

SAFETY DATA SHEET

in accordance with Regulations 1907/2006/EC and 2015/830/EU

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Number and date of revision: 1.0/EN; 12.03.2019

Nitrosol

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

1.1. Product identifier

Trade name **Nitrosol (30%N)**
CAS number Not applicable (mixture)
EINECS number Not applicable (mixture)
Synonym UAN solution

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

Identified uses: fertilizer
Uses advised against: no uses advised against

1.3. Details of the supplier of the safety data sheet

Name of supplier
(manufacturer): NITROGÉNműVEK Zrt.
Address: Pétfürdő, Hősök tere 14.
8105 Pétfürdő, Pf. 450,
Hungary
Telephone: +36-88-620-100
Fax: +36-88-620-102
E-mail: sds@nitrogen.hu

1.4. Emergency telephone number

The UK National Poisons Emergency number +44 870 600 6266

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Not classified in accordance with Regulation 1272/2008/EC.
Remark: Information supporting the classification are specified in sections 11.1 and 16.

2.2. Label elements

Not required.

2.3. Other hazards

The product does not meet the PBT or vPvB criteria.
No other hazards known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

The product is not a substance; therefore, it is not applicable.

3.2. Mixtures

Aqueous solution of urea (30 %) and ammonium nitrate (40 %).
Hazardous ingredient(s)

Name	CAS number	EC number	w/w%	Registration number
Ammonium nitrate	6484-52-2	229-347-8	38-46	01-2119490981-27-0082

Classification of ammonium nitrate:

Classification: Ox. Sol. 3, Eye Irrit. 2

Signal word: Warning

Pictograms:



H statements: H272 May intensify fire; oxidiser.
H319 Causes serious eye irritation.

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Other non-hazardous ingredients:

Name	CAS number	EC number	w/w%	Registration number
Urea (CO(NH ₂) ₂)	57-13-6	200-315-5	29-35	01-2119463277-33-0081

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Skin contact

Wash the affected area with soap and water for at least 15 minutes. Remove contaminated clothing and shoes. In case of persistent irritation, obtain medical help.

Eye contact

Flush/wash eye with plenty of water for at least 15 minutes, with occasional blinking. If necessary and if easy to do so, remove contact lenses. In case of persistent eye irritation, obtain medical help.

Ingestion

Do not induce vomiting. Flush the mouth of the victim with plenty of water and give him plenty of water to drink. In case of persistent sickness, obtain medical help.

Inhalation

Not a likely route of exposure.

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

Eyes, skin: Redness, pain.

Ingestion: In case of small quantities, the poisoning effect is unlikely. In case of ingestion of larger quantities may cause digestive abnormalities (abdominal pain, nausea, diarrhoea) and in extreme cases (especially if the affected person is very young) methaemoglobin formation ("blue baby symptom") or cyanosis (which is indicated by the bluish discoloration of area of the mouth) may occur.

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

In normal cases immediate medical help is not required, but in case of persistent symptoms, obtain medical help. May cause methaemoglobin formation.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Every common extinguishing media can be used. It is recommended to use water spray.

5.2. Special hazards arising from the substance or mixture

The fertilizer is not combustible in itself, but its dried residues may promote combustion. Heating may cause degradation which happens with the liberation of toxic nitrogen oxides and ammonia. After the inhalation of degradation gases or combustion products, remove the injured person from the gas exposure. Even in case of no symptoms, keep him warm and calm. Give oxygen, especially if bluish discoloration can be observed around the mouth. Administer artificial respiration if the breathing has stopped. After the exposure the victim must be kept under medical surveillance for at least 48 hours, because delayed pulmonary oedema may occur.

5.3. Advice for firefighters

Do not inhale the combustion gases (toxic). Approach the fire from down-wind.

Due to the toxic degradation and combustion products, the use of self-contained breathing apparatus is recommended, and full protective suit has to be worn.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Use the recommended PPE during the cleaning of the spillage.

6.2. Environmental precautions

Avoid the contamination of drains and sewage. In case of large quantities gets into sewage, surface or subsurface water, inform the respective environmental protection authority, because it may cause eutrophication.

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6.3. Methods and material for containment and cleaning up

Close the leak area. Pump up the spilled product or collect it with dry sand or earth. Then it has to be collected and has to be placed in clean and properly labelled containers till the safe disposal. Clean the contaminated area and objects with clean water. Do not mix with sawdust or other combustible or organic materials.

6.4. Reference to other sections

Recommendations regarding personal protective equipment can be found in section 8, those regarding the handling of waste can be found in section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

No special prescriptions. Avoid contamination by combustible materials (e.g. diesel oil, fat etc.). The dried residues of the product have an oxidizing effect.

In case of long-term handling of the product, use appropriate personal protection (e.g. gloves).

7.2. Conditions for safe storage, including any incompatibilities

Appropriate containers for storage are plastic containers, plastic, acid proof or plastic- and rubber lined barrels/containers or barrels/containers made of other construction materials (it corrodes carbon steel).

Keep away from heat sources and fire. In agricultural plantations ensure that the fertilizer is not stored near hay, straw, grain, diesel oil etc. Do not use open flame and do not smoke in the vicinity of the storage area.

Keep order in the vicinity of the storage area.

7.3. Specific end use(s)

For professional use

- packaging, repacking, loading, transport
- production of fertilizing solutions (mixing, dilution)

Duration and frequency of use: > 4 h/day

- trickle irrigation
- outdoor spraying (application of fertilizers on head-, leaf and base)
- greenhouse spraying (application of fertilizers on head-, leaf and base)

Frequency and duration of use: max. 12 h/day; 7 days/week, 2-3 months/year.

Risk reducing measures in case of professional users:

- Recommended: the use of automated and/or closed systems.
- Avoid the formation and inhalation of respirable drops/spray.
- The necessary protective equipment is contained in section 8.2.2. If the prepared and used mixture/solution contains ammonium nitrate in > 10 % concentration, and the exposure cannot be excluded in other way, use protective goggles. The use of protective gloves is recommended. Wash hands thoroughly after handling and remove the work clothes.

Consumer use

- dilution
- trickle irrigation
- home garden spraying (application of fertilizers on head-, leaf and base) - with manual spraying
- greenhouse spraying (application of fertilizers on head-, leaf and base) - with manual spraying

Frequency and duration of use: < 4h/day; 1-3 occasion/year.

Risk reducing measures in case of consumers:

- Avoid the formation and inhalation of respirable drops/spray.
- The necessary protective equipment is contained in section 8.2.2. If the prepared and used mixture/solution contains ammonium nitrate in > 10 % concentration, and the exposure cannot be excluded in other way, use protective goggles. The use of protective gloves is recommended. Wash hands thoroughly after handling and remove the work clothes.

(Plant special dosing information is available in the website: www.genezispartner.hu)

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Occupational exposure limit values

There are no officially established limits for the hazardous substance present in the product.

8.1.2. Recommended exposure controls

None.

8.1.3. Occupational exposure limits in case of generation of air-polluting material

In case of intended use of the product, no air-polluting materials are generated.

8.1.4. DNEL and PNEC values

Ammonium nitrate:

DNEL (long term)	worker	general population
dermal	21.3 mg/kg/day	12.8 mg/kg/day
inhalation	37.6 mg/m ³	11.1 mg/m ³
ingestion	-	12.8 mg/kg/day

PNEC values for fresh water: 0,45 mg/l

Urea:

DNEL (acute/long term)	worker	general population
dermal	580 mg/kg/day	580 mg/kg/day
inhalation	292 mg/m ³	125 mg/m ³
oral	-	42 mg/kg/day

8.1.5. Information supporting risk management

No other data supporting risk management is available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Avoid contact with skin and eyes, avoid discharge into water bodies, sewers.

8.2.2. Personal protective equipment

In case of long-term handling, use protective clothes, appropriate gloves (plastic, rubber or leather) and protective glasses (EN 166).

Wash hands after handling the product and take care of personal hygiene.

8.2.3. Environmental exposure controls

Prevent water contaminated by the product entering the sewer system. The leaked product must be collected.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

State	liquid
Appearance	colourless
Odour	odourless
Odour threshold	not applicable (odourless)
pH	7.0 +/- 0.5 (20 °C)
Melting point	crystallization point below -30 °C
Boiling point (15 hPa)	ca. 110-120 °C
Flash point	not applicable (not combustible, inorganic)
Evaporation rate	no data available
Flammability (solid, gas):	not combustible (based on molecular structure)
Upper/lower flammability	or explosive limits: not applicable (non-combustible, non-explosive inorganic material)
Vapour pressure	6.998 hPa (20 °C) – with 32 % N content

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Vapour density	ca. 1.07 (15 °C)
Density	1.26-1.29 g/cm ³
Solubility(ies)	freely soluble in water Water-solubility of the components (20 °C): ammonium nitrate: 1920 g/l; urea: 624 g/l
Partition coefficient n-octanol/water: log Kow (Pow):	ammonium nitrate: -3.1; urea: -1.73
Auto-ignition temperature	not applicable (not combustible, inorganic)
Decomposition temperature	ammonium nitrate: > 170 °C; urea: 134 °C
Viscosity	3.95 mPa·s (20 °C)
Explosive properties	not explosive In case of strong closure (e.g.: in pipes or drains) the heating leads to violent reactions or explosion, especially in that case if it is contaminated with the materials listed in section 10.3.
Oxidizing properties	not oxidizing (the dried residues containing nitrate may promote combustion)

9.2. Other information

None.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

The product is stable under normal storage, handling and use conditions.

10.2. Chemical stability

The product is stable under normal storage, handling and use conditions.

10.3. Possibility of hazardous reactions

In case of strong heating it degrades while forming toxic gases, the heating of fertilizer in strong closure (e.g.: in pipes or drains) may lead to violent reactions or explosions, especially if it is contaminated with the materials listed in section 10.3.

Ammonia gas is formed in case of contact with such alkali materials as lime.

10.4. Conditions to avoid

Heating to temperature above 170 °C (degradation during gas formation). Vicinity of heat source or fire. Contamination with incompatible materials.

10.5. Incompatible materials

Combustible materials, reducing agents, acids, bases, sulphur, chlorates, chlorides, chromates, nitrites, permanganates, metallic powders and other substances containing metals as copper, nickel, cobalt, zinc and their alloys.

10.6. Hazardous decomposition products

Ammonia, oxides of nitrogen.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

No toxicological information available about the product.

We hereby give information about the results of the conducted toxicological studies about the pure ammonium nitrate and about urea as main components, and about other nitrates and ammonium salts.

Acute toxicity

Test substance	CAS number	Exposure route	Species	Result
Ammonium nitrate	6484-52-2	oral	rat	LD50: 2950mg/kg
		dermal	rat	LD50: > 5000 mg/kg
		inhalation	rat	LC50: > 88.8 mg/l
Urea	7704-34-9	oral	rat	LD50: 14300 mg/kg bw

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Test substance	CAS number	Exposure route	Species	Result
Ammonium nitrate	6484-52-2	dermal	rabbit	non-irritating
Urea	7704-34-9			

Eye irritation

Test substance	CAS number	Species	Result
Ammonium nitrate	6484-52-2	rabbit	irritating
Urea	7704-34-9	rabbit	non-irritating
Calcium ammonium nitrate (CAN), 77.9 % ammonium nitrate content	-	rabbit	non-irritating*

* Based on studies with different NPK fertilizers containing ammonium nitrate and CAN fertilizer containing 77,9 % AN, product with less than 80 % AN content are not irritating to the eyes.

Skin sensitization

Test substance	CAS number	Species	Result
Ammonium calcium nitrate dual salt	15245-12-2	mouse	non-sensitizing
Urea	7704-34-9	-	non-sensitizing

Target organ toxicity after repeated exposure

Test substance	CAS number	Exposure route	Species	Result
Urea	7704-34-9	ingestion	rat	NOAEL: 2250 mg/kg /day
Ammonium sulphate	7783-20-2	ingestion	rat	NOAEL: 256 mg/kg/day (52-week test)
Potassium nitrate	7757-79-1	ingestion	rat	NOAEL \geq 1500 mg/kg/day (28-day test)
Ammonium nitrate	6484-52-2	inhalation	rat	NOAEC \geq 185 mg/m ³

Carcinogenicity

Urea is not carcinogenic; no data available about ammonium nitrate.

Mutagenicity

Test substance	CAS number	Test type	Cell type	Result
Ammonium calcium nitrate dual salt	15245-12-2	Bacterial reverse mutation assay	S. typhimurium; E. coli	negative
		In vitro chromosome mutation assay conducted in mammals	Human peripheral lymphocyte	negative
Potassium nitrate	7757-79-1	Mammal cell gene mutation assay	Mouse lymphoma	negative
Urea	7704-34-9	assessed by all three tests mentioned above		negative

Reproductive toxicity

Test substance	CAS number	Exposure route	Species	Result
Potassium nitrate	7757-79-1	ingestion	rat	NOAEL: \geq 1500 mg/kg bw/day
Urea	7704-34-9	ingestion	rat	NOAEL: 500 mg/kg bw/day

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Information on likely routes of exposure

The most probable route of exposures is skin and eye exposure, which can be reduced to minimal with the use of PPE. The inhalation exposure is only possible if during the use of the product dust is formed and no sufficient ventilation is available. In case of normal circumstances ingestion is not likely, only accidental ingestion is possible. The possible symptoms are listed in section 4.2.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Large quantities released into natural waters may cause eutrophication. No toxicological information available about the product. We hereby give information about the results of the conducted toxicological studies about the pure ammonium nitrate and about urea as main components, and about other nitrates.

Tested substance	CAS number	Test	Species/group of animals	Result
Ammonium nitrate	6484-52-2	Short term toxicity in fish	carp (<i>Cyprinus carpio</i>)	LC50 (48 h): 447 mg/l
Potassium nitrate	7757-79-1	Toxicity for invertebrates	water flea (<i>Daphnia magna</i>)	EC50 (48 h): 490 mg/l
Potassium nitrate	7757-79-1	Test conducted on algae and aquatic plants	sedimentary diatomaceous algae	EC50 (10 d): > 1700 mg/l
Urea	7704-34-9	Short term toxicity in fish	<i>Leuciscus idus</i>	LC50 (48 h): > 6810 mg/l
Urea	7704-34-9	Toxicity for invertebrates	water flea (<i>Daphnia magna</i>)	EC50 (24 h): >10000 mg/l
Urea	7704-34-9	Toxicity for algae	<i>Microcystis aeruginos</i>	NOEC: 47 mg/l

In large quantities it causes eutrophication in natural waters.

12.2. Persistence and degradability

Not persistent, its components are inorganic materials.

The ammonium nitrate dissociates for its ions in water. It degrades in the natural nitrification/denitrification cycle. The ammonium ion transforms to nitrites and then nitrates with the help of bacteria both in natural and controlled circumstances (sewage treatment technologies). The biological degradation time in sewage treatment plants is 52 g N/kg dissolved solid material/day in 20 °C. The nitrate both degrades within natural and controlled circumstances (sewage treatment technologies). The decomposition products of the anaerobe degradation: dinitrogen oxide, nitrogen, ammonia. The biological degradation time in sewage treatment plants is 70 g N/kg dissolved solid material/day in 20 °C.

For the effect of humidity, urea degrades into ammonia and carbon dioxide. Utilized as nitrogen source (biological degradation: on 20 °C 4 mg/l per 1 hour).

12.3. Bioaccumulation potential

Not bioaccumulating, because its components are inorganic materials, and their partition coefficient are low.

12.4. Mobility in soil

After dissolution the formed ions are mobile, their adsorption potential is low.

12.5. Results of PBT and vPvB assessment

The product does not meet the PBT or vPvB criteria.

12.6. Other adverse effects

No other adverse effects known.

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SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Depending on the extent and the type of the contamination, it can be used as fertilizer or can be disposed via licensed waste management company. Recommended codes according to the List of Waste:

06 03 14 solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13

15 02 03 absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02

Information regarding the disposal of the packaging

The sacks, containers which are thoroughly cleaned with water - with the permission of the local authorities - can be disposed or recycled as non-hazardous waste (Do not remove the label from the container before cleaning). Recommended code according to the List of Waste:

15 01 02 plastic packaging

SECTION 14: TRANSPORT INFORMATION

14.1. **UN number:** not dangerous goods

14.2. **UN proper shipping name:** not dangerous goods

14.3. **Transport hazard class(es):** not dangerous goods

14.4. **Packaging group:** not dangerous goods

14.5. **Environmental hazards:** not environmentally hazardous

14.6. **Special precautions for user:** not necessary

14.7. **Transport in bulk according to Annex II of MARPOL and the IBC Code:** not applicable

SECTION 15: REGULATORY INFORMATION

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

Directive 2012/18/EU (SEVESO III) on the control of major-accident hazards involving dangerous substances	Ammonium nitrate (lower tier: 1250 t, upper tier: 5000 t)
Regulation 2003/2003/EC relating to fertilisers	The product is an EC fertilizer with high nitrogen content (C.1 fertilizer type – simple fluid fertilizer)
Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), restrictions according to Annex XVII	The product is not subject to restrictions.
Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), authorization	The product does not contain any substances of very high concern.
Regulation 1272/2008/EC on classification, labelling and packaging of substances and mixtures (CLP)	Classification of the product according to CLP – see section 2. Classification of the hazardous component – see section 3.

Related regulations:

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), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

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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, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2. Chemical safety assessment

Chemical safety assessment has been performed for ammonium nitrate and urea.

SECTION 16: OTHER INFORMATION

Important changes in the safety data sheet:

No information.

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Abbreviations:

LD50 – Lethal dose resulting in 50 % mortality
EC50 – Effective concentration, 50 %
DNEL – Derived-No-Effect-Level
LC50 – Lethal concentration resulting in 50 % mortality
NOAEL – No Observed Adverse Effect Level
NOAEC – No Observed Adverse Effect Concentration
PBT – Persistent, bioaccumulative and toxic
vPvB – very persistent and very bioaccumulative
kg bw – kilograms by weight

Most important references:

- Chemical safety assessment of ammonium nitrate, 2016
- Chemical safety assessment of urea, 2010
- International Chemical Safety Cards ICSC 0216, 2001
- Hommel: Hazardous substances, 1989
- Harlan Laboratory: Report for CAN 27 in vivo testing, Report no. D36408, 2011
- Fertilizers Europe: Assessment of ammonium nitrate based fertilizers as eye irritant for classification purposes, 2011

Method of evaluation of data:

Test results for substances or materials for cross-referencing, as well as the method based on the general concentration limits for mixtures set out in Annex I of CLP.

The product is not subject to ADR / RID (Special Specification 307), not oxidizing.

Based on the relevant eye irritation tests made by Harlan laboratories Ltd. on different fertilizers with ammonium nitrate content (CAN27, NPK fertilizers), the mixtures with < 80% ammonium nitrate content are not irritating to the eyes.
