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

1.1 Product identifier
Trade name of mixture – Aqueous urea solution AUS 32
Composition: a mixture of urea and water.
Identification of ingredients:
Trade name: Urea;
INDEX number as listed in Annex VI of CLP: Not listed
CAS number: 57-13-6
EC number: 200-315-5
REACH registration number: 01-2119463277-33-xxxx

1.2 Relevant identified uses of the mixture and uses advised against
1.2.1 Uses: NOx reducing agent – is injected to the exhaust systems of diesel engines before a selective catalytic converter.

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., Ruklos sen., LT55550
Country: Lithuania
Tel. Nr.: +370 349 56465, +370 349 52074.
URL website: www.achema.com
Person responsible for the Safety Data Sheet (with e-mail address): Mindaugas Vaidila, e-mail: m.vaidila@achema.com

1.4 Emergency telephone number
Emergency phone number: Phone number: +370 (5) 2362052
Common emergency phone number: 112

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance
2.1.1 Classification according to Regulation No. 1272/2008: not classified as hazardous.

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

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 the product is a multi-constituent substance containing no hazard components.

SECTION 4. FIRST-AID MEASURES

4.1 Description of first aid measures
The material can get through: the respiratory tract, in contact with skin, eyes, ingestion.
Inhalation: the product has a slight odor of ammonia. Leave the affected area. Does not affect respiratory tract, non-hazardous.
Eye contact: Wash with plenty of water; apply to doctor.
Skin contact: After contact with urea, wash affected hands well.
Ingestion: Wash mouth, drink some water, apply to physician

4.2 Most important symptoms and effects
Delayed effects: None known

4.3 Indication of any immediate medical attention and special treatment needed
None.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable: water and carbon dioxide or other fire-extinguishing media appropriate for surrounding materials.
Not suitable: None.

5.2 Special hazards arising from the substance or mixture
None.

5.3 Advice for firefighters
In the event of fire, wear a self-contained breathing apparatus and a chemical protective suit.
Personal protective equipment: insulating gas masks.

SECTION 6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures.
For personnel not involved in emergency situations: use suitable personal protective equipment, mentioned in section 8.
For the personnel involved in emergency situations: use suitable personal protective equipment, mentioned in Section 8.

6.2 Environmental precautions
Keep away from getting into a rain drainage system or trenches an/or ditches.

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: use as per instructions for motor vehicles.
Technical measures/Precautions: Store in a closed, dry room with good ventilation at temperature not below -11 °C and not above +25 °C.
Instructions on the limit quantity of the substance/preparation to be stored under the conditions specified: none. Keep away from getting into a rain drainage system or trenches an/or ditches.

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: requirements for the package of the substance/preparation: packages (containers) manufactured of high alloyed austenitic Cr-Ni, Cr-Ni-Mo steels, titanium, Ni-Mo-Cr-Mn-Cu-Si-Fe alloys, polyethylene, polypropylene, polyisobutylene, polyfluoroethylene (PFE), polyvinylidene fluoride (PVDF), perfluoroalkoxy alkane (PFA), polytetrafluoroethylene (PTFE), copolymers (vinylidene fluorides and hexafluoropropylenes).
Non suitable packaging materials paper, glass, carbon (non alloyed or low-alloy) steels, copper and its alloys, zinc (galvanized steel), silver alloys, aluminum and its alloys, magnesium and its alloys, plastics and metals with nickel.
In accordance with Regulation 18/2012 restrictions are not applicable.

7.3 Relevant identified uses: NOx reducing agent – is injected to the exhaust systems of diesel engines before a selective catalytic converter.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Regulated occupational exposure limit values: None.
8.2 Exposure controls

8.2.1 Appropriate engineering controls: Inlet and exhaust ventilation.

8.2.2. Individual protection measures:

Eye (face) protection: chemical protective safety goggles (EN 166) or face shield (EN 166).

Skin protection

Hand protection: protective gloves (EN 388).

Other protection: wear cotton working clothes, special boots.

Respiratory protection: short term filter device from ammonia.

Thermal protection: Not necessary.

8.2.3 Environmental exposure controls: do not flush into surface water or sanitary sewer system.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance: Liquid colourless;

Odour: with mild odour of ammonia;

Odor threshold: Mild ammonia odor could be felt in a small quantity of product.

\[ \text{pH: (8-10) 10% solution, mass fraction;} \]

Melting/Freezing temperature: -11.5 °C;

Initial boiling point and boiling range: about 100 °C.

Flash-point: The substance is inorganic. In accordance with Column 2 of REACH Annex VII, flash point does not need to be conducted.

Flammability: Non flammable (based on molecular structure);

Vapour pressure: 23 mbar at 20 °C;

Relative density (D4 (20)): (1087 – 1093) kg/m³ at 20 °C;

Solubility in water: Very soluble;

Partition coefficient n-octanol/water: The substance is inorganic. In accordance with Column 2 of REACH Annex VII, the partition coefficient n-octanol/water does not need to be conducted in case the substance is inorganic.

Auto ignition temperature: In accordance with REACH Annex XI, testing may be omitted if testing does not appear scientifically necessary. Aqueous urea solution AUS 32 have no explosive properties. 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.

Decomposition temperature: 160 – 190 °C.

Viscosity: 1.4 mPas at 25 °C;

Explosive properties: Non explosive;

Oxidizing properties: None.

9.2 Other information.

None

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under regular conditions (see section 7, handling and storage).
10.2 Chemical stability
Stable under regular conditions (see section 7, handling and storage).
Conditions to avoid the substance causing hazardous chemical reactions: lower than the crystallization temperature and higher than 30 °C (urea hydrolysis takes place). Any entry material will contaminate the product and can not be used for its intended purpose.

10.3 Possibility of hazardous reactions
Any entry material will contaminate the product and can not be used for its intended purpose.
Stabilizers need: not necessary.

10.4 Conditions to avoid
Environment temperature lower than crystallisation temperature and higher than 30 °C (urea hydrolysis takes place). Entrance of any materials will pollute the substance and it will be impossible to use the substance for intended purpose.

10.5 Incompatible materials
Entrance of any materials will pollute the substance and it will be impossible to use the substance for intended purpose.

10.6 Hazardous decomposition products
When heated dangerous gases might appear: HCN, NOx, NH3.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects:
Acute toxicity:
Acute oral toxicity: LD₅₀: 8471 mg/kg bw (for urea).
Acute dermal toxicity: LD₅₀: 8200 mg/kg bw (for urea).
Acute inhalation toxicity: not relevant.
Skin irritation or/and sensitization: Not irritating. Not sensitizing effect known.
Serious eye damage/irritation: not irritating.
Mutagenicity: Ames-test: negative
Carcinogenicity: Ames-test: negative
Reproductive toxicity: Ames-test: negative
Specific toxicity for particular organ (STOT) (one time effect): None.
Specific toxicity for particular organ (STOT) (repeated effect): None.

SECTION 12. ECOLOGICAL INFORMATION
**Aqueous urea solution AUS 32**

**12.1 Toxicity**
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 allowable concentration (BPC) and dissolved oxygen. In water bodies of fishing farms, maximum allowable concentration of urea is 80mg/dm³.

**12.2 Persistence and degradability**
In soil and water, urea decomposes to ammonia and carbon dioxide and degrades easily.

**12.3 Bioaccumulative potential**
Considered to be low (based on high water solubility). Urea does not have any bioaccumulative properties, does not form any toxic compound with other substances present in the air or drainage waters. Low potential for bioaccumulation (based on substance properties).

**12.4 Mobility in soil**
Adsorption coefficient: Well-soluble in water; NO₃ ion is extremely mobile; NH₄ cation is absorbed in soil.

**12.5 Results of PBT and vPvB assessment**
According to Annex XIII of Regulation (EC) No1907/2006, no PBT and vPvB assessment has been conducted.

**12.6 Other hazards effect:**
None.

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**SECTION 13. DISPOSAL CONSIDERATIONS**

**13.1 Waste treatment methods.**
**Waste from residues.** The contaminant free AUS 32 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 to an authorised waste facility. Do not empty into drains. Dispose of this material in a safe way and in accordance with all applicable local and national regulations.

**Package waste disposal.**
According to Regulation (EC) No. 1357/2014 the contaminant free packaging of product is classified as non-hazardous waste. Dispose of package waste in a safe way and in accordance with all applicable local and national regulations. Do not remove label, prepared according to Regulation (EC) No. 1272/2008, until package is thoroughly cleaned.

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**SECTION 14. TRANSPORT INFORMATION**

**14.1 UN Number**
None

**14.2 Proper shipping name**
Aqueous urea solution AUS 32.
14.3 Transport hazard classes
None

14.4 Packaging group
None

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 according to Annex II of Marpol 73/78 and the IBC Code:
Not applicable.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR);
- The International Rule for Transport of Dangerous Substances by Railway (RID);
- The International Maritime Dangerous Goods (IMDG);
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78);
- The International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code) (the IBC Code);
- Applicable Law on Waste Disposal of the Republic of Lithuania;
- Applicable Law on Package and Package Waste Handling of the Republic of Lithuania;
- HN23 Maximum Allowable Concentrations of Hazardous Chemical Substances and Preparations in
Working Environment. General Requirements;
- HN36 Banned and Restricted Substances;
- Applicable Regulations for Workers “Protection against the Impact of Chemical Factors” and Regulations for Workers “Protection against Carcinogenous and Mutagenous Impacts”;
- 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;
- Applicable Rules on Waste Disposal;

Additional information provided on the label of the chemical preparation package:
Visual signs No. 14 „Temperature limitation“ (-5ºC ÷ 25ºC) and No. 4 „Protect from sun“ in compliance with LST EN ISO 780.

15.2 Chemical safety assessment
As in accordance with Regulation No. 1272/2008 aqueous urea solution are not classified as hazardous consequently in accordance with REACH Article 14 no Chemical Safety Assessment has been carried out for this mixture.

SECTION 16. OTHER INFORMATION

| Revision date: | 2017-03-31 |
| Version: | 3 |
| Revision No. | 0 |
| Issuing date: | 2017-03-31 |

A clear evidence of added, deleted or modified information:
According to Commission Regulation (EU) 2015/830 a new document form was altered, revised product storage conditions (section 7), supplemented with information on the required personal protective equipment (sections 6 and 8), was added Regulation (EU) No 98/2013, changed and supplemented safety, health and environmental regulations (section 15).

List of abbreviations and acronyms used throughout the Safety Data Sheet:
ADR – European Agreement on Dangerous Goods by Road;
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail;
IMDG – International Maritime Dangerous Goods;
MARPOL 73/78 – International Convention for the Prevention of Pollution from Ships;
ĮST – Company Standards.

Bibliography:
- Company Standard No. 156667399-73 „Aqueous urea solution AUS 32”.
- Methods of evaluating information referred to in Regulation (EC) No. 1272/2008 Article 9, which were used for the classification of the product: The product is not classified as an irritant to eyes on the basis on urea REACH registration dossier contains the specific concentration limits. The product has been

- Relevant precautionary phrases:
  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".

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.