sparks/open flames/hot surfaces. - No smoking. Keep/Store away from clothing and combustible materials. In case of fire: Use water for extinction. Wash exposed parts thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. In case of prolonged eye irritation, seek medical attention. Dispose of contents/container in accordance with local/regional/national /international regulations.
-----------------------------	---	--

2.3 Other hazards

PBT/vPvB criteria:	According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted since ammonium nitrate is inorganic.
Endocrine disrupting properties:	Data lacking
Nanoforms:	This product does not contain nanoforms or nanoform-containing substances.
Other hazards identifications:	When wet, a slippery surface is formed.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Mixture:

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

Chemical name/REACH registration number	CAS no.	EC no.	Classification according to Regulation (EC) 1272/2008 (CLP)	Typical conc.	SCL Limits, M-Coeff. ATE-Value; Type
Nitric acid ammonium salt: 01-2119490981-27-0027	6484-52-2	229-347-8	May intensify fire; oxidant -H272, cat. 3 Causes serious eye irritation. - H319, cat. 2	85%~93%	No Identified values (1)*

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

Ammonium nitrate - Solution

Type [1] Substance classified as a physical hazard, health hazard and environmental hazard. [2] Substance with occupational exposure limits. [3] The substance meets the criteria for PBT according to Regulation (EC) № 1907/2006, Annex XIII. [4] The substance meets the criteria for very persistent and very bioaccumulative (vPvB) in accordance with Regulation (EC) № 1907/2006, Annex XIII. [5] Substance of very high concern. For the full text of the hazard statements, see SECTION 16	
4. FIRST-AID MEASURES	
4.1 Description of first aid measures. The speed of response is important. In case of unconsciousness, place the victim in a stable lateral position. Provide a shower and eye wash near the workplace.	
Eye contact:	Immediately wash eyes with plenty of running water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses if present and easy to do. Seek medical advice if irritation develops and persists.
Skin contact:	Wash affected skin area with plenty of water and soap for at least 15 minutes thoroughly while removing contaminated clothing and shoes. Seek medical advice if irritation develops and persists
Ingestion:	Do not induce vomiting! Never give anything by mouth to an unconscious person! Seek medical attention.
Inhalation:	Remove the victim from exposure into fresh air immediately if adverse effects (e.g. dizziness, drowsiness or respiratory irritation) occur. If not breathing, give artificial respiration or if breathing is difficult, give oxygen and seek medical advice. Do not use mouth-to-mouth respiration. Seek medical advice immediately when vapours are intensively inhaled.
4.2 Most important symptoms and effects	
Acute effects	Eye irritation, cough and dryness. Skin redness
Delayed effects	Not known
4.3 Indication of any immediate medical attention and special treatment needed To the doctor's attention: Treat symptomatically. In case of ingestion, contact a specialist immediately. Delayed effects may occur in case of fire exposure involving the product.	
5. FIRE-FIGHTING MEASURES	
5.1 Extinguishing media	
Small fire:	If involved in fire: Finely sprayed water. If not involved in fire: Suitable media for materials involved in fire.

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

Ammonium nitrate - Solution

Unsuitable media:	Chemical fire extinguishers, foam, fire blanket, sand.
5.2 Special hazards arising from the substance or mixture	
May be explosive in contact with flammable or organic substances and at confinement during fire. In case of fire, may produce hazardous decomposition products such as nitrogen oxides (NO, NO ₂ etc.), ammonia (NH ₃), amines.	
5.3 Advice for firefighters	
In case of fire, wear personal protective equipment and chemical protective clothing. Use a polyvalent filter. In case of ignition indoors - use an oxygen-insulating gas mask. Don't dispose in a sewer!	
6. ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures	
Avoid creating dusty conditions and prevent wind dispersal. Avoid contact with eyes, skin, and clothing. Use suitable protective equipment. Keep away from sources of ignition.	
6.2 Environmental precautions	
Prevent the material from contact with soil, entering surface water or sanitary sewer system. Do not discharge directly to a water source. If accidental spillage or washings enter drains or watercourses, contact local authority.	
6.3 Methods and material for containment and cleaning up	
Vacuum or sweep up and place into suitable labelled containers for recovery or disposal. Clean up affected area with a large amount of water. Do not collect spilled material in sawdust or other combustible material. Prevent formation of dust clouds. Residual trace can be wiped away.	
6.4 Reference to other sections	
See section 8 for personal protective equipment and section 13 for waste disposal.	
7. HANDLING AND STORAGE	
7.1 Precautions for safe handling	
Technical measures/ Precautions:	Use with adequate ventilation. Local exhaust ventilation should be provided. Avoid contact with eyes, skin and clothing. Avoid creating dusty conditions and prevent wind dispersal. Keep away from sources of ignition (spark or flame). Avoid contamination by any source including metals, dust and organic materials. Keep away from moisture.
General occupation hygiene:	Do not eat, drink or smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.
7.2 Conditions for safe storage, including any incompatibilities	
Technical measures/ Storage conditions:	In case of indoor storage, use with adequate ventilation. Avoid contact with eyes, skin and clothing. Avoid creating conditions of dust and do not allow scattering by the wind. Keep away from sources of ignition. Do not store fertilizer in the field near hay, straw, grain, fuels and

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

Ammonium nitrate - Solution

	<p>hydrocarbon-based lubricants, etc.</p> <p>Do not store in direct sunlight and under conditions that allow the occurrence of thermal phases / large temperature fluctuations / to avoid destruction of the product granules. Storage temperature not higher than 30 ° C.</p> <p>Store in piles as their maximum size complies with national and regional legal regulations. Provide a distance for quick access between the piles. Do not store together with other products in the same pile.</p> <p>To comply with the requirements of the Ordinance on the procedure and manner of storage of hazardous chemical substances and mixtures</p> <p>Packaging materials: Stainless steel (304). Synthetic material. Non suitable: Zinc, Copper</p>																						
7.3 Specific end uses:	See exposure scenarios attached to this Safety Data Sheet.																						
8. EXPOSURE CONTROLS / PERSONAL PROTECTION																							
8.1 Control parameters																							
Regulated occupational exposure limit values:	<p>There are no limit values for the content of the substance in the working environment according to Ordinance 13 / 30.12.2003.</p> <p>The limit values for particulate matter in the working environment, according to Ordinance 13 / 30.12.2003 are 10 mg / m3.</p> <p>The limit values for Insoluble Powder containing less than 2% free crystalline silica in the respirable fraction (not containing fibrous particles), not specified in the application of Ordinance 13 / 30.12.2003 are:</p> <p>Inhalable fraction 10.0 mg / m3</p> <p>Respirable fraction 4.0 mg / m3</p>																						
Hazard conclusions, following from performed CSA:	<table><tr><th>Exposure pattern</th><th>Type of effects</th><th colspan="2">Derived No Effect Level (DNEL)</th></tr><tr><td></td><td></td><th>Workers</th><th>Consumers</th></tr><tr><td>Oral¹</td><td rowspan="3">Chronic effects - systemic</td><td>Not applicable</td><td>2.56 mg/kg bw/day</td></tr><tr><td>Dermal¹</td><td>5.12 mg/kg bw/day</td><td>2.56 mg/kg bw/day</td></tr><tr><td>Inhalation¹</td><td>36 mg/m³</td><td>8.9 mg/m³</td></tr><tr><td colspan="2"></td><td>PNEC of sewage system:</td><td>18 mg/dm³</td></tr></table> <p>¹: As an acute toxicity hazard leading to Classification and Labelling of the substance has not been identified, the long-term DNEL is considered sufficient to ensure that effects from acute exposure to the substance do not occur (in accordance with ECHA Guidance 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).</p>	Exposure pattern	Type of effects	Derived No Effect Level (DNEL)				Workers	Consumers	Oral ¹	Chronic effects - systemic	Not applicable	2.56 mg/kg bw/day	Dermal ¹	5.12 mg/kg bw/day	2.56 mg/kg bw/day	Inhalation ¹	36 mg/m ³	8.9 mg/m ³			PNEC of sewage system:	18 mg/dm ³
Exposure pattern	Type of effects	Derived No Effect Level (DNEL)																					
		Workers	Consumers																				
Oral ¹	Chronic effects - systemic	Not applicable	2.56 mg/kg bw/day																				
Dermal ¹		5.12 mg/kg bw/day	2.56 mg/kg bw/day																				
Inhalation ¹		36 mg/m ³	8.9 mg/m ³																				
		PNEC of sewage system:	18 mg/dm ³																				

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

Ammonium nitrate - Solution

8.2 Exposure controls	
8.2.1. Appropriate engineering control:	
Basic general ventilation (1-3 air changes per hour). Local exhaust ventilation: not required. In addition, an eyewash facility and a safety shower for facilities storing or utilizing this material is good industrial practice.	
8.2.2. Individual protection measures, such as personal protective equipment	
Respiratory protection:	Dust masks or respirators with suitable filter (recommended EN 143, 149, filters R2, P3).
Dermal protection:	Long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]
Eye protection:	Chemical goggles (EN166) or face shield
Body protection:	Protective work clothes
Hygiene measures:	Wash your hands thoroughly to the elbows and face after working with this product, before eating, smoking and going to the toilet, as well as at the end of the working day. Wash contaminated clothing before reuse.
8.2.3. Environmental exposure controls:	
Dispose of rinse water in accordance with local and national regulations.	
9. PHYSICAL AND CHEMICAL PROPERTIES	
9.1 Information on basic physical and chemical properties	
a) Physical state:	Solution
b) Colour	Opalescent, opaque
c) Odour:	Odourless
d) Melting/freezing temperature:	Not applicable
e) Boiling temperature/boiling range	Not applicable
f) Flammability:	Not applicable
g) Lower and upper explosive limits:	Not flammable
h) Flash point:	Not applicable.
i) Autoignition point	Contaminated material may form shock sensitive compounds that may explode when dry. Granular Ammonium Nitrate, (solid): Ammonium nitrate with less than 0.2% combustibles (UN 1942) is not classified as explosive. AN fertilizers falling under UN 2067 in UN 2071 also do not explosive properties. Liquid AN (UN2426) is not classified as an explosive substance. Ammonium nitrate with more than 0.2% combustible substances (UN 0222) is classified as an explosive substance (Class 1).

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

Ammonium nitrate - Solution

	Test series UN 1 and 2 show that the crystal ammonium nitrate with unknown impurities is not a Class 1 explosive
j) Decomposition temperature	Not applicable
k) pH of aqueous solution / 200C (10 g / 100 cm ³)	> 4.5
l) Kinematic viscosity	Not data available
m) Solubility in water	> 100 g/l at 20°C
n) Partition coefficient n - octanol/water:	Not relevant as the substance is inorganic, considered to be low (based on high water solubility)
o) Vapour pressure	Based on the high melting temperature (170°C) and decomposition at 210°C, the vapour pressure of the solid substance at room temperature is considered to be very low. Calculation of the vapour pressure is not possible for an inorganic substance
p) Relative density	5.18kg at 16°C
q) Specific gravity	1.37 at 21°C
r) Relative density of vapours:	Not relevant
s) Characteristics of the particles	Not applicable
t) Oxidizing properties:	Oxidizer
u) Specific conductivity:	No data
v) Surface tension:	The surface tension study was not performed because the substance is inorganic.

9.2 Other information

9.2.1 Information related to physical hazard classes

This product has oxidizing properties.

9.2.2 Other characteristics regarding safety

Highly hygroscopic product.

10. STABILITY AND REACTIVITY

10.1 Reactivity

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

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

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

10.4 Conditions to avoid

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

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

Ammonium nitrate - Solution

10.5 Incompatible materials	
Reducing agents, mineral acids and bases, metal dust, combustible materials, chromates, zinc, copper and copper alloys, chlorates, cobalt-containing alloys. Do not mix with hard urea.	
10.6 Hazardous decomposition products	
Under normal conditions of storage and use, hazardous decomposition products should not be produced. Nitrogen oxides. Corrosive vapors. Ammonia. Carbon oxides (CO, CO ₂), Nitric oxides NO _x .	
11. TOXICOLOGICAL INFORMATION	
11.1 Information on the hazard classes defined in Regulation (EC) No. 1272/2008	
11.1.1 ACUTE TOXICITY	
Acute oral toxicity:	Rat LD50: 2950 mg / kg bw (OECD 401); non toxic
Acute dermal toxicity:	Rat LD50: 5000 mg / kg bw (OECD 402); non toxic
Acute inhalation toxicity:	Not applicable; non toxic
11.1.2 LOCAL EFFECTS	
Skin Corrosion / skin irritation:	Rabbit: non-irritating (OECD 404)
Serious eye damage / eye irritation:	Rabbit: irritating (OECD 405)
Respiratory / Skin sensitization	Mice: not sensitizing (OECD 429)
11.1.3 OTHER ADVERSE EFFECTS	
Germ cell mutagenicity:	In vitro: No adverse effect observed (negative) In vivo: No adverse effect observed (negative)
Carcinogenicity:	Non carcinogenic (OECD 453, with ammonium sulphate).
Reproductive toxicity:	Ingestion 28 days NOAEL ≥ 1500 mg / kg body weight per day, rats (OECD 422, with potassium nitrate).
STO (specific toxicity to certain organs) — single exposure	Inhalation - local effects: No study available Inhalation - local effects: No study available
STOT (specific toxicity to certain organs) — repeated exposure;	Via oral route - systemic effects: No adverse effect observed (NOAEL: 256 mg/kg bw/day) (subacute; rat) Dermal - systemic effects: No study available Inhalation - systemic effects: No adverse effect observed (NOAEC: 185 mg/m ³) (subacute; rat)
Aspiration hazard:	This product is solid and this hazard is not relevant.
11.2 Information on other hazards	
11.2.1 Endocrine-disrupting properties	
Data Lacking	
11.2.2 Other information	
No other effects are known	
12. ECOLOGICAL INFORMATION	
12.1 Toxicity	


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

Ammonium nitrate - Solution

Fish (acute):	LC ₅₀ : > 447 mg/L
Fish (long-term):	Testing is not considered necessary
Aquatic invertebrates (acute):	EC ₅₀ / LC ₅₀ : 490 mg/L
Aquatic invertebrates (long-term):	Testing is not considered necessary
Algae (acute):	EC ₅₀ : 83 mg/L
Algae (long-term):	NOEC 1700 mg/L
12.2 Persistence and degradability	
Biodegradation:	Standard test is not applicable as the substance is inorganic. In addition, in the anaerobic transformation of ammonium, one group of bacteria oxidizes ammonium to nitrite while another group oxidizes nitrite into nitrate. The average biodegradation rate in wastewater plant at 20°C is 52 g N/kg dissolved solid/day. Nitrate degradation is fastest in anaerobic conditions. In the anaerobic transformation of nitrate into N ₂ , N ₂ O and NH ₃ , the biodegradation rate in wastewater plant at 20°C is 70 g N/kg dissolved solid /day.
Hydrolysis:	No hydrolysable group is present, will completely dissociate into ions.
12.3 Bioaccumulative potential	
Octanol-water partition coefficient (K _{ow}):	Not relevant as the substance is inorganic, but considered to be low (based on high water solubility)
Bioconcentration factor (BCF):	Low potential for bioaccumulation (based on substance properties).
12.4 Mobility in soil	
Adsorption coefficient:	Low potential for adsorption (based on substance properties).
12.5 Results of PBT and vPvB assessment	
In accordance with REACH Annex XIII, PBT assessment does not apply as this substance is an inorganic substance. PBT assessment does not apply.	
12.6 Endocrine disrupting properties	
No available data for endocrine disrupting properties.	
12.7 Other adverse effects	
Not known. Follow the relevant identified uses and see uses against.	
13. DISPOSAL CONSIDERATIONS	
Waste from residues:	In accordance with local and national regulations landfilled or incinerated. Controlled is possible biodegradation in a treatment plant.
Container:	Containers should be cleaned by appropriate method and then re-used or disposed by landfill or incineration as appropriate, in accordance with local and national regulations. Do not remove label until container is thoroughly cleaned.

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

Ammonium nitrate - Solution

14. TRANSPORT INFORMATION	
UN Number:	ADR/RID: UN2426 ADN/ADNR: UN2426 IMDG: UN2426 ICAO/IATA: UN2426
Proper shipping name:	AMMONIUM NITRATE, LIQUID, hot concentrated solution, with concentration at least 80% but not more than 93%
Transport hazard classes:	ADR/RID: 5.1 ADN/ADNR: 5.1 IMDG: 5.1 ICAO/IATA: 5.1
Packaging group:	ADR/RID: no ADN/ADNR: no IMDG: no
Label	
ADR/RID:	Hazard identification number: 59. Packing group: no Limited quantity: LQ0. Classification code: O1; Hazard class: 5.1
Special precautions:	Tunnel restriction code: E
ICAO/IATA:	IMDG: EmS codes: F-H, S-Q Forbidden
15. REGULATORY INFORMATION	

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

Ammonium nitrate - Solution

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:	Regulation (EC) 1907/2006 (REACH) Fertilizer Regulation (EU) 2019/1009 Directive 2012/18/EC dated 4.07.2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (SEVEZO III): listed in Part 1 of Appendix 1: facilities with capacity over 350 tons. Regulation for Classification, Labeling and Packaging (CLP) 1272/2008.
15.2 Chemical safety assessment:	In accordance with REACH Article 14, a Chemical Safety Assessment has been carried out for this substance.
15.3 Regulation 2019/1148 amending Regulation EC №98/2013 on a marketing and use of explosive precursors harmonized rules across Europe	Ammonium nitrate with concentration of nitrogen above 16% is under the scope of Appendix 1 with code 3102 30 10 (water solution) and 3102 30 90 (others). Purchasing, handling and storage from individual consumer is strictly prohibited!
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.	
Classification in accordance with Regulation 1272/2008, as listed in Annex VI: <i>None.</i> Classification in accordance with Regulation 1272/2008, by self-classification based on the performed CSA: <i>May intensify fire; oxidiser. (H272), cat.3</i> <i>Causes serious eye irritation (H319), cat.2</i>	
Version:	1
New edition date:	October, 2022
Release info:	New edition
Created/Revised by:	"AGROPOLYCHIM"AD, Production Department
Abbreviations and acronyms	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road EC: European Community EN: European standard ERC: Category for release into the environment EU: European Union UN Number: United Nation number ICAO: International Civil Aviation Organization IMDG: International Maritime Regulations for the Transport of Dangerous Goods by Sea IATA: International Air Transport Association LC50: Medium lethal dose EC50: Effect Dose DNEL: Predictable no-effect level

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

Ammonium nitrate - Solution

	<p>NOAEC / NOAEL: Concentration / level of unobserved adverse effect</p> <p>OECD: Organization for Economic Co-operation and Development</p> <p>PBT: Persistence, bioaccumulation, toxicity</p> <p>vPvB: High persistence and strong bioaccumulation</p> <p>PNEC: Predictable no-effect exposure concentration</p> <p>CSA: Chemical Safety assessment</p> <p>PROC: Process category</p> <p>SU: Sector of use</p>
--	--

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

Ammonium nitrate - Solution

ANNEX 1

1. Exposure scenario (1)	
1.1 Manufacture - Manufacturing of the substance (continuous and batch synthesis), including handling, storage and q control	
Environment contributing scenario(s):	
Manufacturing of the substance (continuous and batch synthesis), including handling, storage and q control	ERC 1
Worker contributing scenario(s):	
Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Production of preparations or articles by tableting, compression, extrusion, palletisation	PROC 14
Use as laboratory reagent	PROC 15
1.2 Conditions of use affecting exposure	
1.2.1 Control of Environmental exposure 1: Manufacturing of the substance (continuous and batch synthesis), including handling, storage and q control (ERC1)	
Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.	
1.2.2 Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0

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

Ammonium nitrate - Solution

• Containment: Closed system (minimal contact during routine operations)	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

1.2.3 Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	

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

Ammonium nitrate - Solution

Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0
1.2.4 Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed batch process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0
1.2.5 Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0

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

Ammonium nitrate - Solution

Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

1.2.6 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash	

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

Ammonium nitrate - Solution

hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0
1.2.7 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

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

Ammonium nitrate - Solution

1.2.8 Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

1.2.9 Control of worker exposure: Production of preparations or articles by tableting, compression, extrusion, palletisation (PROC 14)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0

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

Ammonium nitrate - Solution

Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

1.2.10 Control of worker exposure: Use as laboratory reagent (PROC 15)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall (or lab coat); chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0

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

Ammonium nitrate - Solution

• Respiratory Protection: No [Effectiveness Inhal: 0%]		TRA Workers 3.0
• Eye Protection: Yes (chemical goggles or safety glasses with side shields)		
Other conditions affecting workers exposure		
• Place of use: Indoor		TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)		TRA Workers 3.0

1.3 Exposure estimation and reference to its source		
1.3.1 Environmental release and exposure: Manufacturing of the substance (continuous and batch synthesis), including handling, storage and q control (ERC1)		
Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.		
1.3.2 Worker exposure: Use in closed process, no likelihood of exposure (PROC 1)		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.003 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01
1.3.3 Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.137 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.027
1.3.4 Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)		

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

Ammonium nitrate - Solution

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.069 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.013
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.016

1.3.5 Worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.148

1.3.6 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

1.3.7 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268

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

Ammonium nitrate - Solution

	3.0)	
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

1.3.8 Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.137

1.3.9 Worker exposure: Production of preparations or articles by tableting, compression, extrusion, palletisation (PROC 14)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.343 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.067
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.07

1.3.10 Worker exposure: Use as laboratory reagent (PROC 15)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.034 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic,		RCR < 0.01

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

Ammonium nitrate - Solution

long-term		
1.4 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.		

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

Ammonium nitrate - Solution

ANNEX 2

2. Exposure scenario (2)

2.1 Formulation - Formulation of chemicals and fertilizers

Product category / UCN code:

PC 1, Adhesives, sealants
PC 9a, Coatings and paints, thinners, paint removers
PC 11, Explosives
PC 12, Fertilizers
PC 14, Metal surface treatment products, including galvanic and electroplating products
PC 19, Intermediate
PC 20, Products such as pH-regulators, flocculants, precipitants, neutralization agents
PC 35, Washing and cleaning products (including solvent based products)
PC 37, Water treatment chemicals
P15900, Process regulators

Environment contributing scenario(s):

Formulation of chemicals and fertilizers	ERC 2
--	-------

Worker contributing scenario(s):

Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Treatment of articles by dipping and pouring	PROC 13
Production of preparations or articles by tableting, compression, extrusion, pelletisation	PROC 14
Use as laboratory reagent	PROC 15

2.2 Conditions of use, affecting exposure

2.2.1 Control of environmental exposure 1: Formulation of chemicals and fertilizers (ERC2)

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

2.2.2 Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

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

Ammonium nitrate - Solution

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

2.2.3 Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	

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

Ammonium nitrate - Solution

• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed batch process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

2.2.4 Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	

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

Ammonium nitrate - Solution

• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0
2.2.5 Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

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

Ammonium nitrate - Solution

2.2.6 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

2.2.7 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0

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

Ammonium nitrate - Solution

Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

2.2.8 Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

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

Ammonium nitrate - Solution

• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

2.2.9 Control of worker exposure: Treatment of articles by dipping and pouring (PROC 13)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0

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

Ammonium nitrate - Solution

• Skin surface potentially exposed: Two hands face (480 cm2)	TRA Workers 3.0
2.2.10 Control of worker exposure: Production of preparations or articles by tableting, compression, extrusion, palletisation (PROC 14)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm2)	TRA Workers 3.0
2.2.11 Control of worker exposure: Use as laboratory reagent (PROC 15)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	

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

Ammonium nitrate - Solution

• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall (or lab coat); chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, safety glasses with side shields or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

2.3 Exposure estimation and reference to its source

2.3.1 Environmental release and exposure: Formulation of chemicals and fertilizers (ERC2)

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

2.3.2 Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.137 mg/kg bw /day (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.027

2.3.3 Worker exposure: Use in closed batch process (synthesis or formulation) (PROC

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

Ammonium nitrate - Solution

3)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.069 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.013
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.016

2.3.4 Worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.148

2.3.5 Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

2.3.6 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

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

Ammonium nitrate - Solution

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

2.3.7 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

2.3.8 Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.137

2.3.9 Worker exposure: Treatment of articles by dipping and pouring (PROC 13)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01

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

Ammonium nitrate - Solution

term		
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

2.3.10 Worker exposure: Production of preparations or articles by tableting, compression, extrusion, palletisation (PROC 14)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.343 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.067
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.07

2.3.11 Worker exposure: Use as laboratory reagent (PROC 15)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.034 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01

2.4 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.

ANNEX 3

3. Exposure scenario (3)

3.1 Use at industrial site - Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control

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

Ammonium nitrate - Solution

Sector of use:

SU 8, Manufacture of bulk, large scale chemicals (including petroleum products)

SU 9, Manufacture of fine chemicals

Product category:

PC 19, Intermediate

Environment contributing scenario(s):

Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control	ERC 6a
--	--------

Worker contributing scenario(s):

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Treatment of articles by dipping and pouring	PROC 13
Production of preparations or articles by tableting, compression, extrusion, palletisation	PROC 14
Use as laboratory reagent	PROC 15

3.2 Conditions of use, affecting exposure

3.2.1 Control of environmental exposure 1: Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control (ERC6a)

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

3.2.2 Control of worker exposure: Use in closed process, no likelihood of exposure (PROC 1)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0

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

Ammonium nitrate - Solution

Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed system (minimal contact during routine operations)	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

3.2.3 Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

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

Ammonium nitrate - Solution

• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

3.2.4 Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed batch process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

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

Ammonium nitrate - Solution

3.2.5 Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

3.2.6 Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0

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

Ammonium nitrate - Solution

Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

3.2.7 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash	

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

Ammonium nitrate - Solution

hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

3.2.8 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

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

Ammonium nitrate - Solution

3.2.9 Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

3.2.10 Control of worker exposure: Treatment of articles by dipping and pouring (PROC 13)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	

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

Ammonium nitrate - Solution

• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

3.2.11 Control of worker exposure: Production of preparations or articles by tableting, compression, extrusion, palletisation (PROC 14)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	

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

Ammonium nitrate - Solution

• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

3.2.12 Control of worker exposure: Use as laboratory reagent (PROC 15)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall (or lab coat); chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

3.3 Exposure estimation and reference to its source

3.3.1 Environmental release and exposure: Use at industrial site - Industrial use as intermediate incl. sampling, loading, filling, transfer, bagging, storage, quality control (ERC6a)

Exposure assessment and risk characterization are not required for environment, in accordance

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

Ammonium nitrate - Solution

with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

3.3.2 Worker exposure: Use in closed process, no likelihood of exposure (PROC 1)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.003 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01

3.3.3 Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.137 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.027

3.3.4 Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.069 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.013
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.016

3.3.5 Worker exposure: Use in batch and other process (synthesis) where opportunity

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

Ammonium nitrate - Solution

for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.148

3.3.6 Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

3.3.7 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

3.3.8 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

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

Ammonium nitrate - Solution

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

3.3.9 Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.137

3.3.10 Worker exposure: Treatment of articles by dipping and pouring (PROC 13)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

3.3.11 Worker exposure: Production of preparations or articles by tableting, compression, extrusion, palletisation (PROC 14)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.343 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.067

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

Ammonium nitrate - Solution

term	3.0)	
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.07

3.3.12 Worker exposure: Use as laboratory reagent (PROC 15)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.034 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01

3.3 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.

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

Ammonium nitrate - Solution

ANNEX 4

4. Exposure scenario (4)

4.1 Use at industrial site - Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control

Sector of use:

SU 2a, Mining (without offshore industries)
 SU 4, Manufacture of food products
 SU 6a, Manufacture of wood and wood products
 SU 12, Manufacture of plastics products, including compounding and conversion
 SU 15, Manufacture of fabricated metal products, except machinery and equipment
 SU 19, Building and construction work
 SU 23, Electricity, steam, gas water supply and sewage treatment

Product category / UCN code:

PC 1, Adhesives, sealants
 PC 9a, Coatings and paints, thinners, paint removers
 PC 11, Explosives
 PC 14, Metal surface treatment products, including galvanic and electroplating products
 PC 35, Washing and cleaning products (including solvent based products)
 PC 37, Water treatment chemicals
 P15900, Process regulators

Environment contributing scenario(s):

Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control	ERC 6b
---	--------

Worker contributing scenario(s):

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Use in batch and other process (synthesis) where opportunity for exposure arises	PROC 4
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
Industrial spraying	PROC 7
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Roller application or brushing	PROC 10
Treatment of articles by dipping and pouring	PROC 13
Use as laboratory reagent	PROC 15

4.2 Conditions of use, affecting exposure

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

Ammonium nitrate - Solution

4.2.1 Control of environmental exposure: Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control (ERC6b)

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

4.2.2 Control of worker exposure: Use in closed process, no likelihood of exposure (PROC 1)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed system (minimal contact during routine operations)	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

4.2.3 Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

	Method
Product (article) characteristics	

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

Ammonium nitrate - Solution

• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

4.2.4 Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed batch process with occasional controlled	TRA Workers 3.0

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

Ammonium nitrate - Solution

exposure	
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

4.2.5 Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0

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

Ammonium nitrate - Solution

• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

4.2.6 Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

4.2.7 Control of worker exposure: Industrial spraying (PROC 7)

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

Ammonium nitrate - Solution

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands and upper wrists (1500 cm ²)	TRA Workers 3.0

4.2.8 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0

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

Ammonium nitrate - Solution

Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

4.2.9 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat,	

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

Ammonium nitrate - Solution

drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

4.2.10 Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

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

Ammonium nitrate - Solution

4.2.11 Control of worker exposure: Roller application or brushing (PROC 10)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

4.2.12 Control of worker exposure: Treatment of articles by dipping and pouring (PROC 13)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0

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

Ammonium nitrate - Solution

Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

4.2.13 Control of worker exposure: Use as laboratory reagent (PROC 15)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall (or lab coat); chemically resistant gloves conforming to EN374 with basic employee training)	TRA Workers 3.0

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

Ammonium nitrate - Solution

[Effectiveness Dermal: 90%]		
• Respiratory Protection: No [Effectiveness Inhal: 0%]		TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, safety glasses with side shields or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)		
Other conditions affecting workers exposure		
• Place of use: Indoor		TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)		TRA Workers 3.0
4.3 Exposure estimation and reference to its source		
4.3.1 Environmental release and exposure: Industrial use as reactive processing aid incl. sampling, loading, filling, transfer, bagging, storage, quality control (ERC 6b)		
Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.		
4.3.2 Worker exposure: Use in closed process, no likelihood of exposure (PROC 1)		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.003 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01
4.3.3 Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)		
Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.137 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.027
4.3.4 Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)		

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

Ammonium nitrate - Solution

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.069 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.013
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.016

4.3.5 Worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.148

4.3.6 Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

4.3.7 Worker exposure: Industrial spraying (PROC 7)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	1 mg/m³ (TRA Workers 3.0)	RCR = 0.028
Dermal, systemic, long-term	4.286 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.837

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

Ammonium nitrate - Solution

Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.865

4.3.8 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

4.3.9 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

4.3.10 Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.137

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

Ammonium nitrate - Solution

4.3.11 Worker exposure: Roller application or brushing (PROC 10)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	2.743 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.536
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.55

4.3.12 Worker exposure: Treatment of articles by dipping and pouring (PROC 13)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.271

4.3.13 Worker exposure: Use as laboratory reagent (PROC 15)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.034 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01

4.4 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.

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

Ammonium nitrate - Solution

ANNEX 5

5.Exposure scenario (5)

5.1 Use by professional worker - Use by professional worker (outdoor and indoor of reactive substances in open systems)

Sector of use / NACE code:

SU 1, Agriculture, forestry, fishery

SU 2a, Mining (without offshore industries)

SU 10, Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

SU 19, Building and construction work

SU 23, Electricity, steam, gas water supply and sewage treatment

B8.1, Quarrying of stone, sand and clay

Product category:

PC 11, Explosives

PC 12, Fertilizer's

PC 37, Water treatment chemicals

Environment contributing scenario(s):

Use by professional worker (outdoor and indoor of reactive substances in open systems)	ERC 8e, ERC 8b
--	----------------

Worker contributing scenario(s):

Use in closed process, no likelihood of exposure	PROC 1
Use in closed, continuous process with occasional controlled exposure	PROC 2
Use in closed batch process (synthesis or formulation)	PROC 3
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC 5
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	PROC 8a
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC 8b
Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC 9
Non industrial spraying	PROC 11
Use as laboratory reagent	PROC 15
Hand-mixing with intimate contact and only PPE available	PROC 19

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

Ammonium nitrate - Solution

5.2 Conditions of use, affecting exposure

5.2.1 Control of Environmental exposure: Use by professional worker (outdoor and indoor of reactive substances in open systems) (ERC 8e, ERC 8b)

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

5.2.2 Control of Worker exposure: Use in closed process, no likelihood of exposure (PROC 1)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed system (minimal contact during routine operations)	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

5.2.3 Control of Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

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

Ammonium nitrate - Solution

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Closed continuous process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

5.2.4 Control of Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per	TRA Workers 3.0

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

Ammonium nitrate - Solution

hour)	
• Containment: Closed batch process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0

5.2.5 Control of Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant	TRA Workers 3.0

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

Ammonium nitrate - Solution

gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0
5.2.6 Control of Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

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

Ammonium nitrate - Solution

5.2.7 Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands (960 cm ²)	TRA Workers 3.0

5.2.8 Control of Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: $\leq 100\%$ (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	

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

Ammonium nitrate - Solution

• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: Semi-closed process with occasional controlled exposure	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands face (480 cm ²)	TRA Workers 3.0

5.2.9 Control of worker exposure: Non industrial spraying (PROC 11)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	

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

Ammonium nitrate - Solution

Keep dermal exposure to a minimum. Wear protective clothing and make sure that skin is not exposed.	
• Dermal Protection (body and hands): Yes (protective clothing (chemical suit) and chemically resistant gloves conforming to EN374, providing in total a dermal effectiveness of at least 96%). Wearing only gloves is not sufficient.	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands and upper wrists (1500 cm ²)	TRA Workers 3.0

5.2.10 Control of Worker exposure: Use as laboratory reagent (PROC 15)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 8 hours	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall (or lab coat); chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0

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

Ammonium nitrate - Solution

• Skin surface potentially exposed: One hand face only (240 cm ²)	TRA Workers 3.0
5.2.11 Control of Worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)	
	Method
Product (article) characteristics	
• Concentration of substance in mixture: ≤ 100% (solid or liquid)	
• Concentration of substance (used for exposure estimates): Substance as such	TRA Workers 3.0
• Dustiness of material: Low	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: < 1 hour	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour)	TRA Workers 3.0
• Containment: No	TRA Workers 3.0
• Local exhaust ventilation: no [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• General: Work under a high standard of personal hygiene. Wash hands and face before breaks. When using the product, do not eat, drink or smoke.	
• Dermal Protection: Yes (long sleeved overall; chemically resistant gloves conforming to EN374 with basic employee training) [Effectiveness Dermal: 90%]	TRA Workers 3.0
• Respiratory Protection: No [Effectiveness Inhal: 0%]	TRA Workers 3.0
• Eye Protection: Yes (chemical goggles, or full face shield if splashing is possible, in case of using liquid (aqueous) mixtures of the substance)	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Skin surface potentially exposed: Two hands and forearms (1980 cm ²)	TRA Workers 3.0

5.3 Exposure estimation and reference to its source

5.3.1 Environmental release and exposure: Use by professional worker (outdoor and indoor of reactive substances in open systems) (ERC 8e, ERC 8b)

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

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

Ammonium nitrate - Solution

5.3.2 Worker exposure: Use in closed process, no likelihood of exposure (PROC 1)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.003 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01

5.3.3 Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC 2)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.01 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.137 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.027
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.027

5.3.4 Worker exposure: Use in closed batch process (synthesis or formulation) (PROC 3)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.069 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.013
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.016

5.3.5 Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC 5)

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

Ammonium nitrate - Solution

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	1 mg/m³ (TRA Workers 3.0)	RCR = 0.028
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.296

5.3.6 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

5.3.7 Worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014
Dermal, systemic, long-term	1.371 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.268
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.282

5.3.8 Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.5 mg/m³ (TRA Workers 3.0)	RCR = 0.014

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

Ammonium nitrate - Solution

term		
Dermal, systemic, long-term	0.686 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.134
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.148

5.3.9 Worker exposure: Non industrial spraying (PROC 11)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	1 mg/m³ (TRA Workers 3.0)	RCR = 0.028
Dermal, systemic, long-term	4.284 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.837
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR = 0.865

5.3.10 Worker exposure: Use as laboratory reagent (PROC 15)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	0.034 mg/kg bw/day (TRA Workers 3.0)	RCR < 0.01
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)
Combined routes, systemic, long-term		RCR < 0.01

5.3.11 Worker exposure: Hand-mixing with intimate contact and only PPE available (PROC 19)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Inhalation, systemic, long-term	0.1 mg/m³ (TRA Workers 3.0)	RCR < 0.01
Dermal, systemic, long-term	2.829 mg/kg bw/day (TRA Workers 3.0)	RCR = 0.552
Dermal, local, long-term		Qualitative (see below)
Eye, local		Qualitative (see below)

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

Ammonium nitrate - Solution

Combined routes, systemic, long-term	RCR = 0.555
--------------------------------------	-------------

5.4 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.

ANNEX 6

6. Exposure Scenario 6

6.1 Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer

Product category / UCN code:

PC 1, Adhesives, sealants

PC 12, Fertilisers

S50200, Pyrotechnical products

Environment contributing scenario(s):	
Consumer Use (outdoor and indoor of reactive substances in open systems) ERC 8e, ERC 8b as part of specialist products, pyrotechnics and/or matches, fertilizer	
Consumer contributing scenario(s):	
Consumer Use (outdoor and indoor of reactive substances in open systems) PC 1 as part of specialist products, pyrotechnics and/or matches	
Consumer Use (outdoor and indoor) as part of fertilizer	PC 12

6.2 Conditions of use, affecting exposure

6.2.1 Control of Environmental exposure: Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer: ERC 8e, ERC 8b

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

6.2.2 Control of Worker exposure: Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches (PC 1)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: = 0.3 g/g (default)	TRA Consumers 3.1
Measures related to information and behavioural advice to consumers including personal protection and hygiene	
• Adult/Child assumed: Adult	TRA Consumers 3.1
• Use frequency: Infrequent	TRA Consumers 3.1
Other conditions affecting consumers exposure	

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

Ammonium nitrate - Solution

• Body parts potentially exposed: Inside hands / one hand / palm of hands (428.8 cm ²)	TRA Consumers 3.1
• Dermal transfer factor: = 1	TRA Consumers 3.1

6.2.3 Control of Worker exposure: Consumer Use (outdoor and indoor) as part of fertilizer (PC 12)

	Method
Product (article) characteristics	
• Concentration of substance in mixture: = 0.5 g/g (default)	TRA Consumers 3.1
Measures related to information and behavioural advice to consumers including personal protection and hygiene	
• Adult/Child assumed: Adult	TRA Consumers 3.1
• Use frequency: Infrequent	TRA Consumers 3.1
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Inside hands / one hand / palm of hands (428.8 cm ²)	TRA Consumers 3.1
• Dermal transfer factor: = 1	TRA Consumers 3.1

6.3 Exposure estimation and reference to its source

6.3.1 Environmental release and exposure: Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches, fertilizer: ERC 8e, ERC 8b

Exposure assessment and risk characterization are not required for environment, in accordance with the ECHA Guidance on information requirements and chemical safety assessment, Part B: Hazard assessment, Version 2.1, December 2011.

6.3.2 Worker exposure: Consumer Use (outdoor and indoor of reactive substances in open systems) as part of specialist products, pyrotechnics and/or matches (PC 1)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Dermal, systemic, long-term	0.858 mg/kg bw/day (TRA Consumers 3.1)	RCR = 0.335
Combined routes, systemic, long-term		RCR = 0.335

6.3.3 Worker exposure: Consumer Use (outdoor and indoor) as part of fertilizer (PC 12)

Route of exposure and type of effects	Exposure concentration	Risk characterisation
Dermal, systemic, long-term	1.429 mg/kg bw/day (TRA Consumers 3.1)	RCR = 0.558

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

Ammonium nitrate - Solution

Combined routes, systemic, long-term		RCR = 0.558
<p>6.4 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.</p>		