

Material Safety Data Sheet

Diesel Exhaust Fluid / AdBlue®

1. Product and company identification

Product name	: Diesel Exhaust Fluid / AdBlue®
Supplier/Manufacturer	: Kruse North America, Inc. 3511 Silverside Rd.; Concord Plaza, Suite 203 Wilmington, Delaware, 19810 USA Tel +1 302 477 9898 Fax +1 001 302 477 9494
Material uses	: Other non-specified industry: Cleaning of waste gases
Validation date	: 25.08.2009.
Responsible name	: Chemical Check GmbH
e-mail address of person responsible for this SDS	: info@chemical-check.de; k.schnurbusch@chemical-check.de
<u>In case of emergency</u>	: For Chemical Emergency Spill Leak Fire Exposure or Accident Call CHEMTREC Day or Night DOMESTIC NORTH AMERICA 800-424-9300 INTERNATIONAL, CALL 703-527-3887 (collect calls accepted)
Product type	: Liquid.

2. Hazards identification

Emergency overview

Color : Colorless. Yellowish.

Physical state : Liquid.

Odor : Characteristic.

Hazard statements : MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Slightly irritating to the eyes, skin and respiratory system. Avoid breathing vapor or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Contains material that may cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Slightly irritating to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : No known significant effects or critical hazards.

Skin : Slightly irritating to the skin.

Eyes : Slightly irritating to the eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Target organs : Contains material which may cause damage to the following organs: skin, eyes.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion : No specific data.

2. Hazards identification

- Skin** : Adverse symptoms may include the following:
irritation
redness
- Eyes** : Adverse symptoms may include the following:
irritation
watering
redness
- Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Urea	57-13-6	15-40

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire-fighting measures

- Flammability of the product** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
Ammonia.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store between the following temperatures: -5 to 30°C (23 to 86°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Ingredient	Exposure limits
Urea	AIHA WEEL (United States, 1/2009). TWA: 10 mg/m ³ 8 hour(s).

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**

8. Exposure controls/personal protection

- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. >8 hours (breakthrough time): natural rubber (latex)
- Eyes** : 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.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Personal protective equipment (Pictograms)** :



9. Physical and chemical properties

- Physical state** : Liquid.
- Flash point** : Closed cup: Not applicable.
- Color** : Colorless. Yellowish.
- Odor** : Characteristic.
- pH** : 10 [Conc. (% w/w): 10%]
- Boiling/condensation point** : 103°C (217,4°F)
- Melting/freezing point** : -11°C (12,2°F)
- Density** : 1,087 to 1,093 g/cm³ [20°C (68°F)]
- Viscosity** : Dynamic: 0,14 mPa·s (0,14 cP)

10. Stability and reactivity

- Chemical stability** : The product is stable.
- Conditions to avoid** : Store and use away from heat, sparks, open flame or any other ignition source.
- Materials to avoid** : Reactive or incompatible with the following materials: oxidizing materials. Highly reactive with nitrites.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Potential acute health effects

- Inhalation** : Slightly irritating to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Ingestion** : No known significant effects or critical hazards.
- Eyes** : Slightly irritating to the eyes.
- Skin** : Slightly irritating to the skin.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
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11. Toxicological information

Urea	LD50	Rat	>5 g/kg	-
	Intraperitoneal			
	LD50	Rat	567 mg/kg	-
	Intratracheal			
	LD50 Intravenous	Rat	5300 mg/kg	-
	LD50 Oral	Rat	8471 mg/kg	-
	LD50	Rat	8200 mg/kg	-
	Subcutaneous			
TDL _o Oral	Rat	750 mg/kg	-	

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Urea	-	Acute EC50 6573,1 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	-	Acute EC50 3910000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - Neonate - <24 hours	48 hours
	-	Acute LC50 >1000 mg/L Marine water	Crustaceans - Amphipod - Chaetogammarus marinus - Young - 5 mm	48 hours
	-	Acute LC50 90100 ug/L Fresh water	Fish - Rohu - Labeo rohita - FRY - 0,8 g	96 hours
	-	Acute LC50 83700 ug/L Fresh water	Fish - Rohu - Labeo rohita - FRY - 0,8 g	96 hours
	-	Acute LC50 72600 ug/L Fresh water	Fish - Rohu - Labeo rohita - Egg	96 hours
	-	Acute LC50 66800 ug/L Fresh water	Fish - Rohu - Labeo rohita - Egg	96 hours
	-	Acute LC50 65800 ug/L Fresh water	Fish - Rohu - Labeo rohita - FRY - 0,8 g	96 hours
	-	Acute LC50 64700 ug/L Fresh water	Fish - Rohu - Labeo rohita - Egg	96 hours
	-	Acute LC50 23400 ug/L Fresh water	Fish - Rohu - Labeo rohita - Egg	96 hours
	-	Acute LC50 22500 ug/L Fresh water	Fish - Mozambique tilapia - Tilapia mossambica	96 hours
	-	Acute LC50 16700 ug/L Fresh water	Fish - Rohu - Labeo rohita - Egg	96 hours
	-	Acute LC50 5000 ug/L Fresh water	Fish - Giant gourami - Colisa fasciata - Fingerling	96 hours

Persistence/degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Urea	OECD 302B	>96 % - Readily	-	-
	302B Inherent Biodegradability: Zahn-Wellens/EMPA Test	16 days		

13. Disposal considerations

Waste disposal : 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 by-products 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.

13. Disposal considerations

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

[DOT/IMDG/IATA](#) : Not regulated.

15. Regulatory information

[HCS Classification](#) : Target organ effects

[U.S. Federal regulations](#) : **United States inventory (TSCA 8b)**: All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Urea

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Urea: Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

[Clean Air Act Section 112\(b\) Hazardous Air Pollutants \(HAPs\)](#) : Not listed

[Clean Air Act Section 602 Class I Substances](#) : Not listed

[Clean Air Act Section 602 Class II Substances](#) : Not listed

[DEA List I Chemicals \(Precursor Chemicals\)](#) : Not listed

[DEA List II Chemicals \(Essential Chemicals\)](#) : Not listed

[State regulations](#) :

- Connecticut Carcinogen Reporting**: None of the components are listed.
- Connecticut Hazardous Material Survey**: None of the components are listed.
- Florida substances**: None of the components are listed.
- Illinois Chemical Safety Act**: None of the components are listed.
- Illinois Toxic Substances Disclosure to Employee Act**: None of the components are listed.
- Louisiana Reporting**: None of the components are listed.
- Louisiana Spill**: None of the components are listed.
- Massachusetts Spill**: None of the components are listed.
- Massachusetts Substances**: None of the components are listed.
- Michigan Critical Material**: None of the components are listed.
- Minnesota Hazardous Substances**: None of the components are listed.
- New Jersey Hazardous Substances**: None of the components are listed.
- New Jersey Spill**: None of the components are listed.
- New Jersey Toxic Catastrophe Prevention Act**: None of the components are listed.
- New York Acutely Hazardous Substances**: None of the components are listed.
- New York Toxic Chemical Release Reporting**: None of the components are listed.
- Pennsylvania RTK Hazardous Substances**: None of the components are listed.
- Rhode Island Hazardous Substances**: None of the components are listed.

[United States inventory \(TSCA 8b\)](#) : All components are listed or exempted.

[International regulations](#)

15. Regulatory information

- International lists** : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
- Chemical Weapons Convention List Schedule I Chemicals** : Not listed
- Chemical Weapons Convention List Schedule II Chemicals** : Not listed
- Chemical Weapons Convention List Schedule III Chemicals** : Not listed

16. Other information

- Label requirements** : MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

- Hazardous Material Information System (U.S.A.)** :

Health	*	1
Flammability		0
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

- National Fire Protection Association (U.S.A.)** :



- Date of issue** : 25.08.2009.
Date of previous issue : No previous validation
Version : 1

☑ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.