MATERIAL SAFETY DATA SHEET

H_2Blu – Diesel Exhaust Fluid

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: H_2Blu
SYNONYMS: Diesel Exhaust Fluid
PRODUCT CODES:

MANUFACTURER:
ADDRESS:

EMERGENCY PHONE:

CHEMICAL NAME: Urea, Aqueous Solution
CHEMICAL FAMILY: Amide/Organic Salt Solution
CHEMICAL FORMULA: $(NH_2)_2CO$

PRODUCT USE: Used for NOx reduction in diesel engine exhaust systems.

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT:

Component	CAS NO.	% WT
Urea	57-13-6	32-33 %
Water	7732-18-5	67-68%
Free Ammonia	7664-41-7	0.1-0.3%
Biuret	108-19-0	0.1-0.3%

SECTION 3: HAZARDS IDENTIFICATION

OSHA/HCS Status: This material is considered an eye and skin irritant under the OSHA Hazard Communication Standard (29 CFR 1910.1200). This MSDS contains valuable information critical to the safe handling and proper use of the product and should be retained and available for employees and other uses of this product.

EMERGENCY OVERVIEW: Clear colourless liquid with slight ammonia odour. May be harmful if swallowed. May be mildly irritating to eyes and skin.

When heated, urea releases ammonia, which when heated to decomposition may emit toxic fumes of nitrogen oxides, ammonia and cyanic acid.

POTENTIAL ACUTE HEALTH EFFECTS

EYES: May cause temporary irritation, including stinging, watering and redness.
SKIN: May cause mild skin irritation including redness and burning. No harmful effects from skin absorption reported.
INGESTION: May be harmful if swallowed. May cause irritation of mouth, throat and stomach.
INHALATION: This product may be harmful by inhalation. Under normal conditions of use, harmful effects are not expected.

CHRONIC HEALTH HAZARDS: None known.

MEDICAL CONDITIONS AGGRAVATED BY OVER-EXPOSURE: Repeated or prolonged exposure is not known to aggravate medical conditions.

SECTION 4: FIRST AID MEASURES

EYES: Flush eyes with clean water. If irritation persists, seek medical attention.
SKIN: Remove contaminated clothing and clean area with mild soap and water. If irritation persists, seek medical attention. Launder clothing before reuse.
INGESTION: First aid is not normally required. See medical attention if symptoms arise.
INHALATION: Immediately remove person to fresh air. If breathing has stopped, give artificial respiration and seek medical attention.
NOTES TO PHYSICIAN: Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY: Non flammable.

EXTINGUISHING MEDIA: Use media suitable to the surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. Stop spill/release if it can be done with minimal risk.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None other than what is listed in this section.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon oxides, nitrogen oxides, ammonia, biuret, cyanuric acid and other irritating fumes and smoke.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

Personal Precautions: Restrict access to area until completion of clean-up. Wear suitable protective equipment as outlined in Section 8.

Environment Precautions: Ensure that spill product does not enter drains, sewers, waterways or confined spaces.

Spill Response/Cleanup: Ventilate area of release. Stop spill or leak at source if safely possible. Contain and absorbed spilled material with inert, non-combustible absorbent material, such as sand, clay or soil. Shovel into suitable containers for disposal. See Section 13 for Disposal.

SECTION 7: HANDLING AND STORAGE

HANDLING: Use in areas that are well ventilated. Avoid contact with eyes, skin and clothing. For prolonged use of product refer to PPE section of MSDS. Wash with soap and water after handling. Practice good personal hygiene practices after use. Keep product from extreme heat and out of prolonged direct sunlight. See Storage and Incompatible material section below. Keep containers tightly closed when not in use. Keep out of the reach of children. Protect containers against physical damage.

STORAGE: Store in cool, dry, well ventilated area, out of direct sunlight. Keep away from incompatibilities. Recommended storage between 0 - 30 $^{\circ}$C. If stored as per MSDS, product should have a one year storage life from the date of manufacturing.

INCOMPATIBLE MATERIALS: Strong oxidizing agents and strong acids.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:	ACGIH/TLV	ACGIH/STEL
Ammonia	25 ppm	35 ppm
Urea	not listed	not listed

ENGINEERING CONTROLS: Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

RESPIRATORY PROTECTION: Respiratory protection is not usually required. If significant spray or mist occurs, wear a respiratory approved by CSA Z94.4-02 or OSHA - Respiratory Protection Standard 29 CFR 1910.134.

EYE PROTECTION: Approved eye protection to safeguard against potential eye contact, irritation or injury. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or

dusts. If splashing might occur, wear eye protection such as safety glasses with side shields. Depending on the condition(s) of use, a face shield may be necessary.

SKIN PROTECTION: None required under normal conditions for short term use. For prolonged skin exposure, gloves impervious to the material are recommended. See glove manufacturer for information on permeability.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

FLASH POINT:	N/A
APPEARANCE:	Colourless
ODOUR:	Slight Ammonia Odour
PHYSICAL STATE:	Liquid
pH:	7.5 - 9.5
BOILING POINT:	100 °C
FREEZING POINT:	-11 °C
VAPOR PRESSURE (mmHg):	N/A
VAPOR DENSITY (AIR = 1):	0.6 H_2O, >1
SPECIFIC GRAVITY (H2O = 1)	1.09 @ 25 °C
SOLUBILITY IN WATER:	100%
VISCOSITY:	1.4 mPa.s (centistokes) @ 25 °C

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under the recommended storage and handling conditions.

CONDITIONS TO AVOID (STABILITY): Prolonged direct sunlight. Temperatures over 30 °C

INCOMPATIBILITY (MATERIAL TO AVOID): Strong oxidizing agents such as chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen and permanganates. Contact can generate heat, fire, explosions and release toxic fumes. Incompatible with strong acids.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: If involved in a fire, oxides of carbon and nitrogen may be generated: exposure to heat may generate ammonia fumes.

HAZARDOUS POLYMERIZATION: Under normal conditions of storage and use, hazardous polymerization will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: There is no available data for the product itself, only for the ingredients.

Carcinogenic status: No components are listed as carcinogens by ACGIH or IARC.
Reproductive effects: None known.
Teratogenicity: None known.
Mutagenicity: None known.
Epidemiology: None known.
Sensitization to material: Not expected to be a skin or respiratory sensitizer.
Synergistic materials: None known
Irritancy: May be mildly irritating to eyes and skin.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:

Ecotoxicity: No data is available on the product itself. The ecological characteristics of this product have not been fully investigated. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.
Mobility: No information available.
Persistence: No information available.
Bioaccumulation potential: No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any byproducts should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: TRANSPORT INFORMATION

TDG: Not Regulated under Transportation of Dangerous Goods
DOT: Not Regulated

SECTION 15: REGULATORY INFORMATION

WHMIS Information: Class D, Division 2, Subdivision B - Toxic Material Causing Other Toxic Effects for Skin and Eye Irritation

Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Domestic Substance List (DSL) – All ingredients appear on the Domestic Substances List (DSL).

NPRI – CAS 7664-41-7 (NH_3) is found in National Pollutant Release Inventory (NPRI) Substance Lists (1A)

USA: Classification according to OSHA Hazard Communication Standard (29 CFR 1910.1200): This material is considered to be an eye and skin irritant under the OSHA Hazard Communication Standard.

TSCA: Urea is listed on the TSCA chemical substance inventory

SECTION 16: OTHER INFORMATION

PREPARATION INFORMATION:

DISCLAIMER: The information in this MSDS was obtained from sources, which we believe are reliable. 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.

Date of issue: August 14, 2015.
Date of previous issue: JSeptember 19, 2012
Version: 3