MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1. Identification of the substance

Product name	**AdBlue**
Commonly used synonyms	aquous urea solution 32.5%
1.2 Use of the substance	used as the agent in motor industry for purification of exhaust gas from oil engines with the method of selective catalytic reduction (SCR)
1.3 Company identification	**EXO Automotive Spa Unipersonale** Via San Marco 11c Interno 69 35129 PADOVA Italy www.exoautomotive.com Contacts: Phone: (+39) 049 744 99 70 Fax: (+39) 049 744 99 71 Mail: info@exoautomotive.com Office hours: from Monday to Friday 9:00 ÷ 13:00 and 14:00 ÷ 18:00
1.4 Emergency telephone Centre	**Foreign Countries: Contact the closest Poisons Information**

2 HAZARDS IDENTIFICATION

2.1 Human health

The product is not classified as hazardous. However when used the attention should be paid to the following aspects

Skin effect	The longer contact may cause skin irritation
Eyes effect	The longer contact may cause serious eyes irritation
Swallowing	Swallowing of greater amounts (more than 50g adjus ted to pure urea) can cause gastrointestinal troubles

MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

Long - term effects No adverse effects are known.

In the natural way it is present in the human body.

Fire and products of thermal decomposition Inhalation of gases produced during the thermal decomposition can cause irritation and caustic effects for respiratory system lungs. Effect may appear with some delay

2.2. Others

Fire and heating When heated, after evaporation of water, the urea is subject to decomposition. During fire some toxic fumes containing ammonia – NH_3, nitric oxides NOx and carbo oxides (CO,CO_2) may be emitted

3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Component's name and its concentration.

Aqueous (urea) solution containing 32.5% of urea of chemical formula $CO(NH_2)_2$

3.2 Classification

Ingredients	CAS Number	WE Number (EINECS)	% content of the component	Danger category
Urea	57-13-6	200-315-5	32.5	Not classified
Water	7732-18-5	231-791-2	67.5	Not classified

4 FIRST-AID MEASURES

4.1. The Product

Skin contact

- Avoid a long contact with the skin. When using the product always wash the polluted place with water and soap.

Eye contact

- Rinse eyes with plenty of water for at least 10.min
- If the irritation persists provide medical assistance

Swallowing

- Do not cause vomiting
- Give water or milk to drink.
- Do not give anything to the unconscious person
- Provide medical assistance if a greater amount has been swallowed

4.2. Fire and decomposition products

Skin contact

- Wash place of contact with product with plenty of water
- Provide medical assistance

Inhalation

- Take the harmed person out of the terrain threatened with the effect of toxic gases
- Keep the injured person warm and quiet
- The persons which were exposed to inhalation gases produced by decomposition should immediately receive medical assistance.

5 FIRE-FIGHTING MEASURES

5.1. If the product is not directly in danger of the fire effect:

Use the best known means to extinguish fire

5.2. If the product is in danger of the fire effect

- Call the fire brigade
- Avoid inhalation of fumes (they are toxic)
- Evacuate against the wind or in the direction perpendicular to the wind
- When fighting fire (connected with water evaporation, thermal decomposition of urea and release of fumes) wear:
  - insulating equipment with compressed air protecting respiratory system
  - gas-tight clothes
- Use plenty of water. Stay facing fire, always back to wind
- Do not let the product enter sewer
- Should water containing dissolved product enter sev er or waters notify immediately local authorities.

MSDS *according to EC Regulation 1907/2006 and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

6 ACCIDENTAL RELEASE MEASURES

6.1. Protective measures for people:

see par. 7 and par. 8

6.2. Protective measures for environment

Take care to avoid pollution of waters or sever and in the event of accidental polluting them notify competent authorities

6.3. Cleaning methods

- If only it is possible the spilled product should be immediately removed and placed in a clean, marked container
    - As a absorbent material use sand, dry soil or another non inflammable material. Place the gathered material in a marked container, not causing dusting.
    - Depending of the degree and character of pollution use the gathered product as the liquid fertilizer for agricultural purposes or give over to a specialized firm for neutralization.

7 HANDLING AND STORING

7.1. Handling

- Avoid contact with skin, eyes and clothes. Near the place of work install protection showers and eyes washers
- When handling the product wear proper protective clothes and protective gloves

7.2. Storing

- Do not store in temperature above 30^{o}C
- Store the product in tightly closed tanks or containers, in a separate, marked place, situated on a tray delimited with a wall allowing to receive the full volume of tanks or containers.

MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Exposure limit values

NDS[1] (The Highest Permissible Concentrations)	not determined
NDSCh (The Highest Temporary Permissible Concentrations)	not determined

8.2. The measures of personal protection:

- Wear protective clothes, protective gloves, safety goggles or face shield
- Before having meals, smoking and after finishing work wash carefully the hands, arms, and face.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Transparent liquid
Odour	Faint smell of ammonia
pH	ca 10 (basic reaction)
Boiling point	Decomposition in temp. 100°C
Solidification point	-10.5°C
Vapour pressure	6.4 kPa (48 mm Hg) in 20 °C
Flammability	Non flammable

[1] (NDS – weighted value of concentration the effect of which on the worker during 8 hrs of work per da y and average weekly load of work should not cause any disadvantageous effects to his health and to the h ealth of his descendants

Oxidising properties	None
Density gas	ca 1.09 g/cm^3 in 20°C
Refractive index	ca 1.383
Water solubility	Unlimited

MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

10 STABILITY AND REACTIVITY

Stability

Stable during storage, handling and using in normal conditions.

10.1. Conditions to avoid

- Heating over 100°C temperature
- Welding or heat treatment of devices on the install ation where the urea solution may be present before earlier thoroughly washing it in order to remove any rests of urea.

10.2. Materials to avoid

Strong oxidizers, acids, alkalis, nitrates, calcium or sodium hypochlorite

10.3. Hazardous decomposition products

Ammonia - NH_3, nitric oxides NOx and carbo oxides (CO,CO_2) (see also par. 3.2. and 9)

10.4. Dangerous reactions

Urea in solution reacts with calcium or sodium hypochlorite creating explosive nitrogen trichloride

11 TOXICOLOGICAL INFORMATION

11.1. General

See chapter 3.1.

11.2. Toxicological data

LD_{50} (orally, rats) 14300mg/kg – refers to urea (solid substance)

MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

12 ECOLOGICAL INFORMATION

12.1. Ecotoxicity

- Toxicity for fish

The data refer to solid substance – urea

Leuciscus idus LC_{50} [3] - over 6810 mg/l * 96 hrs

[2] Lethal dose for 50% of population subject to the t est
[3] Lethal concentration for 50% of population subject to the test

Rasbora heteromorpha LC_{50} - 12000 mg/l * 96 hrs

Lebistes reticulatus LC_0 - 17500 mg/l * 96 hrs

LC_{100} - 27500 mg/l * 96 hrs

Channa punctatus LC_0 - over 25000 mg/l * 24 hrs

Its own toxicity is low, but it significantly increases demand of oxygen if it is introduces in great amounts to waters and can contribute to danger to the life of aquatic organisms

12.2. Mobility

Soluble in water

12.3. Persistence and degradability

In the substantive degree biodegradable in soil and in water

12.4. Bioaccumulative potential

Low potential of bioaccumulation

13 DISPOSAL CONSIDERATIONS

Depending on the degree and character of pollution, the product may be used as the fertilizer for agricultural purposes or given over to a specia lized firm for neutralization.

MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

14 TRANSPORT INFORMATION

14.1.UNO Classification

The urea solution is not classified, i.e. is not regarded as a dangerous material according to the Orange Book of UNO and international codes of transport, e.g. RID (railway), ADR (road transport) and IMDG (sea transport)

15 REGULATORY INFORMATION

15.1.European Union Regulations

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning 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/EEC and 2000/21/EC. *(Official Journal of the European Union of 30.12.2006, L 396.)* with later changes
- Classification and labeling pursuant to the Directi ves of EU 67/548/EEC and 1999/45/EC (revised)

MSDS *according to EC Regulation 1907/2006* *and seq. amendments (Regulation n.453/2010)*	*Sheet created on: 01/12/2021* *Update N. 00 of -*	
AdBlue® OP		

16 OTHER INFORMATION

The product complies with the standard ISO 22241-1:2006 (E).
The information included in the study EFMA (European Fertilizers Manufacturers' Association) "Guidance for the Compilation of Safet y Data Sheets for Fertilizer's Materials" and in the data base of ESIS – European Chemical Su bstances Information System – has been used.

This sheet has been prepared pursuant to the he Ord inance of the Minister of Health of July 3, 2002 concerning the card of characteristics of a dangerous substance and dangerous preparation (Journal of Laws No 140 item 1171 of Se ptember 3, 2002) and the Ordinance of the Minister of Health of December 14, 2004 amending the card of characteristics of a dangerous and dangerous preparation (Journal of Laws No. 2 item 8 of 2005).

The information included in this safety data sheet have been given in a good faith and its correctness is based on the actual knowledge about the substance. This does not mean any consent for legal responsibility of any person representing the Company for effects caused by the adequate or inadequate use of the given information in particular circumstances.