



SAFETY DATA SHEET

NITRIC ACID, AMMONIUM CALCIUM SALT

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

1.1. Product identifier

Product name	NITRIC ACID, AMMONIUM CALCIUM SALT
Product number	24735
Synonyms; trade names	NITCAL, CALCIUM AMMONIUM NITRATE, DIPCAL CALCIUM NITRATE, DIPCAL RQ, DIPCAL
REACH registration number	01-2119493947-16-XXXX
CAS number	15245-12-2
EC number	239-289-5

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

Identified uses	Fertilizer Chemical Chemical Intermediate
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1.3. Details of the supplier of the safety data sheet

Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	24735

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Not Classified
Health hazards	Acute Tox. 4 - H302 Eye Dam. 1 - H318
Environmental hazards	Not Classified

2.2. Label elements

EC number	239-289-5
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Hazard pictograms



NITRIC ACID, AMMONIUM CALCIUM SALT

Signal word	Danger
Hazard statements	H302 Harmful if swallowed. H318 Causes serious eye damage.
Precautionary statements	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER/ doctor. P501 Dispose of contents/ container in accordance with national regulations.

2.3. Other hazards

Take care as floors and other surfaces may become slippery.

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name	NITRIC ACID, AMMONIUM CALCIUM SALT
REACH registration number	01-2119493947-16-XXXX
CAS number	15245-12-2
EC number	239-289-5
Composition comments	The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move affected person to fresh air at once. Rinse nose and mouth with water. Get medical attention immediately. First aid personnel should wear appropriate protective equipment during any rescue.
Ingestion	Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting unless under the direction of medical personnel. Get medical attention if any discomfort continues.
Skin contact	Remove affected person from source of contamination. Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention if any discomfort continues.
Eye contact	Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

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

Inhalation	Gas or vapour in high concentrations may irritate the respiratory system. Effects may be delayed.
Ingestion	Harmful if swallowed. May cause chemical burns in mouth, oesophagus and stomach. Overexposure may cause the following adverse effects: Stomach pain.
Skin contact	Overexposure may cause the following adverse effects: Irritating. Redness.
Eye contact	Causes serious eye damage. Overexposure may cause the following adverse effects: Pain. Profuse watering of the eyes. Redness.

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

Notes for the doctor	Treat symptomatically. Development of symptoms may be delayed for 24 to 48 hours.
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SECTION 5: Firefighting measures

NITRIC ACID, AMMONIUM CALCIUM SALT

5.1. Extinguishing media

Suitable extinguishing media Extinguish with the following media: Water.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire. Do not use the following: Dry chemicals, sand, dolomite etc. Foam.

5.2. Special hazards arising from the substance or mixture

Specific hazards Take care as floors and other surfaces may become slippery.

Hazardous combustion products When heated, vapours/gases hazardous to health may be formed.

5.3. Advice for firefighters

Protective actions during firefighting Evacuate area. No action shall be taken without appropriate training or involving any personal risk. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions No action shall be taken without appropriate training or involving any personal risk. Evacuate area. Keep unnecessary and unprotected personnel away from the spillage. Do not touch or walk into spilled material. Provide adequate ventilation. If ventilation is inadequate, suitable respiratory protection must be worn. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Take care as floors and other surfaces may become slippery.

For emergency responders Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet.

6.2. Environmental precautions

Environmental precautions Control run-off water by containing and keeping it out of sewers and watercourses. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Move containers from spillage area. Avoid generation and spreading of dust. Approach the spillage from upwind. Avoid the spillage or runoff entering drains, sewers or watercourses. Remove spillage with vacuum cleaner or collect with a shovel and broom, or similar. Collect and place in suitable waste disposal containers and seal securely. Label the containers containing waste and contaminated materials and remove from the area as soon as possible.

6.4. Reference to other sections

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid handling which leads to dust formation. Wear protective clothing as described in Section 8 of this safety data sheet. Provide adequate ventilation. If ventilation is inadequate, suitable respiratory protection must be worn. Store in tightly-closed, original container. Product residues retained in emptied containers can be hazardous. Do not reuse empty containers. Avoid inhalation of dust and contact with skin and eyes.

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Advice on general occupational hygiene

Eye wash facilities and emergency shower must be available when handling this product. When using do not eat, drink or smoke. Wash at the end of each work shift and before eating, smoking and using the toilet. Remove contaminated clothing and protective equipment before entering eating areas. Wear protective clothing as described in Section 8 of this safety data sheet. Good personal hygiene procedures should be implemented.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions

Store in tightly-closed, original container in a dry, cool and well-ventilated place. Protect from sunlight. Keep away from food and drink. Store locked up. Container must be kept tightly closed when not in use. Keep containers upright. Keep away from combustible materials. Store away from the following materials: Organic compounds. Acids. Alkalis. Reducing agents.

7.3. Specific end use(s)

Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Ingredient comments

No exposure limits known for ingredient(s).

DNEL

Consumer - Inhalation; Long term systemic effects: 10 mg/kg/day

PNEC

STP; 18 mg/l

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate ventilation. Eye wash facilities and emergency shower must be available when handling this product.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The selected gloves should have a breakthrough time of at least 8 hours. Viton rubber (fluoro rubber). Neoprene. Thickness: > 0.35 mm To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection

Wear appropriate clothing to prevent repeated or prolonged skin contact.

Hygiene measures

Do not smoke in work area. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Protection against nuisance dust must be used when the airborne concentration exceeds 10 mg/m³. Wear a respirator fitted with the following cartridge: Particulate filter, type P2. Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked.

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Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Solid Granules.
Colour	White.
Odour	Odourless.
Odour threshold	No information available.
pH	pH (diluted solution): 5.0 - 7.0 (110 g/l)
Melting point	400°C
Initial boiling point and range	No information available.
Flash point	No information available.
Evaporation rate	No information available.
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	No information available.
Other flammability	No information available.
Vapour pressure	No information available.
Vapour density	No information available.
Relative density	2.05
Bulk density	1100 kg/m ³
Solubility(ies)	Soluble in water.
Partition coefficient	log Pow: < 0 Koc: < 1
Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.
Viscosity	No information available.
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	No information available.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

Other information	No information available.
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SECTION 10: Stability and reactivity

10.1. Reactivity

NITRIC ACID, AMMONIUM CALCIUM SALT

Reactivity The following materials may react with the product: Acids. Alkalis. Reducing agents. Organic compounds.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Under normal conditions of storage and use, no hazardous reactions will occur.

10.4. Conditions to avoid

Conditions to avoid Avoid exposure to high temperatures or direct sunlight.

10.5. Incompatible materials

Materials to avoid Flammable/combustible materials. Reducing agents. Acids. Alkalis. Organic compounds.

10.6. Hazardous decomposition products

Hazardous decomposition products Does not decompose when used and stored as recommended. When heated, vapours/gases hazardous to health may be formed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 500.0

Species Rat

Notes (oral LD₅₀) Harmful if swallowed.

ATE oral (mg/kg) 500.0

Acute toxicity - dermal

Notes (dermal LD₅₀) LD₅₀ > 2000 mg/kg, Dermal, Rat

Skin corrosion/irritation

Skin corrosion/irritation Based on available data the classification criteria are not met.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

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

Skin sensitisation

Skin sensitisation Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vivo Does not contain any substances known to be mutagenic.

Carcinogenicity

Carcinogenicity There is no evidence that the product can cause cancer.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

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STOT - single exposure Based on available data the classification criteria are not met.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Based on available data the classification criteria are not met.

Aspiration hazard

Aspiration hazard Not anticipated to present an aspiration hazard, based on chemical structure.

Inhalation Gas or vapour in high concentrations may irritate the respiratory system. Effects may be delayed.

Ingestion Harmful if swallowed. May cause chemical burns in mouth, oesophagus and stomach. Overexposure may cause the following adverse effects: Stomach pain.

Skin contact Skin irritation should not occur when used as recommended.

Eye contact Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

SECTION 12: Ecological information

Ecotoxicity The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 48 hours: 447 mg/l, Fish

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: > 100 mg/l, Daphnia magna
OECD 202

Acute toxicity - aquatic plants LC₅₀, 72 hours: >100 mg/l, Algae

Acute toxicity - microorganisms EC₅₀, 3 hours: 1.000 mg/l, Activated sludge
OECD 209

12.2. Persistence and degradability

Persistence and degradability Not applicable. The product contains inorganic substances which are not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential Bioaccumulation is unlikely.

Partition coefficient log Pow: < 0 Koc: < 1

12.4. Mobility in soil

Mobility The product is miscible with water and may spread in water systems.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment Not applicable.

12.6. Other adverse effects

Other adverse effects Not determined.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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General information	Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty. Empty containers or liners may retain some product residues and hence be potentially hazardous.
Disposal methods	Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.
Waste class	Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

SECTION 14: Transport information

General	The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).
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14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

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

EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015. 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.
Restrictions (Annex XVII Regulation 1907/2006)	This product is/contains a substance that is included in REGULATION (EC) No 1907/2006 (REACH) ANNEX XVII - RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES. Entry number: 65

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15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
 CAS: Chemical Abstracts Service.
 DNEL: Derived No Effect Level.
 IATA: International Air Transport Association.
 IMDG: International Maritime Dangerous Goods.
 Kow: Octanol-water partition coefficient.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
 PBT: Persistent, Bioaccumulative and Toxic substance.
 PNEC: Predicted No Effect Concentration.
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
 vPvB: Very Persistent and Very Bioaccumulative.
 IARC: International Agency for Research on Cancer.
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
 cATpE: Converted Acute Toxicity Point Estimate.
 BCF: Bioconcentration Factor.
 BOD: Biochemical Oxygen Demand.
 EC₅₀: 50% of maximal Effective Concentration.
 LOAEC: Lowest Observed Adverse Effect Concentration.
 LOAEL: Lowest Observed Adverse Effect Level.
 NOAEC: No Observed Adverse Effect Concentration.
 NOAEL: No Observed Adverse Effect Level.
 NOEC: No Observed Effect Concentration.
 LOEC: Lowest Observed Effect Concentration.
 DMEL: Derived Minimal Effect Level.
 EL50: Exposure Limit 50
 hPa: Hectopascal
 LL50: Lethal Loading fifty
 OECD: Organisation for Economic Co-operation and Development
 POW: Octanol-water partition coefficient
 SCBA: self-contained breathing apparatus
 STP: Sewage Treatment Plant
 VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
 Aquatic Acute = Hazardous to the aquatic environment (acute)
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

Supplier's information.

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

NITRIC ACID, AMMONIUM CALCIUM SALT

Revision date	25/10/2019
Version number	3.000
Supersedes date	12/07/2018
SDS number	24735
SDS status	Approved.
Hazard statements in full	H302 Harmful if swallowed. H318 Causes serious eye damage.
Signature	J Spenceley



Exposure scenario Professional Use and Distribution

Identification

Product name	NITRIC ACID, AMMONIUM CALCIUM SALT
REACH registration number	01-2119493947-16-XXXX
CAS number	15245-12-2
EC number	239-289-5
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Professional Use and Distribution
Process scope	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities. Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities. Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities. Use of the substance within laboratory settings within enclosed or contained systems, including incidental exposures during material transfers and equipment cleaning.
Product category	PC4 Anti-freeze and de-icing products. PC9a Coatings and paints, thinners, paint removers. PC11 Explosives. PC14 Metal surface treatment products PC16 Heat transfer fluids. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC37 Water treatment chemicals. PC35 Washing and cleaning products
Main sector	SU22 Professional uses

Professional Use and Distribution

Sector of use	SU1 Agriculture, forestry, fishery
	SU2a Mining (without offshore industries)
	SU12 Manufacture of plastics products, including compounding and conversion
	SU15 Manufacture of fabricated metal products, except machinery and equipment
	SU13 Manufacture of other non-metallic mineral products
	SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
	SU19 Building and construction work
	SU23 Electricity, steam, gas, water supply and sewage treatment

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
	ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
	ERC8c Widespread use leading to inclusion into/onto article (indoor)
	ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
	ERC8e Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
	ERC8f Widespread use leading to inclusion into/onto article (outdoor)
	ERC9b Widespread use of functional fluid (outdoor)
	ERC10a Widespread use of articles with low release (outdoor)
	ERC11a Widespread use of articles with low release (indoor)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
	PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
	PROC5 Mixing or blending in batch processes
	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
	PROC10 Roller application or brushing
	PROC11 Non industrial spraying
	PROC13 Treatment of articles by dipping and pouring.
	PROC19 Manual activities involving hand contact
	PROC26 Handling of solid inorganic substances at ambient temperature

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

No exposure assessment presented for the environment.

Product characteristics

Not regarded as dangerous for the environment.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid , or: Solid in solution
Concentration details	Covers concentrations up to 100 %.

Professional Use and Distribution

Inorganic salts.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Ventilation rate Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Ensure the ventilation system is regularly maintained and tested.

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

Technical protective measures Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Only allow access to authorised persons. Automate activity where possible. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimise exposures.

Risk management measures

Avoid contact with skin and eyes.
Avoid breathing dust or mist.
Wear eye and face protection.
Wear suitable coveralls to prevent exposure to the skin.
If ventilation is inadequate, suitable respiratory protection must be worn.

3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.



Exposure scenario Industrial Use and Distribution

Identification

Product name	NITRIC ACID, AMMONIUM CALCIUM SALT
REACH registration number	01-2119493947-16-XXXX
CAS number	15245-12-2
EC number	239-289-5
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial Use and Distribution
Process scope	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities. Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities. Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities. Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities. Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

Industrial Use and Distribution

Product category	PC1 Adhesives, sealants. PC4 Anti-freeze and de-icing products. PC9a Coatings and paints, thinners, paint removers. PC11 Explosives. PC12 Lawn and garden preparations (- fertilizers). PC14 Metal surface treatment products PC15 Non-metal-surface treatment products. PC16 Heat transfer fluids. PC19 Intermediate. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC21 Laboratory chemicals. PC29 Pharmaceuticals PC35 Washing and cleaning products PC37 Water treatment chemicals. PC39 Cosmetics, personal care.
Main sector	SU3 Industrial uses
Sector of use	SU1 Agriculture, forestry, fishery SU2a Mining (without offshore industries) SU2b Offshore industries SU6a Manufacture of wood and wood products SU6b Manufacture of pulp, paper and paper products SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals SU10 Formulation [mixing] of preparations and/or re-packaging SU11 Manufacture of rubber products SU12 Manufacture of plastics products, including compounding and conversion SU13 Manufacture of other non-metallic mineral products SU15 Manufacture of fabricated metal products, except machinery and equipment SU16 Manufacture of computer, electronic and optical products, electrical equipment SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18 Manufacture of furniture SU19 Building and construction work SU23 Electricity, steam, gas, water supply and sewage treatment
<u>Environment</u>	
Environmental release category	ERC2 Formulation into mixture ERC3 Formulation into solid matrix ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC5 Use at industrial site leading to inclusion into/onto article ERC6a Use of intermediate ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC7 Use of functional fluid at industrial site

Worker

Industrial Use and Distribution

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC7 Industrial spraying PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. PROC19 Manual activities involving hand contact PROC26 Handling of solid inorganic substances at ambient temperature
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

No exposure assessment presented for the environment.

Product characteristics

Not regarded as dangerous for the environment.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid , or: Solid in solution
Concentration details	Covers concentrations up to 100 %.
	Inorganic salts.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure the ventilation system is regularly maintained and tested.

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

Technical protective measures	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Only allow access to authorised persons. Automate activity where possible. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimise exposures.
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Risk management measures

Industrial Use and Distribution

Avoid contact with skin and eyes.

Avoid breathing dust or mist.

Wear eye and face protection.

Wear suitable coveralls to prevent exposure to the skin.

If ventilation is inadequate, suitable respiratory protection must be worn.

3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.