

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

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

1.1 Product identifier

Trade name : Ammonium Nitrate Solution 85%, Ammonium Nitrate Solution 92%, Ammonium Nitrate Solution 90%

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

Use of the Substance/Mixture : Raw material for industry, Intermediate

Recommended restrictions on use : Consumer uses

1.3 Details of the supplier of the safety data sheet

Supplier : Borealis L.A.T GmbH
St.-Peter-Strasse 25, 4021 Linz, Austria
Telephone: +43 732 6915-0

E-mail address : sds@borealisgroup.com

1.4 Emergency telephone number

+44 (0) 1235 239 670 (NCEC Carechem 24)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Oxidizing liquids, Category 3 H272: May intensify fire; oxidizer.

Eye irritation, Category 2 H319: Causes serious eye irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :  

Signal word : Warning

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Hazard statements	: H272 H319	May intensify fire; oxidizer. Causes serious eye irritation.
Precautionary statements	: Prevention: P210 P220 P280 Response: P305 + P351 + P338 P337 + P313 P370 + P378	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep/Store away from clothing/ combustible materials. 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. If eye irritation persists: Get medical advice/ attention. In case of fire: Use water to extinguish.

Hazardous components which must be listed on the label:
Ammonium nitrate

2.3 Other hazards

Results of PBT and vPvB assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Ammonium nitrate	6484-52-2 229-347-8 01-2119490981-27	Ox. Sol. 3; H272 Eye Irrit. 2; H319	>= 80 - <= 95

Remarks : REACH Registration Numbers:
www.borealisgroup.com , Company - REACH - Registered substances

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- If inhaled : Move to fresh air in case of accidental inhalation of dust.
Keep patient warm and at rest.
Give oxygen or artificial respiration if needed.
Seek medical advice.
- In case of skin contact : Do not remove contaminated clothing (clothing might stick to the skin).
Wash off with soap and plenty of water.
If skin irritation persists, call a physician.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention if irritation develops and persists.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Do NOT induce vomiting.
Get medical advice/ attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : Eye contact:
Redness
Pain
- Ingestion:
Abdominal pain
Convulsions
Diarrhoea
Dizziness
Vomiting
Weakness
- Skin contact:
Redness
- Inhalation:
Cough
Headache
Sore throat

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

The absorption of this product into the body may lead to the formation of methaemoglobine that, in sufficient concentration, causes cyanosis.

Risks : Irritating to eyes.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Immediately give oxygen if victim turns blue (lips, ears, fingernails).
Symptoms of poisoning may not appear for several hours.
Keep under medical supervision for at least 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : High volume water jet

Unsuitable extinguishing media : Foam
Dry powder
Halons
Carbon dioxide (CO₂)
Do not smother with steam or sand.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Hazardous decomposition products formed under fire conditions.
Nitrogen oxides (NO_x)
Ammonia
Potential explosion hazard when heated under strong confinement (e.g. tubes and drains) especially if contaminated with incompatible material.
See chapter 10.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Complete suit protecting against chemicals

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.
Contact the proper local authorities.

Ensure doors and windows are opened.
Avoid inhalation of decomposition fumes.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.
Eliminate all ignition sources if safe to do so.

6.2 Environmental precautions

Do not allow contact with soil, surface or ground water.
Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Soak up with inert absorbent material.
Allow to solidify, use mechanical handling equipment.
Scrape up.
Shovel into suitable container for disposal.
After cleaning, flush away traces with water.

6.4 Reference to other sections

For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	: Ensure adequate ventilation. Avoid inhalation of vapour or mist. The pump should be rinsed with water before each start-up due to safety reasons. Rinse the pump with water also after shutdown to avoid formation of solid residues. Drain down and flush system prior to equipment opening or maintenance. Keep away from incompatible materials.
Advice on protection against fire and explosion	: Keep away from open flames, hot surfaces and sources of ignition. Keep away from combustible material. Keep away from heat. Risk of explosion if heated under confinement.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice for diagnostics. Regular cleaning of equipment, work area and clothing. Wash hands before breaks and immediately after handling the product. When using do not

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

eat, drink or smoke.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep away from sources of ignition - No smoking. Keep locked up or in an area accessible only to qualified or authorised persons. Suitable materials for containers: Stainless steel

Unsuitable materials for containers: Copper Zinc

Further information on storage conditions : Avoid unprotected outdoor storage. Keep solutions above crystallisation temperature (~ 96 °C) to prevent precipitation. Keep at temperature not exceeding 140 °C.

Advice on common storage : Keep away from combustible material. Keep away from incompatible materials. See chapter 10.

7.3 Specific end use(s)

Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Ammonium nitrate	Workers	Skin contact	Long-term, Systemic	5,12 mg/kg bw/day
	Workers	Inhalation	Long-term, Systemic	36 mg/m ³
	Consumers	Skin contact	Long-term, Systemic	2,56 mg/kg bw/day
	Consumers	Inhalation	Long-term, Systemic	8,9 mg/m ³
	Consumers	Ingestion	Long-term, Systemic	2,56 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Ammonium nitrate	Sewage treatment plant	18 mg/l

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

8.2 Exposure controls

Engineering measures

Avoid inhalation of vapour or mist.

Provide adequate ventilation.

Use specific dispensers and pumps specifically designed to prevent splashes/spills/exposure to occur.

Ensure that eye flushing systems and safety showers are located close to the working place.

Before working with fire and hot materials on containers and apparatus remains of products must be removed through efficient cleaning with water.

Minimise number of staff exposed.

Effective contaminant extraction.

Minimisation of manual phases.

Avoidance of contact with contaminated tools and objects.

Personal protective equipment

Eye protection : Safety goggles or face-shield.
(EN 166)

Hand protection

Material : Heat resistant gloves

Material : Nitrile rubber

Break through time : > 480 min

Glove thickness : $\geq 0,11$ mm

Directive : Equipment should conform to EN 374

Remarks : Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin and body protection : Wear suitable protective clothing.
Chemical resistant protective suit
Apron
Boots

Respiratory protection : Suitable respiratory equipment:
(K or ABEK-filter)
Respiratory protection complying with EN 143 / EN 149.

Protective measures : Appropriate personal protective equipment (PPE) shall be worn in accordance with Regulation (EU) 2016/425.

Environmental exposure controls

General advice : Do not allow contact with soil, surface or ground water. Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	: liquid, (hot)
Colour	: colourless, pale yellowish
Odour	: ammoniacal
Odour Threshold	: Not applicable
pH	: 5 - 7, 85 - 92 %
Melting point	: 74 °C concentration 85 % 95 °C concentration 90 % ca. 100 °C concentration 92 %
Boiling point	: ca. 146 °C
Flash point	: Not applicable, (inorganic)
Flammability (solid, gas)	: The product is not flammable.
Upper explosion limit	: Not applicable
Lower explosion limit	: Not applicable
Vapour pressure	: No data available
Density	: 1,355 g/cm ³ (20 °C) concentration 85 % 1,380 g/cm ³ (20 °C) concentration 90 % 1,400 g/cm ³ (20 °C) concentration 92 %
Solubility(ies) Water solubility	: completely soluble

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

- Decomposition temperature : 210 °C
Decomposes on heating.
- Explosive properties : Not explosive
- Oxidizing properties : May intensify fire; oxidizer.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- Hazardous reactions : Contact with strong bases liberates ammonia.
Contact with strong acids liberates nitrous gases.
May react violently with:
Combustible material

10.4 Conditions to avoid

- Conditions to avoid : Decomposes on heating.
Risk of explosion if heated under confinement.

10.5 Incompatible materials

- Materials to avoid : Reducing agents
Strong acids and strong bases
Powdered metals
Combustible material
Organic materials
Copper
Copper alloys
Chlorates
Chromates
Nitrites
sulphur
permanganates

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

10.6 Hazardous decomposition products

Nitrogen oxides (NOx), Ammonia

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Acute oral toxicity : LD50 (Rat): 2.950 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50: > 88,8 mg/l
Method: No information available.

Acute dermal toxicity : LD50: > 5.000 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Ammonium nitrate:

Species: Rabbit
Method: OECD Test Guideline 405
Result: Irritating to eyes.

Respiratory or skin sensitisation

Skin sensitisation: Based on available data, the classification criteria are not met.

Respiratory sensitisation: Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Species: Mouse

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.
Test substance: Calcium ammonium nitrate
Read-across (Analogy)

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Genotoxicity in vitro

- : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative
Test substance: Ammonium calcium nitrate
- : Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Test substance: Ammonium calcium nitrate
- : Test Type: In vitro gene mutation study in mammalian cells
Method: OECD Test Guideline 476
Result: negative
Test substance: Potassium nitrate

Carcinogenicity

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Remarks: No significant adverse effects were reported

Reproductive toxicity

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Effects on fertility

- : Species: Rat
NOAEL: > 1.500 mg/kg,
Method: OECD Test Guideline 422
Test substance: Potassium nitrate

STOT - single exposure

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Assessment: Based on available data, the classification criteria are not met.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Components:

Ammonium nitrate:

Species: Rat

NOAEL: 0,185 mg/l

Application Route: Inhalation

Exposure time: 14 d

Method: OECD Test Guideline 412

Test substance: Ammonium nitrate

Aspiration toxicity

Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Ammonium nitrate:

- Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 447 mg/l
Exposure time: 48 h
Test Type: Short term
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 490 mg/l
Exposure time: 48 h
Test Type: Short term
Test substance: Potassium nitrate
Remarks: Fresh water
- Toxicity to algae : EC50 : > 1.700 mg/l
Exposure time: 10 d
Test substance: Potassium nitrate
Remarks: Marine water
- Toxicity to bacteria : EC50 : > 1.000 mg/l
Exposure time: 180 min
Test Type: Respiration inhibition of activated sludge
Test substance: Sodium nitrate
Method: OECD Test Guideline 209
- Toxicity to fish (Chronic toxicity) : Remarks: study scientifically unjustified

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50: 555 mg/l
Exposure time: 7 d
Species: Bullia digitalis (prosobranch gastropod)

12.2 Persistence and degradability

Components:

Ammonium nitrate:

Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Components:

Ammonium nitrate:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

12.4 Mobility in soil

Components:

Ammonium nitrate:

Mobility : Medium: Water
Remarks: completely soluble
: Medium: Soil
Remarks: (NO₃-), Not expected to adsorb on soil.
: Medium: Soil
Remarks: (NH₄+), After release, adsorbs onto soil.

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Other adverse effects

Product:

Additional ecological information : Remarks: Do not allow product to reach ground water, water bodies or sewage system.
Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- Product : Can be landfilled or incinerated, when in compliance with local regulations.
Depending on the degree of contamination, dispose of by use as fertilizer on farm or as raw material for an authorised waste facility.
Do not allow product to reach ground water, water bodies or sewage system.
Do not dispose of together with household waste.
European waste code:
06 10 02* (wastes containing dangerous substances)
- Contaminated packaging : Empty remaining contents.
Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number

- ADR : UN 2426
IMDG : UN 2426

14.2 UN proper shipping name

- ADR : AMMONIUM NITRATE, LIQUID
IMDG : AMMONIUM NITRATE, LIQUID

14.3 Transport hazard class(es)

- ADR : 5.1
IMDG : 5.1
Subsidiary hazard class :

14.4 Packing group

- ADR
Packing group : Not assigned by regulation
Hazard Identification Number : 59
Labels : 5.1
Tunnel restriction code : (E)
IMDG

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Packing group : Not assigned by regulation
Labels : 5.1
EmS Code : F-H, S-Q

14.5 Environmental hazards

ADR

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : No specific instructions needed.

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

Ship type : 2
Pollution category : Z

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:
Ammonium nitrate (Number on list 58)
Restricted to professional users.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Category		Quantity 1	Quantity 2
3	Ammonium nitrate: technical grade	350 t	2.500 t

Other regulations:

Regulation (EU) No 98/2013 of the European Parliament and of the Council of 15 January 2013 on the marketing and use of explosives precursors:
Annex II
All suspicious transactions, significant disappearances and thefts shall be reported to the national appointed bodies (https://ec.europa.eu/home-affairs/what-we-do/policies/crisis-and-terrorism/explosives/explosives-precursors_en).

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.
(Ammonium nitrate)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

SECTION 16: Other information

Full text of H-Statements

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

Full text of other abbreviations

Eye Irrit. : Eye irritation
Ox. Sol. : Oxidizing solids

Further information

Training advice : Provide adequate information, instruction and training for operators., Regular trainings of all employees which are involved in the transport of dangerous goods (according to chapter 1.3 ADR).

Other information : Issued according to Regulation (EC) No 1907/2006, Annex II, and its amendments.
Changes since the last version are highlighted in the margin.
This version replaces all previous versions.

Issuer : Borealis, Group Product Stewardship / Steffen Pfeiffer

Sources of key data used to compile the Safety Data Sheet : Chemical Safety Report, Ammonium Nitrate. FARM REACH Consortium, 2019
EFMA / Fertilizers Europe Guidance documents

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Annex

Exposure Scenario

Number	Title
ES1	Formulation or re-packing, Formulation & (re)packing of substances and mixtures
ES2	Use at industrial sites, Use as an intermediate

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

ES1: Formulation & (re)packing of substances and mixtures

1.1. Title section

Structured Short Title : Formulation or re-packing

Environment		
CS1	Formulation & (re)packing of substances and mixtures	ERC2, ERC3
Worker		
CS2	Formulation & (re)packing of substances and mixtures, General measures	PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15
CS3	Continuous process, Closed systems	PROC2
CS4	Use in closed batch process (synthesis or formulation)	PROC3
CS5	Batch process	PROC4
CS6	Mixing or blending, Batch process	PROC5
CS7	Material transfers, Non-dedicated facility	PROC8a
CS8	Material transfers, Dedicated facility	PROC8b
CS9	Material transfers, Small package filling, Dedicated facility	PROC9
CS10	Treatment by dipping and pouring	PROC13
CS11	Tabletting, compression, extrusion or pelletisation	PROC14
CS12	Laboratory activities	PROC15

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Formulation into solid matrix (ERC3)

1.2.2. Control of worker exposure: Formulation & (re)packing of substances and mixtures, General measures

Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Treatment of articles by dipping and pouring (PROC13) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers percentage substance in the product up to 100 %.	
Physical form of product	: Solid, low dustiness Liquid
Amount used, frequency and duration of use (or from service life)	
Duration	: Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Provide a basic standard of general ventilation (1 to 3 air changes per hour).	
Local exhaust ventilation no Inhalation - minimum efficiency of 0 %	
Occupational Health and Safety Management System: Advanced	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Long sleeved clothing Dermal - minimum efficiency of 90 %	
Use eye protection according to EN 166.	
Respiratory protection no	

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Inhalation - minimum efficiency of 0 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use

1.2.3. Control of worker exposure: Continuous process, Closed systems

Use in closed, continuous process with occasional controlled exposure (PROC2)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.4. Control of worker exposure: Use in closed batch process (synthesis or formulation)

Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Technical and organisational conditions and measures

Closed batch process with occasional controlled exposure

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

1.2.5. Control of worker exposure: Batch process

Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.6. Control of worker exposure: Mixing or blending, Batch process

Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

1.2.7. Control of worker exposure: Material transfers, Non-dedicated facility

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities (PROC8a)

Other conditions affecting workers exposure	
Body parts exposed	: Two hands (960 cm ²)

1.2.8. Control of worker exposure: Material transfers, Dedicated facility
Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Other conditions affecting workers exposure	
Body parts exposed	: Two hands (960 cm ²)

1.2.9. Control of worker exposure: Material transfers, Small package filling, Dedicated facility
Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

1.2.10. Control of worker exposure: Treatment by dipping and pouring
Treatment of articles by dipping and pouring (PROC13)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

1.2.11. Control of worker exposure: Tableting, compression, extrusion or pelletisation
Production of preparations or articles by tableting, compression, extrusion, pelletisation (PROC14)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

1.2.12. Control of worker exposure: Laboratory activities
Use as laboratory reagent (PROC15)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Formulation into solid matrix (ERC3)

Additional information on exposure estimation

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

1.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,027

1.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,013
combined routes	systemic	long-term		0,016

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

1.3.5. Worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134
combined routes	systemic	long-term		0,148

1.3.6. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,282

1.3.7. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,282

1.3.8. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
----------------	---------------	--------------------	----------------	-----

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,271

1.3.9. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134
combined routes	systemic			0,137

1.3.10. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,271

1.3.11. Worker exposure: Production of preparations or articles by tableting, compression, extrusion, pelletisation (PROC14)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,343 mg/kg	0,067

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

			bw/day (ECETOC TRA worker v3)	
combined routes	systemic	long-term		0,07

1.3.12. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

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

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

ES2: Use as an intermediate

2.1. Title section

Structured Short Title : Use at industrial sites

Environment		
CS1	Use as an intermediate, Industrial use	ERC6a
Worker		
CS2	Use as an intermediate, General measures	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15
CS3	Continuous process, Closed systems	PROC1
CS4	Use in closed, continuous process with occasional controlled exposure	PROC2
CS5	Use in closed batch process (synthesis or formulation)	PROC3
CS6	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS7	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)	PROC5
CS8	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS9	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS10	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS11	Treatment of articles by dipping and pouring	PROC13
CS12	Production of preparations or articles by tableting, compression, extrusion, pelletisation	PROC14

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

CS13 Use as laboratory reagent

PROC15

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Use of intermediate (ERC6a)

2.2.2. Control of worker exposure: Use as an intermediate, General measures

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Treatment of articles by dipping and pouring (PROC13) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / Use as laboratory reagent (PROC15)

Product (article) characteristics	
Covers percentage substance in the product up to 100 %.	
Physical form of product	: Solid, low dustiness Liquid
Amount used, frequency and duration of use (or from service life)	
Duration	: Covers daily exposures up to 8 hours
Technical and organisational conditions and measures	
Provide a basic standard of general ventilation (1 to 3 air changes per hour).	
Local exhaust ventilation	no
Inhalation - minimum efficiency of	0 %
Occupational Health and Safety Management System: Advanced	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Long sleeved clothing	

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Dermal - minimum efficiency of 90 %	
Use eye protection according to EN 166.	
Respiratory protection no	
Inhalation - minimum efficiency of 0 %	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use

2.2.3. Control of worker exposure: Continuous process, Closed systems
Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Other conditions affecting workers exposure	
Body parts exposed	: One hand face only (240 cm ²)

2.2.4. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure
Use in closed, continuous process with occasional controlled exposure (PROC2)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

2.2.5. Control of worker exposure: Use in closed batch process (synthesis or formulation)
Use in closed batch process (synthesis or formulation) (PROC3)

Other conditions affecting workers exposure	
Body parts exposed	: One hand face only (240 cm ²)

2.2.6. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Other conditions affecting workers exposure	
Body parts exposed	: Palms of both hands (480 cm ²)

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

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

2.2.8. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities (PROC8a)

Other conditions affecting workers exposure

Body parts exposed : Two hands (960 cm²)

2.2.9. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Other conditions affecting workers exposure

Body parts exposed : Two hands (960 cm²)

2.2.10. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

2.2.11. Control of worker exposure: Treatment of articles by dipping and pouring
Treatment of articles by dipping and pouring (PROC13)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

2.2.12. Control of worker exposure: Production of preparations or articles by tableting, compression, extrusion, pelletisation

Production of preparations or articles by tableting, compression, extrusion, pelletisation (PROC14)

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm²)

2.2.13. Control of worker exposure: Use as laboratory reagent

Use as laboratory reagent (PROC15)

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Use of intermediate (ERC6a)

Additional information on exposure estimation

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

2.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

2.3.4. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure	Exposure level	RCR
----------------	---------------	----------	----------------	-----

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

		indicator		
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,137 mg/kg bw/day (ECETOC TRA worker v3)	0,027
combined routes	systemic	long-term		0,027

2.3.5. Worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v3)	0,013
combined routes	systemic	long-term		0,016

2.3.6. Worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134
combined routes	systemic	long-term		0,148

2.3.7. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,282

2.3.8. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,5 mg/m ³ (ECETOC TRA worker v3)	0,014
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,282

2.3.9. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,271

2.3.10. Worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,686 mg/kg bw/day (ECETOC TRA worker v3)	0,134

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

combined routes	systemic	long-term		0,137
-----------------	----------	-----------	--	-------

2.3.11. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	1,371 mg/kg bw/day (ECETOC TRA worker v3)	0,268
combined routes	systemic	long-term		0,271

2.3.12. Worker exposure: Production of preparations or articles by tableting, compression, extrusion, pelletisation (PROC14)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,343 mg/kg bw/day (ECETOC TRA worker v3)	0,067
combined routes	systemic	long-term		0,07

2.3.13. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	0,1 mg/m ³ (ECETOC TRA worker v3)	< 0,01
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v3)	< 0,01
combined routes	systemic	long-term		< 0,01

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Hot Ammonium Nitrate Solution

Version 7.0

Revision Date: 21.10.2019

Former date: 31.05.2017

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

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.