Enviro Diesel (BW) Pty Ltd.

innovation and pioneering

Material Safety Data Bulletin Enviro-diesel EF No. 003

* * * Section 1 - Product and Company Identification * * *

Product Name: Enviro-diesel

Intended Use: Diesel fuel

Synonyms: Renewable diesel blend, renewable diesel blend with highway diesel

Manufacturer Information:

Enviro Diesel (BW) Pty Ltd.
Plot 346
Gaborone, Botswana

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* * * Section 2 - Hazards Identification * * *

Emergency Overview

WARNING!

Flammable Liquid
Vapor Skin Irritant
Aspiration Hazard

NFPA

Appearance: Straw coloured

Physical Form: Liquid

Odour: Diesel fuel

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Mild to moderate skin irritant. Contact may cause redness, itching, a burning sensation, and skin damage. Prolonged or repeated contact may cause drying and cracking of the skin, dermatitis (inflammation), burns, and severe skin damage. No harmful effects from skin absorption observed.

Inhalation (Breathing): Information is not available on acute toxicity.

Ingestion (Swallowing): A small degree of toxicity by ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the respiratory tract, irritation of the digestive tract, nausea, diarrhoea, evidence of

nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
68476-34-6	Fuels, diesel #1, ASTM D975 Grade no.1, ASTM D975 D1.	75 - 95
928771-01-1	Triglyceride, unsaturated trans fatty acids	5-25
67784-80-9	Sunflower/Soybean/Cotton Seed oil,	5-25
91-20-3	Naphthalene	<0.01

This product is a blend of modified hydrogenated refined vegetable oil and petroleum-derived diesel fuel where the percentage of renewable diesel blended within the final product indicated as R-% - for example, R-5 is 5% renewable diesel and 95% petroleum diesel. Renewable diesel consists of plant-derived fatty acid. Petroleum Diesel Fuel is a complex mixture of hydrocarbons with carbon numbers in the range C9 to C23 produced from the distillation of crude petroleum oil.

BECAUSE DIESEL FUEL IS THE PREDOMINATING PERCENTAGE IN ENVIRO-DIESEL, THIS SDS FOR RENEWABLE DIESEL FUEL REFLECTS THE CHARACTERISTICS OF PETROLEUM DERIVED DIESEL FUEL GRADE 1D (#1).

* * * Section 4 - First Aid Measures * * *

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, clean the affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from the source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If the victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe carefully for adequacy of breathing. Seek medical attention.

* * * Section 5 - Fire Fighting Measures * * *

*** SEE SECTION 9 FOR FLAMMABILITY PROPERTIES

General Fire Hazards

Vapours may ignite when exposed to heat, spark, open flame or another source of ignition. When mixed with air and exposed to an ignition source, flammable vapours can burn in the open or explode in confined spaces. Because it is heavier than air,

	gases may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.
Hazardous Combustion Products	Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).
Hazardous Combustion Products	**SMALL FIRES:** Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, firefighting foam, and other gaseous agents. **LARGE FIRES:** Water spray, fog or firefighting foam. Water may be ineffective for fighting the fire but may be used to cool fire-exposed containers
Unsuitable Extinguishing Media	None
Fire Fighting Equipment/Instructions	Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self- contained breathing apparatus with full face piece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires, the use of unmanned hose holders or monitor nozzles may be advantageous to minimise personnel exposure further. Major fires may require withdrawal, allowing the tank to burn. A storage tank that's burning requires specially trained staff and equipment to extinguish the fire, often including the need for properly applied firefighting foam.

* * * Section 6 - Accidental Release Measures * * *

Personal Precautions:	Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. Use of explosion-proof electrical equipment essential. Stay upwind and away from spill/release. Notify persons and shipping downwind of the spill/release, isolate immediate hazard area and keep unauthorised personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures
Environmental Precautions:	Stop spill/release if possible safely. Prevent spilt material from entering sewers; storm drains, other unauthorised drainage systems,

and natural waterways. Use foam on spills to minimise vapours. Use water sparingly to decrease environmental contamination and reduce disposal requirements. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Centre.

Methods for Containment and Clean-Up: Notify relevant authorities by all applicable regulations. Immediately clean up of any spill. Dike far ahead of spill for later recovery or disposal. Absorb spill with an inert material such as sand or vermiculite, and place in suitable container for elimination. When dropped on water, remove with appropriate methods (e.g. skimming, booms or absorbents).

* * * Section 7 - Handling and Storage * * *

Precautions for safe handling: Wear protective gloves. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulphur and nitrogen, benzene and other hydrocarbons) and dangerously low oxygen levels. Diesel engine exhaust contained hazardous combustion products and classified as a probable cancer hazard in humans. Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and API RP 2003 for specific bonding/grounding requirements. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146.

Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

"Empty" containers retain residue and may be dangerous. Do not pressurise, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums must be properly bunged and promptly shipped to the supplier or a drum reconditioned. All containers must be disposed of in an environmentally safe manner by governmental regulations. Before working on or in tanks, which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references about cleaning, repairing welding, or other contemplated operations.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cold, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store

only in approved containers. Post area "No Smoking or Open Flame." Keep away from any non-compatible materials (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component	US-ACGIH	OSHA	Other
Diesel Fuel No.12	Skin TWA: 100 mg/m^3	---	---
Naphthalene	STEL: 15 ppm Skin TWA: 10 ppm	TWA: 10 ppm TWA: 50 mg/m^3	TWA: 0.2 mg/m^3 (as total of 17 PNA's measured by NIOSH Method 5506)

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary

Skin/Hand Protection: The use of gloves impervious to the particular material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure, limit use NIOSH-certified air-purifying respirator equipped with organic vapour cartridges/canisters.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should follow whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

Suggestions provided in this section for exposure control and specific types of protective equipment and based on the available information. Users should consult with the particular manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial

hygiene, safety, or engineering professionals.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Liquid.	
Colour	:	Light Amber
Odour	:	Hydrocarbon
Solubility	:	Negligible
Boiling point	:	> 180 °C
Flash Point	:	> 45 °C (ASTM D-93)
Upper Explosion Limit (UEL)	:	7,5 %(V)
Lower Explosion Limit (LEL)	:	0.6 %(V)
Vapour pressure	:	0.5 hPa
Relative vapour density	:	2
Density	:	0.800 g/cm3 @ 20 °C
Pour point	:	< -37 °C
Viscosity, kinematic	:	3.5 mm2/s @ 40 °C (ASTM D-445)
		< 1 mm2/s @ 100 °C (ASTM D-445)

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Avoid high temperatures and all sources of ignition. Prevent vapour accumulation.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizers.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

* * * Section 11 - Toxicological Information * * *

Diesel Fuel No. 1

Carcinogenicity: Petroleum middle distillates have been shown to cause skin tumours in mice following repeated and prolonged skin contact. Follow-up studies have shown that these cysts form through a non-genotoxic mechanism associated with many cell damage and repair and that they are not likely to cause tumours in the absence of prolonged skin irritation. Animal studies have also shown that washing the skin with soap and water can reduce the tumour response. Middle distillates with low polynuclear aromatic hydrocarbon content are not carcinogen by IARC.

Target Organs: Limited evidence of renal impairment has been noted from a few earlier case reports involving excessive exposure to diesel fuel No. 2. However, renal toxicity has not been demonstrated to be a consistent finding of diesel fuel exposure.

Naphthalene

Carcinogenicity: Naphthalene evaluation in two-year inhalation studies in both rats and mice. The US National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some proof of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene is a carcinogen by IARC and NTP.

Acute Toxicity:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Diesel Fuel No.1	> 5 g/kg	> 2 g/kg	5 mg/L
Renewable diesel	>14.4 g/kg (Rats) Similar material	No data	No data

* * * Section 12 - Ecological Information * * *

Ecotoxicity: Experimental studies show that acute aquatic toxicity values are in the range 1-100 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. Should be regarded as toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Mobility: Releases to water will result in films of hydrocarbons floating and spreading on the surface. For the lighter components, volatilization is a major loss process and reduces the hazard to aquatic organisms. In the air, the hydrocarbon vapours react readily with hydroxyl radicals with half-lives of less than one day. Photooxidation on the water surface is also a significant loss process, particularly for polycyclic aromatic compounds. In water, the majority of components will be absorbed by sediment. Adsorption is the most efficient physical process on release to soil. Adsorbed hydrocarbons will slowly degrade in both water and soil.

Persistence and degradability: The renewable hydrocarbons in materials are regarded as inherently biodegradable since microorganisms can degrade their hydrocarbon components.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material are between 3.9 and 6 and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

* * * Section 13 - Disposal Considerations * * *

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 14 - Transportation Information * * *

DOT Information

Shipping Name: Diesel Fuel
UN #: 1202 **Hazard Class:** 3 **Packing Group:** III

Placard:

* * * Section 15 - Regulatory Information * * *

Component Analysis

This material contains one or more of the following chemicals that should be under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and CERCLA (40 CFR 302.4) reported.

Naphthalene (91-20-3)

CERCLA: 100 lb. final RQ; 45.4 kg final RQ

SARA Section 311/312 – Hazard Classes

Acute	Chronic	Fire	Sudden Release of	Reactiv
X	X	X	--	--

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product may contain listed chemicals below the de minimus levels which therefore are not subject to the provider notification requirements of Section 313 of the Emergency Planning and Community Right- To-Know Act (EPCRA) of 1986 and 40 CFR 372. If you may be required to report releases of chemicals listed in 40 CFR 372.28, you may contact Hess Corporate Safety if you need additional information regarding this product.

State Regulations

Component Analysis - State

The following elements appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Fuels, diesel, no.1	68476-34-6	No	No	No	Yes	No	No
Naphthalene	91-20-3	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) provide under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to cause cancer.

Component Analysis - WHMIS IDL

No ingredients listed in the WHMIS IDL.

Analysis – Inventory

Component	CAS #	TSCA	CAN	EEC
Fuels, diesel, no.1	68476-34-6	Yes	DSL	EINECS
Unsaturated trans fatty acids	928771-01-1	Yes	DSL	EINECS
Naphthalene	91-20-3	Yes	DSL	EINECS

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration. NJTSR = New Jersey Trade Secret Registry.

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond d our control, we make no warranties, expressed or implied, except those that may contain in our written contract of sale or acknowledgement.

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