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

1.1. Product identifier

Product name: **Urea Solution AUS 32, AUS 40, AUS 20**

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

Identified uses: industrial uses - for exhaust gas purification – NOx reductor

Uses advised against: undefined

1.3. Details of the supplier of the safety data sheet

Producer:
AB Achema
Jonalaukio k., Ruklos sen., LT55550
Lithuania
tel.: +370 349 56465, +370 349 52074.
www.achema.lt
e-mail: m.vaidila@achema.com
Distributor:
HICO Group
ul. Inwalidów 1a
85-727 Bydgoszcz / Poland
www.hicogroup.eu

1.4. Emergency telephone number

NHS111
European emergency number: 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)
The product is not classified as hazardous according to Regulation (EC) 1272/2008

2.2. Label elements

Labeling according to Regulation (EC) No 1272/2008

Signal word none

Pictograms none

Hazard statements

none

Precautionary statements

General

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

2.3. Other hazards

There is no information regarding the fulfillment of the PBT or vPvB criteria according to Annex XIII of Regulation 1907/2006 / EC (REACH). PBT and vPvB assessment not carried out beacuse the product is inorganic.
Endocrine disrupting properties – no data.

SECTION 3: Composition/information on ingredients

3.1. Substances - not applicable

3.2. Mixtures

Chemical characterization: mixture of urea and water

Name of substance	Identifier	Classification 1272/2008		% weight
Urea	Index: -- CAS: 57-13-6 EC: 200-315-5 Registration No. REACH: 01-2119463277-33-XXXX	--	--	< 35

Notes

The full meaning of the risk phrases H included in the section 16
[1] Specific concentration limits, ATE

[2] Substance for which there are national occupational exposure limit values
[3] Substance with a Union workplace exposure limit
[4] SVHC: substances included in the list established in accordance with Article 59 (1)

SECTION 4: First aid measures

4.1. Description of first aid measures

General information
Remove contaminated, soaked clothing immediately. In the event of an accident or feeling unwell, immediately consult a doctor. Keep the victim calm. If the person is unconscious, place him/her in stable first aid position.

Inhalation
Avoid inhalation of vapours, aerosols or mist. The product has a slight ammonia smell.
Remove person to fresh air and keep comfortable for breathing.
Ensure warmth and calm.
Provide medical assistance if necessary.

Ingestion
Do not induce vomiting.
Rinse mouth.
If unconscious – do not give the person anything to swallow.
Provide medical assistance if necessary. Transport the injured person to a hospital if necessary.

Eye contact
Remove contact lenses, if present and easy to do.
Rinse contaminated eyes with lukewarm water for 10-15 minutes with the eyelids rolled back.
Apply a sterile dressing to the burned area.
Provide medical assistance if necessary.

Skin contact
Remove contaminated clothing immediately.

Clean contaminated skin, wash with plenty of water, then wash with water and mild soap.
If skin irritation persists, consult a doctor.

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

If on skin: possible reddening, drying and itching of the skin;
If in eyes: eye irritation, eye burning;
If swallowed: larger amounts cause gastrointestinal disturbances, abdominal pain;
If inhaled: possible irregular, labored breathing, cough, chest pain. Prolonged exposure causes chronic inflammation of the respiratory tract.

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

Symptomatic treatment.
First aid supplies should be available on the workplace premises.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Fire-fighting foam, carbon dioxide CO_2, fire-extinguisher powders, dispersed water
Use appropriate extinguishing media to extinguish fires in the vicinity.

Unsuitable extinguishing media

Do not direct dense jets of water onto the surface of a burning product.

5.2. Special hazards arising from the substance or mixture

Urea heated under vacuum to 120-130°C sublimes without decomposition.
At higher temperatures (160-190°C) decompose to form ammonium cyanate.
At temperature 180-190°C and at atmospheric pressure decomposes to form biuret, cyanic acid.
At temperatures above 200°C, urea decomposes into ammonia and cyanic acid.
Auto-ignition temperature: 715°C.

Combustion products

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

Explosive mixtures

Not applicable

5.3. Advice for firefighters

Use standard firefighting methods for extinguishing chemical fires.
Use water to cool containers exposed to high temperatures, and if possible, remove them from the area affected.
Use water spray jets to disperse vapours.

Fire-fighter protective equipment

Full personal protective equipment.
Self-contained breathing equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Avoid contact with eyes and skin. Wear appropriate protective equipment. Remove all sources of ignition. Keep all persons not equipped with personal protection equipment away.
In case of a discharge of a significant volume of the mixture, warn its users and order all bystanders to leave the contaminated area.
Do not touch or walk through spilled material.

6.2. Environmental precautions

Avoid contact of large quantities with soil or waterways.
Prevent environmental contamination.

Protect drains.
In case of serious contamination of soil, watercourse or sewage system, notify the appropriate authorities.

6.3. Methods and material for containment and cleaning up

Secure any damaged packaging.
Ventilate the area affected and avoid inhaling vapours.
Pump up as much of the spilled substance/mixture as possible into sealed containers and remove residues with dry sand.
Place all contaminated mass collected in a substitute container and send it for disposal in accordance with the local regulations.
In selected situations: collected product, after dilution, may by use as fertilizer.
Keep spilled product away from water bodies.

6.4. Reference to other sections

See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Recommendations for handling the mixture

Provide adequate ventilation.
Avoid contact with eyes and skin.
Avoid inhaling product vapours/ aerosol.
Prevent environmental contamination.

General industrial health and safety regulations

Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Replace contaminated clothing.
Wash contaminated clothing before reusing.
Wash hands and face before breaks.

7.2. Conditions for safe storage, including any incompatibilities

Storage rooms must be ventilated.
Keep container tightly closed.
Store in a dry and cool place.
Keep only in the original container.
Hoses, pumps and other equipment used for transport should be used exclusively for this product to avoid contamination of the urea solution with other products.
Due to very strict product purity requirements, contact with other substances is not allowed.
Keep away from sunlight, as well as heat and ignition sources.
Do not store together with foodstuffs and animal feed.
Storage temperature: 5 – 25°C.
Avoid temperature under 0°C and above 30°C.

Packaging requirements:

Suitable packaging materials (containers): austenitic steels (Cr-Ni and Cr-Ni-Mo), titanium, Ni-Mo-Cr-Mn-Cu-Si-Fe alloys, polyethylene, polypropylene, polyisobutylene, polyfluoroethylene (PFE), polyethylene (vinylidene fluoride) (PVDF), perfluoroalkoxy polymer (PFA), polytetrafluoroethylene (PTFE), copolymers (vinylidene fluorides and hexafluoropropylenes).
Unsuitable packaging materials: paper, glass, carbon steels (unalloyed or low-alloyed), copper and its alloys, zinc (galvanized steel), silver alloys, aluminum and its alloys, magnesium and its alloys, plastics and metals with nickel.
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.
Do not handle until all safety precautions have been read and understood.

7.3. Specific end use(s)

Urea solutions AUS 40, AUS 32 and AUS 20 reducting nitrogen oxides (NOx).
Urea solution AUS 32 is used to purify exhaust gases from diesel cars.
Urea solution AUS 40 is used to purify exhaust gases from marine diesel engines.
Urea solution AUS 20 is used to remove nitrogen oxides (NOx) from smoke in a waste incineration system. Also suitable for smearing/spraying stumps as an agent against the spread of coniferous diseases (root sponge).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ingredients with limit values that require monitoring at the workplace

		Limit values				
Substance	**CAS**	**Long-term**		**Short-term**		**Comments**
		ppm	mg/m³	ppm	mg/m³	
--	--	--	--	--	--	-

The product does not contain any relevant quantities of substances with critical values that have to be monitored at the workplace.

DNEL
Urea:
Workers, inhalation, systemic effects, long-term exposure: 292 mg/m³
Workers, inhalation, systemic effects, short-term exposure: 292 mg/m³
Workers, dermal, systemic effects, long-term exposure: 580 mg/kg bw / day
Workers, dermal, systemic effects, short-term exposure: 580 mg/kg bw / day
Consumers, inhalation, systemic effects, long-term exposure: 125 mg/m³
Consumers, inhalation, systemic effects, short-term exposure: 125 mg/m³
Consumers, dermal, systemic effects, long-term exposure: 580 mg/kg bw / day
Consumers, dermal, systemic effects, short-term exposure: 580 mg/kg bw / day
Consumers, oral, systemic effects, long-term exposure: 42 mg/kg bw / day
Consumers, oral, systemic effect, short-term exposure: 42 mg/kg bw / day

PNEC
Urea:
Potable water: 0,47 mg/l
Marine water: 0,047 mg/l

8.2. Exposure controls

Appropriate engineering controls
Workstations and storage rooms must be well ventilated.

Individual protection measures

Eye or face protection
Use safety goggles or face protection compliant with the EN 166 standard.
Eye wash bottle with clean water or eye washers must be provided near the work area.
Skin protection

Hand protection
Use chemical-resistant protective gloves compliant with the EN 374 standard.
Recommended material eg:,
butyl rubber: material thickness: > 0.5 mm, breakthrough time: >480 min;
nitrile rubber: material thickness: 0,35 mm, breakthrough time: >480 min;
fluorine rubber: material thickness: >=0,4 mm, breakthrough time: >480 min;
polychloroprene: material thickness: >=0,5 mm, breakthrough time: >480 min;
natural rubber: material thickness: 0,5 mm, breakthrough time: >480 min;
PVC: material thickness: 0,5 mm, breakthrough time: >480 min.
Breakthrough time specified at temperature 22°C, using pure urea. When using the product at higher temperatures or when the product is used in mixtures with other substances or solutions at normal temperatures, the resistance of the glove material may be reduced and the allowable glove life must be reduced.
Select glove material based on breakthrough time, rate of penetration and degradation.
It is recommended to change gloves regularly and immediately replace them if they have any signs of wear, damage (tears, holes) or their appearance changes (colour, flexibility, shape).
Apply protective cream on unprotected body parts.

Body protection
Wear appropriate clothing to prevent any possibility of skin contact.
The type of protective equipment must be selected based on the quantity and concentration of hazardous substances in the given work environment.

Respiratory protection
Use self-contained breathing equipment compliant if there is a risk of mixture vapours contaminating the air, compliant with EN 14387 standard.

Thermal hazards
No data

Environmental exposure controls
Do not discharge into drains and groundwater.

General health and safety guidelines
Follow good personal hygiene practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid (20°C, 1013 hPa)
Colour	No data available
Odour	Mild ammonia smell
Melting point/freezing point	AUS 32: -11,5°C; AUS 40: -1°C; AUS 20: -6°C
Boiling point or initial boiling point and boiling range	about 100°C
Flammability	No data available
Lower and upper explosion limit	not applicable – inorganic substance
Flash point	not applicable – inorganic substance
Auto-ignition temperature	No data available
Decomposition temperature	160 - 190°C
pH	8 – 10 (10% solution)
Kinematic viscosity	No data available

	Solubility	Soluble in water without limits
	Partition coefficient n-octanol/water (log value)	No data available
	Vapour pressure	23 mbar (20°C)
	Density and/or relative density	AUS 32 (1,087 - 1,093) 20 °C; AUS 40 (1,108 - 1,116) 20 °C; AUS 20 (1,052 - 1,058) 20 °C
	Relative vapour density	No data available
	Particle characteristics	No data available
9.2.	**Other information**	
	Information with regard to physical hazard classes	No data available
	Other safety characteristics	
	Viscosity	AUS 32 about 1,4 mPas / 25 °C; AUS 40 about 1,38 mPas / 25 °C; AUS 20 about 1,2 mPas / 25 °C
	Vapour density	for non-flammable liquids is not specified

SECTION 10: Stability and reactivity

10.1. Reactivity

The mixture is not chemically reactive if stored and used under proper conditions.

10.2. Chemical stability

The mixture is chemically stable if stored and used under proper conditions.

10.3. Possibility of hazardous reactions

Penetration of any materials, which will contaminate the product, prevent the product from being used for its intended purpose.
Need for stabilizers: not required.

10.4. Conditions to avoid

Temperature < ambient temperature
Temperature > 30°C (urea hydrolysis)
Penetration of any materials, which will contaminate the product, prevent the product from being used for its intended purpose.

10.5. Incompatible materials

Penetration of any materials, which will contaminate the product, prevent the product from being used for its intended purpose.
Contact with other material is forbidden.

10.6. Hazardous decomposition products

At temperatures above 25°C urea decomposition start, accompanied by the release of ammonia.
Urea heated under vacuum to 120-130°C sublimes without decomposition.
At temperatures 160-190°C decompose to form ammonium cyanate.
At temperature 180-190°C and at atmospheric pressure decomposes to form biuret, cyanic acid.
At temperatures above 200°C, urea decomposes into ammonia and cyanic acid.

SECTION 11: Toxicological information

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

Acute toxicity

Based on available data, the classification criteria are not met.
Acute toxicity test results are unavailable.
Urea:
LD50 (oral, rate male): 14300 mg/kg mc (OECD 423)

Symptoms / delayed effects: Negative effects have not been established
LD50 (oral, rat female): 15000 mg/kg mc (OECD 423)
Symptoms / delayed effects: Negative effects have not been established

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

Serious eye damage/irritation
Based on available data, the classification criteria are not met.

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

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

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

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

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

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

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

11.2. Information on other hazards

Endocrine disrupting properties
No data

Other information
No data

SECTION 12: Ecological information

12.1. Toxicity

Based on available data, the classification criteria are not met.
In potable water tanks, the maximum permissible concentration of urea must not exceed the amount of matter calculated based on the amount of possible biochemical concentration (BPC) and dissolved oxygen. In water reservoirs of fish farms, the maximum allowable concentration of urea is 80 mg/dm^3.
LC50 (Leuciscus idus, 96 h): > 6810 mg /l
EC50 (Daphnia magna, 24 h):> 10000 mg/l
Daphnia magna (long-therm): no data
Toxicity for fish:
Urea is inherently low toxicity to fish
LC50 (Golden orphan, 48 h): > 10000 mg/l (OECD 203)
LC50 (Golden orphan, 96 h): > 6810 mg/l/ (OECD 203)
Toxicity for invertebrates (short-therm):
Low toxicity
LC50 (Daphnia magna, 24 h): > 10000 mg/l (OECD 202)
LC50 (Herisoma trivolvis, 24 h): 14241 mg/l (OECD 202)
Toxicity for invertebrates (long-therm):
No data
Toxicity for algae and water plants:
Low toxicity
LC50 (algae, 192 h): > 10 000 mg/l (OECD 202)
LC50 (algae, 7 days): > 10 000 mg/l (OECD 202)

12.2. Persistence and degradability

The compound is well degradable.
Degradability:

- 4 ,g/l/1 h (20°)
- 400 mg/l/ 3h (2%)
- 52% (7 days)
- 85% (14 days)
- 96% (16 days)

12.3. Bioaccumulative potential

K_{ow} = considered low (based on high water solubility)
The main part of the product – urea – has not any bioaccumulative potential, does not create toxic compounds with other substances in air or drainage systems.
BCF = low bioaccumulative potential (considered substance properties)
Urea does not create any toxic compounds in the soil.

12.4. Mobility in soil

Adsorption coeffcient: good solubility in water.
NO_3^- ion is unusually mobile. NH_4^+ cation is absorbable in the soil.

12.5. Results of PBT and vPvB assessment

This mixture does not contain substances that meet the criteria for PBT or vPvB in accordance with Annex XIII.

12.6. Endocrine disrupting properties

No data

12.7. Other adverse effects

No data

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Dispose of in accordance with current regulations.
Waste with product residue:
In accordane with WE 1357/2014 waste free from contamination ale classified as other than dangerous. Depending on the degree and nature of the contamination, it must be disposed of as fertilizer (after dilution) or hand over to an authorised company.
Do not discharge into drains, sewage systems or surface waters.
Waste packing:
Hand over any used packaging to an authorised company for disposal or reuse.
Do not store along with municipal wastes.
Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

14.1.	**UN number or ID number**	not applicable
14.2.	**UN proper shipping name**	not applicable
14.3.	**Transport hazard class(es)**	not applicable
	Label no. :	not applicable
14.4.	**Packing group**	not applicable
14.5.	**Environmental hazards**	No
14.6.	**Special precautions for user**	not applicable
14.7.	**Maritime transport in bulk according to IMO instruments**	not applicable

SECTION 15: Regulatory information

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

- Regulation (EC) No 1272/2008 (CLP) 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 (REACH).
- REGULATION (EC) No 1907/2006 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.
- COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2. Chemical safety assessment

No mixture chemical safety assessment has been carried out.

SECTION 16: Other information

Full text of H-phrases mentioned in section 3:

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Classification procedures according to Regulation (EC) 1272/2008

Classification based on supplier details.

Training tips

Before use, read the data sheet.

Abbreviations and Acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
PP: Severe Marine Pollutant
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

Note to readers

The product described in the safety data sheet should be stored and used in accordance with good industrial practices and in compliance with all applicable legal regulations.
The information contained in the safety data sheet is based on the current state of knowledge and is intended to describe the product in terms of health, safety and environmental regulations. It should not be considered a guarantee of any specific product properties.
We cannot make any representations or warranties regarding the accuracy or completeness of any information provided or the quality or specifications of any products, substances or mixtures discussed herein.
The user is responsible for creating conditions for the safe use of the product and for the consequences of its misuse.
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