



ECO LIGHT FUEL OIL (ELFO)



PENTAS FLORA SDN BHD (775059-T)
(A member of the EXSIM Group of Companies)

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A healthy ecology is a basis for a healthy economy



Eco Light Fuel Oil (ELFO)

PRODUCT COA (SPECIFICATION)

PROPERTY	UNIT	LIMIT	METHOD
Heater Required		Yes	
Density @ 15°C	kg/L	max 0.93	ASTM D 1298-99
Kinematic Viscosity @ 50°C	mm ² /s	max 60	ASTM D 445-06
Flash point, PMCC	°C	min 60	ASTM D 93-08
Moisture Content	% w/w	<0.3	ASTM D 4377-00
Total Acid Number	mg KOH/g	<1	ASTM D 664-07
Sediment by Centrifuge	% v/v	<0.5	ASTM D 1796-04
Ash Content	% w/w	<0.8	ASTM D 482-07
Calorific Value	Mj/kg	max 45	ASTM D 240-02
Micro Carbon Residue	% w/w	max 5	ASTM D 4530-07
pH	-	6 - 7	US EPA 9045D
Poly-aromatic hydrocarbons			
Benzo(a)pyrene	mg/kg	<5	US EPA 8270D
Dibenz(ah)anthracene	mg/kg	<5	US EPA 8270D
Benz(a)anthracene	mg/kg	<20	US EPA 8270D
Benzo(b)fluoranthene	mg/kg	<20	US EPA 8270D
Benzo(k)fluoranthene	mg/kg	<20	US EPA 8270D
Chrysene	mg/kg	<20	US EPA 8270D
Indeno(123-cd)pyrene	mg/kg	<20	US EPA 8270D
Elements			
Arsenic, As	mg/kg	<2	ASTM D 4951-06
Cadmium, Cd	mg/kg	<2	ASTM D 4951-06
Chromium, Cr	mg/kg	<5	ASTM D 4951-06
Lead, Pb	mg/kg	<5	ASTM D 4951-06
Total Halogen as Cl	mg/kg	<600	ASTM D 4951-06
Sulfur	% w/w	<0.7	ASTM D 4951-06

Revised date: June 2016

SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Pentas Flora Eco Light Fuel Oil

Product Use: Industrial Grade Fuel Oil for Burners and Boilers

Synonyms/Trade Name: Recycled Fuel Oil, Reconstituted Fuel Oil

Company Identification: Pentas Flora Sdn Bhd

Lot 183, Jalan 5, Kompleks Perabot Olak Lempit, 42700 Banting, Selangor.

www.pentastflora.com

Emergency Responses Telephone No: 603-3149 1288

2. HAZARD IDENTIFICATION

CLASSIFICATIONS
 Flammable Liquid - Category 4
 Carcinogenicity - Category 2
 Toxic to Reproduction - Category 2
 Specific Target Organ Toxicity (Repeated Exposure) - Category 2
 Acute Toxicity - Inhalation - Category 4
 Acute Aquatic Toxicity - Category 3

PICTOGRAMS



SIGNAL WORD

DANGER

HAZARDS STATEMENT

Combustible Liquid.
 Suspect to cause cancer from prolonged and repeated skin contact.
 May damage fertility or the unborn child.
 May cause damage to liver, kidney and nervous system through prolonged or repeated exposure.
 Harmful if inhaled.

NFPA Hazard ID: Health: 0 Flammability: 2 Reactivity: 0

NFPA Rating:



NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	SYNONYM	CAS NO.	AMOUNT
Lubricating Oils, used	Used Oil	70514-12-4	80-100%
Hydrocarbon solvents. May include diesel, gasoline, jet fuels etc	N/A	N/A	0-20%

4. FIRST AID MEASURES

Eye

Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

Skin

Take off all contaminated clothing immediately. Wash off immediately with soap and plenty of water. Wash contaminated clothing before re-use. If skin irritation persists, call a physician.

Ingestion

Do NOT induce vomiting. Do not give liquids. Seek medical attention immediately. If vomiting does occur naturally, keep head below the hips to reduce the risks of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

Inhalation

Move to fresh air. Give oxygen. If breathing is irregular or stopped, administer artificial respiration. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

Extinguishing Media

Carbon Dioxide (CO₂), Water Spray, Dry chemical, Foam. Keep containers and surroundings cool with water.

Specific Hazards During Fire Fighting

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 further minimise personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

Protection of Fire Fighters

Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, smoke, incomplete combustion products and gases including sulfur oxides and assorted oxides of carbon.

Flammability Properties

Flash Point [Method]: 48°C min (118°F) [ASTM D-93]

Flammable Limits (Approximate volume % in air): Not applicable

Autoignition Temperature: >250°C (482°F)

6. ACCIDENTAL RELEASE MEASURES

Notification Procedures

In the event of a spill or accidental release, notify authorities in accordance with all applicable regulations.

Protective Measures

Avoid contact with spilled material. Eliminate all sources of ignition in vicinity of spilled material. Keep unnecessary personnel away from spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

Spill Management

Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting

Report spills to local authorities as appropriate or required.

7. HANDLING AND STORAGE

Precautionary Measures

Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. This product should be only stored and handled areas with intrinsically safe electrical classification.

General Handling Information

Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard

Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimise this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings

Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurise, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum re-conditioner or disposed of properly.

Storage

Store in a cool dry location. Keep away from incompatible materials (Section 10). Do not store in open or unlabelled containers.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product.

LIST	COMPONENTS	CAS NO.	TYPE	VALUE
OSHA	Polycyclic Aromatic Compounds (or coal tar pitch volatiles - benzene soluble)	-	PEL	0.2 mg/m ³
	Used Lubricating Oil	70514-12-4	PEL	5 mg/m ³ (as mineral oil mist)
ACGIH	Used Lubricating Oil	70514-12-4	TWA	0.2 mg/m ³ (as mineral oil) Sum of 15 NTP-listed polynuclear aromatic hydrocarbons 0.005 mg/m ³
	Polycyclic Aromatic Compounds (or coal tar pitch volatiles - benzene soluble)	-	TWA	0.2 mg/m ³

GENERAL CONSIDERATIONS

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: If contact is likely, safety glasses with side shields are recommended.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include:- 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required. If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

Attention: The data below are typical values and do not constitute a specification.

General Information

Colour	Dark brown/black
Physical State	Liquid
Odour	Characteristic
pH Value	Data not available
Vapour Pressure	<0.1 kPa at 40°C
Initial Boiling Point	circa.150°C
Final Boiling Point	Cannot be determined (>600°C)
Solubility in Water	Negligible
Density	maximum 0.93 kg/L at 15°C
Flash Point	60°C minimum
Flammable Limits - Upper	5% (v/v) maximum
Flammable Limits - Lower	0.5% (v/v) minimum
Auto-Ignition Temperature	>250°C
Kinematic Viscosity	maximum 60mm ² /s at 50°C

10. STABILITY AND REACTIVITY

Chemical Stability

This material is considered stable and non-reactive under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials

May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products

Carbon Monoxide, Carbon Dioxide and noncombusted hydrocarbons (smoke).

Hazardous Polymerization

Hazardous polymerization will not occur under normal temperatures and pressures.

11. TOXICOLOGICAL INFORMATION

Inhalation

Because of its low vapor pressure, this product presents minimal inhalation hazard at ambient temperature. Upon heating, fumes may be evolved. Inhalation of fumes or mist may result in respiratory tract irritation and central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure and death. The burning of any hydrocarbon as fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation and death.

Skin Irritation

May cause skin irritation with prolonged or repeated contact. Practically non-toxic absorbed following acute (single) exposure. Exposure may cause a phototoxicity reaction: liquid or mist on the skin may produce a painful sunburn reaction when exposed to sunlight. Produce may be hot which could cause 1st, 2nd, or 3rd degree thermal burn.

Ingestion

This material has low order of acute toxicity. If large quantities are ingested, nausea, vomiting and diarrhea may result. Ingestion may also cause effects similar to inhalation of the product. Could present an aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death.

Further Information

There may be Polyaromatic Hydrocarbons (PAHs) present in this product, some of which are animal carcinogens.

Acute Toxicity - Oral: LD50 rat > 5000 mg/kg

Acute Toxicity - Dermal: LD50 rabbit > 2000 mg/kg

Acute Toxicity - Inhalation: Data not available

Eye Irritation: Slightly irritating

Skin Irritation: Slightly irritating

Respiratory Irritation: Expected to be slightly irritating

Skin Sensitisation: Not a skin sensitiser

Carcinogenicity: Dermal application to mice causes skin tumours.

Mutagenicity: In-vitro mutagenicity studies show that mutagenic activity is related to 4-6 ring polycyclic aromatic control.

Reproductive Toxicity: Causes slight fetotoxicity in rats doses which are maternally toxic.

12. ECOLOGICAL INFORMATION

Basis for Assessment

Fuels are typically made from blending several refinery streams. Toxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives. Information given is based on knowledge of available data on the hydrocarbon blends and on knowledge of the constituents.

Mobility

Float on water. Contain volatile components. Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. If it enters soil, it will adsorb particles and will not be mobile. Large volumes may penetrate soil and could contaminate groundwater.

Persistence/ Degradability

Major components are inherently biodegradable. Persists under anaerobic conditions. The volatile components oxidize rapidly by photochemical reactions in air.

Bioaccumulation

Contain components which may have the potential to bio accumulate. May caused fish and shellfish tainting.

Eco Toxicity

Poorly soluble mixture. Product is classified as harmful to aquatic organisms, LL/EL50 10-100 mg/l. (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Films formed on water may affect oxygen transfer and damage organisms.

13. DISPOSAL CONSIDERATION

Waste Disposal

Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor to deal satisfactorily with type of product should be established beforehand. Do not dispose into the environment, in drains or in water courses.

Product Disposal

Dispose in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed in a safe manner (see Disposal instruction).

Container Disposal

Recycle or dispose in accordance with the legislation on force with a recognised collector or contractor.

14. TRANSPORT INFORMATION

CFR

Proper shipping name: Not regulated if shipped below 60°C (140°F)
Elevated temperature liquid, flammable (if shipped above 60°C (140°F))
UN-No : Not regulated if shipped below 60°C (140°F)
3256 if shipped above 60°C (140°F)
Class : 9
Packing Group : III
Hazard Inducer : Recycled Fuel Oil

TGD

Proper shipping name: Not regulated if shipped below 60°C (140°F)
Elevated temperature liquid, flammable (if shipped above 60°C (140°F))
UN-No : Not regulated if shipped below 60°C (140°F)
3256 if shipped above 60°C (140°F)
Class : 9
Packing Group : III
Hazard Inducer : Recycled Fuel Oil

IATA

UN-No : Not regulated if shipped below 60°C (140°F)
3256 if shipped above 60°C (140°F)
Class : Not regulated if shipped below 60°C (140°F)
Not permitted for transport at 60°C (140°F) or higher temperature

IATA

UN-No : Not regulated if shipped below 60°C (140°F)
3256 if shipped above 60°C (140°F)
Class : Not regulated if shipped below 60°C (140°F)
Not permitted for transport at 60°C (140°F) or higher temperature

IATA Passenger Transport

UN-No : Not regulated if shipped below 60°C (140°F)
3256 if shipped above 60°C (140°F)
Class : Not regulated if shipped below 60°C (140°F)
Not permitted for transport at 60°C (140°F) or higher temperature

IMDG-Code

UN-No : Not regulated if shipped below 60°C (140°F)
3256 if shipped above 60°C (140°F)
Description of the goods: Elevated temperature liquid, n.o.s.
(Recycled Fuel Oil)
Class : Not regulated if shipped below 60°C (140°F)
Not permitted for transport at 60°C (140°F) or higher temperature.
9
Packing Group : III
IMDG-Labels : 9
EmS Number : F-A S-P
Marine Pollutant : No

15. REGULATORY INFORMATION

EC Symbol	T
EC Risk Phrase	R45 May cause cancer. R52/53 Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment. R66 Repeated exposure may cause skin dryness and cracking.
EC Safety Phrase	S45 In case of accident on if you feel unwell seek medical advice immediately. S53 Avoid exposure – obtain special instruction before use. S61 Avoid release to the environment. Refer to special instructions/ safety data sheet.

AICS (Australia)

All components listed.

National Legislation

National Code of Practice for the Preparation of Material Safety Data Sheets [OHSC:2011].
List of Designated Hazardous Substances [NOHSC:10005].
Approved Criteria for Classifying Hazardous Substances [NOHSC:1008].
Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003].
Australian Dangerous Goods Code.

16. OTHER INFORMATION

REVISION STATEMENT: This is a 1st Revision SDS
Revision Date: March 21, 2016

The information and recommendations contained herein are to the best of Pentas Flora's knowledge and belief, accurate and reliable as of the date issued. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users.

...END OF SDS...