

<b>ID#:</b>	3406633	<b>Assessment Owner:</b>	Clive Owen
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<b>Email:</b>	clive@a1groupuk.com	<b>Date Created:</b>	13/10/2017 13:40:00
<b>Date Assessment Reviewed</b>	23/02/2023	<b>Next Review Date:</b>	23/02/2028 11:54:00
<b>Material Code:</b>	156112	<b>Tradename:</b>	GREENOX, ADBLUE, AUTOMOTIVE UREA SOLN
		<b>Supplier</b>	TENNANTS DISTRIBUTION LIMITED
<b>Supplier Phone:</b>	0161 205 4454	<b>IMC:</b>	
<b>Keyword</b>	Fuel (Additive)	<b>Frequency of use:</b>	Weekly
<b>Approximately how much of the material is used by one person in one working day:</b>	10 LITRES	<b>How many people are directly exposed?:</b>	1
<b>Are any other people put at risk from indirect exposure?:</b>	No	<b>How are they exposed?:</b>	
<b>Are there any susceptible workers?:</b>	No	<b>Susceptible Categories:</b>	
<b>Other info:</b>		<b>Is this material being used outside of the normal temperature range?:</b>	No

**Additional work practices:****Existing Control measures:****Exp Limit**

**Notes** Greenox®, AdBlue®, Automotive Urea Solution, AUS, Diesel Exhaust Fluid, DEF

**Files Uploaded****File Name****Activities**

Act No	Method	Area	Exposure
1	Pouring	Outside	Up to 1/2 hour per shift

**Work Area**

Work Area Code	Sub Area Code
WW	

Safer Substitute Chosen	Reason for leaving/swapping material

**Material/Process**  
**GREENOX, ADBLUE, AUTOMOTIVE UREA SOLN**



**Health Hazards**

May cause ill health if ingested in quantity  
 Skin - irritation and dermatitis may result from prolonged contact  
 May cause eye irritation

**Considerations**

**LOW HAZARD**

LIQUID

**Supplier** TENNANTS DISTRIBUTION LIMITED

**Keyword** Fuel (Additive)

**Contents**

Urea: 32.5%

**Signal Word**

**Exp Limit**

Method	Pouring	Area	Outside	Exposure	Up to 1/2 hour per shift
LOW ACUTE RISK - FULL EXPOSURE			LOW CHRONIC RISK - FULL EXPOSURE		

**Spillage**

Ventilate area  
 Wear polythene or nitrile gloves  
 Wear eye protection if contact likely  
 Wear respiratory protection for large spills in poorly ventilated areas  
 Wear protective overalls and footwear for large spillages  
 Absorb in sand or inert absorbent material  
 Small spills - wipe up with cloth  
 Collect into a container, close lid  
 Dispose or recycle of spillages in a controlled manner - Refer to Hazardous Waste Regulations if appropriate

**Control Measures**

LOW ACUTE RISK - INDIVIDUAL ACTIVITY	LOW CHRONIC RISK
--------------------------------------	------------------



AVOID SKIN CONTACT



POLYTHENE OR NITRILE



IF CONTACT LIKELY



WASH AFTER EXPOSURE



IF HEAVILY SOILED



CLOSE ALL CONTAINERS



CONTROLLED STORE /WASTE

**First Aid**

Inhalation - remove to fresh air; get immediate medical attention after significant exposure or if feeling ill  
 Ingestion - do not induce vomiting, wash out mouth with water  
 If feeling unwell consult your doctor immediately  
 Eye - irrigate with water until irritation subsides; if irritation persists then consult a doctor  
 Skin - wash with soap/cleanser and rinse with water; if irritation persists then consult a doctor

**Fire**

Isolated small scale fire:  
 Water - carbon dioxide - powder - foam - inert material  
 Large fire: evacuate area, call fire brigade or follow site procedure  
 Wear self-contained breathing apparatus and protective clothing

**Activity Comments**

Date Printed 23/02/2023



Material/Process

GREENOX, ADBLUE, AUTOMOTIVE UREA SOLN

LOW HAZARD  
LIQUID



Supplier TENNANTS DISTRIBUTION LIMITED  
Keyword Fuel (Additive)  
Signal Word

Method Pouring Area Outside Exposure Up to 1/2 hour per shift Activity Comments

LOW ACUTE RISK - FULL EXPOSURE LOW CHRONIC RISK - FULL EXPOSURE

LOW ACUTE RISK - INDIVIDUAL ACTIVITY LOW CHRONIC RISK

Control Measures



AVOID SKIN CONTACT



POLYTHENE OR NITRILE



IF CONTACT LIKELY



WASH AFTER EXPOSURE



IF HEAVILY SOILED



CLOSE ALL CONTAINERS



CONTROLLED STORE /WASTE

Health Hazards

May cause ill health if ingested in quantity  
Skin - irritation and dermatitis may result from prolonged contact  
May cause eye irritation



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Date Printed 23/02/2023



## REQUEST DETAILS

#ID: 3406633 User making request: Clive Owen

## MATERIAL DETAILS

Material Code: 156112

## Tradename:

GREENOX, ADBLUE, AUTOMOTIVE UREA SOLN

LOW UNCONTROLLED ACUTE RISK

LOW UNCONTROLLED CHRONIC RISK

LOW CONTROLLED ACUTE/CHRONIC RISK

## IMC

Supplier

TENNANTS DISTRIBUTION LIMITED

## ACTIVITY DETAILS

Act No	Method	Area	Exposure
1	Pouring	Outside	Up to 1/2 hour per shift

## SCENARIO DETAILS

## Additional work practices:

Approximately how much of the material is used by one person in one working day:	10 LITRES	Frequency of use:	Weekly	How many people are directly exposed?:	1
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Are any other people put at risk from indirect exposure?:

No

Are there any susceptible workers?:

No

Susceptible Categories:

Work Area Code

WW

Sub Area Code

## Other Information

Greenox®, AdBlue®, Automotive Urea Solution, AUS, Diesel Exhaust Fluid, DEF

## Considerations

Answer



**PRODUCT: GREENOX® (ADBLUE®) (ADBL) REVISION: 5 DATED: 20/05/15 PAGE 1 OF 6**

**PRODUCT SPECIFICATION**

Product Name	Greenox® (AdBlue®)
Alternative Name	Automotive urea solution 32, AUS 32, diesel exhaust fluid, DEF
Specification Reference	ADBL/5 (05/15/0082001)

**SALES SPECIFICATION**

Characteristics	Unit	Min	Max	Typical Value
Urea Content	Weight %	31.8	33.2	32.5
Density	g/cm <sup>3</sup>	1.087	1.093	1.0895
Refractive Index at 20°C		1.3814	1.3843	1.3829
Alkalinity as NH <sup>3</sup>	%	-	0.2	
Biuret	%	-	0.3	
Aldehydes	mg/kg	-	5	
Insolubles	mg/kg	-	20	
Phosphate (PO <sub>4</sub> )	mg/kg	-	0.5	
Calcium	mg/kg	-	0.5	
Iron	mg/kg	-	0.5	
Copper	mg/kg	-	0.2	
Zinc	mg/kg	-	0.2	
Chromium	mg/kg	-	0.2	
Nickel	mg/kg	-	0.2	
Aluminium	mg/kg	-	0.5	
Magnesium	mg/kg	-	0.5	
Sodium	mg/kg	-	0.5	
Potassium	mg/kg	-	0.5	

Greenox® conforms to DIN 70070 and ISO 22241 and is supplied ready to use.

**Storage**

To maintain the product quality it is recommended that AdBlue® is stored below 25°C and out of direct sunlight. Do not store or allow product to come into contact with mild steel, aluminium, brass, copper or alloys. These will damage the catalyst system.

**Shelf Life** (in accordance with ISO 22241-3)

**Constant ambient storage temperature (°C) Minimum shelf life (months)**

≤10	36
≤25	18
≤30	12
≤35	6
≥35	Significant decomposition test before use

**Freezing**

Adblue® will begin to freeze at -11°C; this does not affect the product quality or strength. The liquid phase of a partially frozen solution will still be at the required concentration and may continue to be used. The remaining frozen portion may be used after allowing to thaw

**NOTES**

**Exclusion of Liability**

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Any information or advice obtained from Tennants otherwise than by means of this publication and whether relating to Tennants materials or other materials, is also given in good faith. However, it remains at all times the responsibility of the customer to ensure that Tennants materials are suitable for the particular purpose intended.

Tennants accepts no liability whatsoever (except as otherwise provided by law) arising out of the use of information supplied, the application, adaptation or processing of the products described herein, the use of other materials in lieu of Tennants materials or the use of Tennants materials in conjunction with such other materials.

**Health and Safety**

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of this product, identifying the potential hazards and giving advice on the handling precautions and emergency procedures. This must be consulted fully before handling, storage and use.



**PRODUCT: GREENOX® (ADBLUE®) (ADBL) REVISION: 5 DATED: 20/05/15 PAGE 2 OF 6**

## SAFETY DATA SHEET

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

#### 1.1 Product Identifier

Trade Name	Greenox®, AdBlue®, Automotive Urea Solution, AUS, Diesel Exhaust Fluid, DEF
CAS Number	57-13-6
EINECS Number	200-315-3
REACH Registration Number	01-2119463277-33-xxxx (Urea)
Composition	Mixture of urea and water

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

Identified use(s): NO<sub>x</sub> reducing agent, for injection into exhaust system of diesel engines. Industrial use for flue gas NO<sub>x</sub> reduction.

Uses advised against: None

#### 1.3 Details of the supplier of the safety data sheet

Tennants Distribution Limited

Hazelbottom Road

Cheetham

Manchester

M8 0GR

Tel: 44(0)161 205 4454

Fax: 44(0) 161 203 4298

Email: [msds@tennantsdistribution.com](mailto:msds@tennantsdistribution.com)

#### 1.4 Emergency telephone number

Tel: 44(0)844 335 0001 (24 hours)

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of substance or mixture

**According to Regulation (EC) No. 1272/2008 (CLP).**

This product is not classified according to the CLP regulation.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

Not classified

#### Information concerning particular hazards for human health and environment:

See section 16 for full text of any R phrases or H statements above see section 11 for more details on any health effects or symptoms.

#### 2.2 Label elements

**Labelling according to Regulation (EC) 1272/2008:** None

**Hazard pictograms:** None

**Signal word:** None

**Hazard statements:** None

#### 2.3 Other hazards

**Results of PBT and vPvB assessment**

PBT: Not applicable

vPvB: Not applicable

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical characterisation:** Mixture

**CAS No.:** 57-13-6

**Description:** Urea

**Identification Numbers:**

**EC Number:** 200-315-5

**Chemical characterisation:** Mixtures

**Description:** An aqueous solution of urea

**Dangerous components:** There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.



**PRODUCT: GREENOX® (ADBLUE®) (ADBL) REVISION: 5 DATED: 20/05/15 PAGE 3 OF 6**

<b>4. FIRST AID MEASURES</b>
<b>4.1 Description of first aid measures</b> <b>General advice:</b> No special measures required.
<b>Inhalation</b> Avoid inhalation of vapour mist or spray. If inhaled, supply fresh air. Get medical attention in case of complaints.
<b>Skin contact</b> Immediately rinse with water. If skin irritation continues, get medical attention.
<b>Eye contact</b> Check for and remove any contact lenses. Rinse opened eye for several minutes under running water. Get medical attention if irritation occurs.
<b>Ingestion</b> Rinse out mouth and then drink plenty of water. Do not induce vomiting: call for medical help immediately.
<b>Protection of first-aiders</b> No action shall be taken involving any personal risk or without suitable training.
<b>4.2 Most important symptoms and effects, both acute and delayed</b> Potential acute health effects: Eye contact: No known significant effects or critical hazards. Inhalation: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. Skin contact: No known significant effects or critical hazards. Ingestion: No known significant effects or critical hazards.
<b>4.3 Indication of any immediate medical attention and special treatment needed</b> Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>5. FIRE FIGHTING MEASURES</b>
<b>5.1 Extinguishing Media</b> Suitable extinguishing media: Use fire extinguishing methods suitable to surrounding conditions. Unsuitable extinguishing media: Not known
<b>5.2 Special hazards arising from the substance or mixture</b> Hazards from the substance or mixture: In a fire or if heated, a pressure increase will occur and the container may burst. Hazardous thermal decomposition products: Decomposition products may include the following materials carbon dioxide, carbon monoxide, nitrogen oxides and ammonia. Avoid breathing dusts, vapours or fumes from burning materials. In case of inhalation of decomposition products in a fire, symptoms may be delayed.
<b>5.3 Advice for fire-fighters</b> Special precautions for fire fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Special protective equipment for fire fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
<b>6. ACCIDENTAL RELEASE MEASURES</b>
<b>6.1 Personal precautions, protective equipment and emergency procedures</b> For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. For emergency responders: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>6.2 Environmental precautions</b> Do not allow to enter sewers/surface or ground water.
<b>6.3 Methods and material for containment and cleaning up</b> Absorb with liquid binding material (sand, diatomite, acid binders, universal binders, sawdust). Send for recovery or disposal in suitable receptacles.
<b>6.4 Reference to other sections</b> No dangerous substances are released. See section 7 for information on safe handling. See section 8 for information on personal protection equipment. See section 13 for disposal information.



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<b>7. HANDLING AND STORAGE</b>	
<b>7.1 Precautions for safe handling</b> Prevent formation of aerosols. Ensure good ventilation in the workplace. Technical measures/ Precautions: Store in a closed, dry room with good ventilation at temperature not below -11 °C and not above +30 °C. Instructions on the limit quantity of the substance/preparation to be stored under the conditions specified: no. Information about fire and explosion protection: No special measures required	
<b>7.2 Conditions for safe storage, including any incompatibilities</b> Storage: Keep containers closed until required. Store away from oxidising agents. See section 10. Protect from frost, store in cool, dry conditions in well-sealed receptacles.	
<b>7.3 Specific end use(s)</b> Store out of direct sunlight and below 30°C to keep product in best condition. For use in catalytic SCR systems the product must not be stored in, or come into contact at any point with: mild steel, aluminium, brass or copper as these will poison the catalyst.	
<b>8. EXPOSURE CONTROLS/PERSONAL PROTECTION</b>	
<b>Additional information about design of technical facilities:</b> No further data, see section 7.	
<b>8.1 Control Parameters</b> Ingredients with limit values that require monitoring at the workplace: The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.	
<b>8.2 Exposure controls</b> Personal protective equipment: Select PPE appropriate for the operations taking place into account the product properties. <b>General protective and hygiene measures</b> Avoid close or long term contact with the skin. Do not eat, drink, smoke or sniff while working. Avoid contact with the skin. Do not inhale gases, fumes or aerosols. Wash hands before breaks and at the end of work.	
<b>Eye/face protection</b> Safety glasses.	
<b>Hand protection</b> Wear gloves impermeable to the product.	
<b>Respiratory protection</b> In case of inadequate ventilation wear respiratory protection. Recommended: Filter P2 (EN143)	
<b>Body protection</b> Protective work clothing.	
<b>9. PHYSICAL AND CHEMICAL PROPERTIES</b>	
<b>9.1 Information on basic physical and chemical properties</b>	
Appearance	Fluid
Colour	Clear
Odour	Ammonia like or odourless
pH-value at 20°C	8-10
Melting point (°C)	-11°C
Boiling point (°C)	100°C
Decomposition temperature	Not determined
Self-igniting	Product is not self-igniting
Danger of explosion	Product does not present an explosion hazard
Flash point	Not applicable
Flammability	Not flammable
Explosion limits	Not determined
Vapour pressure at 20°C	23 hPa
Density at 20°C	1.087 to 1.093 g/cm <sup>3</sup>
Solubility in/miscibility with water	Fully miscible
Partition coefficient (n-octanol/water)	Not determined. Inorganic substance.
Viscosity	1.4 mPa.s @20°C





**PRODUCT: GREENOX® (ADBLUE®) (ADBL) REVISION: 5 DATED: 20/05/15 PAGE 5 OF 6**

<b>10. STABILITY AND REACTIVITY</b>
<b>10.1 Reactivity</b> Stable under regular conditions.
<b>10.2 Chemical stability</b> Stable under regular conditions. <b>Thermal decomposition/conditions to be avoided</b> The residue upon evaporation decomposes on heating above 220°C producing toxic gases.
<b>10.3 Possibility of hazardous reactions</b> Reacts violently with strong oxidants, nitrates, inorganic chlorides, chlorites and perchlorates causing fire and explosion hazard.
<b>10.4 Conditions to avoid</b> For intended use, avoid contamination with metal, dust or organic matter.
<b>10.5 Incompatible materials</b> Strong oxidising agents, nitrate, chlorites and perchlorates. For intended use, the product must not be in contact with mild steel, aluminium, brass, copper or alloys as these can damage the catalyst system.
<b>10.6 Hazardous decomposition products</b> Under normal conditions none.
<b>11. TOXICOLOGICAL INFORMATION</b>
<b>11.1 Information on toxicological effects</b>
<b>Acute toxicity</b>
<b>Acute oral toxicity:</b> LD50: 8471 mg/kg bw (for urea).
<b>Acute dermal toxicity:</b> LD50: 8200 mg/kg bw (for urea).
<b>Acute inhalation toxicity:</b> not relevant.
<b>Skin irritation or/and sensitization:</b> Not irritating. Not sensitizing effect known.
<b>Mutagenicity:</b> Ames-test: negative
<b>Carcinogenicity:</b> Ames-test: negative
<b>Reproductive toxicity:</b> Ames-test: negative
<b>Specific toxicity for particular organ (STOT) (one time effect):</b> None.
<b>Specific toxicity for particular organ (STOT) (repeated effect):</b> None.
<b>12. ECOLOGICAL INFORMATION</b>
<b>12.1 Toxicity</b> Aquatic toxicity 57-13-6 Urea EC50 >10000 mg/kg (daphnia)
<b>12.2 Persistence and degradability</b> Biodegradable
<b>12.3 Bioaccumulative potential</b> Product is not expected to bioaccumulate
<b>12.4 Mobility in soil</b> No further relevant information available
<b>12.5 Results of PBT and vPvB</b> <b>PBT:</b> Not applicable <b>vPvB:</b> Not applicable
<b>12.6 Other adverse effects</b> No further relevant information available.
<b>13. DISPOSAL CONSIDERATIONS</b>
<b>13.1 Waste treatment methods</b> <b>Recommendation</b> Recommended Hierarchy of Controls: Minimise waste Reuse if not contaminated Recycle, e.g. dilution and use as fertilizer Safe disposal (if all else fails). <b>European waste catalogue</b> Waste code 06 10 99 (wastes not otherwise specified)
<b>13.2 Uncleaned packaging</b> Recommendation: Disposal must be made according to official regulations Recommended cleansing agents: Water if necessary together with cleansing agents



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**14. TRANSPORT INFORMATION**

This product is not classed as hazardous for transport (ADR, RID, IMDG).

**15. REGULATORY INFORMATION**

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

EU Regulation (EC) No. 1907/2006 (REACH) Annex XIV - List of substances subject to authorization Substances of very high concern: Not applicable.

Other EU regulations

Europe inventory: All components are listed or exempted.

Seveso II Directive

This product is not controlled under the Seveso II Directive. National regulations

Notes: To our knowledge no other country or state specific regulations are applicable.

**15.2 Chemical safety assessment:** A chemical safety assessment has not been carried out.

**16. OTHER INFORMATION**

**Abbreviations**

EC50: median effective concentration

LC50: median lethal concentration

LD50: median lethal dose

NOEC: no observable effect concentration

OEL: occupational exposure limit

PBT: persistent, bioaccumulative, toxic chemical

PNEC: predicted no-effect concentration

STEL: short-term exposure limit

TWA: time weighted average

vPvB: very persistent, very bioaccumulative chemical

**Source of key data used to compile the data sheet**

Supplier information

**Modifications from last revision**

The Specification has been updated. The Safety Data Sheets have been revised in accordance with current requirements

**Date:** 20/05/15

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