

Attention: Health, Safety & Environment Officer

Enclosed is a Material Safety Data Sheet (M)SDS for the product(s) either purchased or requested by your company.

This SDS describes important aspects of care, transport, storage and other basic technical considerations for the correct handling of Noxguard Diesel Exhaust Fluid (DEF).

The (M)SDS provides important health and safety information. We suggest that you review this document prior to handling the product. For the (M)SDS to serve as an effective means of hazard communication, it must be made available to all those who handle and are responsible for operations involving this product. We strongly urge you to distribute an (M)SDS to all employees, handlers and users of this product. If you resell the product, please provide a copy of this (M)SDS to your customers.

In addition to health and safety information, the (M)SDS contains information that will help you comply with chemical control laws and regulations.

Material Safety Data Sheets are provided to current customers. You can find more useful information for this and other aspects of Noxguard DEF on: www.transliquidtechnologies.com

We appreciate your business and look forward to serving you.



DIESEL EXHAUST FLUID

SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier	
Product identifier:	DIESEL EXHAUST FLUID, DEF Grade Urea Liquor
Synonym(s):	Carbamide, Carbonyldiamide. DEF-Grade Urea Liquor — 32.5%, SCR/SNCR-Grade Urea Liquor — 40%, SCR/SNCR-Grade Urea Liquor — 50%, DEF Grade Urea Solution, Urea Solution.
Recommended use:	Industrial.
Recommended restrictions:	None known.
Chemical Family:	Carboxylic acids (Urea).
Molecular Weight:	60.06 (Urea).
CAS No.:	57-13-6 (Urea).
1.2 Recommended use of the chemical and restrictions on use	
Identified Use(s):	Emissions control, Fertilizer.
Uses Advised Against:	None Known.
1.3 Supplier's details Company Identification Physical Address:	
Mailing Address:	Transliquid Technologies LLC 10120 Hirsch Rd Houston, TX 77016 330 Rayford Rd, #208 Spring, TX 77386.
Telephone:	281-377-5845.

E-mail: info@transliquidtechnologies.com

1.4 Emergency Phone No.

CHEMTREC (USA and Canada):	1-800-424-9300 (24hr).
CHEMTREC (Outside of USA and Canada):	+1-703-527-3887 (24hr).

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification

Of the substance or mixture: Not classified as dangerous for supply / use.

2.2 Specific Hazards

Physical hazards:	Not classified.
Health hazards:	Not classified.
Environmental hazards:	Hazardous to the aquatic environment, acute Category 3.
OSHA defined hazards:	Not classified.

2.3 Label elements

Hazard symbol:	None.
Signal word:	None.
Hazard statement:	Harmful to aquatic life.

2.4 Precautionary statement

Prevention:	Avoid release to the environment.
Response:	Wash hands after handling.
Storage:	Store away from incompatible materials.
Disposal:	Dispose of contents/container in accordance with local / regional / national / international regulations.

2.5 Hazard(s) not otherwise classified (HNOC):	None known.
2.6 Supplemental information:	None.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

Chemical name	CAS number	%
Urea	57-13-6	30 - 80
Water	7732-18-5	30 - 60
Biuret	108-19-0	< 0.7
Free Ammonia ¹	7664-41-7	< 0.5
Composition comments	<p>All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.</p> <p>This Safety Data Sheet is not a guarantee of product specification or NPK value(s), NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.</p>	



SECTION 4: FIRST AID MEASURES

4.1 Description of first aid and measures	
Inhalation:	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact:	Wash off with soap and water. Get medical attention if irritation develops and persists.
Eye contact:	Rinse with water. Get medical attention if irritation develops and persists.

¹ Ammonia is considered a **high health hazard** because it is corrosive to the skin, eyes, and lungs. Exposure to 300 parts per million (ppm) is immediately dangerous to life and health. Ammonia is also flammable at concentrations of approximately 15% to 28% by volume in air.

Ingestion:	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms / effects, acute and delayed:	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed:	Treat symptomatically.
General Information:	Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media	
Suitable extinguishing media:	Water fog. Foam. Dry chemical powder Carbon dioxide (CO2).
Unsuitable extinguishing media:	Do not use water jet as an extinguisher, as this will spread the fire.
5.2 Specific hazards arising from the chemical:	During fire, gases hazardous to health may be formed.
5.3 Equipment / Fire	
Special protective equipment and precautions for firefighters:	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Firefighting equipment / instructions:	Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk.
General fire hazards:	No unusual fire or explosion hazards noted.

SECTION 6: ACCIDENTAL RELEASE MEASURES

<p>6.1 Personal precautions, protective equipment and emergency procedures:</p>	<p>Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.</p>
<p>6.2 Methods and materials for containment and cleaning up</p>	
<p>Large Spill:</p>	<p>Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.</p>
<p>Small Spills:</p>	<p>Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.</p>
<p>In all cases:</p>	<p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Prevent product from entering drains.</p>
<p>6.3 Environmental precautions:</p>	<p>Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.</p>

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities:

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

SECTION 8: EXPOSURE CONTROL/ PERSONAL PROTECTION

8.1 Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)		
Components	Type	Value
Free Ammonia (CAS 7664-41-7)	PEL	35 mg/m ³
	TWA	50 ppm
US. ACGIH Threshold Limit Values		

Components	Type	Value
Free Ammonia (CAS 7664-41-7)	STEL	35 ppm
	TWA	25 ppm
US. NIOSH: Pocket Guide to Chemical Hazards		

Components	Type	Value
Free Ammonia (CAS 7664-41-7)	STEL	27 mg/m ³
		35 ppm
	TWA	18 mg/m ³
		25 ppm
US. Workplace Environmental Exposure Level (WEEL) Guides		

Components	Type	Value	Form
Urea (CAS 57-13-6)	TWA	10 mg/m ³	Total particulate.

Substance	CAS No.	LTEL (8hr TWA mg/m3)	LTEL (8 hr TWA mg/m3)	STEL (ppm)	STEL (mg/m3)	Note
Ammonia, anhydrous	7664-41-7	25	18	35	27	USA (NIOSH / OSHA)
		50	35	-	-	TLV(ACGIH)
Source	NIOSH= National Institute of Occupational Safety & Health OSHA= Occupational Safety and Health Administration TLV=Threshold Limit Value ACGIH= American Conference of Industrial Hygienists					

8.2 Biological limit values: No biological exposure limits noted for the ingredient(s).

8.3 Exposure guidelines: Follow standard monitoring procedures.

8.4 Appropriate engineering controls: Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and mists.

8.5 Individual protection measures, such as personal protective equipment

Eye / face protection: Wear approved safety glasses or goggles.

Skin protection:

Hand protection: Neoprene gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

Other:	Wear appropriate clothing to prevent repeated or prolonged skin contact.
Respiratory protection:	<p>If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Wear air supplied respiratory protection if exposure concentrations are unknown. In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment.</p> <p>In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134 and ANSI Z88.2.</p>
Thermal hazards:	Wear appropriate thermal protective clothing, when necessary.
8.6 General hygiene considerations:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Appearance:	Colorless liquid.
Physical state:	Liquid.
Form:	Liquid.
Color:	Not available.
9.2 Odor:	Slight ammonia.
9.3 Odor threshold:	Not available.

9.4 pH:	7 - 10 (depending on free Ammonia content).
9.5 Melting point / freezing point:	Not available.
9.6 Initial boiling point and boiling:	223 °F (106.11 °C) (50% urea solution) range.
9.7 Flash point:	Not available.
9.8 Evaporation rate:	Not available.
9.9 Flammability (solid, gas):	Not applicable.
9.10 Upper/lower flammability or explosive limits Flammability limit - lower (%):	Not available.
Flammability limit - upper (%):	Not available.
Explosive limit - lower (%):	Not available.
Explosive limit - upper (%):	Not available.
9.11 Vapor pressure:	Not available.
9.12 Vapor density:	Not available.
9.13 Relative density:	1.14 (50% urea solution). 1.18 (70% urea solution).
9.14 Solubility(ies):	
Solubility (water):	100%
9.15 Partition coefficient (n-octanol/water):	Not available.
Auto-ignition temperature:	Not available.
9.16 Decomposition temperature:	Not available.
9.17 Viscosity:	Not available.
9.18 Other information	
Explosive properties:	Not explosive.

Oxidizing properties:

Not oxidizing.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	This product may react with strong oxidizing agents.
Chemical stability:	Normally stable. May gradually give off ammonia.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	High temperatures. Contact with incompatible materials.
Incompatible materials:	Reacts violently with strong oxidants, nitrites, inorganic chlorides, chlorites and perchlorates.
Hazardous decomposition products:	Ammonia. Nitrogen oxides (NO _x). Biuret.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:	May cause discomfort if swallowed.
Oral:	350 mg/kg as Ammonium hydroxide.
Dermal ² :	Low acute toxicity. LD ₅₀ (rat) > 200 mg /kg.
Inhalation:	LD ₅₀ (rat) 5.1 mg/h, 1 Hour. Prolonged inhalation may be harmful.

11.2 Skin corrosion / irritation:

Prolonged skin contact may cause temporary irritation.

11.3 Serious eye damage / irritation:

Direct contact with eyes may cause temporary irritation.

² LD stands for "Lethal Dose". LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. The LD₅₀ is one way to measure the short-term poisoning potential (acute toxicity) of a material. —CCOHS.

11.4 Respiratory or skin sensitization:

Respiratory sensitization: Not a respiratory sensitizer.

Skin sensitization: This product is not expected to cause skin sensitization.

11.5 Other toxicity

Germ cell mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity: Not classifiable as to carcinogenicity to humans.

Reproductive toxicity: This product is not expected to cause reproductive or developmental effects.

STOT³- single exposure: None anticipated.

STOT- repeated exposure: None anticipated.

Aspiration hazard: None anticipated.

Skin sensitization Germ cell mutagenicity Carcinogenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

IARC Monographs. Overall Evaluation of Carcinogenicity: Not Listed.

NTP Report on Carcinogens: Not Listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated.

Chronic effects: Prolonged inhalation may be harmful.

³ Stands for Specific Target Organ Toxicity

SECTION 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity:

Harmful to aquatic life.

Components	Test	Species	Test Results
Free Ammonia (CAS 7664-41-7) Aquatic			
Fish⁴	LC ₅₀	Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	0.43 - 0.47 mg/l, 96 hours
Components	Test	Species	Test Results
Urea (CAS 57-13-6) Aquatic			
Fish	LC ₅₀	<i>Leuciscus idus</i>	> 6810 mg/l, 96 hours

12.2 Persistence and degradability

Bioaccumulative potential:

Partition coefficient n-octanol / water
(log K_{ow})

Urea (CAS 57-13-6) -2.11

12.3 Mobility in soil:

This product is water soluble and may disperse in soil.

12.4 Other adverse effects:

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

⁴ LC stands for "Lethal Concentration". LC values usually refer to the concentration of a chemical in air but in environmental studies it can also mean the concentration of a chemical in water. —CCOHS

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 General Information

Disposal instructions:	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local / regional / national / international regulations.
Local disposal regulations:	Dispose in accordance with all applicable regulations.
Hazardous waste code:	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products:	Dispose in accordance with applicable regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging:	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: TRANSPORT INFORMATION

DOT:	Not regulated as dangerous goods.
IATA:	Not regulated as dangerous goods.
IMDG:	Not regulated as dangerous goods.
Transport in bulk according to Annex 8 of MARPOL 73 / 78 and the IBC Code:	Not established.

SECTION 15: REGULATORY INFORMATION

15.1 US federal regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated.

CERCIA Hazardous Substance List (40 CFR 302.4). Free Ammonia (CAS 7664-41-7): LISTED.

15.2 Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories:	Immediate Hazard	No.
	Delayed Hazard	No.
	Fire Hazard	No.
	Pressure Hazard	No.
	Reactivity Hazard	No.

SARA 302 Extremely hazardous substance:

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Free Ammonia	7664-41-7	100	500		

SARA 311/312 Hazardous chemical: Yes.

SARA 313 (TRI reporting): Not regulated.

15.3 Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs): Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):	Free Ammonia (CAS 7664-41-7).
Safe Drinking Water Act (SDWA):	Not regulated.
15.5 US state regulations:	California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.
US. Massachusetts RTK - Substance List:	Free Ammonia (CAS 7664-41-7).
US. New Jersey Worker and Community Right-to-Know Act:	Free Ammonia (CAS 7664-41-7).
US. Pennsylvania Worker and Community Right-to-Know Law:	Free Ammonia (CAS 7664-41-7).
US. Rhode Island RTK:	Free Ammonia (CAS 7664-41-7).
Legislation specific for the substance or mixture:	Not listed.
15.5.1 OSHA	
Toxic and hazardous substance (29 CFR 1910.1900):	Not listed.
Requirements for preparation, adoption and submittal of implementation plans (40 CFR 51.100):	Not listed.
National emission standards for hazardous air pollutants (40 CFR 61.01):	Not listed.
15.5.2 Title III Consolidated list of lists	
CAA section 112(r) list of substances for accidental release prevention:	Ammonia (CAS No: 7664-41-7) Listed (>=20%) Product as supplied: <1% Ammonia.
15.5.3 OSPAR List of chemicals for priority action:	
	Not listed.

15.5.4 State rights to know list:	Ammonia (CAS No: 7664-41-7): California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
15.5.5 TSCA:	All ingredients are listed.
15.5.6 Proposition 65 (California):	Not listed.
15.5.7 Ozone Depleting Substances:	Not listed.
15.5.8 Title III Consolidated list of lists	
CAA section 112(r) list of substances for accidental release prevention:	Ammonia (CAS No: 7664-41-7) Listed (>=20%) Product as supplied: <1% Ammonia.
Canada:	Listed on Domestic Substances List (DSL).

SECTION 16: OTHER INFORMATION

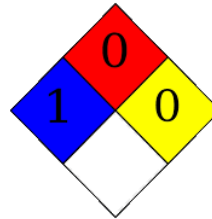
16.1 About this information	
Issue date:	31-Mar-17.
Revision date:	29-Sep-21.
Version #:	2.
HMIS® ratings:	Health: 1. Physical hazard: 0. Flammability: 0.

16.2 Legends

LTEL :	Long Term Exposure Limit
STEL :	Short Term Exposure Limit
STOT :	Specific Target Organ Toxicity
OSHA :	Occupational Safety and Health Administration
TSCA :	Toxic Substances Control Act
NFPA :	National Fire Protection Association

HMIS :	Hazardous Material Information System
OECD :	Organization for Economic Cooperation and Development

NFPA ratings



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