Aqueous urea solution AUS 40, AUS 20

Revision date:
2026.02.28
Version No. 5.0
Revision No. 0
Issuing date:
2026.02.28

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

1.1 Product identifier

Trade name of mixture – Aqueous urea solution AUS 40, AUS 20.
Other means of identification: none.

1.2 Relevant identified uses of the mixture and uses advised against

1.2.1 Uses:
Industrial use:
- Industrial use [SU23]: for exhaust gas cleaning – NOx reducing agent.

1.2.2 Uses advised against: none.

1.3 Details of the supplier of the safety data sheet

Manufacturer: AB Achema
Full address: Jonalaukio k. 1, Jonavos sen., LT-55296
Country: Lithuania
Tel. Nr.: +370 349 56736.
Manufacturer's website: www.achema.lt
Person responsible for the Safety Data Sheet (with e-mail address): Mindaugas Vaidila, e-mail: m.vaidila@achema.com

1.4 Emergency telephone number

Please contact: Poison Information and Control Office in the Republic of Lithuania by phone ++370 52362052, cell phone +370 687 53378, on site http://www.apsinuodijau.lt/information-in-english/ or by the Common emergency Center by 112.
Helpdesk services work 24 hours a day, 365 days a year.
Other remarks (language in which assistance is provided): assistance is provided in Lithuanian.

Poison Control Centers in Europe are available on site http://www.who.int/pcs/poisons/centre/directory/euro/en/.
Telephone numbers of poison control centers in the European Economic Area: **IRELAND** (Dublin) +353 1 8379964; **AUSTRIA** (Vienna) +43 1 406 43 43; **BELGIUM** (Brussels) +32 70 245 245; **BULGARIA** (Sofia) +359 2 9154 409; **CZECH REPUBLIC** (Praha) +420 224 919 293; **DENMARK** (Copenhagen) 82 12 12 12; **ESTONIA** (Talinn) 112; **GREECE** (Athens) +30 10 779 3777; **ICELAND** (Reykjavik) +354 525 111, +354 543 2222; **ITALY** (Rome) +39 06 305 4343; **LATVIA** (Ryga) +371 704 2468; **MALTA** (Valletta) 2425 0000; **NORWAY** (Oslo) 22 591300; **NETHERLANDS** (Bilthoven) +31 30 274 88 88; **FRANCE** (Paris) +33 1 40 0548 48; **FINLAND** (Helsinki) +358 9 471 977; **SWEDEN** emergency cases 112; in less acute cases +46 040 456 6700; **HUNGARY** (Budapest) 06 80 20 11 99; **GERMANY** (Berlin) +49 30 19240.

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation No. 1272/2008 [CLP]:
Not classified as hazardous according to Regulation (EU) No. 1272/2008.

2.2 Label elements

Labeling according to Regulation No. 1272/2008 [CLP]:
P102 – Keep out of reach of children.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302+P352 – IF ON SKIN: Wash with plenty of soap and water.

2.3 Other hazards

According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted since product is inorganic.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

According to the REACH Regulation (EU) No. 1907/2006 the product is a multi-constituent.

Identity of the components of the mixture.

CAS no.	EC no.	Index No. in accordance with Regulation (EC) No. 1272/2008	REACH registration No.	Mass fraction, %	IUPAC name	Classification in compliance with Regulation (EC) No. 1272/2008 (CLP)
57-13-6	200-315-5	Not applicable	01-2119463277-33-XXXX	39.5-40.5 (only for AUS 40); 19.5-20.5 (only for AUS 20)	urea	Does not meet classification criteria
108-19-00	203-559-0	Not applicable	Not applicable	≤ 0.3 (only for AUS 20); ≤ 0.5 (only for AUS 40)	biuret	Does not meet classification criteria

SECTION 4. FIRST-AID MEASURES

4.1 Description of first aid measures

4.1.1. General information
The material can get through: the respiratory tract, in contact with skin, eyes, ingestion.
Inhalation: the product has a slight odor of ammonia. If inhaled, leave the affected area. The product does not meet the criteria for classification under the Regulation (EU) No. 1272/2008. In case feeling bad, seek medical advice.
Skin contact: wash affected hands (body) with plenty of water. Change the contaminated clothes.
Eye contact: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Ingestion: Wash mouth, drink some water, and seek medical advice.
4.1.2. Individual protection measures recommended for first-aiders: Comply with general hygiene requirements. Product contact with eyes is prohibited. Avoid repeated or prolonged contact with skin or clothing. Wear protective gloves.

4.2 Most important symptoms and effects

Inhaled: there is no available data on the inhalation of the product which causes adverse symptoms.
Skin Contact: may cause skin irritation.
Eye Contact: eye irritation.
Ingestion: the product is not acutely toxic. Possible symptoms are: nausea, vomiting, possible fainting.

4.3 Indication of any immediate medical attention and special treatment needed

Measures that can only be taken by a doctor: eye treatment, gastric lavage.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable: water and carbon dioxide, powder, sand or other fire-extinguishing media appropriate for surrounding materials.
Not suitable: none.

5.2 Special hazards arising from the substance or mixture

The urea solution is non-flammable, but in the event of a fire, the product will decompose at high temperatures and release ammonia into the environment.
Heated under vacuum at its melting point (120÷130 ºC) it sublimes without change. At 160÷190 ºC under vacuum urea sublimes and is converted to ammonium cyanate. At atmospheric pressure at 180÷190 ^{0}C it sublimes completely and decomposes partially to biuret, cyanic acid. At higher temperature than 200 ºC urea sublimes and is converted to ammonium and cyanic acid. Self-inflammable temperature: +715 ºC.

5.3 Advice for firefighters

In the event of fire, substances causing irritation may be released so a self-contained breathing apparatus and a chemical protective suit must be worn. Firefighters must use personal protective equipment in accordance with LST EN 469.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1. For personnel not involved in emergency situations: Avoid contact with the product. Evacuate from the yard if it's safe. In the event of an accident, use the personal protective equipment provided in sub-section 8.2 of this SDS.
6.1.2. For the personnel involved in emergency situations: Use the personal protective equipment provided in sub-section 8.2 of this SDS. Collect as much spillage as possible with dry sand or other absorbent. Avoid contact with the product. After contact with the product, remove them, wash affected area with running water.

6.2 Environmental precautions

Pump (scoop) as much as possible of the spilled substance/ preparation into tight containers. Keep away from getting into a sewer system or water pools.

6.3 Methods and material for containment and cleaning up

Pump (scoop) as much as possible of the spilled substance/ preparation into tight containers and eliminate the

remains with dry sand. Pumped (taken away) product (after dilution) may be used as fertilizer. Prevent spread substance/preparation from accessing water pools.

6.4 Reference to other sections

See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Usage requirements and recommendations: AUS 40 must be used as per instructions for motor of ships, AUS 20 must be used as per instructions for waste incineration.

Storage conditions: store in a closed, dry room with good ventilation at temperature not below +5 ºC and not above +25 ºC.

Keep other chemical materials out of the solution. Hoses, pumps and other equipment used for transfusion should only be used for this product to avoid contamination of the urea solution with other materials.

To avoid any contamination, pour the urea solution into clean, rinsed IBCs suitable for use with distilled water or water of equivalent quality. Containers filled with urea solution must be labeled.

IBCs must have a lid with a breather. When IBCs are filled with urea solution, their lower and upper screw caps must be sealed.

During storage, the urea solution must be protected from direct sunlight. At temperatures above 25 ºC, decomposition of urea begins, accompanied by the release of ammonia.

The urea solution is non-flammable, but in the event of a fire at high temperatures, the product will decompose and release ammonia into the environment.

Prolonged transport or storage above 25 ºC should be avoided to prevent decomposition of the urea solution.

As the urea solution solidifies at low temperatures, its volume increases by about 7% and can rupture the containers.

Vehicles with insulation and heating equipment are recommended to maintain the required temperature of the urea solution.

Instructions on the limit quantity of the substance/preparation to be stored under the conditions specified: none. Keep away from spillage and getting into a sewer system.

7.2 Conditions for safe storage, including any incompatibilities

Incompatible products: Due to very strict requirements applied for product cleanliness, contact with other substances shall not be allowed.

Requirements to packages:

Suitable packaging (containers) materials that can come into direct contact with the product include: high-alloy Cr-Ni and Cr-Ni-Mo austenitic steels, titanium, high density (HD) polyethylene and propylene HD PE, HD PP, polyfluoroethylene, polyvinylidene difluoride, poly (perfluoroalkoxy) PFA, polyisobutylene. Note: plastics must avoid additives that may contaminate the urea solution.

Materials that cannot come into direct contact with the product include carbon, non-alloy or low-alloy steels, copper and its alloys, zinc, galvanized steel, silver alloys, aluminum and its alloys, magnesium and its alloys, plastics and nickel-plated metals. It is not recommended to store the product in containers that are not resistant to ammonia. Pay special attention to the tightness and cleanliness of the container of the stored product.

According to the Resolution of the Government of the Republic of Lithuania No.16.08.2004. 966 "On the Approval of the Description and Listing of Criteria for the Listing and Classification of Substances, Mixtures or Preparations of Hazardous Substances in Hazardous Substances" (Official Gazette, 2004, No. 130-4649), as well as subsequent amendments and supplements Requirements for hazardous objects restrictions for the product are not applicable.

In accordance with Regulation (EU) No. 98/2013.

7.3 Specific end use(s)

Aqueous urea solutions AUS 40 and AUS 20 are NO_x reducing agents.
Aqueous urea solution AUS 40 is used to inject to the exhaust systems of diesel engines of ships before a selective catalytic converter.
Aqueous urea solution AUS 20 is used for removal of NO_x formed from smoke stumps spreading/spraying in the incineration system.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Chemical, worker exposure limit value in air:
Long-term exposure limit (IPRD): 10 mg/m^3 according to urea (applicable in Lithuania according to HN 23).
Short-term exposure limit (TPRD): according to HN23 in Lithuania not applicable for urea.
Limit value (NRD): according to HN23 in Lithuania not applicable for urea.
Occupational exposure limit (s) according to Directive 98/24/EC: not applicable for urea.
Occupational exposure limit (s) according to Directive 2004/37/EC: not applicable for urea.
Any other national occupational exposure limits: no data available.

Non-limiting value (s) (DNEL): The product is aqueous urea solution. DNEL of the product is not determined. The physicochemical properties of the pure urea DNEL product which could have the greatest negative effect, according to urea REACH dossier are provided.

Workers exposure

Exposure mode	Exposure type	Hazardous	Physicochemical property that could have the greatest negative effect
Inhalation	Systemic effect – long lasting	DNEL: 292 mg/m³	Toxicity
Inhalation	Systemic effect - acute	DNEL: 292 mg/m³	Toxicity
Inhalation	Local effect – long lasting	The hazard is not known, but there is no need to collect more hazard information because there is no human exposure	
Inhalation	Local effect – acute	The hazard is not known, but there is no need to collect more hazard information because there is no human exposure	
Dermal	Systemic effect – long lasting	DNEL: 580 mg/kg bw/day	Toxicity
Dermal	Systemic effect - acute	DNEL: 580 mg/kg bw/day	Toxicity
Dermal	Local effect – long lasting	The hazard is not known	
Dermal	Local effect – acute	The hazard is not known	
If in eyes	Local effect	The hazard is not known	

Public exposure

Exposure mode	Exposure type	Hazardous	Physicochemical property that could have

			the greatest negative effect
Inhalation	Systemic effect – long lasting	DNEL: 125 mg/m³	Toxicity
Inhalation	Systemic effect - acute	DNEL: 125 mg/m³	Toxicity
Inhalation	Local effect – long lasting	The hazard is not known, but there is no need to collect more hazard information because there is no human exposure	
Inhalation	Local effect – acute	The hazard is not known, but there is no need to collect more hazard information because there is no human exposure	
Dermal	Systemic effect – long lasting	DNEL: 580 mg/kg bw/day	Toxicity
Dermal	Systemic effect - acute	DNEL: 580 mg/kg bw/day	Toxicity
Dermal	Local effect – long lasting	The hazard is not known	
Dermal	Local effect – acute	The hazard is not known	
If swallowed	Systemic effect – long lasting	DNEL: 42 mg/kg bw/day	Toxicity
If swallowed	Systemic effect - acute	DNEL: 42 mg/kg bw/day	Toxicity
In in eyes	Local effect	The hazard is not known	

Predicted Inactive Concentration (s) (PNEC). PNEC of the product is not determined. PNEC of pure urea product according to urea REACH dossier are provided.

Section	**Hazardous**	**Comments / Grounds**
Fresh water	PNEC aqua (fresh water): 0,47 mg/l Periodic releases: there is no PNEC	Exposure factor: 100 Extrapolation method: exposure factor The PNEC of water was derived using an effect factor of 100, up to 47 mg / l in aeruginosa (the most sensitive culture) Justification for the re-release of the PNEC: Separate PNEC re-release was not proposed.
See water	PNEC aqua (see water): 0,047mg/L Periodic releases: there is no PNEC	Exposure factor: 100 Extrapolation method: exposure factor No effect is expected due to the inclusion of urea in the urea cycle.
Freshwater sediment	There is no probability of sediment exposure	No data available: It is proposed that the PNEC value should not be set.
See water sediment	There is no probability of sediment exposure	No data available: It is proposed that the PNEC value should not be set.
Microorganisms in sewage treatment system	The hazard is not known	Urea is naturally low toxic to microorganisms and is used as a nutrient and source of nitrogen (N). Based on this, PNEC is not proposed.
Soil	No hazard to soil	No data available: It is proposed that the PNEC value should not be set.
Air	The hazard is not known	
Food chain	No bioaccumulation potential	

No additional material measurements / monitoring are required during product storage, and product use. The product must be manufactured and used in a professional manner by the Minister of Social Security and Labor of the Republic of Lithuania and the Minister of Health of 2001 July 24 order No. 97/406 "On Approval of Regulations for the Protection of Workers from Chemical Agents at Work and for the Protection of Workers against the Exposure to Carcinogens and Mutagens at Work" (Official Gazette, 2001, No. 65-2396), as subsequently amended.

8.2 Exposure controls

8.2.1 Appropriate engineering controls: inlet and exhaust ventilation.

8.2.2. Individual protection measures:

Eye (face) protection: chemical resistant hermetic safety goggles or face protection shield in accordance to LST EN ISO 16321-1 and LST EN ISO 16321-3.

Skin protection

Hand protection: adequate protection gloves according to EN 420, EN ISO 21420due to chemical protection, EN 388 due to mechanical protection. Protective gloves must be made of one of the materials listed in the table, at least as specified, for penetration of thickness and resistance.

Glove material	Glove thickness, mm	Penetration time, min*
Butyl rubber - butyl	0.50	> 480
Nitrile rubber/Nitrile latex	0.35	> 480
Fluorocarbon rubber	n.m. 0.40	> 480
Polychloroprene	n.m. 0.50	> 480
Natural rubber/Natural latex	0.50	> 480
Polyvinyl chloride	0.50	> 480

* - Time of penetration of glove material is the time that the product in contact with the glove penetrates through it completely. The shorter the penetration time, the glove material is less resistant to the product.

The manufacturer or consumer of the product must choose the appropriate glove material from the available options based on the nature of their work, the likelihood of contact with the product, the probable duration of exposure. When constantly working with the product it is recommended that the material of used gloves can withstand from being penetrated for at least 480 minutes. When working with the product, gloves can not be used for longer than the penetration time.

Skin protection creams do not adequately protect from the product.

Please note that the penetration time of the glove material in this section has been set at 22 ° C and using pure ammonium nitrate. When using calcium ammonium nitrate consisting of a mixture of ammonium nitrate and dolomite, the time of penetration of the glove material should be similar in size. When working at a higher temperature, the resistance of the glove material may be considerably lower, and in such cases, the permitted life of the glove must be shortened. We recommend that when you start using a new type or other manufacturer's gloves, make sure that they are chemically and mechanically resistant to working conditions. If you have any questions about the suitability of the gloves, please contact the manufacturers / suppliers of gloves.

The inside of the gloves should not contain powders which can cause hand skin allergies.

Before using the gloves, please always make sure there are no tears, cracks, or other defects.

When the work is finished, the gloves must be cleaned and washed thoroughly before they are dry. After work, care must be taken to the hand skin.

Other protection: wear working clothes according EN ISO 13688, wear special working boots according to EN ISO 20345. After finishing work wash your hands with soap and change clothes.

Respiratory protection: in case ventilation is not sufficient use masks with the "K" or "A2B2E2K2P3" filter according to LST EN 14387.

Thermal protection: not necessary.

8.2.3 Environmental exposure controls: do not flush into sewer system.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

(a) Physical state: clear liquid at 20 °C and a pressure of 1013 hPa.

(b) Color: colourless.

(c) Odor: with mild odor of ammonia.
(d) Melting and solidifying temperature: Crystallization temperature:

- AUS 40 equal to minus 1°C;
- AUS 20 equal to minus 6°C.

(e) Boiling point or initial boiling point and boiling range: about 100ºC.
(f) Flammability: nonflammable.
(g) Upper and lower explosion limits: none explosive.
(h) Flash-point: for noneflamable liquids in accordance with Column 2 of REACH Annex VII, flash point does not need to be conducted.
(i) Auto-ignition temperature: In accordance with REACH Annex XI, testing may be omitted if testing does not appear scientifically necessary. However, due to product do not contain groups that may react with oxygen and therefore will not auto-ignite at temperatures between room temperature and melting point, a study is not considered necessary.
(j) Decomposition temperature: at temperatures above 25 ºC, gradual decomposition of the product begins, accompanied by ammonia release.
(k) pH: (8-10) 10 % solution, mass fraction.
(l) Kinematic viscosity:

- AUS 40 viscosity equal about 1.38 mPas at 25 °C;
- AUS 20 viscosity equal about 1.2 mPas at 25 °C.

(m) Solubility: very soluble.
(n) Partition coefficient: n-octanol/water (logarithmic value): not determined for liquid mixture solutions.
(o) Vapour pressure: 23 mbar at 20 ^{0}C.
(p) Density and / or relative density:

- AUS 40 equal to 1.108 ÷ 1.116 at 20 °C;
- AUS 20 equal to 1.052 ÷ 1.058 at 20 °C.

(q) Relative vapor density: for noneflamable liquids is not determined.
(r) Fraction properties: Not applicable as the product is a liquid.

9.2 Other information

Refractive index at 20 °C:

- AUS 40 equal to 1.3937 – 1.3954;
- AUS 20 equal to 1.3630 – 1.3650.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended storage, transportation and handling conditions.

10.2 Chemical stability

Stable under recommended storage, transportation and handling conditions.

10.3 Possibility of hazardous reactions

Any entry of other material will contaminate the product and can not be used for its intended purpose.
As the urea solution solidifies at low temperatures, its volume increases by about 7% and can rupture the containers. At temperatures above 25 ºC, decomposition of urea begins, accompanied by the release of ammonia.
Stabilizers need: not necessary.

10.4 Conditions to avoid

Particular attention must be paid to the tightness and cleanliness of the packaging of the stored product.
Keep other chemical materials out of the solution. Any entry of other material will contaminate the product and cannot be used for its intended purpose. Unacceptable conditions: ambient temperature below plus 5 °C and above 25 ºC (urea hydrolysis takes place). At temperatures above 25 ºC, decomposition of urea begins, accompanied by the release of ammonia.
Prolonged transportation or storage above 25 ºC should be avoided to prevent decomposition of the urea solution. Store above crystallization temperature to avoid damage to containers. Due to very strict requirements for the quality of the product, it is recommended to protect it from contamination by dust, precipitation and dirt. During storage, the urea solution must be protected from direct sunlight, which promotes the growth of algae or bacteria.

10.5 Incompatible materials

Any entry of other material will contaminate the product and cannot be used for its intended purpose. Contact with other materials is not permitted. Materials that cannot come into direct contact with the product include carbon, non-alloy or low-alloy steels, copper and its alloys, zinc, galvanized steel, silver alloys, aluminum and its alloys, magnesium and its alloys, plastics and nickel-plated metals. It is not recommended to store the product in containers that are not resistant to ammonia.

10.6 Hazardous decomposition products

At temperatures above 25 ºC, decomposition of urea begins, accompanied by the release of ammonia.
Heated under vacuum at its melting point (120÷130 ºC) it sublimes without change. At 160 ÷ 190 ºC under vacuum urea sublimes and is converted to ammonium cyanate. At atmospheric pressure at 180 ÷ 190 ºC it sublimes completely and decomposes partially to biuret, cyanic acid and alkali metals. At higher temperature than 200 ºC urea sublimes and is converted to ammonium and cyanic acid.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity:

Product acute toxicity studies are not available. As the product is a urea aqueous solution, information on acute toxicity according to REACH dossier for registration of urea is provided.
Practical experience / human information: no available data.
Effects on animals

The results of the studies performed with pure urea are presented in the table below.

	Exposure dose / concentration	Routes	Method	Symptoms / delayed effects	Notes
Acute oral toxicity	LD50: 14300 mg/kg bw (male) LD50: 15000 mg/kg bw (female)	Rats	OECD 423	Negative effects have not been established	Direct ATE Validation for Trusted Data
Acute dermal toxicity	Data not available				
Acute inhalation toxicity (vapour)	Data not available				

Other information: data not available.
Assessment/Classification: according to available data urea and aqueous urea solutions do not meet the

criteria for classification according to Regulation No. 1272/2008.
Skin corrosion and / or irritation: according to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008. The REACH registration dossier for urea states that studies on rats have shown that urea is non-irritating to the skin. Based on these results, the documentation interpreted that urea is non-irritating to skin and humans.
Eye irritation: according to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008. The registration dossier for urea under REACH states that studies on rats have shown that urea is mildly irritating to the eyes. Based on medical data collected by urea manufacturers on urea-related incidents, it was interpreted in the dossier that urea is not classified as an eye irritant to humans.
Respiratory sensitization: no data available (source – urea registration under the REACH dossier). According to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008.
Mutagenicity: based on the results of the "Ames" study with the various urea concentrations so far (negative results of the research), it was interpreted that urea does not exhibit mutagenic effects (source – urea registration according to the REACH dossier). According to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008.
Carcinogenicity: does not meet the criteria. Ames-test: negative (source – urea registration in REACH dossier). According to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008. According to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008.
Reproductive toxicity: does not meet the criteria. Ames-test: negative (source – urea registration in REACH dossier).
Specific toxicity for particular organ (STOT) (one time effect): According to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008.
Specific toxicity for particular organ (STOT) (repeated effect): According to available data the product does not meet the criteria for classification according to Regulation No. 1272/2008.
Aspiration hazard: does not meet the criteria for classification.

11.2. Information on the other hazards

11.2.1. Endocrine disrupting properties: data N/A.
11.2.2. Other information: None.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

According to the available data, the product does not meet the criteria for classification as dangerous for the environment according to Regulation (EC) No. 1272/2008.
In bodies of drinking water, maximum allowable concentration of urea shall not exceed the amount of organic matter established by calculations against the amounts of biochemical possible concentration (BPC) and dissolved oxygen. In water bodies of fishing farms, maximum allowable concentration of urea is 80mg/dm3.
Leuciscus idus (orfe) 96-h LC_{50}> 6810 mg/l
Daphnia magna (short-term): 24-h EC_{50}: > 10000 mg/l
Daphnia magna (long-term): no data.

Toxicity for fish

Exposure dose / concentration	Test duration	The name of the organism used in the	Results	Method

		tests		
LC50: > 10 000 mg/l	48 h	Golden orphan	Urea is of inherently low toxicity for fish	OECD 203
LC50: 6 810 mg/l	96 h	Golden orphan	Urea is of inherently low toxicity for fish	OECD 203

Toxicity to aquatic invertebrates (short-term effects)

Exposure dose / concentration	Test duration	The name of the organism used in the tests	Results	Method
LC50: > 10 000 mg/l	24 h	Daphnia magna	Low toxicity level	OECD 202
LC50: 14 241 mg/l	24 h	Herisoma trivolvis	Low toxicity level	OECD 202

Toxicity to aquatic invertebrates (long-term effects): no data available.

Toxicity to algae and aquatic plants

Exposure dose / concentration	Test duration	The name of the organism used in the tests	Results	Method
LC50: > 10 000 mg/l	192 h	Algae	Low toxicity level	OECD 202
LC50: > 10 000 mg/l	7 days	Algae	Low toxicity level	OECD 202

12.2 Persistence and degradability
The compound is well degradable: 4 mg/l in 1 h at 20 ºC / 68 °F Zahn-Wellens-Test / 400 mg/l: 3h: 2 %, 7d: 52 %, 14d: 85 %, 16 d: 96 %.

12.3 Bio accumulative potential
Octanol-water partition coefficient (K_{ow}): considered to be low (based on high water solubility). The main part of product – urea – does not have any bio accumulative properties, does not form any toxic compound with other substances present in the air or drainage waters.
Bio concentration factor (BCF): low potential for bioaccumulation (based on substance properties). Urea in the soil does not form any toxic compounds.

12.4 Mobility in soil
Adsorption coefficient: well-soluble in water; NO_3 ion is extremely mobile. NH_4 cation is absorbed in soil.

12.5 Results of PBT and vPvB assessment
According to Annex XIII of Regulation (EC) No 1907/2006, no PBT and vPvB assessment has been conducted.

12.6 Endocrine disrupting properties:
No data available.

12.7 Other side effects:
None.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste from residues. The contaminant free waste according to Regulation (EC) No. 1357/2014 is classified as non-hazardous waste. Depending on degree and nature of contamination dispose of by use as fertilizer

(after dilution) or must be transferred to an authorized waste handling companies. Wastes in Lithuania must be handled in accordance with Law on Waste Disposal of the Republic of Lithuania, in other countries – in accordance with national legislation. The final product waste code is assigned by the waste manager / holder. It is recommended not to encourage disposal of the product with leaks.

Package waste disposal. Product packaging waste that is not dangerous and/or not contaminated with other dangerous substances, according to Regulation (EU) No. 1357/2014 are classified as non-hazardous waste. Product packaging waste must be handed over to waste management companies. Wastes in Lithuania must be handled in accordance with Law on Waste Disposal of the Republic of Lithuania, in other countries – in accordance with national legislation. The final product waste code is assigned by the waste manager / holder. Do not remove label, prepared according to Regulation (EC) No. 1272/2008, until package is thoroughly cleaned.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number or ID number
Not available because the product is not subject to ADR requirements.

14.2 UN proper shipping name
Not available because the product is not subject to ADR requirements.

14.3 Transport hazard classes
Not available because the product is not subject to ADR requirements.

14.4 Packaging group
Not available because the product is not subject to ADR requirements.

14.5 Environmental hazards
The product is not classified as hazardous substance according to the Orange Book and International Transport Codes RID (Railway), ADR (Road) and IMDG (sea transport).

14.6. Special precautions for users
None.

14.7. Transport in bulk cargoes by sea in accordance with IMO measures
The product is packed in packaging for carriage and therefore is not subject to MARPOL 73/78 Annex II and the IBC Code.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/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), 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 (published in the Official Journal of the European Union L 353/1, 2008)

including all subsequent amendments and supplements;

- Commission Regulation No. (EU) 2020/878 amending Regulation of the European Parliament and of the Council Annex II to Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (published in Official Journal of the European Union L 203 of 26 of June 2020);

- Commission Regulation (EC) No 552/2009 of 22 June 2009 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards Annex XVII (published in the Official Journal of the European Union L 164, 2009) including all subsequent amendments and supplements;

- REGULATION (EC) No 1272/2008 2006 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 (published in the Official Journal of the European Union L 353/1, 2008) including all subsequent amendments and supplements;

- Commission Regulation (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives (published in the Official Journal of the European Union L 365/89, 2014) including all subsequent amendments and supplements;

- REGULATION (EC) 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous chemicals and amending and subsequently repealing Council Directive 96/82 / EC (published in the Official Journal of the European Union No L197, 2012, July 27th) (published in the Official Journal of the European Union L 197/1, 2012) including all subsequent amendments and supplements;

- Regulation (EU) No. 2019/148 of the European Parliament and of the Council of 20th of June 2019 on trade in and use of explosives precursors and amending Regulation (EC) No. 1907/2006 and repealing Regulation (EU) No. 98/2013 (published in the Official Journal of the European Union L 186/1, 2019) as subsequently amended and supplemented;

- Council Directive 98/24/EC of April 7 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (published in the Official Journal of the European Union L 131/11, 1998) including all subsequent amendments and supplements;

- The International Rule for Transport of Dangerous Substances by Railway (RID);

- The International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

(International Bulk Chemical Code) (the IBC Code).

- The International Maritime Dangerous Goods (IMDG);

- International Convention for the Prevention of Pollution from Ships of 1973 (Official Gazette, 2004, No. 138-5030, TAR identification code 073T001KONVRG731618), including all subsequent amendments and supplements.

- Guidance on Safety Data Sheets and Exposure Scenarios (European Chemicals Agency, 2018 Reference: ECHA-18-G-07-EN) including all subsequent amendments and supplements.

- European Inventory of Existing Commercial Chemical Substances (EINECS) (published in Official Journal of the European Union C 146 A, 1990).

- European List of Notified Chemical Substances (ELINCS) (EUR 22543 EN, Office for Official Publications of the

European Communities, 2006, ISSN 1018-5593) including all subsequent amendments and supplements.

National legislation (Lithuania):
- Law of the Republic of Lithuania on Chemicals and Preparations (18 April 2000, No. VIII-1641) (Official Gazette 2000, No 36-987; TAR identification code 1001010ISTAIII-1641) including all subsequent amendments and supplements.

- Law of the Republic of Lithuania on the Transport of Dangerous Goods by Road, Rail and Inland Waterways (Official Gazette, 2001, No. 111-4022, TAR identification code 1011010ISTA00IX-636) including all subsequent amendments and supplements.

- Law on Waste Management of the Republic of Lithuania (June 16, 1998 No. VIII-787) (Official Gazette, 1998, No. 61-1726, TAR identification code 0981010ISTAVIII-787) including all subsequent amendments and supplements.

- Law on Package and Package Waste Handling of the Republic of Lithuania (September 25, 2001 No. IX-517) (Official Gazette, 2001, No. 85-2968, TAR identification code 1011010ISTA00IX-517) including all subsequent amendments and supplements.

- Minister of Environment of the Republic of Lithuania, 1999 July 14 order No. 2017 "On Approval of Waste Management Regulations" (Official Gazette, 1999, No. 63-2065, TAR Identification Number 099301MISAK00000217) including all subsequent amendments and supplements.

- Minister of Health of the Republic of Lithuania July 24 2001 order No. 97/406 "On Approval of provisions for the protection of workers from chemical agents at work and the protection of workers from the effects of carcinogens and mutagens at work" (Official Gazette, 2001, No 65-2396, TAR identification code 1012230ISAK0097 / 406) including all subsequent amendments and supplements.

- Government of the Republic of Lithuania, 2004 August 17 resolution No. 966 „On Prevention, Response and Investigation of dangerous objects and substances, mixtures or preparations classified as hazardous materials, and a list of criteria for designation of the Approval, as subsequently amended and supplemented. (Official Gazette, 2004, No. 130-4649; 2005 No. 131-4731, 2008, No. 109-4159; 2009 No. 90-3855; 2010, No. 59-2894; 2012 No. 61-3078), as amended and supplemented.

- Minister of Health of the Republic of Lithuania and Minister of Social Security and Labor of the Republic of Lithuania September 1 2011 order No. V-824 / A1-389 "On Approval of Lithuanian Hygiene Norm HN 23: "Occupational Exposure Limits, General Requirements for Measurement and Exposure Assessment of Chemicals"" (Official Gazette, 2011, No. 112-5274, TAR Identification Code 1112250ISAK4/A1-389) including all subsequent amendments and supplements.

- HN36 Banned and Restricted Substances.

- Applicable Procedure of Safety Data Sheet Requirements and Supply thereof to Professional Users.

- Applicable Rules on Labeling of Items (Products) to be Sold in Lithuania and Referring Price thereof.

- LST EN 149 "Respiratory protective devices. Filtering half masks for protection against particles. Requirements, testing, marking".

- LST EN 388 "Protective gloves against mechanical hazards".

- LST EN 405:2002+A1:2009 "Respiratory protective equipment. Valves with filter valves for protection against gas or gas and particles. Requirements, testing, marking".

- LST EN 420 "Protective gloves. General requirements and testing methods".

- LST EN 469 "Protective clothing for firefighters. Performance requirements for firefighting protective clothing".

- LST EN ISO 13688 "Protective clothing. General requirements (ISO 13688: 2013)".

- LST EN 14387 "Respiratory protective devices. Gas filters and composite filters. Requirements, testing, marking";

- LST EN ISO 16321-1 „Eye and face protection equipment for work". Part 1. General requirements (ISO 16321-1:2021)";

- LST EN ISO 16321-3 „Eye and face protection equipment for work". Part 3. Additional requirements for mesh guards (ISO 16321-3:2021)";

- LST EN ISO 20345 „Personal protective equipment. Safe footwear (ISO 20345: 2011)";

- LST EN ISO 21420 „Protective gloves. General requirements and test methods".

Additional information provided on the label of the chemical preparation package:
- Visual signs No. 14 „Temperature limits" (-5ºC ÷ 25ºC) in compliance with LST EN ISO 780;
- Visual sign No.11 „Keep away from sunlight" according to LST EN ISO 780.

Additional information about the relevant Community provisions on safety, health and the environment for the product.
The product is not subject to requirements according to the Government Resolution No. 966 of the Government of the Republic of Lithuania of 2004.08.07 „On Approval of the Description of the List and Attribution Criteria for List of Materials, Mixtures or Preparations of Hazardous Substances in the Hazardous Objects" (Official Gazette, 2004, No. 130-4649) with all subsequent amendments and supplements).

Restrictions on the product according to Regulation (EU) No. 2019/1148: not applicable.

15.2 Chemical safety assessment

As in accordance with Regulation No. 1272/2008 [CLP] mixture is not classified as hazardous consequently in accordance with REACH Article 14 no Chemical Safety Assessment has been carried out for this product.

SECTION 16. OTHER INFORMATION

Revision date: 2026.02.28
Version: 5.0
Revision No. 0
Issuing date: 2026.02.28

(i) A clear evidence of added, deleted or modified information:
The following changes were made to the safety data sheet as compared to the previous version:
- Headline of SDS: revision date, version number and issuing date of this safety data sheet has been changed;
- sub-section 1.3: Company's address has been changed;
- section 16: revision date, version number and issuing date of this safety data sheet has been changed.

(ii) List of abbreviations and acronyms used throughout the Safety Data Sheet:
ATE – acute toxicity estimate;
ADR – European Agreement on Dangerous Goods by Road;

CLP – Classification, Labeling and Packaging Regulation; Regulation (EC) No 1272/2008;
CAS – Chemical Abstracts Service;
DNEL – Derived No-Effect value;
EU – European Union;
ECHA – European Chemicals Agency;
EC No. – EINECS ir ELINCS numbers;
EINECS – European List of Existing Commercial Chemical Substances;
ELINCS – European Register of Substances;
Eye Irrit. 2 – eye irritating 2 category;
HS – Hygiene Standard;
IBC Code – International Code for the Construction and Equipment of Ships Carrying Bulk Hazardous Substances;
IMDG – International Maritime Organisation;
ĮST – Company Standard;
IMSBC – International Bulk Cargo Code;
IUCLID – International Database of General Information on Chemicals;
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail;
IUPAC – International Union of Pure and Applied Chemistry;
UN – United Nations;
Kow – octanol-water partition coefficient;
LC50 – Lethal concentration of 50% of tested population;
LD50 – Lethal dose for 50% of tested population;
MARPOL 73/78 – International Convention for the Prevention of Pollution from Ships;
OJ – Official Journal;
Oxid. Solid 3 – oxidizing solids, 3 category;
PBT – Persistent, Bioaccumulative, Toxic;
PNEC(s) – Forecast(-s) no effect(-s) concentration(-s);
SDS – Safety Data Sheet;
vPvB – very Persistent, very Bio accumulative.

Explanation of the utilization sector (SU):
SU23 – Electricity, current, gas, water supply and sewage treatment.

(iii) Bibliography:

1) Registration of urea according to the REACH dossier is published on the website of the European Chemicals Agency.
2) http://gestis-en.itrust.de/nxt/gateway.dll?f=templates&fn=default.htm&vid=gestiseng:sdbeng

(iv) Applicable classification and procedures used to determine the classification of mixtures in accordance with Regulation (EC) No. 1272/2008 [CLP Regulation]:

Classification in accordance with Regulation (EC) No. 1272/2008	Classification procedure
The product does not meet the criteria for classification according to Regulation (EC) No. 1272/2008	The product was classified based on the classification of the main part of the mixture – urea – according to the classification in the REACH dossier. The dossier indicates that urea does not meet the criteria for classification in accordance with Regulation (EC) No 1272/2008.

(v) Relevant precautionary and hazard statements:

P102 – Keep out of reach of children;
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing;
P302+P352 – IF ON SKIN: Wash with plenty of soap and water.

(vi) Training Advice: To ensure the protection of people and the environment, people who manufacture, handle and use this product must be trained to work with hazardous substances, hazardous materials, nitrogen fertilizers with sulphur properties, have adequate hygiene skills, first aid principles and information on emergency procedures. This safety data sheet must be made available to those working with the product. Persons must be instructed before working with the product.

NOTE. The information provided in this safety data sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any proceed, unless specified in the text.

Release info: This version replaces all previous documents.

The End of Safety Data Sheet.