

Diesel Fuel

SECTION 1. IDENTIFICATION

| | |
|----------------------------|--|
| Product Identifier | Diesel Fuel |
| Recommended Use | Fuel. |
| Manufacturer | AES Drilling Fluids, LLC, 11767 Katy Freeway, Suite 230, Houston, TX, 77079, Sales & Information, 281-556-5628 |
| Emergency Phone No. | CHEMTREC, 1-800-424-9300, 24-hour Emergency |
| Date of Preparation | August 14, 2015 |

SECTION 2. HAZARD IDENTIFICATION

Classification

Flammable liquid - Category 3; Skin irritation - Category 2; Eye irritation - Category 2A; Carcinogenicity - Category 1B; Specific target organ toxicity (single exposure) - Category 3; Specific target organ toxicity (repeated exposure) - Category 2; Aspiration hazard - Category 1; Aquatic hazard (Chronic) - Category 2

Label Elements



Signal Word:

Danger

Hazard Statement(s):

| | |
|------|--|
| H226 | Flammable liquid and vapour. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H350 | May cause cancer. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |

Precautionary Statement(s):

| | |
|------|---|
| P202 | Do not handle until all safety precautions have been read and understood. |
| P210 | Keep away from heat, sparks, open flames, and hot surfaces. – No smoking. |
| P233 | Keep container tightly closed. |
| P260 | Do not breathe dust, fume, gas, mist, vapours or spray. |
| P264 | Wash hands thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P280 | Wear protective gloves/eye protection/face protection. |

Response:

IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

Storage:

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS No. | % | Other Identifiers |
|---|------------|---------|-------------------|
| Distillates (petroleum), hydrotreated light | 64742-47-8 | 0 - 100 | |
| Hydrodesulfurized kerosene | 64742-81-0 | 0 - 100 | |
| Deodorized kerosene | 8008-20-6 | 0 - 100 | |
| Naphthalene | 91-20-3 | < 3 | |

Notes

Multiple ranges have been used with some ingredients due to blend variances of products used as ingredients.

SECTION 4. FIRST-AID MEASURES**First-aid Measures****Inhalation**

Remove source of exposure or move to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor. If breathing has stopped, trained personnel should begin rescue breathing. Avoid mouth-to-mouth contact by using a barrier device. Call a Poison Centre or doctor.

Skin Contact

Take off immediately contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 15-20 minutes. Call a Poison Centre or doctor. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice or attention.

Ingestion

Seek immediate medical attention. Rinse mouth with water. Never give anything by mouth if person is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. If vomiting occurs, have victim lean forward to reduce the risk of aspiration.

First-aid Comments

If exposed or concerned, get medical advice or attention.

SECTION 5. FIRE-FIGHTING MEASURES**Extinguishing Media****Suitable Extinguishing Media**

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Use water to keep non-leaking, fire-exposed containers cool.

Specific Hazards Arising from the Product

Flammable liquid and vapour, releases vapour that can form an explosive mixture with air. May travel a considerable distance to a source of ignition and flash back to a leak or open container. Closed containers may rupture violently when heated releasing contents.

In a fire, the following hazardous materials may be generated: Oxides of carbon.

Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Firefighters should wear appropriate breathing apparatus and protective clothing. Dike and recover contaminated water for appropriate disposal. Containers may rupture from gas generation in a fire situation. Use water spray only to cool fully closed containers.

SECTION 6. ACCIDENTAL RELEASE MEASURES

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Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Eliminate all ignition sources. Use grounded, explosion-proof equipment. Do not touch damaged containers or spilled product unless wearing appropriate protective equipment. Use the personal protective equipment recommended in Section 8 of this safety data sheet. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Distant ignition and flashback are possible.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

Methods and Materials for Containment and Cleaning Up

Small spills or leaks: eliminate all ignition sources. Stop or reduce leak if safe to do so. Do not use absorbents. Contain spill using noncombustible material such as vermiculite, earth or sand. Do NOT use combustible materials such as sawdust. Place used absorbent into suitable, covered, labelled containers for disposal. Large spills or leaks: isolate the spill area and restrict access. Eliminate all ignition sources. Dike spilled product to prevent runoff. Remove or recover liquid using pumps or vacuum equipment. Prevent contamination of waterways or sewers.

Other Information

Contact EH&S regarding spill as spills of certain products and certain quantities may require reporting to various authorities.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Do not breathe in this product. Do not get in eyes, on skin or on clothing. Do not swallow. Only use where there is adequate ventilation. Avoid generating vapours or mists. Prevent uncontrolled release of product. Avoid release to the environment. Immediately report leaks, spills or failures of the safety equipment (e.g. ventilation system). In the event of a spill or leak, exit the area immediately. Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Keep containers tightly closed when not in use or empty. Do NOT eat, drink or store food in work areas. Wash hands thoroughly after handling this product and before eating, using the washroom or leaving work area. Immediately remove contaminated clothing using the method that minimizes exposure. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources, an approved, fire-resistant area, separate from incompatible materials (see Section 10: Stability and Reactivity). Empty containers may contain hazardous residue. Store separately. Keep closed. Follow all precautions given on this safety data sheet.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

| Chemical Name | ACGIH® TLV® | | Alberta | | SASK | |
|---|-------------------|-----------------|----------------|-----------------|----------------|-----------------|
| | TWA | STEL [C] | OEL | STEL | OEL | STEL |
| Naphthalene | 10 ppm Skin A4 | 15 ppm | 10 ppm Skin | 15 ppm | 10 ppm Skin | 15 ppm |
| Distillates (petroleum), hydrotreated light | 5 mg/m3 | Not established | 5 mg/m3 | Not established | 5 mg/m3 | Not established |
| Hydrodesulfurized kerosene | 200 mg/m3 Skin A3 | | 200 mg/m3 | | 200 mg/m3 Skin | |
| Deodorized kerosene | 200 mg/m3 A3 Skin | | 200 mg/m3 Skin | | 200 mg/m3 Skin | 250 mg/m3 |

ACGIH® = American Conference of Governmental Industrial Hygienists. TWA = Time-Weighted Average. STEL = Short-term Exposure Limit. OEL = Occupational Exposure Limit.

Appropriate Engineering Controls

Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this

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product is used and stored. An eyewash and safety shower should be within acceptable distance to the work area.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear gloves with appropriate chemical resistance, see manufacturers specifications for suitability. Wear chemical protective clothing e.g. gloves, aprons, boots.

Respiratory Protection

If conditions exist above the OEL wear a NIOSH approved air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

| | |
|--|---|
| Appearance | Clear yellow - green liquid. |
| Odour | Aromatic |
| Odour Threshold | Not available |
| pH | Not available |
| Melting Point/Freezing Point | Not available (melting); < -40 °F (-40 °C) (freezing) |
| Initial Boiling Point/Range | 149 - 300 °F (65 - 149 °C) |
| Flash Point | 100 - 150 °F (38 - 66 °C) |
| Evaporation Rate | < 1 |
| Flammability (solid, gas) | Not available |
| Upper/Lower Flammability or Explosive Limit | 7% (upper); 7% (lower) |
| Vapour Pressure | 0.40 mm Hg |
| Vapour Density (air = 1) | > 4.5 |
| Relative Density (water = 1) | 0.775 - 0.840 |
| Solubility | Practically insoluble (less than 0.1%) in water |
| Partition Coefficient, n-Octanol/Water (Log Kow) | Not available |
| Auto-ignition Temperature | 410 °F (210 °C) |
| Decomposition Temperature | Not available |
| Viscosity | 1.0 - 2.4 centipoises (dynamic) |
| Other Information | |
| Physical State | Liquid |

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None expected under normal conditions of storage and use.

Conditions to Avoid

Open flames, sparks, static discharge, heat and other ignition sources.

Incompatible Materials

Strong oxidizing agents (e.g. perchloric acid), strong reducing agents (e.g. hydrides).

Hazardous Decomposition Products

Decomposition products can include: oxides of carbon, hydrocarbons.

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SECTION 11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LC50 | LD50 (oral) | LD50 (dermal) |
|---|---|----------------------|------------------------|
| Naphthalene | Not available | 490 mg/kg (rat) | > 2,500 mg/kg (rat) |
| Distillates (petroleum), hydrotreated light | Not available | > 5000 mg/kg (rat) | > 2000 mg/kg (rabbit) |
| Hydrodesulfurized kerosene | 5200 mg/m ³ (rat) (4-hour exposure) | 5000 mg/kg (rat) | 2000 mg/kg (rabbit) |
| Deodorized kerosene | > 5,000 mg/m ³ (rat) (4-hour exposure) | 2,835 mg/kg (rabbit) | > 2,000 mg/kg (rabbit) |

Skin Corrosion/Irritation

May cause moderate or severe irritation based on information for closely related materials. Symptoms may include drying and cracking of the skin (dermatitis).

Serious Eye Damage/Irritation

May cause mild eye irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A severe exposure can cause unconsciousness.

Skin Absorption

Symptoms may include redness, rash, swelling and itching.

Ingestion

Symptoms may include nausea, vomiting, stomach cramps and diarrhea. Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A severe exposure can cause unconsciousness. May cause severe irritation or burns to the mouth, throat and stomach.

Aspiration Hazard

If aspirated into the lungs if swallowed or vomited may cause chemical pneumonitis which can be fatal.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause damage to organs.

Respiratory and/or Skin Sensitization

No information was located for respiratory sensitization. Not known to be a skin sensitizer.

Carcinogenicity

| Chemical Name | IARC | ACGIH® | NTP | OSHA |
|---|------------|--------|------------------------|------------|
| Naphthalene | Group 2B | A3 | Reasonably anticipated | Not Listed |
| Distillates (petroleum), hydrotreated light | Group 3 | A3 | Not Listed | Not Listed |
| Hydrodesulfurized kerosene | Not Listed | A3 | Not Listed | Not Listed |
| Deodorized kerosene | Group 3 | A3 | Not Listed | Not Listed |

(Distillates (petroleum), hydrotreated light) Not known to cause cancer. Mouse skin painting studies have shown that highly refined petroleum base oils similar to the ingredients in this product have not caused skin tumors. (Naphthalene) This product contains <1.0% Naphthalene which has been identified as a possible human carcinogen by IARC and NTP.

Key to Abbreviations

IARC = International Agency for Research on Cancer. Group 1 = Carcinogenic to humans. Group 2B = Possibly carcinogenic to humans. ACGIH® = American Conference of Governmental Industrial Hygienists. A2 = Suspected human carcinogen. A4 = Not classifiable as a human carcinogen.

Reproductive Toxicity

Development of Offspring

No information was located.

Sexual Function and Fertility

Not known to cause effects on sexual function or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Not known to be a mutagen.

SECTION 12. ECOLOGICAL INFORMATION

Do not allow product to contaminate domestic or irrigation water supplies, lakes, streams, ponds or rivers.

Ecotoxicity

(Hydrodesulfurized kerosene) Very toxic, with long lasting effects to aquatic life.

Acute Aquatic Toxicity

| Chemical Name | LC50 Fish | EC50 Crustacea | ErC50 Aquatic Plants | ErC50 Algae |
|---|--|---|----------------------|---------------|
| Naphthalene | 1.99 mg/L (Pimephales promelas (fathead minnow); 96-hour) | 2.16 mg/L (Daphnia magna (water flea); 48-hour) | Not available | Not available |
| Distillates (petroleum), hydrotreated light | 2.9 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour) | Not available | Not available | Not available |
| Hydrodesulfurized kerosene | Not available | Not available | Not available | Not available |
| Deodorized kerosene | Not available | Not available | Not available | Not available |

Persistence and Degradability

Expected not to degrade rapidly based on indirect evidence e.g. knowledge from structurally similar substances. No ingredient of this product or its degradation products is known to be highly persistent.

Bioaccumulative Potential

This product or its degradation products have the potential to bioaccumulate based on the n-octanol/water partition coefficient (Log Kow).

Mobility in Soil

If released into the environment, this product is expected to move rapidly through the soil, based on physical and chemical properties.

Other Adverse Effects

No known significant effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of unused product in accordance with local environmental and public health regulations. Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction. This product and its container must be disposed of as hazardous waste. Do NOT dump into any sewers, on the ground or into any body of water. The container for this product can present explosion or fire hazards, even when emptied. Do not cut, puncture, or weld on or near this container. Dispose of or recycle empty containers through an approved waste management facility.

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SECTION 14. TRANSPORT INFORMATION

| Regulation | UN No. | Proper Shipping Name | Transport Hazard Class(es) | Packing Group |
|--------------|--------|---------------------------|----------------------------|---------------|
| US DOT | 1202 | Diesel Fuel (Diesel Fuel) | 3 | III |
| Canadian TDG | 1202 | Diesel Fuel (Diesel Fuel) | 3 | III |

Environmental Hazards Marine Pollutant

Special Precautions Please note: Combustible liquid classification is dependent on a flash point of >60° C (140° F) and <93° C (200° F).

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by the Controlled Products Regulations.

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL or are not required to be listed.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.

Additional USA Regulatory Lists

SARA Title III - Section 302: No listed components.

SARA Title III - Section 311/312: Acute Hazards Chronic Health Hazard. Fire Hazard

SARA Title III - Section 313. (Naphthalene)

California Proposition 65: Listed.

SECTION 16. OTHER INFORMATION

NFPA Rating Health - 1 Flammability - 2 Instability - 0

SDS Prepared By HSE Department

Phone No. 403-269-2800

Date of Preparation August 14, 2015

Disclaimer Do not handle or use until precautions on MSDS are read and understood. The information on this form is furnished solely for the purpose of enabling those who transport, handle or use our products to ensure the safety and health of their employees and to comply with various laws and regulations (federal, state and local). We believe the statements, technical information and recommendations contained herein are reliable but, they are given without warranty or guarantee of any kind, express or implied and we assume no responsibility for any loss, damage, direct or consequential, arising out of their use.

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