Material Safety Data Sheet

Section 1 - Identification of The Material and Supplier

Product Name:	**ADBLUE DIESEL EXHAUST FLUID**
Product Use:	**NOx reduction in exhaust gases from vehicles with diesel engines**
Supplier:	**Lubricants NZ LTD** **20 Marphona Crescent** **Takanini 2105** **NEW ZEALAND** **Phone: (09) 640 0004** **Fax: (09) 266 4004**
EMERGENCY RESPONSE TELEPHONE NUMBER:	**0800 734 607**
Creation Date:	**October, 2020**
This version issued:	**October, 2020** and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature
Non-Hazardous substance. Non-Dangerous good.

Risk Phrases: None under normal operating conditions.
Safety Phrases: S23, S24. Keep out of reach of children. If swallowed, contact a doctor or Poisons Information Centre immediately and show this container or label. Wear suitable protective clothing and gloves.
SUSMP Classification: None allocated.
HSNO Classification: Not a Dangerous Good according to transport regulations, however, this is a C1 3.1D Combustible Liquid and for storage meets the definition of Dangerous Goods.
UN Number: 3272

Emergency Overview

Physical Description & Colour: Clear liquid, mixes with water
Odour: Characteristic with a slightly ammoniacal odour.
Major Health Hazards: Gross overexposure may cause pulmonary oedema (body fluid in the lungs) with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin. Symptoms may be delayed. Harmful if swallowed.

Potential Health Effects

Inhalation:
Short Term Exposure: Available data indicates that this product is not harmful. In addition product is unlikely to cause any discomfort or irritation. Inhalation of high concentration may cause mild irritation of the throat.
Long Term Exposure: No data for health effects associated with long term inhalation.

Skin Contact:
Short Term Exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. In addition product is unlikely to cause any discomfort in normal use.
Long Term Exposure: oil blisters may develop following prolonged and repeated exposure through contact with stained clothing.

Eye Contact:
Short Term Exposure: This product may be mildly irritating to eyes, but is unlikely to cause anything more than mild discomfort which should disappear once product is removed.
Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:
Short Term Exposure: Significant oral exposure is considered to be unlikely. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.
Long Term Exposure: No data for health effects associated with long term ingestion**.**

Section 3 - Composition/Information on Ingredients

INGREDIENTS	CAS NO	CONC,%	TWA	STEL
Urea	57-13-6	30-40	5	not set
Water	7732-18-5	>60	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak "is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.
Skin Contact: Gently blot away excess liquid. Irritation is unlikely. However, if irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed.
Eye Contact: Quickly and gently blot material from eyes. No effects expected. If irritation does occur, flush contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed. Obtain medical advice if irritation becomes painful or lasts more than a few minutes. Take special care if exposed person is wearing contact lenses.
Ingestion: If product is swallowed or gets in mouth, do NOT induce vomiting; wash mouth with water and give some water to drink. If symptoms develop, or if in doubt contact a Poisons Information Centre or a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: 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 toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.

Decomposition may produce toxic fumes of: carbon dioxide (CO2), nitrogen oxides (NOx), other pyrolysis products typical of burning organic material
Extinguishing Media: The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.
Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.
In such an event consider:
- foam.
- dry chemical powder.
- carbon dioxide

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade.
Flash point: N/A.
Upper Flammability Limit: No data.
Lower Flammability Limit: No data.
Autoignition temperature: N/A.

Section 6 - Accidental Release Measures

Accidental release:
Minor spills do not normally need any special clean-up measures. In the event of a major spill, prevent spillage from entering drains or water courses. As a minimum, wear overalls, goggles and gloves. Suitable materials for protective clothing include nitrile, neoprene. Eye/face protective equipment should comprise as a minimum, protective glasses and, preferably, goggles. If there is a significant chance that vapours or mists are likely to build up in the clean-up area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the NZ Standards.
Stop leak if safe to do so and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Can be slippery on floors, especially when wet. Recycle containers wherever possible after

careful cleaning. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. This material may be suitable for approved landfill. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 10 of this MSDS for details of personal protective measures, and make sure that those measures are followed.
Storage: Store packages of this product in a cool place. Make sure that containers of this product are kept tightly closed. Keep containers dry and away from water. Make sure that the product does not come into contact with substances listed under "Incompatibilities. Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **NZS 1715**, Protective Gloves: **NZ 2161**, Occupational Protective Clothing: **NZS 4501** Industrial Eye Protection: **NZS 1337**, Occupational Protective Footwear: **NZS2210**.

Exposure Limits	**TWA (mg/m^3)**
Urea	10 (mist)

Even if individuals inhaled 10 mg/m3 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. The workplace environmental exposure limit (WEEL) established by the AIHA is protective against the effects of urea as a nuisance dust.
Ventilation: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.
Eye Protection: Eye protection is not normally necessary when this product is being used. However, if in doubt, wear suitable protective glasses or goggles.
Skin Protection: The information at hand indicates that this product is not harmful and that normally no special skin protection is necessary. However, we suggest that you routinely avoid contact with all chemical products and that you wear suitable gloves (preferably elbow-length) when skin contact is likely.
Protective Material Types: We suggest that protective clothing be made from the following materials: nitrile, neoprene.
Respirator: Usually, no respirator is necessary when using this product.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Clear liquid, mixes with water
Odour:	Characteristic slightly ammoniacal odour.
Boiling Point:	100°C
Freezing/Melting Point:	-11.5°C. Liquid at normal temperatures.
Volatiles:	No data.
Vapour Pressure:	6.4@40°C
Vapour Density:	No data.
Specific Gravity:	1.09 at 20°C
Water Solubility:	Completely soluble.
pH:	9.8-10 (1% solution)
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water Distribution:	No data
Autoignition temp:	N/A

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.
Conditions to Avoid: This product should be kept in a cool place, preferably below 30°C. Keep containers tightly closed. Containers should be kept dry.
Incompatibilities: strong oxidising agents.
Fire Decomposition: Combustion forms carbon dioxide, and if incomplete, carbon monoxide, various hydrocarbons, aldehydes and smoke. Water is also formed. Small quantities of oxides of nitrogen, sulfur, zinc and phosphorus.

Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.
Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Toxicity: UREA:
■ Unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
TOXICITY IRRITATION
Oral (rat) LD50: 8471 mg/kg Skin (human): 22 mg/3 d (I)- Mild
Intraperitoneal (rat) LD50: >5000 mg/kg
Subcutaneous (rat) LD50: 8200 mg/kg
Intratracheal (rat) LD50: 567 mg/kg
Oral (mouse) LD50: 11000 mg/kg
Subcutaneous (mouse) LD50: 9200 mg/kg
Intravenous (mouse) LD50: 4600 mg/kg
Intraperitoneal (Mouse) LD: 6608 mg/kg
Intravenous (Rat) LD50: 5300 mg/kg
Intravenous (Rabbit) LD: 4800 mg/kg
Subcutaneous (Pig) LD: 14800 mg/kg
■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
For urea:
There is little data that relates urea to human health other than its use in dermatology and some more limited applications in clinical medicine. The use of urea (at 10% concentration or less) in ointments and creams to treat dry skin has been widespread, and long term follow-up studies have indicated that the substance is nonallergenic and virtually free from side effects. Among other clinical therapeutic uses, the treatment of inappropriate secretion of antidiuretic hormone (SIADH) should be noted, because its chronic form has involved long term oral administration of large amounts of urea. Most patients have tolerated urea well, although diarrhoea is sometimes reported after ingestion of 60-90 g/day. The possibility exists that infection of H. pylori in human stomach may aggravate local effects by urea because of ammonia generation.
Acute toxicity: The acute toxicity by urea is well delineated by the oral route. Toxicity is low in mammals other than ruminants, especially cattle, and sheep, in which the rumen micro-organisms contain urease activity and metabolise urea to ammonia at a high rate. In mice and rats, urea is of low toxicity even by the subcutaneous and intravenous route.
Repeated dose toxicity: No well-conducted repeated dose toxicity studies on urea were located. Chronic toxicity and carcinogenicity screening studies in mice and rats fed with 4500, 9000 or 45000 ppm in diet (up to about 6750 mg/kg body weight/day for mice and about 2250 mg/kg body weight/day for rats) did not uncover any treatment-related toxic syndromes in the various organs studied. Neither was any weight depression noted at terminal necropsy for animals of either sex or species at any dose levels. Thus the NOAELs were about 6750 mg/kg body weight/day for mice and about 2250 mg/kg body weight/day for rats.
Repeated dose toxicity studies with rats by skin application over 4 weeks and 25 weeks were conducted using urea ointment at 10%, 20% and 40% concentrations, and no consistent treatment-related toxic effects were found. The ointments were applied on a 20 cm2 area of the back skin; it is concluded that the repeated dose toxicity of urea by dermal route is low.
Reproductive/developmental toxicity: The studies cited under repeated dose toxicity did not indicate any toxic effects on the reproductive organs of mice and rats. No adequate teratogenicity/developmental toxicity studies of urea with mammals were located. According to one rat study, 50 g/kg body weight/day administered by gavage in two doses 12 hours apart for an average of 14 days did not cause outstanding (external) teratogenicity; the mean birthweight of the newborn was lower but the litter size greater. Injection of urea into the air sack of eggs shows that urea is toxic to the development of chick embryo.
Genetic toxicity: Urea has been negative in several appropriately conducted bacterial mutagenicity tests. Urea caused DNA single strand breaks in mammalian cells in vitro and was clastogenic for mammalian cells in vitro and in vivo but only at concentrations much beyond the physiological range (about 50-100 higher concentrations than found in human blood). The mechanism of genotoxicity is probably non-specific (e.g. difference in osmotic pressure across the cell membrane).
NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
Altered sleep time, change in motor activity, antipsychosis, dyspnea, methaemoglobinaemia, convulsions, lymphomas recorded.
Carcinogenic by RTECS criteria.

Section 12 - Ecological Information

Comments about ecotoxicity:
Experimental data on the finished product are not available.
It is considered to present little danger for aquatic life. No information available for used product.
Mobility
Air: There is a slow loss by evaporation.
Soil: Given its physical and chemical characteristics, the product generally shows little mobility in the ground.
Water: The product is insoluble; it spreads on the surface of the water
Persistence and degradability: No experimental information about the finished product. However the "mineral oil" fraction of the new product is intrinsically biodegradable.
Some components of the product may not be biodegradable.

Section 13 - Disposal Considerations

Disposal: This product may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. If neither of these options is suitable, consider controlled incineration, or landfill.

Section 14 - Transport Information

Not Classified as a Dangerous Good.

Section 15 - Regulatory Information

Classification: All of the significant ingredients in this formulation are compliant with NZS regulations.

Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Notice to reader
All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or
completeness of the data and information in this data sheet.
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