SAFETY DATA SHEET

AUTOMOTIVE DIESEL OIL (ADO)

SECTION 1: IDENTIFICATION

Product Name Automotive Diesel Oil

Synonyms Diesel Fuel
Marine Gas Oil
Marine Distillate Fuel

Product Type Petroleum distillates / Hydrocarbon

Recommended use Fuel for diesel powered engines

Manufacturer Puma Energy PNG Refining Limited
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SECTION 2: HAZARDS IDENTIFICATION

Classification	Symbol	Signal Word	Hazard Statement
Acute Toxicity Oral Category 1		Danger	H300: Maybe fatal if swallowed and enter airways
Acute Toxicity Inhalation Category 4		Warning	H332- Harmful if inhaled
Aspiration Hazard		Danger	H304- May be fatal if swallowed and enters airways
Skin irritation Category 2		Warning	H315- Causes skin irritation

Classification	Symbol	Signal Word	Hazard Statement
Carcinogenicity Category 2		Warning	H351- Suspected of causing cancer
TOST Category 2		Warning	H373- May cause damage to kidney through prolonged or repeated exposure
Hazardous to the aquatic environment Category Chronic 3		-	H-412 Harmful to aquatic life with long lasting effects

Precautionary statements:

PREVENTION

P202	Don't handle until all safety precautions have been read and understood.
P261	Avoid breathing fumes and vapors
P264	Wash exposed parts thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves and clothing, and eye protection.

RESPONSE

P301+ P310	If swallowed, immediately call poison center or a doctor.
P304+ P340	If inhaled, remove person to fresh air and keep comfortable for breathing.
P312	Call poison center or doctor if you feel unwell.
P314	Get medical advice/ attention if you feel unwell.
P332+P313	If skin irritation occurs, get medical attention/ advice.
P362+P364	Take off contaminated clothing and wash it before reuse

STORAGE

P405	Store locked up

DISPOSAL

P-501	Dispose of contents and container in accordance with applicable local and international regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Composition	% Weight	CAS Number
Diesel plus additives and less than 500 ppm sulphur	90- 100	68334-30-5

The product may contain other components. These do not possess significant health and safety hazards as long as normal precautions in handling petroleum products are observed and good standards of industrial and personal hygiene are practiced.

SECTION 4: FIRST AID MEASURES

Eye Contact

Immediately flush eyes with copious quantities of water for at least 20 minutes or until irritation subsides. If irritation persists, get prompt medical attention.

Skin Contact

Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before reuse. When using high pressure equipment, product can be injected in the skin. If high pressure injuries occur, the casualty should be sent to the hospital. Do not wait for symptoms to develop.

Inhalation

If inhaled and breathing difficulties develop, move victim away from source of exposure and into fresh air. Seek immediate medical attention.

Ingestion

ASPIRATION HAZARD. DO NOT INDUCE VOMITING or give anything by mouth because this material can enter the lungs and can cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side of the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

The area should be clear of all non-emergency personnel.

Extinguishing Media

Dry chemical, Carbon Dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon Dioxide can displace Oxygen. Use caution when applying Carbon Dioxide in confined spaces.

Unsuitable Extinguishing Media

Do not use water jet.

Hazards

Hazardous decomposition products may include: carbon dioxide, carbon monoxide, and other hazardous substances.

Protective Equipment

Full protective clothing must be worn; this should include breathing apparatus when approaching a fire in a confined space.

Other information

Keep adjacent drums and tanks cool by spraying with water from a safe location. If possible, remove them from the danger zone. If adequate cooling cannot be achieved, the area needs to be evacuated, and further fire fighting and cooling attempts should be carried out from safe location.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions

Remove all possible sources of ignition in the surrounding area. Evacuate all personnel. DO not breathe fumes/vapor. Shut off ignition sources and do not operate electrical equipment. Avoid contact with skin, eyes, and clothing. Ventilate contaminated area thoroughly. Wear chemical resistant knee length safety boots and PVC jackets and trousers. Wear safety glasses or full face shield if splashes are likely to occur.

Environmental Precautions

Prevent from spreading or entering into drains, surface waters and soil by using appropriate non-combustible barriers. Inform local authorities if impacts cannot be prevented. This may be harmful to the environment if released in large quantities.

Clean-up Methods (Small Spillages)	To minimize soil and groundwater contamination, absorb liquid with sand earth or other recommended sorbent material, as soon as possible. Sweep up and remove to a suitable, clearly marked container for disposal in accordance with local regulations. DO not disperse using water.
Clean-up Methods (Large Spillages)	Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Dispose according to local regulations.
Maritime Spillages	Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

SECTION 7: HANDLING AND STORAGE

Handling Procedures

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

Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. It can accumulate static charge by flow or agitation. It can be ignited by static discharge. The use of explosion proof electrical equipment is recommended and may be required (see appropriate fire codes).

Empty containers retain residue and may be dangerous. DO not pressurize, 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 should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with government regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage Procedures

Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No smoking or Open Flame." Store only approved containers. Keep away from any incompatible material (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.

Product Transfer

Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment. Avoid splash filling. Wait 2 minutes after tank filling (for large storage tanks) before opening hatches or manholes. When filling tanks there is always a danger of static discharges leading to explosion. This is particularly hazardous when switch loading tanks.

Product transfer may give rise to light hydrocarbon vapor in the headspace of tanks. This vapor may explode if there is a source of ignition such as static discharge.

Partly filled containers present hazard than those that are full, therefore, handling, transfer and sampling activities need special care. Conditions, such as filling empty Filter Water Separator vessels that lead to the formation of hydrocarbon mists are also particularly hazardous.

Tank Cleaning

Cleaning, inspection and maintenance of storage tanks is a specialist operation that requires the implementation of strict procedures and precautions. These include issuing of work permits, gas freeing of tanks, using a manned harness, lifelines, and wearing air-supplied breathing apparatus. Prior to entry and whilst cleaning is underway, the atmosphere within the tank must be monitored using an Oxygen meter and explosimeter. Additional precautions are required where the tank may previously have contained leaded gasoline.

Recommended Materials

For containers use mild steel, stainless steel or Aluminum. For mild steel applications, internal lining may be required using an aviation approved coating.

For seals and gaskets, consult manufacturer's literature for suitability.

Unsuitable Materials

Synthetic materials such as plastics and fiberglass may be unsuitable for containers and container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However, some may be suitable for glove materials. Avoid contact with Copper alloys, as this may cause thermal stability to deteriorate. Avoid contact with galvanized materials.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Information is based on study of similar products.

Exposure Controls: Ingredient Name	Occupational exposure limits	ACGIH Threshold Limit Value (TWA)	Form
Fuel, Diesel	Not established	100 mg/m^3 *(TLV listed under Diesel Fuel [68334-30-5; 68476-30-2; 68476-31-3; 68476-34-6; 77650-28-3] as total hydrocarbons) TWA:	Vapor and Aerosol; Skin

NOTE: TLV listed under Diesel Fuel

The level of personal protection and the types of controls necessary will vary depending on exposure conditions. Select controls based on a risk assessment of local circumstances. Use sealed systems as far as possible. Use local, intrinsically safe, exhaust ventilation if there is a risk of inhalation of vapors, mists or aerosols. Provide eye washes and showers for emergency use.

Respiratory Protection

Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapor cartridge combined with a particulate pre-filter should be considered. Where air-filtering respirators are unsuitable (e.g. where airborne concentrations are high, there is a confined space or a risk of Oxygen deficiency) use appropriate positive pressure breathing apparatus.

Hand Protection

The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the performance of their products. Nitrile is suggested for prolonged or repeated exposure. Neoprene or PVC gloves may be suitable for incidental contacts.

Eye Protection

Wear safety glasses with side shields or full face shield if splashes are likely to occur.

Environment Exposure Controls

Minimize release to the environment. AN environmental assessment must be made to ensure compliance with local environmental registration.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance/ Color	Color is variable: pale straw to yellow to light brown
Odour	Characteristic odour
Kinematic Viscosity at 40°C, cSt	2.000 to 4.500 cSt at 40 deg C
Density at 15°C, kg/m3	820 to 860 kg/m3
Flash Point, °C (PMCC)	>61.5°C
Boiling Point	200 - 400 °C
Vapor Pressure, kPa	<1 mmHg at 25° C
Vapor Density (Air=1)	>1
Solubility in Water	Negligible
n-octanol/water partition coefficient	Not available
Auto-ignition Temperature, C	>250° C (approx)
Volatile Component	100 %
Flammability Limits – UEL	6% (V/V) maximum
Flammability Limits – LEL	1% (V/V) minimum
pH Value	Not applicable
Melting Point	Not applicable

SECTION 10: STABILITY AND REACTIVITY

Stability This product is stable under normal conditions of storage and use.

Conditions to avoid Avoid heat, open flames and all ignition sources.

Polymerization Not Applicable

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Thermal decomposition and combustion produce noxious fumes containing oxides of carbon.

SECTION 11: TOXICOLOGICAL INFORMATION

Information is based on product data and toxicology of similar products.

Acute oral toxicity	Low toxicity: LD50 >2000 mg/kg, rat Aspiration hazard if swallowed – fatal if aspirated into lungs.
Acute dermal toxicity	Low toxicity: LD50 >2000 mg/kg, rabbit
Acute inhalation toxicity	Low toxicity: LD50 >5mg/l /4h, rat
Eye irritation	Mild irritant
Skin irritation	Irritating. Prolonged exposure causes can cause redness, swelling and dry skin.
Respiratory irritation	Expected to be slightly irritating to the upper respiratory tract. Inhalation may lead to nausea, vomiting or drowsiness.
Skin sensitization	Not a skin sensitizer.
Mutagenicity	No known significant mutagenic effects.
Reproductive toxicity	Not expected to be a developmental toxicant.
Carcinogenicity	Classified as Carcinogen category 2, based on animal data.
Repeated dose toxicity	Kidney effects to male rats not considered relevant for humans.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

A: General Product Information

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Test & Species	Toxicity
Fish- Lepomis macrochirus (LC_{50}/96-hour)	31.0265 mg/Li
Daphnia Magna (LC_{50}/48-hour)	2.16 mg/L
Daphnia Magna (EC_{50}/48-hour)- Flow through	1.96 mg/Li
Daphnia Magna (EC_{50}/48-hour)- Static	1.09 – 3.4 mg/Li
Algae- Skeletonema costatum (EC_{50}/72-hour)	0.4 mg/Li

Ecotoxicity	Toxic to aquatic organisms, and may cause long term effects in the aquatic environment.
Environmental Mobility	Oil component of this product floats and can migrate from water to land. Large volumes may penetrate soil and could contaminate groundwater.
Environmental Degradability	Oxidizes by photochemical reactions in air. Major components are inherently biodegradable. Persists under aerobic conditions. The volatile components oxidize rapidly by phytochemical reactions in air.

Bioaccumulation	Contains components with the potential to bioaccumulate. May cause tainting of fish and shell fish. Poorly soluble mixture. Films formed on water may affect Oxygen content and may harm organisms.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal	Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor to deal satisfactorily with this type of product should be established beforehand. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.
Container Disposal	Recycle or dispose in accordance with the legislation in force with a recognized collector or contractor. Do not pollute the soil, water or environment with the waste product.

SECTION 14: TRANSPORT INFORMATION

ADG Not classified.

IMDG

Identification number	UN3082
Proper shipping name	Environmentally hazardous substance, Liquid, NOS
Technical name	(Gas oil – unspecified)
Class / Division	9
Packing group	III
Marine pollutant	Yes

IATA

UN number	3082
Proper shipping name	Environmental hazardous substance, Liquid, NOS
Technical name	(Gas oil – unspecified)
Class / Division	9
Packing group	III

SECTION 15: REGULATORY INFORMATION

Information is not intended to be comprehensive and other regulatory information may apply.

SUSDP
Not scheduled – when packed in >20 li containers
S5 – when packed in <20 li containers

SECTION 16: OTHER INFORMATION

Abbreviations used

ACGIH	American Conference of Governmental Industrial Hygienists
ADG	Australian Code for the Transport of Dangerous Goods by Road and Rail
CAS number	Chemical Abstracts Service Registry Number
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LD50	Lethal dose 50% or median lethal dosage
LEL	Lower explosive limit
MARPOL	International Convention for the Prevention of Pollution from Ships
NOS	Not otherwise specified
OSHA	Occupational Safety and Health Administration
SUSDP	Standards for the Uniform Scheduling of Drugs and Poisons
TLV	Threshold limit value
TWA	Time weighted average
UN number	United Nations number
UEL	Upper explosive limit

History

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Prepared / Reviewed by	Technical Department / Health, Safety, Security and Environment
Approved by	General Manager – Refinery PNG

Notice to user

Although all reasonable and practicable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy and completeness of the information contained herein.

The information given in this document is applicable when the product is used for its intended purpose.

The user is responsible to use the product safely and to comply with applicable regulations.

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