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

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
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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



This assessment was compiled by Alcumus Sygol Limited from supplier's safety data sheets where appropriate. Safety in the use of assessments is the responsibility of the subscriber. For advice call the helpdesk on 01296 678464

Date Printed 23/02/2023



REQUEST DETAILS

#ID: 3406632 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

LH

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 ³	1.087	1.093	1.0895
Refractive Index at 20°C		1.3814	1.3843	1.3829
Alkalinity as NH ³	%	-	0.2	
Biuret	%	-	0.3	
Aldehydes	mg/kg	-	5	
Insolubles	mg/kg	-	20	
Phosphate (PO ₄)	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

Information contained in this publication is accurate to the best of the knowledge and belief of Tennants.

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_x reducing agent, for injection into exhaust system of diesel engines. Industrial use for flue gas NO_x 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

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

4. FIRST AID MEASURES
4.1 Description of first aid measures General advice: No special measures required.
Inhalation Avoid inhalation of vapour mist or spray. If inhaled, supply fresh air. Get medical attention in case of complaints.
Skin contact Immediately rinse with water. If skin irritation continues, get medical attention.
Eye contact Check for and remove any contact lenses. Rinse opened eye for several minutes under running water. Get medical attention if irritation occurs.
Ingestion Rinse out mouth and then drink plenty of water. Do not induce vomiting: call for medical help immediately.
Protection of first-aiders No action shall be taken involving any personal risk or without suitable training.
4.2 Most important symptoms and effects, both acute and delayed 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.
4.3 Indication of any immediate medical attention and special treatment needed 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.
5. FIRE FIGHTING MEASURES
5.1 Extinguishing Media Suitable extinguishing media: Use fire extinguishing methods suitable to surrounding conditions. Unsuitable extinguishing media: Not known
5.2 Special hazards arising from the substance or mixture 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.
5.3 Advice for fire-fighters 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.
6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures 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".
6.2 Environmental precautions Do not allow to enter sewers/surface or ground water.
6.3 Methods and material for containment and cleaning up Absorb with liquid binding material (sand, diatomite, acid binders, universal binders, sawdust). Send for recovery or disposal in suitable receptacles.
6.4 Reference to other sections 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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7. HANDLING AND STORAGE	
7.1 Precautions for safe handling 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	
7.2 Conditions for safe storage, including any incompatibilities 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.	
7.3 Specific end use(s) 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.	
8. EXPOSURE CONTROLS/PERSONAL PROTECTION	
Additional information about design of technical facilities: No further data, see section 7.	
8.1 Control Parameters 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.	
8.2 Exposure controls Personal protective equipment: Select PPE appropriate for the operations taking place into account the product properties. General protective and hygiene measures 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.	
Eye/face protection Safety glasses.	
Hand protection Wear gloves impermeable to the product.	
Respiratory protection In case of inadequate ventilation wear respiratory protection. Recommended: Filter P2 (EN143)	
Body protection Protective work clothing.	
9. PHYSICAL AND CHEMICAL PROPERTIES	
9.1 Information on basic physical and chemical properties	
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 ³
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

10. STABILITY AND REACTIVITY
10.1 Reactivity Stable under regular conditions.
10.2 Chemical stability Stable under regular conditions. Thermal decomposition/conditions to be avoided The residue upon evaporation decomposes on heating above 220°C producing toxic gases.
10.3 Possibility of hazardous reactions Reacts violently with strong oxidants, nitrates, inorganic chlorides, chlorites and perchlorates causing fire and explosion hazard.
10.4 Conditions to avoid For intended use, avoid contamination with metal, dust or organic matter.
10.5 Incompatible materials 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.
10.6 Hazardous decomposition products Under normal conditions none.
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.
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.
12. ECOLOGICAL INFORMATION
12.1 Toxicity Aquatic toxicity 57-13-6 Urea EC50 >10000 mg/kg (daphnia)
12.2 Persistence and degradability Biodegradable
12.3 Bioaccumulative potential Product is not expected to bioaccumulate
12.4 Mobility in soil No further relevant information available
12.5 Results of PBT and vPvB PBT: Not applicable vPvB: Not applicable
12.6 Other adverse effects No further relevant information available.
13. DISPOSAL CONSIDERATIONS
13.1 Waste treatment methods Recommendation Recommended Hierarchy of Controls: Minimise waste Reuse if not contaminated Recycle, e.g. dilution and use as fertilizer Safe disposal (if all else fails). European waste catalogue Waste code 06 10 99 (wastes not otherwise specified)
13.2 Uncleaned packaging Recommendation: Disposal must be made according to official regulations Recommended cleansing agents: Water if necessary together with cleansing agents



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

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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