SAFETY DATA SHEET

Diesel

1. Identification of the substance/preparation and company/undertaking

Material Name	**Diesel**
Recommended Uses	Fuel for compression ignition diesel powered engines.
Other names	Ultra Low Sulphur Diesel
Supplier	**Puma Energy Australia** ABN 78 147 981 020 PO Box 95, Fortitude Valley QLD 4006
Emergency Telephone	1800 019 142

2. Hazards Identification

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.
Classified as hazardous according to the criteria of NOHSC, and not classified as Dangerous Goods according to the Australian Dangerous Goods Code.

Symbol(s)	Xn Harmful. N Dangerous for the environment.
R-phrase(s)	R40 Limited evidence of carcinogenic effect. R65 Harmful: may cause lung damage if swallowed. R66 Repeated exposure may cause skin dryness or cracking. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrase(s)	S2 Keep out of the reach of children. S24 Avoid contact with skin. S29 Do not empty into drains. S36/37 Wear suitable protective clothing and gloves. S43 In case of fire use water, dry chemical or carbon dioxide. Do not use water jet. S61 Avoid release to the environment. Refer to special instructions/Safety data sheets. S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
Health Hazards	Slightly irritating to respiratory system. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache and nausea. May cause moderate irritation to skin. Repeated exposure may cause skin dryness or cracking. Harmful: may cause lung damage if swallowed. Limited evidence of carcinogenic effect.
Signs and Symptoms	If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance.
Safety Hazards	May ignite on surfaces at temperatures above auto-ignition temperature. Vapour in the headspace of tanks and containers may ignite and explode at temperatures exceeding auto-ignition temperature, where vapour concentrations are within the flammability range. Not classified as flammable but will burn. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
Environmental Hazards	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Additional Information	This product is intended for use in closed systems only.
SUSDP Schedule	Not scheduled. When packed in containers having capacity of greater than 20 litres. S5 When packed in containers having capacity of less than 20 litres.

3. Composition/Information on Ingredients

Preparation description

Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon numbers predominantly in the C9 to C25 range. May also contain several additives at <0.1% v/v each. May contain cetane improver (Ethyl Hexyl Nitrate) at <0.2% v/v. May contain catalytically cracked oils in which polycyclic aromatic compounds, mainly 3-ring but some 4- to 6-ring species are present. May contain Fatty Acid Methyl Esters (FAME).

Hazardous Components

Chemical Identity	CAS	EINECS	Symbol(s)	R-phrase(s)	Conc.
Fuels, diesel,	68334 30-5	270-676-1	Xn, N	R40; R65; R66; R51/53	<100%

4. First Aid Measures

Inhalation

Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact

Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact

Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion

If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 38.3° C (101° F), shortness of breath, chest congestion or continued coughing or wheezing.

Advice to Physician

Treat symptomatically.

5. Fire Fighting Measures

Clear fire area of all non-emergency personnel.

Specific Hazards

Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Oxides of sulphur. Unidentified organic and inorganic compounds. Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. Flammable vapours may be present even at temperatures below the flash point.

Suitable Extinguishing Media

Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media

Do not use water in a jet.

Protective Equipment for Fire fighters

Wear full protective clothing and self-contained breathing apparatus.

Additional Advice

Keep adjacent containers cool by spraying with water.

6. Accidental Release Measures

Avoid contact with spilled or released material. Observe all relevant local and international regulations. Evacuate the area of all nonessential personnel. Ventilate contaminated area thoroughly.

Protective measures	Do not breathe fumes, vapour. Do not operate electrical equipment. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
Major Spill	Where liquid spills or overflows resulting from incidents such as pump hose rupture or burst pipelines following collision with a pump, exceed 20 litres or for where there is the requirement for emergency response. Transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
Small Spill	For small liquid spills (where a spill covers < 2 square meters or is < 10 litres), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
Additional Advice	Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

7. Handling and Storage

General Precautions	Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Prevent spillages. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Never siphon by mouth. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. Maintenance and Fuelling Activities - Avoid inhalation of vapours and contact with skin. Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements. AS 1940:2004 The storage and handling of flammable and combustible liquids.
Handling	Avoid inhaling vapour and/or mists. Avoid prolonged or repeated contact with skin. When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Earth all equipment. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Storage	Drum and small container storage: Drums should be stacked to a maximum of 3 high. Use properly labelled and closable containers. Tank storage: Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep in a bunded area with a sealed (low permeability) floor, to provide containment against spillage. Prevent ingress of water.
Product Transfer	Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling. Contamination resulting from product transfer may give rise to light hydrocarbon vapour in the headspace of tanks that have previously contained gasoline.

This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Recommended Materials For containers, or container linings use mild steel, stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Materials Some synthetic materials may be unsuitable for containers or 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.

Container Advice Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Additional Information Ensure that all local regulations regarding handling and storage facilities are followed.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

Naphthalene	AU OEL	TWA	10 ppm	52 mg/m3
	AU OEL	STEL	15 ppm	79 mg/m3
Oil mist, Mineral	AU OEL	TWA(Mist)		5 mg/m3

Additional Information In the absence of a national exposure limit, the American Conference of Governmental Industrial Hygienists (ACGIH) recommends the following values for Diesel Fuel: TWA – 100 mg/m3 Critical effects based on Skin and Irritation.

Exposure Controls The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Eye washes and showers for emergency use.

Personal Protective Equipment Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. AS/NZS 1337: Eye protectors for industrial applications. AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. AS/NZS 1715: Selection, use and maintenance of respiratory protective devices. AS/NZS 1716: Respiratory protective devices.

Respiratory Protection If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air filtering respirators are suitable, select an appropriate combination of mask and filter. All respiratory protection equipment and use must be in accordance with local regulations.

Hand Protection Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.

Eye Protection Chemical splash goggles (chemical monogoggles). Approved to EU Standard EN166.

Protective Clothing Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing).

Monitoring Methods Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Environmental Exposure Local guidelines on emission limits for volatile substances must be observed for the discharge of

Controls	exhaust air containing vapour.

9. Physical and Chemical Properties

Physical State	Liquid
Appearance	Colourless, pale straw to yellow, including fluorescent green, blue or yellow.
Odour	Mild
pH	Data not available
Initial Boiling Point and Boiling Range	170 - 390 °C / 338 - 734 °F
Freezing/melting point	Data not available
Flash point	> 61.5°C (ASTM D-93 / PMCC)
Lower / upper Flammability or Explosion limits	1 - 6 %(V)
Auto-ignition temperature	> 220 °C / 428 °F
Vapour pressure	0.1 kPa
Specific gravity	Data not available
Density	Typical 0.84 g/cm3 at 15 °C / 59 °F
Solubility in other solvents	Data not available
n-octanol/water partition coefficient (log Pow)	3 - 6
Kinematic viscosity	2 - 4.5 mm2/s at 40 °C / 104 °F
Vapour density (air=1)	Data not available

10. Stability and Reactivity

Stability	Stable under normal conditions of use.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	Strong oxidising agents.
Hazardous Decomposition Products	Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. Toxicological Information

Basis for Assessment	Information given is based on product data, a knowledge of the components and the toxicology of similar products.
Acute Oral Toxicity	Low toxicity:LD50 >2000 mg/kg, Rat Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Acute Dermal Toxicity	Low toxicity:LD50 >2000 mg/kg, Rabbit
Acute Inhalation Toxicity	Low toxicity: LC50 >5 mg/l / 4 h, Rat High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
Skin Irritation	May cause moderate skin irritation (but insufficient to classify). Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Eye Irritation	Slightly irritating.
Respiratory Irritation	Slightly irritating.
Sensitisation	Not a skin sensitiser.
Repeated Dose Toxicity	Kidney: caused kidney effects in male rats which are not considered relevant to humans
Mutagenicity	In-vitro mutagenicity studies show that mutagenic activity is related to 4-6 ring polycyclic aromatic content.

Carcinogenicity	Limited evidence of carcinogenic effect. Repeated skin contact has resulted in irritation and skin cancer in animals.
Reproductive and Developmental Toxicity	Not expected to be a developmental toxicant.

12. Ecological Information

Information given is based on a knowledge of the components and the ecotoxicology of similar products. Fuels are typically made from blending several refinery streams. Ecotoxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives.

Acute Toxicity	Toxic:LL/EL/IL50 1-10 mg/l(to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).
Mobility	Floats on water. Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.
Persistence/degradability	Major constituents are inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.
Bioaccumulation	Contains constituents with the potential to bioaccumulate.
Other Adverse Effects	Films formed on water may affect oxygen transfer and damage organisms.

13. Disposal Considerations

Material Disposal	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. 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. 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 should be established beforehand.
Container Disposal	Send to drum recoverer or metal reclaimer. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums. Do not pollute the soil, water or environment with the waste container. Comply with any local recovery or waste disposal regulations.
Local Legislation	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. Transport Information

ADG
This material is not classified as dangerous according to the Australian Dangerous Goods Code.

IMDG

Identification number	UN 3082
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name	(Gas oil - unspecified)
Class / Division	9
Packing group	III
Marine pollutant	Yes

IATA (Country variations may apply)

UN No.	3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.
Technical name	(Gas oil - unspecified)
Class / Division	9

Packing group	III
Additional Information	Not classified under ADG 07 regulations as special provision AU 02 applies

15. Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

SUSDP Schedule	Not scheduled. When packed in containers having capacity of greater than 20 litres. S5 When packed in containers having capacity of less than 20 litres.
AICS	All components are listed or exempt
Classification triggering Components	Contains fuels, diesel.
Other Information	National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC: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. Standard Uniform Scheduling of Drugs and Poisons.

16. Other Information

Key to abbreviations

AMP	Acceptable Maximum Peak
ACGIH	American Conference of Governmental Industrial Hygienists, an agency that promulgates exposure standards.
ADG	Australian Code for the Transport of Dangerous Goods by Road and Rail
ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail
CAS Number	Chemical Abstracts Service Registry Number
HAZCHEM Code	Emergency action code of numbers and letters which gives information to emergency services. Its use is required by the ADG Code for Dangerous Goods in bulk.
ICAO	International Civil Aviation Organization.
IATA	International Air Transport Association, the organization promulgating rules governing shipment of goods by air.
IMDG	International Maritime Organization Rules, rules governing shipment of goods by water.
NOHSC	National Occupational Health & Safety Commission, Australia
TWA	Time weighted average
STEL	Short term exposure limit
UN Number	United Nations Number, a four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.
NOHSC	National Occupational Health and Safety Commission
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
EINECS	European Inventory of Existing Commercial Chemical Substances
MARPOL	International Convention for the Prevention of Pollution for Ships

Additional Information	This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.

R-phrase(s)

R40	Limited evidence of carcinogenic effect.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.

Storage of Combustible Liquids	Combustible liquids with a flash point between 61 C and 150 C are required to be stored as for flammable liquids (Dangerous Goods Class 3) under AS 1940. [Refer to Australian Standard 1940, Storage and Handling of Flammable and Combustible Liquids, for full storage guidelines.]
Respirators	In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

Diesel – Petrol Storage Tanks	Individuals should not enter poorly ventilated or confined space eg. fuel storage tanks, without consulting AS/NZS 2865 – Safe Working in a Confined Space. An air supplied breathing apparatus may be required if adequate ventilation is not ensured.
Work Practices – Solvents	Organic solvents may present both a health and flammability hazard. It is recommended that engineering controls should be adopted to reduce exposure where practicable (for example, if using indoors, ensure explosion proof extraction ventilation is available). Flammable or combustible liquids with explosive limits have the potential for ignition from static discharge. Refer to AS 1020 (The Control of undesirable static electricity) and AS 1940 (The Storage and Handling of Flammable and Combustible Liquids) for control procedures.
Personal Protective Equipment Guidelines	The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.
Health Effects From Exposure	It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a SDS which would encompass all possible scenarios, it is anticipated that user will assess the risks and apply control methods where appropriate.
Colour Rating System	A colour rating is allocated for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects.

NOTICE TO READER

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet. The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. Puma Energy Australia shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

Date of issue	2013
Date of previous issue	2013
Prepared by	**Puma Energy Australia**