Technical Material Safety Data Sheet

Product: AUS40
Revised: 07/Feb/22
Version: 2.0

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

1.1. Product Identifier

Product Name: Aqueous Urea Solution 40%
Synonyms: Marine Urea Solution, AUS40
Chemical Composition: 40% urea and 60% water
Molecula Formula: (NH2)2CO + H2O

1.2. Relevant Identified uses of the substance or mixture and uses advised against

Maritime Grade Urea Solution for marine application to Selective Catalytic Reduction (SCR) exhaust system of diesel engines of ships.

1.3. Details of the supplier of the safety data sheet

Company details: B2G Com. Importacao Exportacao e Servicos Ltda Rua Silvestre de Lima, 83 - Sala 01 – Sao Paulo – SP – CEP 04264-110 – Brazil
Telephone: +55 (11) 5051-3081
Email: site@aus40.com.br
Website: www.aus40.com.br
Emergency telephone: 0800 11 8270

SECTION 2: Hazards Identification

2.1. Classification of the substrate

According to Regulation EC 1272/2008 urea is not classified as a dangerous substance.
Skin effect: Contact may cause mild skin irritation including redness and burning. No harmful effects from skin absorption have been reported.
Eyes effect: Contact may cause mild eye irritation including stinging, watering, and redness.
Swallowing: No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.
Inhalation: No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.
Long –term effects: No negative effects are known. In a natural state it is present in the human body. Urea is used as an ingredient in cosmetics, medical preparations, us a product of the human metabolism and is present in urine.
Fire and products of thermal decomposition: Inhalation of gases created by thermal decomposition may cause irritation and caustic action for the respiratory system. Influence on lungs may occur over some time.

Fire and warming: When urea decomposes it produces ammonia. In case of fire toxic gases containing ammonia, carbon dioxide and nitric oxides—NOx may be released.

2.2. Label elements

The preparation is not classified as dangerous according to directive EC 1272/2008 and its amendments.

2.3. Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

SECTION 3: Composition/ information on ingredients

3.1. Substances

Product containing urea as a main ingredient.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation: Remove injuries from exposure area. In severe cases, or if recovery is not rapid or complete, seek medical attention.
Skin contact: Rinse contaminated areas with plenty of water. Remove any contaminated clothing and wash before reusing. If irritation persists seek medical attention.
Eye contact: Wash thoroughly with water for at least 10 minutes. Obtain medical attention.
Swallowing: Wash out mouth with water. Do not induce vomiting. If patient is conscious, give water to drink. If patient feels unwell seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Acute and delayed symptoms do not occur in normal conditions of use (see section 11).

4.3. Indication of requirement for any immediate medical attention and special treatment

Medical assistance is needed in case of the inhalation of large amounts of dust.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Use an extinguishing agent suitable for surrounding fire
Unsuitable extinguishing media: No data

5.2. Special hazards arising from the substance or mixture

Contact with skin

- Skin having contact with a melted material to be washed with a large amount of water
- Provide medical attention

Inhalation

- Remove the injured from the area endangered with toxic gases.
- Provide the injured warmth and keep them calm.
- Persons exposed to inhalation of gases being products of decomposition should be provided with immediate medical attention.

5.3. Advice for firefighters

Irritating substances may be emitted upon thermal combustion so self-contained breathing apparatus will be required.

- Call fire brigade.
- Avoid inhaling of vapours (they are toxic). Stand with a face towards fire, always back to the wind.
- When extinguishing a fire, use proper masks. If vapours are released, use breathing apparatus.
- Use a large amount of water.
- Prevent release of a melted product to sewage ducts.

If water containing a dissolved product is released to sewage of waters, inform local authorities immediately.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Put on appropriate personal protective equipment

6.2. Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution.

6.3. Methods and material for containment and cleaning up

Any spillage of urea should be immediately cleaned and placed in a clean, labelled container. Depending on the degree and type of pollution, a collected product may be used as fertilizer for agricultural purposes or may be transferred to a specialized company for neutralization purposes.

6.4. Reference to other sections

See section 1 for emergency contact information and section 13 for waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes. Avoid repeated or prolonged contact with skin and clothing.
Avoid dust inhalation. Wear suitable protective clothing.
Avoid excessive accumulations of dust. Avoid unnecessary exposure to atmospheric air to prevent moisture retention. When handling the product for a longer time, wear protective clothes and gloves.

7.2. Conditions for safe storage, including any incompatibilities

Store in a closed, dry room with good ventilation at temperatures not below +5 ºC and not above +25 ºC. Avoid temperatures below 0 °C and above 30 °C. Entrance of any materials will pollute the substance and it will be impossible to use the substance for intended purpose.

7.3. Specific and end use(s)

Urea is not classified as a dangerous substance. Exposure scenarios have not been made.

SECTION 8: Exposure controls/ personal protection

8.1. Engineering controls

Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limits.

8.2. Personal protection

When handling the product for a longer period of time, wear proper protective gloves. At high concentrations of dust, wear proper dust masks.
Avoid excessive accumulation of dust and install a local exhaust ventilation system where necessary.
Respiratory protection: Respirators.
Eye Protection: Wear protection glasses.
Hand Protection: Protective gloves.

Skin and body protection: Work footwear and clothing.
Hygiene measures: Have a wash and change clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state at 20C and 1013hPa: Liquid, clear
Melting / freezing point: 0 °C
Boiling point (1013 hPa): 103 °C
Relative density: 1110 kg/m3
Vapour pressure: 80 Pa at 20C
Water solubility: 624000mg/L at 20C
Partition coefficient n-octanol/water: Log Kow (Pow): -1.73 at 20C
Surface tension: Not applicable
Flammability: Non-Flammable
Flash point: No data available
Self-ignition temperature: No evidence of self-ignition
Explosive properties: No explosive properties
Oxidising properties: No oxidising properties
Granulometry: Fraction 1—3 mm (min. 90%)
Dissociation constant: Above 0.6 (pkb)
Viscosity: 1.38 mPa-s (1,38 cP) [@25 °C]

SECTION 10: Stability and reactivity

10.1. Reactivity

Non-reactive during storage, handling and application under normal conditions.

10.2. Chemical Stability

Stable during storage, handling and application under normal conditions.

10.3. Possibility of hazardous reactions

Unknown

10.4. Conditions to avoid

Heating above melting point.
Welding or heat treatment of equipment installation, where urea may be present without earlier thorough washing to remove all residue of a fertilizer

10.5. Incompatible materials

Strong oxidants, acids, alkalis, nitrates, calcium hypochlorite or sodium hypochlorite.

10.6. Hazardous decomposition products

Urea reacts with calcium hypochlorite or sodium hypochlorite forming explosive nitrogen trichloride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity	LD503 (Oral)	Low acute toxicity - LD50 (rat) =8471mg/kg
Irritation	Skin	Not irritating—Human, rabbit (New Zealand white), mouse (NudeMF1h)
	Eye	Not irritating (Vienna white)
Corrosivity	Human and animal data show that urea is not corrosive.	
Sensitization	Skin	Not sensitizing—naturally present at the relatively high con-
	Respiratory	Not sensitizing.
Repeated dose toxicity	NOAEL4 (oral)	2250mg/kg bw/day (rat, mouse)
Mutagenicity	No known significant effects or critical hazards	
Carcinogenicity	NOAEL (oral)	No known significant effects or critical hazards
Toxicity for reproduction	LOAEL5	No known significant effects or critical hazards

SECTION 12: Ecological information

12.1. Toxicity

Urea does not fulfil the T criteria.

Aquatic compartment

Short-term toxicity to fish	LC50 for freshwater fish: 6810mg/L
Long-term toxicity to fish	Urea is of inherently low toxicity to fish species: it is a normal

Short-term toxicity to aquatic invertebrates	EC50 / LC50 for freshwater invertebrates: 10000mg/L (Daphnia, freshwater snails and aedes egypti larvae)
Long-term toxicity to aquatic invertebrates	Urea is of inherently low toxicity to species of aquatic invertebrates and exposure will be limited by the action of microorgan-
Algae and aquatic plants	EC10 / LC10 or NOEC for freshwater algae: 47mg/L—Blue-green
Sediment organisms	The very high-water solubility of urea and low adsorption addi-
Toxicity to aquatic microorganisms	The 72-hour toxicity threshold of urea was 29mg/l, and the 16 hour toxicity threshold of urea to Pseudomonas putida was >

Terrestrial compartment

Toxicity to soil macro-organisms	Application of urea (in common with other nitrogen fertilizers) releases ammoniacal-N which is nitrified to nitrate: an acidic species that causes gradual lowering of soil pH unless the effect is counteracted by lime application. This is not a direct effect of
Toxicity to terrestrial plants	Low toxicity to plants is predicted: the substance is widely used
Toxicity to soil micro-organisms	Urea is of inherently low toxicity to microorganisms as it is uti-
Toxicity to another terrestrial organ-	No data available.

12.2. Persistence and degradability

Urea does not fulfil the P or vP criteria.

12.3. Bio-accumulative potential

Urea does not fulfil the B or vB criteria.

12.4. Mobility in soil

Highly biodegradable in soil and water

12.5. Results of PBT and vPvB assessment

Urea is neither a PBT nor a vPvB substrate.

12.6. Other adverse effects

No data.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Remains of the product, including packaging waste, should be transferred to the specialized companies with an appropriate waste management permit.
Depending on the degree and type of contamination, the product is either used as a fertilizer for agricultural purposes or transferred to the specialized company for neutralization. In case of spill of fertilizer—see section 6.

SECTION 14: Transport information

Urea is not classified, that means they are not considered as dangerous materials according to the Orange book of UN and international transport codes, eg. RID, ADR and IMDG.

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Urea Solution

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Not applicable.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code

Not applicable.

SECTION 15: Regulatory information

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

- Regulation (EC) No 1307/2006 of the European Parliament and of the council of 18th December 2006 concerning registration, evaluation, Authorization 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 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)*
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. *(Official Journal of the European Union of 30.12.2006, L 353. With later changes)*

15.2. Chemical safety assessment

The chemical safety assessment has been made.

SECTION 16: Other information

Training: Employees should be trained in the scope of proper mixture handling. Read the safety data sheet before use.