Material Safety Data Sheet

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : **Ultra Low Sulfur Diesel Fuel 2 (S-15 ppm) Dyed**
Uses : Fuel for use in off-road diesel engines, boilers, furnaces and other combustion equipment.

Manufacturer/Supplier : **Shell Oil Products US**
PO BOX 4453
Houston, TX 77210-4453
USA
MSDS Request : 877-276-7285

Emergency Telephone Number
Spill Information : 877-242-7400
Health Information : 877-504-9351

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	CAS No.	Concentration
Fuels, diesel, no.2	68476-34-6	100.00 %

Dyes and markers can be used to indicate tax status and prevent fraud.
Contains/may contain full range straight run middle distillate, CAS # 68814-87-9.
Contains/may contain light catalytic cracked distillate, CAS # 64741-59-9.
Contains/may contain hydrotreated middle distillate, CAS # 64742-46-7.
Contains organic sulfur compounds.
Contains Benzene, CAS # 71-43-2.

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour : Red. Liquid. Hydrocarbon.

Health Hazards : Harmful: may cause lung damage if swallowed. Vapours may cause drowsiness and dizziness. A component or components of this material may cause cancer. This product contains benzene which may cause leukaemia (AML acute myelogenous leukaemia).

Safety Hazards : Combustible liquid. 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.

Health Hazards

Inhalation : 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.

Skin Contact : May cause moderate irritation to skin. Repeated exposure may

cause skin dryness or cracking.

Eye Contact	:	May cause slight irritation to eyes.
Ingestion	:	Harmful: may cause lung damage if swallowed.
Other Information	:	A component or components of this material may cause cancer. This product contains benzene which may cause leukaemia (AML acute myelogenous leukaemia).
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. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.
Aggravated Medical Condition	:	Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.
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.

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 101° F (37° C), shortness of breath, chest congestion or continued coughing or wheezing.
Advice to Physician	:	Treat symptomatically. Potential for chemical pneumonitis.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	:	> 52 °C / 126 °F (ASTM D-93 / PMCC)
Lower / upper Flammability or Explosion limits	:	0.5 - 4.4 %(V)
Auto ignition temperature	:	260 °C / 500 °F
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 Firefighters	:	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. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations. Evacuate the area of all non-essential 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.
Clean Up Methods	:	For small liquid spills (< 1 drum), 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. For large liquid spills (> 1 drum), 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. Shovel into a suitable clearly marked container for disposal or reclamation in accordance with local regulations.
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. U.S. regulations may require reporting releases of this material to the environment which exceed the

reportable quantity (refer to Chapter 15) to the National Response Centre at (800) 424-8802. Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Centre at (800) 424-8802. This material is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Petroleum Exclusion. Therefore, releases to the environment may not be reportable under CERCLA.

7. HANDLING AND STORAGE

General Precautions : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. 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.

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.

Storage : Drum and small container storage: Drums should be stacked to a maximum of 3 high. Use properly labelled and closeable 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. 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.

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

Material	Source	Type	ppm	mg/m3	Notation
Fuels, diesel, no.2	ACGIH	TWA(Vapor and aerosol.)		100 mg/m3	as total hydrocarbons
Fuels, diesel, no.2	ACGIH	SKIN_DES(Vapor and aerosol.)			Can be absorbed through the skin,as total hydrocarbons
Fuels, diesel, no.2	ACGIH	TWA(Inhalable fraction and vapor.)		100 mg/m3	as total hydrocarbons
Fuels, diesel, no.2	ACGIH	SKIN_DES(Inhalable fraction and vapor.)			Can be absorbed through the skin,as total hydrocarbons
Benzene	ACGIH	TWA	0.5 ppm		
Benzene	ACGIH	STEL	2.5 ppm		
Benzene	ACGIH	SKIN_DES			Can be absorbed through the skin.
Benzene	OSHA	TWA	1 ppm		
Benzene	OSHA	STEL	5 ppm		
Benzene	OSHA	OSHA_ACT	0.5 ppm		
Benzene	OSHA Z1A	TWA	1 ppm		
Benzene	OSHA Z1A	STEL	5 ppm		
Benzene	SHELL IS	TWA	0.5 ppm	1.6 mg/m3	

Benzene	SHELL IS	STEL	2.5 ppm	8 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.
Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes. Shell has adopted as Interim Standards the OSHA Z1A values that were established in 1989 and later rescinded.
SHELL IS is the Shell Internal Standard.

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.

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.
Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

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.

Eye Protection : Chemical splash goggles (chemical monogoggles).

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

9. PHYSICAL AND CHEMICAL PROPERTIES

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Appearance	:	Red. Liquid.
Odour	:	Hydrocarbon.
Flash point	:	> 52 °C / 126 °F (ASTM D-93 / PMCC)
Lower / upper Flammability or Explosion limits	:	0.5 - 4.4 %(V)
Auto-ignition temperature	:	260 °C / 500 °F
Specific gravity	:	0.85

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 >20 mg/l / 1.00 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 relevent to humans
Mutagenicity	:	Mutagenic; positive in in-vivo and in-vitro assays.
Carcinogenicity	:	Repeated skin contact has resulted in irritation and skin cancer in animals. Known human carcinogen. (Benzene) May cause leukaemia (AML - acute myelogenous leukemia). (Benzene)

Material	:	Carcinogenicity Classification
Fuels, diesel, no.2	:	ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.

Distillates (petroleum), light catalytic cracked	:	IARC 2A: Probable carcinogen.
Benzene	:	ACGIH Group A1: Confirmed human carcinogen.
Benzene	:	NTP: Known carcinogen.
Benzene	:	IARC 1: Human carcinogen.
Benzene	:	OSHASP: Cancer hazard.

Reproductive and Developmental Toxicity : Not expected to be a developmental toxicant.

Additional Information : Myelodysplastic syndrome (MDS) was observed in individuals exposed to very high levels (50 ppm to 300 ppm range) of benzene over a long period of time in the workplace. The relevance of these results to lower levels of exposure is not known. (Benzene)

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. If it enters soil, it will adsorb to soil particles and will not be mobile. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.

Persistence/degradability : Persists under anaerobic conditions. 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

US Department of Transportation Classification (49CFR)

Identification number	UN 1202
Proper shipping name	Diesel fuel
Class / Division	3
Packing group	III
Emergency Response Guide No .	128

IMDG

Identification number	UN 1202
Proper shipping name	DIESEL FUEL
Class / Division	3
Packing group	III
Marine pollutant:	Yes

IATA (Country variations may apply)

Identification number	UN 1202
Proper shipping name	Diesel fuel
Class / Division	3
Packing group	III

15. REGULATORY INFORMATION

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

Federal Regulatory Status

Additional Information : IARC has classified diesel exhaust emissions as a Class 2A carcinogen - probably carcinogenic to humans. Steps should be taken to prevent personal exposure to diesel exhaust emissions.

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Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

Ultra Low Sulfur Diesel Fuel 2 (S-15 ppm) Dyed ()	Reportable quantity: 5000 lbs
Benzene (71-43-2)	Reportable quantity: 10 lbs

Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

Clean Water Act (CWA) Section 311

Benzene (71-43-2)	Reportable quantity: 10 lbs

Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Centre at (800) 424-8802.

SARA Hazard Categories (311/312)
Immediate (Acute) Health Hazard. Delayed (Chronic) Health Hazard. Fire Hazard.

SARA Toxic Release Inventory (TRI) (313)

Benzene (71-43-2)	0.20%

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This product contains a chemical known to the State of California to cause cancer.
Known to the State of California to cause birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Fuels, diesel, no.2 (68476-34-6)	
Benzene (71-43-2)	Listed.

Pennsylvania Right-To-Know Chemical List

Fuels, diesel, no.2 (68476-34-6)	Listed.
Benzene (71-43-2)	Special hazard. Environmental hazard. Listed.

16. OTHER INFORMATION

Additional Information : This document contains important information to ensure the

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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.

NFPA Rating (Health, Fire, Reactivity)	:	1, 2, 0
MSDS Version Number	:	5.0
MSDS Effective Date	:	05/07/2010
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	:	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product.
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.