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

1.1 Product identifier

Trade name: AdBlue®

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

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

1.3 Supplier’s details

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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture


2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008): No labeling elements required.

2.3 Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature: Aqueous solution

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
</table>

AdBlue® is a registered trademark of Verband der Automobilindustrie e.V. (VDA).
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: No specific instructions needed.

If inhaled: Move to fresh air.
If symptoms persist, call a physician.

In case of 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.

In case of eye contact: Rinse cautiously with water for several minutes.

If swallowed: Rinse mouth with water.
Do NOT induce vomiting.
If conscious, drink plenty of water.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: Inhalation:
Cough
Shortness of breath
Sore throat

Skin contact:
Redness

Eye contact:
Redness

Ingestion:
Convulsions
Headache
Nausea
Vomiting

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
- Carbon dioxide (CO2)
- Water mist
- Alcohol-resistant foam

Unsuitable extinguishing media:
- High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting:
- The product itself does not burn.
- Burning produces irritant fumes.

5.3 Advice for firefighters

Special protective equipment for firefighters:
- Wear self-contained breathing apparatus and protective suit.

Further information:
- Standard procedure for chemical fires.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

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.

6.2 Environmental precautions

Prevent product from entering drains.

6.3 Methods and material for containment and 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.

6.4 Reference to other sections
For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe 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.
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.

7.2 Conditions for safe storage, including any incompatibilities
Requirements for storage areas and containers: 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.
Packaging material: Suitable material: Highly alloyed austenitic Cr-Ni-steels and Ci-Ni-Mo-steels (acc. to DIN EN 10088-1 to 3; e.g. 1.4541 and 1.4571), Titanium, HDPE, Polypropylene
Unsuitable material: Copper alloys, Copper, Unalloyed steels, Zinced steel

7.3 Specific end use(s)
Specific use(s): Consult the technical guidelines for the use of this substance/mixture.
## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqueous Urea Solution</td>
<td>Workers</td>
<td>Skin contact</td>
<td>Acute systemic effects</td>
<td>580 mg/kg bw/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>292 mg/m^3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
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<td></td>
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<td>Remarks: Urea</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Acute systemic effects</td>
<td>580 mg/kg bw/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>125 mg/m^3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>Acute systemic effects</td>
<td>42 mg/kg bw/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
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<td>Long-term systemic effects</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
</tbody>
</table>

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqueous Urea Solution</td>
<td>Fresh water</td>
<td>0.47 mg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remarks: Urea</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

**Engineering measures**
Provide adequate ventilation.

**Personal protective equipment**

- **Eye protection**: Safety goggles
- **Hand protection**
  - Remarks: In case of contact through splashing: Gloves
- **Skin and body protection**: Lightweight protective clothing
- **Respiratory protection**: No personal respiratory protective equipment normally required.

**Environmental exposure controls**

- **General advice**: Prevent product from entering drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- **Appearance**: liquid
- **Colour**: colourless
- **pH**: 8,8
- **Melting point**: -11,5 °C
- **Flammability (solid, gas)**: not auto-flammable
- **Density**: 1,090 g/cm³
- **Solubility(ies)**:
  - Water solubility: soluble
- **Decomposition temperature**: > 30 °C
- **Viscosity**
  - Viscosity, dynamic: 1,4 mPa.s
Explosive properties : Not explosive

9.2 Other information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
Thermal decomposition from ~ 30°C, with formation of ammonia.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Hazards reactions : Violent hydrolysis at high temperatures. Risk of burst of containers.

10.4 Conditions to avoid

10.5 Incompatible materials
Materials to avoid : Nitrates, Nitrites, Strong oxidizing agents, Strong acids, Base metals

10.6 Hazardous decomposition products
Ammonia

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity

Product:
Acute oral toxicity : LD50 (Rat): 14,300 mg/kg
Method: OECD Test Guideline 401
Test substance: Urea

Acute inhalation toxicity : Remarks: No data available
Acute dermal toxicity : Remarks: study scientifically unjustified

Skin corrosion/irritation

Product:
Species: Rabbit
Method: OECD Test Guideline 404
Test substance: Urea
No skin irritation

Serious eye damage/eye irritation

Product:
Species: Rabbit
Method: OECD Test Guideline 405
Test substance: Urea
No eye irritation

Respiratory or skin sensitisation

Product:
No known effect.

Germ cell mutagenicity

Product:
Genotoxicity in vitro : Test Type: Ames test
Result: negative
Test substance: Urea

Germ cell mutagenicity-Assessment : Not mutagenic in Ames Test

Carcinogenicity

Product:
Species: Rat
Application Route: Oral
Activity duration: 365 d
NOAEL: NOAEL: 2.250 mg/kg bw/d
Method: NCI screening study
Test substance: Urea

Carcinogenicity - : Animal testing did not show any carcinogenic effects.
Assessment

Reproductive toxicity

Product:
Effects on fertility: Species: Rat
Dose: 500 mg/kg
Application Route: Oral

Test substance: Urea
Remarks: Lowest observed adverse effect level
Based on available data, the classification criteria are not met.

Product:
Species: Rat
NOAEL: 2.250 mg/kg
Application Route: Oral
Exposure time: 365 d
Method: NCI screening study
Test substance: Urea
Remarks: Health injuries are not known or expected under normal use.

Further information

Product:
Remarks: 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.

SECTION 12: Ecological information

12.1 Toxicity

Product:
Toxicity to fish: LC50 (Leuciscus idus (Golden orfe)): > 6.810 mg/l
Exposure time: 96 h
Test substance: Urea

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): > 10.000 mg/l
Exposure time: 24 h
Test Type: static test
Test substance: Urea
Remarks: Fresh water
Toxicity to algae: NOEC (Microcystis aeruginosa): 47 mg/l
Exposure time: 192 h
Test Type: Cell multiplication inhibition test
Test substance: Urea
Remarks: Fresh water

12.2 Persistence and degradability

**Product:**
Biodegradability: Test Type: activated sludge
Water
Result: Readily biodegradable.
Biodegradation: 96 %
Exposure time: 16 d
Kinetic:

3 h: 3 %
7 h: 52 %
10 d: 60 %
14 d: 85 %
16 d: 96 %
Method: OECD Test Guideline 302B
Test substance: Urea

12.3 Bioaccumulative potential

**Product:**
Bioaccumulation: Test substance: Urea
Remarks: Bioaccumulation not expected: Partition coefficient (n-octanol/water) log Pow < 3.

12.4 Mobility in soil

**Product:**
Distribution among environmental compartments: Adsorption/Soil
Medium: Soil
Remarks: Adsorbs on soil.

12.5 Results of PBT and vPvB assessment

**Product:**
Assessment: Remarks: This mixture contains no substances that are assessed to be a PBT or a vPvB.
12.6 Other adverse effects

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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.

SECTION 14: Transport information

14.1 UN number
Not regulated as a dangerous good

14.2 UN proper shipping name
Not regulated as a dangerous good

14.3 Transport hazard class(es)
Not regulated as a dangerous good

14.4 Packing group
Not regulated as a dangerous good

14.5 Environmental hazards
Not regulated as a dangerous good

14.6 Special precautions for user
Remarks : Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR, Avoid temperatures above 30°C.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

<table>
<thead>
<tr>
<th>Ship type</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollution category</td>
<td>Z</td>
</tr>
</tbody>
</table>

SECTION 15: Regulatory information

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

Other regulations : No data available

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance. (Urea)

SECTION 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

(http://www.ilo.org/dyn/icsc/showcard.display?p_lang=en&p_card_id=0595)
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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.

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