

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

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

Product information

Trade name : AdBlue®

Synonyms : Aqueous Urea Solution

Use of the Substance/Mixture : For reducing of nitrogen oxides in exhaust gases of Diesel engines (SCR-technology).

Supplier :
: Borealis L.A.T GmbH
St.-Peter-Strasse 25, 4021 Linz, Austria
Telephone: +43 732 6915-0

E-mail address : product.safety@borealisgroup.com

2. HAZARDS IDENTIFICATION

GHS Classification (1272/2008 (EC))

|| Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Aqueous solution

Components

Chemical name	CAS-No. EC-No. Registration number	Concentration [%]
urea	57-13-6 200-315-5 01-2119463277-33	>= 31,8
water	7732-18-5 231-791-2	<= 68,2

4. FIRST AID MEASURES

General advice : No specific instructions needed.

Inhalation : Move to fresh air.

AdBlue is a registered trademark of Verband der Automobilindustrie e.V. (VDA).

Product safety information sheet

according to Regulation (EC) No. 1907/2006, Article 32

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

- If symptoms persist, call a physician.
- Skin contact : Wash off with soap and plenty of water.
Take off contaminated clothing and wash before reuse.
If skin irritation persists, call a physician.
- Eye contact : Rinse cautiously with water for several minutes.
- Ingestion : Rinse mouth with water.
Do NOT induce vomiting.
If conscious, drink plenty of water.

Notes to physician

- Symptoms : Inhalation:
Cough
Shortness of breath
Sore throat
- Skin contact:
Redness
- Eye contact:
Redness
- Ingestion:
Convulsions
Headache
Nausea
Vomiting
- Treatment : Treat symptomatically.

5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Carbon dioxide (CO₂)
Water mist
Alcohol-resistant foam
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : The product itself does not burn.
Burning produces irritant fumes.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.
- Further information : Standard procedure for chemical fires.

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use personal protective equipment.
Material can create slippery conditions.
Use non-slip safety shoes in areas where spills or leaks can occur.
Avoid inhalation of vapour or mist.
Avoid contact with skin, eyes and clothing.
Ensure adequate ventilation, especially in confined areas.
- Environmental precautions : Prevent product from entering drains.
- Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.
After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling

- Advice on safe handling : Avoid contact with skin, eyes and clothing.
- Advice on protection against fire and explosion : No special protective measures against fire required.

Storage

- Requirements for storage areas and containers : Suitable materials for containers:
Highly alloyed austenitic Cr-Ni-steels and Cr-Ni-Mo-steels (acc. to DIN EN 10088-1 to 3; e.g. 1.4541 and 1.4571)
Titanium
HDPE
Polypropylene
- : Unsuitable container:
Copper alloys
Copper
Unalloyed steels
Zinc-coated steel
- : Store at room temperature.
Protect from sunlight.
- Advice on common storage : Do not store together with oxidizing and acidic materials.
Do not store or transport together with nitrites and salts containing nitrates.

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

DNEL	:	End Use: Workers Exposure routes: Skin contact Potential health effects: Acute systemic effects Value: 580 mg/kg bw/d Urea
	:	End Use: Workers Exposure routes: Inhalation Potential health effects: Acute systemic effects Value: 292 mg/m ³ Urea
	:	End Use: Workers Exposure routes: Skin contact Potential health effects: Long-term systemic effects Value: 580 mg/kg bw/d Urea
	:	End Use: Workers Exposure routes: Inhalation Potential health effects: Long-term systemic effects Value: 292 mg/m ³ Urea
	:	End Use: Consumers Exposure routes: Skin contact Potential health effects: Acute systemic effects Value: 580 mg/kg bw/d Urea
	:	End Use: Consumers Exposure routes: Inhalation Potential health effects: Acute systemic effects Value: 125 mg/m ³ Urea
	:	End Use: Consumers Exposure routes: Ingestion Potential health effects: Acute systemic effects Value: 42 mg/kg bw/d Urea
	:	End Use: Consumers Exposure routes: Skin contact Potential health effects: Long-term systemic effects Value: 580 mg/kg bw/d Urea
	:	End Use: Consumers Exposure routes: Inhalation Potential health effects: Long-term systemic effects Value: 125 mg/m ³

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

Urea
: End Use: Consumers
Exposure routes: Ingestion
Potential health effects: Long-term systemic effects
Value: 42 mg/kg bw/d
Urea

PNEC : Fresh water
Value: 0,47 mg/l
Urea

Engineering measures

Provide adequate ventilation.

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection : In case of contact through splashing:
Gloves

Eye protection : Safety goggles

Skin and body protection : Lightweight protective clothing

Hygiene measures : Keep away from food and drink.
When using do not eat, drink or smoke.
Wash hands before breaks and at the end of workday.
Shower or bathe at the end of working.
Take off immediately all contaminated clothing.
Keep working clothes separately.

Environmental exposure controls

General advice : Prevent product from entering drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : liquid

Colour : colourless

Safety data

Flammability (solid, gas) : not auto-flammable

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

Explosive properties	: Not explosive
pH	: 8,8
Melting point	: -11,5 °C
Density	: 1,090 g/cm ³
Water solubility	: soluble
Viscosity, dynamic	: 1,4 mPa.s

10. STABILITY AND REACTIVITY

Reactivity	: Thermal decomposition from ~ 30°C, with formation of ammonia.
Materials to avoid	: Nitrates Nitrites Strong oxidizing agents Strong acids Base metals
Hazardous decomposition products	: Ammonia
Thermal decomposition	: > 30 °C
Hazardous reactions	: Violent hydrolysis at high temperatures. Risk of burst of containers.

11. Toxicological information

Information on toxicological effects

Product

Acute oral toxicity	: LD50: 14.300 mg/kg, Rat, OECD Test Guideline 401, Test substance: Urea
Acute inhalation toxicity	: no data available
Acute dermal toxicity	: study scientifically unjustified
Skin corrosion/irritation	: Rabbit, OECD Test Guideline 404, Test substance: Urea, No skin irritation
Serious eye damage/eye irritation	: Rabbit, OECD Test Guideline 405, Test substance: Urea, No eye irritation
Respiratory or skin sensitisation	: No known effect.

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

Germ cell mutagenicity	
Genotoxicity in vitro	: Ames test, Result: negative, Test substance: Urea
Assessment	: Not mutagenic in Ames Test
Carcinogenicity	: Rat, Oral, NCI screening study, Test substance: Urea Animal testing did not show any carcinogenic effects.
Reproductive toxicity	: Rat, Dose: 500 mg/kg, Oral, Test substance: Urea Lowest observed adverse effect level Based on available data, the classification criteria are not met.
STOT - repeated exposure	: Rat, Oral, 365 d, NOAEL: 2.250 mg/kg, NCI screening study, Test substance: Urea, Health injuries are not known or expected under normal use.
Further information	: According to our experience and to the information provided to us, the product does not have any harmful effects if it is used and handled as specified.

12. Ecological information

Toxicity

Product

Toxicity to fish	: LC50: > 6.810 mg/l, 96 h, Leuciscus idus (Golden orfe), Test substance: Urea
Toxicity to daphnia and other aquatic invertebrates	: EC50: > 10.000 mg/l, 24 h, Daphnia magna (Water flea), static test, Test substance: Urea, Fresh water
Toxicity to algae	: NOEC: 47 mg/l, 192 h, Microcystis aeruginosa, Cell multiplication inhibition test, Test substance: Urea, Fresh water

Persistence and degradability

Product

Biodegradability	: 96 %, Result: Readily biodegradable, activated sludge, Exposure time: 16 d, Water, OECD Test Guideline 302B, Test substance: Urea
------------------	---

Bioaccumulative potential

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

Product

Bioaccumulation : Test substance: Urea, Bioaccumulation not expected: Partition coefficient (n-octanol/water) $\log P_{ow} < 3$.

Mobility in soil

Product

Distribution among environmental compartments : Adsorption/Soil, Medium: Soil, Adsorbs on soil.

Results of PBT and vPvB assessment

Product

Assessment : This mixture contains no substances that are assessed to be a PBT or a vPvB.

Other adverse effects

Product

Additional ecological information : The product is not considered hazardous for the environment.

13. DISPOSAL CONSIDERATIONS

Product : Where possible recycling is preferred to disposal or incineration.
Contact the proper local authorities.
Do not dispose of together with household waste.
Dispose of wastes in an approved waste disposal facility.
Contact manufacturer.

: European waste code:
06 10 99: wastes not otherwise specified

Contaminated packaging : In accordance with local and national regulations.

14. TRANSPORT INFORMATION

Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR
Avoid temperatures above 30°C.

15. REGULATORY INFORMATION

Chemical safety : A Chemical Safety Assessment has been carried out for this

Aqueous Urea Solution

Version 3

Revision Date 16.05.2016

Print Date 19.05.2016

assessment

substance.
(Urea)

16. OTHER INFORMATION

Further information

Other information : Issued in accordance with Article 32 of Regulation (EC) No 1907/2006, and its amendments.

Issuer : Borealis, Group Product Stewardship / Mikaela Eriksson.

Sources of key data used to compile the Safety Data Sheet : Chemical Safety Report, Urea. FARM REACH Consortium, 2014
International Chemical Safety Card, Urea, 1997
(http://www.ilo.org/dyn/icsc/showcard.display?p_lang=en&p_card_id=0595)

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.