AdBlue Material Data Safety Sheet

the fluid accountants
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1 Identification of Substance and Company Information

1.1 Product Characteristics

Chemically, AUS 32 is an aqueous solution of 32.5 % by weight of urea. The product is of very high purity and its consistent quality is secured through the industrial standard DIN V 70070.

Chemical composition: urea in water COMMON SYNONYMES (urea): Carbamide, Carbonyldiamide, Carbon acid diamid German: Harnstoff, Spanish: Urea, French: Ur, Latin: Carbamidum; Urea pura; Ureum.

1.2 Chemical Characteristics

Product AdBlue; Urea Solution Chemical formula urea solution: (NH2)2CO + H2O

The density is 1.09 g/cm3 at 20 C. Adjustment 0.0007/degree celcius. mol mass (urea): 60,06 g/mol

CAS: Chemical Abstracts Service No.: 57-13-6 EINECS-Number (urea): 200-3155

1.2.1 Physical Characteristics

Appearance colourless, clear liquid beginning of crystallization: -11C viscosity

(with 25 C): approx. 1.4 mPa s heat conductivity (with 25 C): approx. 0.570 W/m K specific warmth (with 25 C): approx. 3.40 kJ/kg K surface tension: at least 65 mN/m preliminary standard pH: slightly alkaline, approx. 9.0

2 Composition / Information

NAME CAS No EC No % urea 57-13-6 200-315-5 32.5 water 7732-18-5 231-791-2

67.5 Free Ammonia 7664-41-7 trace Biuret 108-19-0 trace

3 Hazard Identification

3.1 Acute Health Effects

3.1.1 Swallowed

Although ingestion is not thought to be harmful, the material may lead to discomforting effects by inducing gastrointestinal tract pain leading to nausea and vomiting. In an occupational setting, ingestion of insignificant quantities should not be a cause for concern.

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3.1.2 Eye Contact

Although the material is not classed as an irritant, direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness.

3.1.3 Skin Contact

Skin Product can produce inflammation of the skin following prolonged contact or immersion. Skin contact is not thought to have harmful health effects, the material may still produce adverse effects following entry through wounds, lesions or abrasions, where a stinging sensation will be felt.

3.2 Chronic Health Effects

Principal routes of exposure are by accidental skin and eye contact and by inhalation of vapours especially at higher temperatures. As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice. Urea is a naturally occurring chemical in the body. It is an end product of protein metabolism and is excreted in the urine.

4 First Aid Measures

4.1 Swallowed

If swallowed, DO NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

4.2 Eye

If this product comes into contact with the eyes: Wash out immediately with fresh running water or eyewash solution, ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. If pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

4.3 Skin

If skin contact occurs: Immediately remove all contaminated clothing, including footwear, flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.

4.4 Inhalation

If fumes or combustion products are inhaled, remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor and treat symptomatically.

5 Fire Fighting

AdBlue is not flammable. Use water to control fires provided that water is compatible with burning materials. There is no restriction on the type of extinguisher which may be used.

5.1 Fire Fighting

Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves for fire only. Prevent, by any means available, spillage from entering drains or water courses. Use firefighting procedures suitable for surrounding area. DO NOT approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.

5.2 Fire/Explosion Hazard

Non-combustible. Not considered to be a significant fire risk. Expansion or decomposition on heating may lead to violent rupture of containers. Decomposes on heating and may produce ammonia fumes. May emit acrid smoke. Reacts with sodium hypochlorite [bleach] or calcium hypochlorite to form explosive nitrogen trichloride. Decomposition may produce toxic fumes of carbon dioxide (CO2) nitrogen oxides (NOx). May emit corrosive fumes.

6 Accidental Release Measures

6.1 Minor Spills

Slippery when spilt. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable labelled container for waste disposal.

6.2 Major Spills

Slippery when spilt but presents a minor hazard. Clear area of personnel. Control personal contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Contain spill with sand, earth or vermiculite. Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal. Collect recoverable product into labelled containers for disposal. Wash area with water but prevent runoff into drains or waterways. If contamination of drains or waterways occurs, advise environmental services promptly.

7 Handling and Storage

7.1 Environmental Storage Considerations

If the storage tank is located within 10m of a watercourse, 50 metres of a borehole, or is near an open drain then it must be bunded to 110% of the capacity of the tank. In the UK, the tank must be placed at least 1.8 meters from a dwelling and 0.76m from a boundary.

7.2 Procedure for Handling

Use a spill-free close-coupled connection between storage tanks and vehicle. If this is not possible, for example when pouring from a small container, follow the following handing instructions. Limit all unnecessary personal contact. Use in a well-ventilated area. When handling DO NOT eat, drink or smoke. Always wash hands with water after handling. Avoid physical damage to containers. Use good occupational work practice. Observe manufacturer's storing and handling recommendations.

7.3 Suitable Containers

Polyethylene, polypropylene or Stainless Steel containers. Check all containers are clearly labelled and free from leaks.

7.4 Storage Incompatibility

Avoid reaction with oxidising agents or strong acids.

7.5 Storage Requirements

Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storing and handling recommendations. Precipitate forms if stored below 50 C. Do not store for long periods. Do not store below -11 C.

8 Exposure Controls / Personal Protection

8.1 Ingredient Data

Urea Even if individuals inhaled 10 mg/m of urea through the whole workday, they would only inhale 100 mg/day. This increment, even if totally absorbed, would be insignificant when compared to the 30 g/day normal excretion rate in the urine. In confined spaces, the product can react to evolve ammonia and/or carbon dioxide vapours.

8.2 Personal Protection

8.2.1 Eye Safety

Glasses with side shields or chemical goggles when risk of spillage exists. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

8.2.2 Hands/Feet

Wear protective gloves, eg. PVC.

8.2.3 Other PPE

Overalls when handling large quantities. An Eyewash unit should be installed close to refilling installations.

9 Physical & Chemical Properties

Physical Form Colourless Liquid, mixes with water. Specific Gravity at 20C 1.11

10 Chemical Stability / Reactivity

This is a stable material Will not form hazardous polymerisation Reacts with Sodium Hypochlorite [bleach] or Calcium Hypochlorite to form nitrogen trichloride that may explode spontaneously in air. Incompatible with sodium nitrite, phosphorous pentachloride and nitrosyl or gallium perchlorate.

11 Toxicological Information

Urea LD50 [rat] 14300-15000 mg/kg LD50 cattle 510 mg/kg.

12 Ecotoxicity

Toxic to fish 9100 mg/l [96 hours] Notify Environment agency in cases of pollution of watercourses or boreholes.